



Summary of PCD's Strategic Grain Reserve programme

Summary

Strategic grain reserves (SGRs) were popularly supported in the past and are still fairly common in African countries. Despite concerns regarding their use and management (discussed in more detail later in this document), food reserves are being recommended by some experts as a buffer to high food prices, with a potential to smoothen price volatility as well as reduce the impacts of other food security shocks. Recent calls have been made by governments and development partners for renewed attention to SGRs in light of developments in Eastern and Southern Africa, concerning issues in Kenya, Malawi and Zambia, for example. Food stocks need diligent management. They require good storage facilities and should be rotated frequently for quality and health reasons. In practice, this is rarely done unless there is a severe crisis, partly because governments are reluctant to release large quantities of food into their markets because of the potential to suppress prices and distort the markets. Food is a valuable commodity which can be used for political or personal gain; large-scale food procurement and storage is thus vulnerable to waste, fraud, and abuse. This document shows how the Partnership for Child Development (PCD) proposes to address these management issues using public sector demand for school feeding, building on the work around Home Grown School Feeding (HGSF) that focuses on strengthening procurement from smallholder farmers.

This programme outline shows how PCD, and partners including the International Food Policy Research Institute (IFPRI) and the World Food Programme (WFP), will work with governments to strengthen the management of existing strategic grain reserves through linkages with school feeding programmes in at least two African countries over the 42-month grant period. PCD will work with appropriate partners to provide evidence based technical assistance, including innovative technologies, to support governments that wish to deliberately link their SGRs to their HGSF programs in order to improve the rotation and management of the reserve stocks (e.g. reduce stock age) and to strengthen the procurement from smallholder farmers. Our theory of change for this concept is that improved management of procurement and increased market access for smallholder farmers, improved storage and handling of the grain stocks, and the planned use of a portion of the available stocks to feed schoolchildren will result in lower costs to governments, greater food security, better educational and social outcomes, and increased rural prosperity.

We propose to build on the synergies with the HGSF program already underway, extending the evidence based platform currently supporting national governments implementing HGSF to also cover the linkages with SGRs. This approach will leverage the existing partnerships with relevant ministries on the topics of school feeding, school health and the links with smallholder agriculture. The activities will examine in more detail relevant specific themes (e.g. aflatoxin contamination and other food quality and safety issues), building on the existing multisectoral in-country and regional HGSF networks. With the existing HGSF grant, a technical assistance planning process is underway with the governments of Cote d'Ivoire, Ghana, Kenya, Malawi, Mali, and Nigeria, out of a potential nineteen countries in scope. At country level, the first step in the technical assistance process will be to determine whether the governments are interested in pursuing the option of deliberately linking their school feeding purchases from smallholders to their food reserve programs. In this project, we will seek to work with at least two and up to five countries on pilots linking existing strategic grain reserves to the market that school feeding programmes provide. Should additional countries request assistance in piloting these linkages, we will seek to leverage funding through the Technical Assistance Plans we are developing with these governments.

Background and rationale

Past experience in high and middle income countries has highlighted the role that public procurement can play in driving economic, social, and/or technological change. The most spectacular examples of the latter, perhaps, are the U.S. and France. The U.S. Department of Defense procurement policies played a major role in positioning the U.S. as the world leader in computer-related industries (e.g., software and semiconductors); France's public investments modernized the country's energy and telecommunications sectors as well as the mass transit system.¹ Public sector food purchases have been used to support

¹ *The School Food Revolution: Public Food and the Challenge of Sustainable Development*, K. Morgan and R. Sonnino, Earthscan, 2008, pp 23-27

prices, scoop up surpluses, and/or moderate fluctuations in food availability (e.g., India and the U.S.). The U.S. has used food surpluses to benefit farmers, schoolchildren, and poor families for decades. (See also the discussion of India's experience below.)

School food procurement schemes have been deliberately designed to spur employment and private sector and rural development (e.g., in Chile, Egypt, and Malaysia). Chile is one of the better documented examples. The Chilean government deliberately built school feeding to benefit small- and medium-size food businesses, and has excellent data on the impact on schooling, nutrition, and SME development.² However, there is little data specifically on the topic of the use of food reserves in the context of school feeding, and no data to date regarding the actual use of food reserves in Africa for school feeding.

The Bill & Melinda Gates Foundation recently commissioned a study by IFPRI that examined the issue of strategic grain reserves (SGRs) in Africa. SGRs are a controversial topic, and we do not propose to enter into the debate about the pros and cons of reserves. As IFPRI notes in its proposal for the study,

“...the track record of strategic food reserve policy implementation has been mixed. It has been an uphill battle for policy makers and development practitioners to implement effective strategic reserves / buffer stock programs in the developing countries of Africa and Asia. The agricultural price policy integrated buffer stocking and social safety net programs and was one of the main catalysts in accelerating the adoption of modern technology in the early years of green revolution. In later years, however, some of them became too expensive, plagued with corruption, and imposed heavy social costs in some countries (Rashid et al. 2006, 2007, and 2008). India is a good example. When the country increased minimum support prices abnormally high (allegedly due to special interests), it became very lucrative for the farmers and traders to sell their wheat and rice to the government instead of in the open market. As a result, national food stock increased from about 18 million tons in 1997/98 to about 65 million tons in the summer of 2002. The corresponding food subsidy bill jumped from US\$1.09 billion in 1997/98 to US\$ 3.2 billion in 2001/02, of which buffer stocks alone accounted for US\$1.6 billion. The following analogy by Dreze (2001) offers an interesting perspective:

‘If all the sacks of grain lying in the Food Corporation of India (FCI) warehouses were lined up in a row, the line would stretch a million kilometers—more than twice the distance from the earth to the moon. When millions of people are undernourished, if not starving, hoarding of this scale—is at enormous costs—is nothing short of implicit mass murder.’

These are useful, albeit depressing, statistics about the complexities of implementing buffer stock (strategic food reserve) policy in a cost effective way. However, there are encouraging stories in almost all green revolution countries; and a handful of countries manage to continue to make these policies effective. For instance, Bangladesh has time and again demonstrated how a buffer stock policy helps overcome food security crisis, save human lives, or even avert famine by combining both buffer stock and trade policies (Ahmed et al. 2000; and Dorosh, 2001, Rashid et al. 2007). In recent years, Ethiopia has also been successful implementing a food reserve program. During 2007-2008, when food prices increased sharply, the strategic reserve in the country was critical for stabilizing prices, minimizing vulnerabilities, and providing supports to the poor who were particularly hit by a drought in the *Belg* season (short rainy season). There are some debates over the institutional mechanisms used—such as re-introducing a rationing program, direct selling to flour mills, drawing down the stock to an alarmingly low level, and not making food available for the donors (like WFP) to carry out emergency operations. These debates and arguments notwithstanding, there is no denying that the strategic reserves in Ethiopia helped relieve millions poor from the severity of price hikes.³

At least 19 sub-Saharan African countries have some form of SGRs, and the systems employed to manage those reserves are quite varied, as are the intended and applied uses. The age and quality of the stocks are of particular concern. IFPRI uses a stock age analysis to estimate the condition and costs of

² “Country Policy and Funding Mechanism Study”, Global Child Nutrition Foundation, Nov. 2009

³ “Strategic Food Reserves in Africa: Analyzing Operational Efficiency and Smallholder Participation”, a research proposal submitted to The Bill and Melinda Gates Foundation Market Access team by IFPRI, Oct. 15, 2009 (unpublished).

storing food stocks—the shorter the storage period, the higher the assumed quality, the lower the likely losses to spoilage, and the lower the storage and maintenance costs. As examples, Ethiopia’s reserves are considered to be relatively well managed. None of the seven Ethiopian warehouses studied by IFPRI had stocks older than 9 months; nationally about 62 percent of the stocks were three months old or less in 2007-8. By contrast, 33 percent of stocks in Kenyan warehouses appeared to be more than 9 months old; in Bangladesh, more than 10 percent of stocks were older than six months; and at the time of the study in Malawi, most of the 140,000 MT of grain in the Strategic Grain Reserve had been stored for more than three years without rotation.⁴

The same report states that “Maintaining food reserves is expensive. If the grain stocks are not managed efficiently, there are at least three potential adverse consequences: (i) it may require large subsidies to pay for the storage costs, (ii) grain quality may deteriorate and can pose health risks..., and (iii) when stock gets older, generally following good harvests, governments have to sell the grain to open markets, which can distort markets and adversely affect private sector incentives. Once a policy decision to hold grain stock is made, it is important to devise measures to minimize fiscal costs, ensure food safety, and reduce distortive impacts of stock policies on grain markets... maintaining grain stock is expensive even when stocks are managed efficiently...implicit finance charges, value of losses, and costs of stock maintenance (fumigation, sorting, drying, etc.)...by valuing average stock at market prices and then calculating the finance charge at 12.5 percent interest rates by stock age....the cost of holding a ton of grain (in Ethiopia) was \$11.4 in 2005-6 and US\$19.3 in 2007-8”. Of particular public health concern is the issue of aflatoxin. During 2010 in Kenya alone, over 2 million bags of maize were rendered unfit for human and livestock consumption due to high levels of aflatoxin contamination.⁵

Another IFPRI publication cites the cost of losses and quality deterioration in Bangladesh in 2000/01 (Stocks are now also considered to be managed quite well in that country):

“In the late 1990s, government policy in Bangladesh shifted in favor of increased public foodgrain stocks, setting official minimum stock targets of 1.0 to 1.2 million tons...Because no mechanism for stock rotation involving simultaneous buying and selling grain at a wholesale level exists, higher stock levels with no increase in distribution led to an increase in average age of stocks and problems of stock quality deterioration... Using market prices to value procurement and distribution of rice and wheat, consumer and producer subsidies accounted for 57.4 and 20.9 percent, respectively, of net outlay in 2000/01. Implicit losses to rice consumers due to quality deterioration were significant in 2000/01: about 1.05 billion Taka (about 19 million dollars), equal to 10.9 percent of total net outlay on rice of the Public Food Distribution System. Analysis of the costs and benefits of alternative stock targets based on calculations of the minimum age of stock on a monthly basis indicates that moderate increases in the size of stock (e.g. 200 thousand tons), lead to only small net marginal outlays. However, unless procurement and distribution are also raised, the age and quality of the stock for distribution deteriorates, resulting in significant losses to program recipients.”⁶

Improving SGR management by linking with Home Grown School Feeding

A recent analysis undertaken by the World Bank, World Food Programme (WFP) and the Partnership for Child Development (PCD) identified that today, perhaps for the first time in history, every country for which we have information is seeking to provide food, in some way and at some scale, to its schoolchildren (Bundy et al., 2009). In most countries in sub-Saharan Africa, the existing school feeding programmes tend to rely on external funding and implementation. The analysis presented in *Rethinking School Feeding* also highlighted that countries do not seek to exit from providing food to their schoolchildren, but rather tend to transition from externally supported projects to nationally owned programs. Low-income countries transitioning toward sustainable, government-funded implementation of school feeding programs provide the perfect opportunity to strengthen links between school feeding, agricultural and community development. Furthermore, national school feeding programs running at scale in sub-Saharan Africa have the potential to be large enough and predictable enough as a new market for smallholder products that they can drive needed policy and infrastructure changes and income growth for

⁴ Draft report “Strategic Food Reserves in Africa: Analyzing Operational Efficiency and Smallholder Participation”, S. Rashid, S. Lemma, et al IFPRI, May 2010

⁵ IITA, 2010.

⁶ “Implications of Quality Deterioration for Public Foodgrain Stock Management and Consumers in Bangladesh”, by P.A. Dorosh, N. Farid, IFPRI, 2003

the rural poor. However, national government ownership of those programs is critical to both the sustainability and the achievement of those needed policy and infrastructural changes.

Most African governments would like to implement large-scale HGSF programs, as demonstrated by a building of momentum in the continent over the last decade. In 2003, African governments included locally-sourced school feeding programs in the Comprehensive Africa Agriculture Development Programme (CAADP). That same year, the New Partnership for Africa's Development (NEPAD), together with WFP and the Millennium Hunger Task Force, launched a pilot Home-Grown School Feeding and Health Programme designed to link school feeding to agricultural development through the purchase and use of locally and domestically produced food.⁷ Twelve pilot countries were invited to implement the novel program. So far, Cote d'Ivoire, Ghana, Kenya, Mali and Nigeria are already implementing national programs. A key lesson from these countries is that a major obstacle to government ownership is a sustainable method of funding the program without penalizing the poor or making other painful trade-offs.

The theory of change for this proposal is that better management of procurement (especially from smallholders), of the physical storage and handling of the food stocks, and the planned use of a portion of the available stocks to feed schoolchildren will result in lower costs to governments, greater food security, better educational and social outcomes, and improved rural prosperity:

- Providing a large-scale, predictable market for smallholders' surplus of food grains will improve the nation's food security;
- The reduction of losses in national food reserves will be the equivalent of adding money to the government coffers;
- The use of some portion of the food reserves (e.g., the portion purchased from smallholders and/or the amount "saved" from loss) for school feeding programs will contribute towards addressing hunger in the short run and developing productive labor force in the long run;
- Strengthening the supply chain for HGSF from the SGRs would enable countries to provide alternative channels to meet school feeding needs in food deficit areas, strengthening overall resilience of the system and addressing gaps in the ability of communities to provide food to schools.

Country level examples

The activities undertaken to achieve these outcomes vary across the different country contexts. Two examples of Ethiopia and Malawi are explored below.

Ethiopia: Quoting the recent IFPRI report, "The linkage with school feeding program is literally non-existent. This is partly because the school feeding program is small in the country. During 2008-09, total food distribution under school feeding program has averaged only 6,590 tons. This is miniscule compared to the need, given the country has almost 14.5 million children, between the age of 7-14, enrolled in school. Even if the only poor children are covered under the school feeding programs, the additional demand for food can be as high as 568 thousand tons per year. This is a large demand for a justifiable intervention, which will not only keep children in school and increase nation's future labor productivity but also can contribute towards generating local demand and boosting food processing sectors. For instance, the private sector-led flour mills have been growing in the country in recent years. If the school feeding program engages them to produce micronutrient fortified flour or biscuits, this will directly contribute towards the growth of processing sector. Besides, given stable prices and the right policy environment, this will also trigger a supply response that can potentially generate benefits for the smallholders in the country."⁸

Malawi: IFPRI's review of Malawi's Strategic Grain Reserves included the following consideration of the government's interest in a "Universal School Meals Program" (USM): "School data were used to develop several scenarios of the USM program. This was intended to assist government plan for the sources of grain if indeed this was to be implemented nation-wide. We present 4 scenarios: (i) All students, (ii) Rural Schools only, (iii) Government Schools only, and (v) Food Insecure Schools only.

⁷ NEPAD. 2003. "The NEPAD Home-Grown School Feeding Programme: A Concept."

⁸ Draft report "Strategic Food Reserves in Africa: Analyzing Operational Efficiency and Smallholder Participation", S. Rashid, S. Lemma, et al IFPRI, May 2010

Girls' school attendance can be improved by the promise of at least one nutritious meal each day. In order to promote enrolment and regular attendance by girls, and hence motivate parents to send their daughters to school instead of keeping them at home to work or care for siblings, WFP has been running a "take-home rations" program, thus in addition to the school meal program. Therefore, in addition to the four scenarios above, we also add a "take-home rations" making eight, the total number of scenarios.

Each school meal is about 100g per child and 12.5kg is given to all girls as "take-home ration". For the different options, results are as follows (Source: Rashid et al., 2010)::

Scenario 1		Scenario 2		Scenario 3		Scenario 4	
All Students		Rural Schools Only		Government School Only		Food Insecure Districts only	
<i>With THR*</i>	<i>No THR*</i>	<i>With THR</i>	<i>No THR</i>	<i>With THR</i>	<i>No THR</i>	<i>With THR</i>	<i>No THR</i>
'0000 MT							
294	70	265	63	105	25	147	35

*With THR= with "take-home ration"; No THR=without "take-home ration"

The results show that the school meals program can contribute to the rotational problems faced by the Malawi SGR and help bring in efficiency.⁹ The renewed call by the Government of Malawi to transition from externally driven school feeding towards HGSF within the next two years, including a pilot stage in 2011, provides an ideal entry point for this work.

The program work streams

PCD and implementing partners will work with the targeted governments to determine a minimum goal for food (staples) to be purchased from smallholders as a part of each country's food reserves strategy, to deliberately use at least that same amount each year to supply schools¹⁰, and thus to provide benefit to:

- Farmers (mainly smallholders), who can expect a consistent, predictable market for their surplus staples;
- Schoolchildren, who can expect to be better-fed and better-educated through HGSF;
- Poor families (including smallholder farm families), who can expect their children to thrive and to enjoy the income transfer benefit of the school food;
- Citizens and private enterprises, which reap jobs and profits from the transport, handling, and processing associated with the reserves and HGSF programs (and—indirectly, at least—from the better educated and healthier population of school goers); and
- Governments, which can glean financial and food security benefits via the planned and continuous rotation of stocks, improved management and reduced wastage and spoilage losses in the reserves, as well as a happier, healthier, and better educated citizenry.

Through activities in this project, PCD will work with governments to pilot improved management of existing strategic grain reserves in at least two and up to five African countries over the four-year grant period. PCD will provide evidence based support and facilitation aimed at improving the rotation and management of the reserve stocks (e.g. reduce stock age) and to strengthen the procurement from smallholder farmers. The proposed activities will focus on countries which are implementing or have stated plans to implement HGSF programs (which are intentionally designed to purchase some portion of the school food from smallholder farmers and to strengthen local agriculture in so doing), beginning with the countries of focus for the HGSF grant (currently Cote d'Ivoire, Ghana, Kenya, Malawi, Mali, and Nigeria). Ghana, Kenya, Malawi, Mali, and Nigeria already have food reserves, and Cote d'Ivoire operates a centralized government food procurement program, although we do not yet have details regarding whether the country maintains reserve stocks.

We propose to build on the synergies with the HGSF program already underway, extending the evidence based platform currently supporting national governments implementing HGSF to cover the linkages with SGRs. This approach will leverage existing partnerships with the relevant ministries on the topics of

⁹ Ibid.

¹⁰ Strengthening the supply channel for HGSF from the SGRs will also enable to address needs in food deficit areas and thus gaps in community ability to provide food to schools.

school feeding, school health and the links with smallholder agriculture. In particular,

- Partnerships with National Governments outside sub-Saharan Africa running similar programmes, including Brazil, Chile and India¹¹ for example, will be extended to provide South-South linkages and expertise on SGRs and social protection.
- IFPRI will provide further inputs on policy research and related technical assistance. As the current body of IFPRI research on this issue has to date focused on the aggregate, country level perspective, more detailed analyses are required to support programme implementation, including the following key areas:
 - Determination of stock optimality,
 - Assessing food safety along the SGR supply chain,
 - Analyzing cost-effectiveness of alternative program design
 - Carrying out program evaluation and monitoring, and
 - Help disseminate the policy messages through its regional and country level networks based on the systematic analysis and documentation of good practice in implementation. This will maximize opportunities for knowledge transfer, ensuring that lessons learned, which can be extremely useful global public goods, do not get lost over time
- WFP will provide high level policy and programme support both at regional and country level. WFP Purchase for Progress (P4P) will continue to be a key partner cross-cutting the project activities focusing on strengthening small holder farmer procurement. Key area of WFP activities will include:
 - Food security policy analysis and advocacy
 - Strengthening policy linkages with regional and in-country food security stakeholders
 - Tools/mapping for policy and programme support e.g. Vulnerability assessment and mapping (VAM), market analysis, small-holder procurement...etc...

The project will be structured around the three existing HGSF program work streams:

- 1) Gathering and disseminating the knowledgebase of HGSF and SGRs.
- 2) Facilitating country level partnerships and dialogue on the linkages between HGSF and SGRs.
- 3) Providing evidence based technical assistance supporting/piloting operational linkages between HGSF and SGRs.

In addition, a further work stream will be incorporated into our ongoing programme to focus specifically on

- 4) New technology for better linkage between SGRs and HGSF.

As part of the knowledge base work stream, the project will consolidate the evidence on the linkages between HGSF and SGRs, also providing a medium to disseminate the different analyses undertaken by IFPRI and other partners. The proposed activities will examine in more detail relevant specific themes, including the issue of aflatoxin contamination and market impacts, for example, in collaboration with leading research institutions working across agriculture, health and nutrition including IITA, KEMRI, the University of Maryland, and others. An early output of this work stream will be the monitoring and evaluation plan that will be developed in partnership with IFPRI.

Under the partnerships work stream, the project will work to strengthen the links across stakeholders from different sectors, bridging research, policy and practice dimensions. A key focus in this work stream will be continued engagement with the private sector, both in-country and across countries. There is now opportunity to explore public-private partnerships related to SGRs specifically, building on the dialogue PCD has already established on private sector involvement in HGSF programmes more broadly. Some of the opportunities for strengthening programme implementation and cost-efficiency by involving private sector stakeholders include, for example, logistics, fuel efficient stoves, food processing, storage and handling¹².

At country level, the first step in the technical assistance process will be to determine whether the governments are interested in pursuing the option of deliberately linking their school feeding purchases

¹¹ For experiences in India see Study of "Institutional feeding programmes and their linkages with smallholder farmers", draft report from the M S Swaminathan Research Foundation.

¹² Currently, PCD is undertaking a series of analyses jointly with business schools in the North and South (including UC Berkeley, UCLA, GIMPA, amongst others) to qualify and quantify opportunities for the private sector across the HGSF system, the findings of which will inform the project activities.

from smallholders to their food reserve programs. PCD and partners will work with each requesting government to study best practices and the potential benefits, determine optimum levels of smallholder involvement and rotation of stocks into their school feeding programs, identify any weaknesses in the management of the reserves, and propose technological innovations or other solutions to improve the management, reduce cost due to spoilage and losses, and lessen vulnerability to corruption. In the process, PCD will identify gaps and assist each government that decides—after studying the pros and cons—to pursue the smallholder-reserves-school feeding option to plan and implement a program tailored to the specific circumstances of each country. The assessment will also map key stakeholders, activities involved in the in-country food security and social protection decision making processes and potential funding opportunities for scale-up. After determining which of the countries—if any—wish to pursue the pilot program, and as PCD expands its HGSF assistance to other countries (as is foreseen in the current grant), there will be more countries where food reserves and HGSF are co-located, and the process can be repeated. The intent is to work in two phases: First with the current priority HGSF countries, and subsequently with other requesting governments, with a goal of implementing this pilot program of smallholder-reserves-school feeding linkages in at least two and up to five countries over the next 4 years.

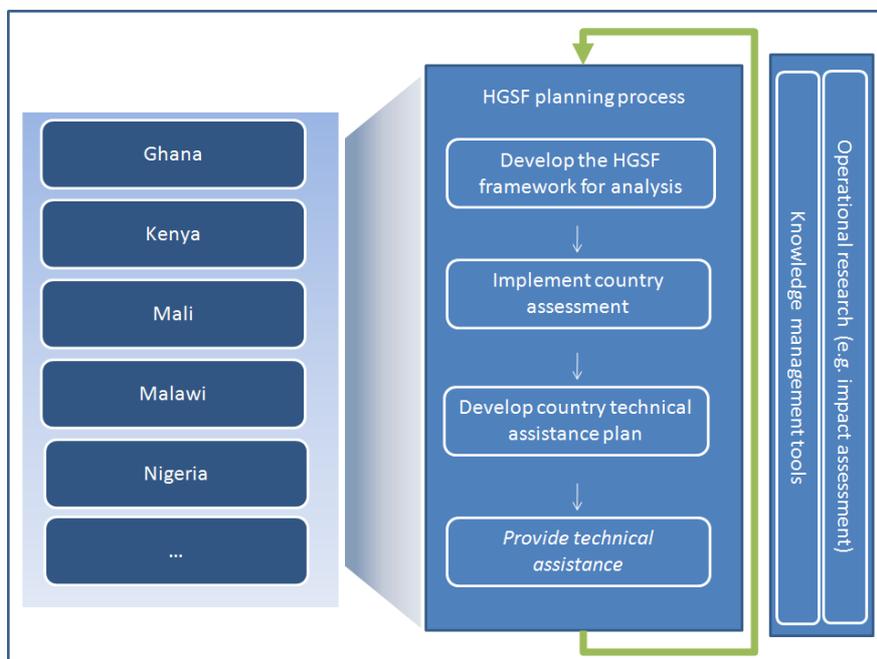


Figure 1: Schematic view of PCD HGSF planning approach

The fourth work stream combines knowledge base and technical support activities that focus on new technologies to improve SGR management and links to HGSF. Activities in this work stream will build on the 2010 IFPRI study recommending the use of modern technology (a) to improve the operational efficiency of SGR and (b) to ensure food safety. The first recommendation involves linking up all SGR warehouses to a central server so as to enhance access to information regarding stock positions, stocks ages, and proximity of the warehouses to the areas / regions where food supplies are needed for emergency operation, safety nets or other purposes. This recommendation is based on the finding of the report that in most countries in Africa, there is very little to no use of computer technology to monitor SGR and other food security operations. For instance, the warehouse managers send handwritten report to the head offices, where this information is processed and entered to the computer. This is a lengthy process, with plenty of room for errors, which can lead to delays and incorrect decision making support, possibly leading to cost human lives in case of emergencies. The second recommendation relates directly to the process of linking SGR with safety nets and School feeding programs. As described in the previous sections, a key challenge in managing SGR stock is efficiently rotating the stocks; and unless SGRs are properly linked with the safety nets, stocks lose quality and can become unsafe for human consumption. This becomes particularly serious concern when it comes to feeding school children.

There are two key aspects in the implementation of these recommendations: (a) it will require partnership (or hiring) of technical experts (e.g., computer Software Company, food safety experts, and cost-effective equipments); and (b) systematic documentation of the learning and impacts of introduction of these technologies. While we cannot provide exact details of involvement of technical partners, the tentative deliverables related to (b) are outlined below:

1. *Linking SGR warehouses with computer network*

Introduction of any new technology will have to be approved by the governments and their partners. To this end, PCD/IFPRI can jointly work on holding consultations with the relevant government agencies on the benefits of linking warehouses to a central server. In tandem with the consultation, IFPRI will conduct detail baseline assessment of the operational performance of the SGR. Once governments are convinced of this technological introduction, technical partners can be invited to set up the computers and train the staff members in the SGR agency. After the technology is in operation, IFPRI will conduct a follow up assessment to determine the impacts and the sustainability.

2. *Aflatoxin / food safety risk reduction measures*

The same IFPRI study reported that due to inefficient management of stocks, a substantial portion of stocks stay in warehouses for more than a year. While aflatoxin contamination can occur even at the field level, leaving grain stocks in the warehouse for more than a year increases the risks of further contamination. Therefore, the study recommended mainstreaming risk assessment measures in the management of SGRs. However, given that HGSF programmes also rely on local procurement, some measure of food safety risk assessment will also need to be implemented at the community level. The technology for food safety assessments is improving in terms of cost efficiency and usability. Indeed, low cost technology may become available between now and launching of this project. However, irrespective of the types of technology, there will clearly be a need for detail information on the extent and magnitudes of food contamination. To that end, the IFPRI food safety research team can generate information on the prevalence of causes of contamination at the warehouse by analyzing (i) incoming and outgoing prevalence data in selected warehouses; (ii) inventory of storage facilities and associated costs of risk reduction measures; and (iii) socio-economic characteristics of hh/traders supplying warehouses. Similarly at the community level, necessary information can be generated by analyzing these and other necessary indicators.

Annex 1: Sizing SGR and HGSF linkages

Table 1 outlines the current status of SGRs in Sub-Saharan Africa, as well as the demand for grains from school feeding programmes. The demand for grains from the school feeding programme was estimated using a base cereal ration of 150g per child per day over a 200 day school year. Take-home rations were not included in this estimation, making the school feeding tonnage a lower bound estimate for the demand potential.

Table 1: Basic information about school feeding demand and SGRs in Africa (Source: adapted from IFPRI, 2009).

Region / Country	Has a SGR?	Year of establishment	Initial Stock level	Current stock level (MT)	Has a SF programme ?	Est. size of SF programme	Est. current demand for cereals from SF (MT)	% of SGR current or initial stock from current SF	Enrolled population (primary)	Est. demand from universal SF (MT)
Eastern Africa										
Ethiopia	Yes	1981	180,000	407,000	Yes	500,000	15,000	0.04	10,971,581	329,147
Eritrea	Yes	1981			Yes		0		364,263	10,928
Somali	Yes	1981			Yes		0			
Kenya	Yes	2002	360,000	720,000	Yes	600,000	18,000	0.03	6,101,390	183,042
Sudan	Yes	1980	500,000	???	Yes		0		3,880,705	116,421
Tanzania	Yes	1991	100,000	240,000	Yes	210,000	6,300	0.03	7,959,884	238,797
Burundi	Yes	1990			Yes		0		1,324,937	39,748
Uganda	No, but setting up a SGR is under consideration				Yes	85,000	2,550		7,537,971	226,139
Rwanda	No, but moving fast toward instituting a SGR				Yes	310,000	9,300		2,150,430	64,513
Western Africa										
Mauritania	Yes	2006	6,000	???	Yes	185,000	5,550		483,776	14,513
Mali	Yes		20,000	35,000	Yes	120,000	3,600	0.10	1,716,956	51,509
Burkina Faso	Yes	1975	35,000	27,392	Yes	80,000	2,400	0.09	1,390,571	41,717
Ghana	Yes				Yes	600,000	18,000		3,130,575	93,917
Nigeria	Yes	1989	60,000	???	Yes	130,000	3,900		22,861,884	685,857
Niger	Yes	1980	50,000		Yes	120,000	3,600	0.07	1,126,073	33,782
Chad	Yes	1990	35,000		Yes	130,000	3,900	0.11	1,296,486	38,895
Senegal	Transitory				Yes	185,000	5,550		1,473,464	44,204
Cape Verde	Transitory		15,000		Yes	73,000	2,190	0.15	81,434	2,443
Southern Africa										
Mozambique	Yes				Yes	190,000	5,700		4,172,749	125,182
Zambia	Yes	1995	Very small until 2004/05	360,000 (2007-08)	Yes	275,000	8,250		2,678,610	80,358
Malawi	Yes	1995	60,000	200,000	Yes	750,000	22,500	0.11	2,933,557	88,007
Zimbabwe	Yes	1980s	290,000	??	Yes	200,000	6,000			
Swaziland	Yes	1995			Yes	77,000	2310			

Source: IFPRI, authors compilation based information from FEWS-Net in East and Western Africa; and IFPRI collaborators in selected countries

Additional reference material

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