



FRAMEWORK FOR SEED SYSTEM INVESTMENTS IN AGRA COUNTRIES

A Guide for the Design of Country Seed Strategy and Investment Plan

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PREAMBLE

This is a guide for AGRA Country Offices to support and work with Governments to prepare and generate a comprehensive Country Seed Sector Investment Plan. This guide assumes that in most governments, a series of studies in the seed sector have been made, road maps, or investment proposals or business plans designed. However, and based on AGRA's experience, these investment plans, roadmaps, or business plans were not designed cognizant of the complete functioning seed system. In some countries like Kenya and Rwanda, very comprehensive studies and plans were developed for Early Generation Seed Production or Breeding and Variety release.

Yet, the complete seed system requires more than these key seed sector investments such as seed awareness and update and policy and regulations. This therefore is a guide and/or framework that provides a structured guide to AGRA countries for identifying and prioritizing bottleneck in the seed sectors and preparing investment proposals and plans to tackle these bottlenecks. The vision is to develop a seed system that serves the farmers adequately and can attract both local and international seed agribusiness investors.

1. INTRODUCTION

1.1 Background to AGRA's Investments in Seed

A well performing and efficient seed system is a prerequisite for agricultural transformation in every country. The Alliance for a Green Revolution in Africa (AGRA) has invested significant amount of resources to develop the seed sector. AGRA's attention to seed started in 2007 when it launched its signature investment, the Program for Africa's Seed Systems (PASS) with an investment of \$150 million. This investment spanned over 13 African countries. The program generated interest and more partners increased funding to a tune of \$285 million to cover a period of 10 years to finance seed systems with additional coverage to 17 African countries. The PASS goal was to develop sustainable, mostly private sector-based, seed systems in Africa that would increase access for smallholder farmers to improved crop varieties that produce higher crop yields resulting in increased income, improved food security and reduced poverty.

Following the 2008 global food crisis, in 2009, the G8, in L'Aquila Italy, announced over \$20 billion in commitments to global food security challenge and USAID, on behalf of the Group of G8 Countries and as part of its commitment under the then G8's New Alliance for Food Security and Nutrition (NAFSN), supported AGRA to scale up PASS with the Scaling Seeds and Technologies Partnership (SSTP) program. The aim of SSTP was to improve food security and reduce poverty among smallholder farmers by taking to scale seed and other technologies relevant to smallholder farmers with additional focus on 6 countries (Ghana, Senegal, Ethiopia, Malawi, Mozambique and Tanzania). SSTP was expected to help countries transition from state-dominated seed systems to systems that allow for private sector including local businesses and non-profit organizations to provide key services and strengthen the capacity of the state to carry out critical regulatory functions.

The independent evaluation of PASS and SSTP (Natural Resources Institute, 2019) noted that both programs made significant progress and have changed lives of many smallholder farmers in Africa. With significant coverage of the entire seed system right from Research and Development to seed production and marketing, significant progress was registered. Notable progress well documented for example indicate that over 203 MScs and 99 PhDs were trained in crop breeding and seed technology and are part of the critical mass of scientist working with both public and private sector in agricultural sector. Over 536 crop varieties were released between 2007 and 2016 and almost 40% of these varieties have been commercialized and in use by farmers. In total 101 private seed companies were established and over 16,000 agro-dealers were established, trained and certified.

 <p>AGRA has built the Professional capacity available to both public and private sector.</p> <p>AGRA has strengthened NARS, University and Agriculture depts. by training more than 600 PhDs and MScs</p>	 <p>AGRA has supported local scientists and NARS to produce over 600 locally-adapted, improved varieties, Over 300 of which have been commercialized</p>	 <p>AGRA has grown Africa seed production capacity from 12 to 101 seed companies with capacity to produce 130,000MT of seed in 18 countries.</p> <p>As a result the African seed business has attracted over US\$200 million of investments</p>	 <p>AGRA has supported over 38,000 agrodealers: "mom and pop" shops that distribute inputs to farming communities.</p> <p>As a result the average distance to the farmer has reduced from over 50km to less than 10km</p>
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Footnote: The number of scientists trained, varieties released and agro-dealers cited in the box above is a total sum from other AGRA programs.

1.2. AGRA's 2017-2021 Strategy and investments in Seed

In between 2015 and 2016, AGRA reviewed the progress of its work and designed a five (5) year successor strategy to drive more investments and scale up the gains achieved since 2006. In the review of the work, AGRA noted that significant progress had been made in seed systems development - strengthening research capacity, development of new varieties, review of policy frameworks, building private sector and strengthening last mile delivery systems - and that the time was ripe to leverage and scale these efforts to drive widespread adoption of productivity enhancing technologies. Among the key lessons AGRA learnt from the previous strategy, was a recognition that input technologies require systems for access and functional markets to ensure adoption of these technologies. AGRA learnt that even when these technologies are developed and available, adoption is not guaranteed. For instance, of 600+ varieties released since 2007, only 30-40% was commercialized by 2017 and a significant number of farmers are unable to access and/or adopt many of these technology solutions, particularly women who comprise the majority of smallholder farmers. Consequently, most smallholder farmers' yields in most African countries remain low, and technologies and practices that have long been replaced in favor of more productive and efficient ones in other parts of the world continue to be used in Africa.

AGRA noted that it needed to support the strengthening of inputs systems and institutions that deliver technologies by selecting and working with the right set of government and value chain actors who can create the necessary conditions for smallholder farmers to adopt these technologies. The strategy further noted that, scaling up technologies needed targeted partnerships and alliances, mainly between public and private sector actors and investment to ensure well organized input delivery systems, mature and functional market outlets, conducive policy environments for private sector investments to thrive, and functional and efficient regulatory environments.

With strong and functioning input and market systems, as well as information and confidence of returns, farmers are incentivized to pro-actively invest in activities including purchase of inputs with the view to increase their income. Through the process of technology-transfer and adoption with adequate market access at local levels, working with thousands of SMEs and millions of farmers across the continent along integrated value chains, AGRA predicts success in contributing to economic stimulation in rural areas and ensure greater food security at national levels.

AGRA's strategy has since guided all investments including delivery of seed to countries. Most of the investments have been deployed as grants to support and finance gaps identified in various countries. As an innovative approach and to respond to the challenge of integrated investments, AGRA further deployed resources to, and through, a consortium of partners to ensure integrated delivery of services to farmers including seed. Overtime, AGRA kept noting that the investments and grants were not sufficiently fixing the systemic gaps and challenges in the seed sector as was envisaged in the strategy.

2. MAPPING SEED SYSTEM CHALLENGES AND GAPS

Recognizing the significant investment in the seed sector in selected Africa countries and driven by the need to strengthen seed and other systems, in 2018, AGRA commissioned a comprehensive assessment of seed system to understand the status, issues, challenges, gaps and potential investment in the seed sector in 11 AGRA countries. The assessment was intended to further provide AGRA with additional insights of the systematic bottlenecks in the seed sector to guide AGRA's own catalytic, but also mobilize additional, investments to fix seed issues and gaps. Further to this, AGRA commissioned complementary work to provide a landscape of existing and adequacy of policies for seed and other systems. The studies were carried out by The African Seed Access Index (TASI) and with Africa Agricultural Technology Foundation (AATF) identified focused on five (5) areas of the seed system:

- (1) Breeding and Variety Release
- (2) Early Generation Seed (EGS) Supply
- (3) Certified Seed Production
- (4) Awareness of Seed by farmers
- (5) Marketing and Distribution
- (6) Regulatory environment and certification

The system analysis has found several issues. For instance, in breeding & variety release we found that supply of Early Generation Seed (EGS) is not the only binding constraints in the seed sector. Certified seed production, awareness creation; seed distribution and regulatory are equally important. and yet resources are not always targeting these. Policies play a critical role to drive seed systems at national, regional and international level. In early 1980s, governments adopted policies and liberalized the seed sector which included liberalization of the seed sub-sector soon after IMF-WB structural adjustments. Many governments shut down their national seed companies. It is the private sector which has been slow to move into the space for a number of reasons including the original culture of not venturing into seed business because of fear of competition from government led research stations. Governments started slowly to ease space for private seed companies accompanied with appropriate policy reforms. These key reforms have opened space for private companies who have increased significantly the volumes of seed produced and availed to farmers. More detail on the assessment of issues, challenges and gaps are listed below. Where AGRA has intervened and supported, is also highlighted.

(i). Breeding and Variety release: The duration for variety release remains long and so is accessibility of public varieties by private sector to multiply and avail to farmers. In Ghana, the average length of variety release process is 42 months. Although there was an increase in the number of varieties released between 2013-2015 and 2016-2018, there are still gaps as the long variety release process and seed companies are dissatisfied with the duration of the process.

(ii). Early Generation Seed Supply (EGS): the EGS includes two classes; breeder and foundation which are initial and pure stocks of seed from which subsequent classes are produced. Without it one can't progress to other classes. This continues to be a challenge in many countries. Availability ranges between 20-80% depending on countries for instance Kenya and Uganda are close to having enough. The availability and capacity to produce EGS is a challenge in many countries which is limiting quantity of commercial seed of good resilient varieties to be on the market and in the hands of the farmers.

(iii). Certified Seed Production: despite the relative increase in private sector registering and undertaking production of certified seed, there are still challenges occasioned by the inadequacy of EGS to multiply for farmers. But more importantly the capacity to produce certified seed even when EGS is not limiting is still lacking in a number of countries e.g. Mozambique, Mali, Ghana, South Sudan and Rwanda. Seed sales have not reached optimal levels most of them producing between 20-30% of the national demand despite many varieties having been released.

(iv). Awareness of Improved Seed by Farmers: There are still low levels of awareness and utilization of improved seeds (including hybrids) by farmers. Up to 70% of farmers do not have access to extension services and are likely unaware of improved varieties. The emergence of private seed companies and Village Based Advisors (VBAs) are playing a major role in raising awareness of new and relevant seed varieties to farmers. Despite this, there are still insufficient private sector engagement in raising awareness of improved varieties among farmer. Farmers are wary of new varieties and want to keep to their known and proved varieties. A lot of demonstrations need to be undertaken although the private sector finds it risky to invest in promoting new varieties that don't end up being taken up leading to losses. This partly explains why variety turnover is low with varieties as old as 15-30 years still in production. Suffice to point out that average adoption of improved varieties in Africa is still less than 20%.

(v). Marketing and Distribution: There are still challenges in distributing seed to farmers. In most countries, the average distance from the farmer's house to the nearest agro-dealer shop is 15-20 kilometers. In many countries where they exist, the agro-input dealers, are not trained and certified. The entire network of agro-dealers is undeveloped and insufficient in terms of number and capacity.

(vi). Regulatory environment and certification: Despite the liberalization, the seed sector in Africa is still stifled by many policy and regulatory impediments. For example, the quality of seed remains low despite a number of efforts to respond to this. The assessment carried out by AGRA and other studies show that up to 20-40% of seed in Africa is fake causing loss of \$400 million annually. In Uganda alone 30% of the seed on market is fake. All this is due to weak national regulatory agencies to provide oversight and limited manpower, with poorly-equipped laboratories as well as lack of transport and weak regulations in general. Uganda has only 6 inspectors for the entire country with 26 seed companies widely dispersed. A lesson learned from AGRA's work in SSTP is that nearly 30% of farmers who are willing to invest in improved varieties abandon those varieties due to lower than expected yields, likely the result of adulteration.

In table 1, a summary of selected seed system issues and the status across the 11 AGRA countries shows for example that Seed system is relatively stronger in Kenya and probably Tanzania than in countries like Burkina Faso and Mali.

In Countries where seed systems are strong like South Africa (see Ariga, et al, 2019)¹, they are characterized by examples where at minimum, 84% of the farmers have adopted improved seed, the breeding and variety release is mostly driven by the private sector. The policy and regulatory environment is self-regulated by the industry or private sector seed players. The distribution system is purely dominated by strong agro-dealer networks with some specialized distribution outlets. Examples of such countries include South Africa and Zambia and or Zimbabwe. Other countries like Kenya are also moving towards where these are.

¹ Joshua Ariga, Edward Mabaya, Michael Waithaka, Maria Wanzala-Mlobela (2019: *Journal of Agricultural Economics Association*: Can improved agricultural technologies spur a green revolution in Africa? A multi-country analysis of seed and fertilizer delivery systems. Published October 2019.

Table 1: Summary of the system status in 11 AGRA Countries



System Issue Area	Burkina Faso	Ghana	Mali	Nigeria	Malawi	Mozambique	Ethiopia	Kenya	Rwanda	Uganda	Tanzania
1. Simplified/complex registration process for seed producers	Weak	Marginal	Weak	Marginal	Good	Marginal	Marginal	Good	Marginal	Good	Good
2. Weak/strong variety development	Marginal	Marginal	Marginal	Marginal	Marginal	Weak	Good	Good	Weak	Good	Good
3. Constraining/facilitative variety release and registration by government	Weak	Marginal	Weak	Weak	Marginal	Marginal	Good	Marginal	Marginal	Marginal	Marginal
4. Adequate/inadequate supply of quality EGS	Weak	Weak	Weak	Weak	Marginal	Weak	Marginal	Marginal	Weak	Marginal	Marginal
5. Quality/sub-standard seed inspection services	Weak	Marginal	Weak	Marginal	Marginal	Weak	Marginal	Good	Weak	Weak	Marginal
6. Strong/weak quality assurance system	Weak	Marginal	Weak	Marginal	Marginal	Weak	Marginal	Good	Weak	Weak	Good
7. Adherence/non-adherence to seed packaging and labelling requirements	Weak	Marginal	Weak	Marginal	Marginal	Weak	Marginal	Good	Weak	Marginal	Good
8. Complex/simplified seed importation and exportation procedures	Marginal	Weak	Marginal	Marginal	Good	Good	Marginal	Good	Marginal	Good	Good
9. Under/well developed agro-dealer network for seed marketing and sales	Marginal	Good	Good	Marginal	Good	Weak	Weak	Good	Marginal	Good	Good
10. Effective/ineffective government institutional arrangements	Weak	Good	Weak	Marginal	Marginal	Weak	Marginal	Marginal	Weak	Good	Marginal
11. Effective/ineffective Seed Association	Weak	Marginal	Marginal	Good	Marginal	Weak	Marginal	Good	Marginal	Marginal	Marginal
12. Domestication and implementation of regional harmonized regulations and standards	Marginal	Good	Marginal	Weak	Marginal	Weak	Weak	Marginal	Marginal	Marginal	Marginal

As a result of the gaps identified, AGRA hastened investments to change this situation. Currently, AGRA is supporting 5 countries (Ethiopia, Nigeria, Uganda & Tanzania) to introduce electronic tag system (E-tags) on seed packs to improve seed quality. With the use of these e-tags in Kenya, for example, and within 2 years, fake seed level has reduced from 34% to 4% and the authorities have made it mandatory for all seed packs on market to have e-tags. Nigeria has started implementing the same while Uganda, Ethiopia and Tanzania are in the process. AGRA has also supported some countries to allow private sector to access foundation seed for multiplication to farmers. In Tanzania, the government authorized private seed inspectors to augment those of government. AGRA is also supporting governments like Rwanda and Nigeria to devolved seed inspection by authorizing private seed inspectors. As a result, Rwanda has 77, Nigeria 68 private seed inspectors with more being certified. In Uganda and Ethiopia there is progress has already trained 13 government seed inspectors.

Table 2: Examples of issues, options and interventions

Policy and regulatory constraints identified and prioritized by stakeholders	Reform options needed to complement seed	Policy and Advocacy Interventions
Unavailability and limited access to seeds (early generation & certified seeds)	Consider having in place efficient and cost effective EGS production models in place.	Support models and free movement of seed across borders (harmonization) Demand forecasting Financing (Production credit, processing equipment) Reduced or tax holiday on equipment for irrigation and farm machinery

Inefficiency in the implementation of quality assurance system	Seed certification and standards Effective implementation of Ghana's seed policy/seed plan	Support seed regulation passed by parliament and implemented Sensitization Establishment of independent seed regulatory agencies Support digitization initiatives Frameworks to implement punitive measures for culprits
Inadequate promotion and education on the use of improved seeds	Extension systems	Strengthen extension to deliver strong enough knowledge to farmers
High cost of variety release	Varietal release process Establishment of national seed fund	Policy makers and all stakeholders must come together
Companies releasing own varieties: challenge for breeding	Plant Variety Protection/Plant Breeders' Rights	Need for proper consultation and education on the bill

These two studies, and coupled with AGRA's own experiences, and lessons from the field noted that there are systemic gaps and challenges in the seed sector and need to be responded to comprehensively and not through piecemeal interventions.

Based on these studies, and considering lessons from the field, AGRA is reconsidering its investment model in the seed by adjusting its grant making from isolated and opportunistic seed proposals to a holistic seed system investment plan and proposal.

AGRA has been implementing Strategy [2017-2021] and in 2019 underwent an independent Mid-Term process Evaluation that recognized the significant progress made in the strategy including seed and further called for systemic investments to address these and other emerging challenges in the seed sector. The next section provides a an outline and framework AGRA countries should use and work with other stakeholders to develop comprehensive and systemic interventions to address the gaps.

Investments made by AGRA to close gaps



Electronic tags on seed packs

AGRA is supporting 5 countries (Ethiopia, Nigeria, Uganda & Tanzania) to introduce E-tags on seed packs to improve seed quality.



4%
The current level of fake seed level in Kenya from a high of 34% within 2 years.

AGRA has also supported some countries to allow private sector to access foundation seed for multiplication to farmers.

77
In Rwanda

65
In Nigeria

13
In Uganda and Ethiopia



Private seed inspectors to augment government efforts.

3. FRAMEWORK FOR DESIGNING SEED INVESTMENTS IN AGRA COUNTRIES

3.1. Context

This framework provides a structured guide to AGRA countries for identifying and prioritizing bottleneck in the seed sectors and preparing investment proposals and plans to tackle these bottlenecks. The vision is to develop a seed system that serves the farmers adequately and can attract both local and international seed agribusiness investors.

3.2. National Seed Strategy and Investment Plan Structure

AGRA country offices and, under the guidance of respective Regional Manager, the Country Manager will support and oversee the design of comprehensive investment strategy, plans and proposals to address all the systemic gaps already identified. The investment plan will be based on what has already been identified as gaps and issues in the seed sector based on the studies by AGRA in 2018 and others the can complement any issues. The Strategy and Investment Plan will have the following sections and components.

Section 1: Introduction to the Strategy and Investment Plan

Section 2: Background to Agriculture – in relation Seed Sector

Section 3: Analysis of seed investments in the country progress and status

Section 4: Analysis of Seed Sector Challenges, gaps and area of potential investment

- Breeding and Variety Release
- Early Generation Seed (EGS) Supply
- Certified Seed Production
- Awareness of Seed by farmers
- Marketing and Distribution
- Regulatory environment and certification

Section 5: Major investment Areas based on Gaps

- Component 1: Breeding and Variety Release
- Component 2: Early Generation Seed (EGS) Supply
- Component 3: Certified Seed Production
- Component 4: Awareness of Seed by farmers
- Component 5: Marketing and Distribution
- Component 6: Regulatory environment and certification

Section 6: Results Framework

Section 7: Budget

The budget needs to illustrate an articulation of the existing and funding gaps by various government and partners. To demonstrate that the seed system has been analyzed and investments designed to target all the issues and challenges in sections 3, 4 and 5 of 3.4 above, the costing plan should have a summary table that has a semblance of Table 3 below as an illustrative. The numbers provided are only hypothetical and only to illustrate the point.

Table 3: Illustrative template of a costed plan

Components/ Budget	TOTAL COST		EXISTING FUNDING				FUNDING GAP
	Overall Cost in (\$)	GovG	USAID	BMGF	AGRA	TOTAL FUNDED	FUNDING GAP
	E+F	A	B	C	D	E=(A+B+C+D)	F
Component 1: Breeding & Variety Release	3,526,200	830,000	733,400	854,000	374,200	2,791,600	734,600
Component 2: EGS Supply	2,252,934	374,034	456,300	843,600	234,000	1,907,934	345,000
Component 3: Certified Seed Production	2,675,000	564,000	854,000	456,000	234,000	2,108,000	567,000
Component 4: Awareness of Seed by farmers	1,767,000	236,000	478,000	354,000	465,000	1,533,000	234,000
Component 5: Marketing and Distribution	2,229,008	584,008	549,000	253,000	387,000	1,773,008	456,000
Component 6: Regulatory environment	1,521,700	354,700	345,000	354,000	345,000	1,398,700	123,000
Overhead and Operational Costs	3,190,000	456,000	465,000	857,000	956,000	2,734,000	456,000
TOTAL BUDGET	13,971,842	3,398,742	3,880,700	3,971,600	2,995,200	11,512,242	2,915,600



ANNEXES 1: DETAILED AGRA TEMPLATE FOR GRANT PROPOSAL FOR EVERY COUNTRY FOR FIXING THE SEED SYSTEMS

- Executive Summary
- Summarize the Objectives
- Background
 - General Background
 - Country Context
 - Development Challenge
 - Relationship with Government's Development Strategies
 - Seed Sector Development Roadmap
 - Relationship with AGRA's Strategy for the country and Its Programs
- Goals and Results
- Program Parameters
- Target beneficiaries
- Geographical Scope
- Sustainability
- Gender
- Management Approach
- Period
- Partners' Responsibility
- Environmental Compliance and Climate Risk Mitigation
- Program Activities
- Activity Components
- Description of the Work to be done and Outputs
- Monitoring and Evaluation [KPIs]
- Performance Monitoring
- Evaluation Approach
- Learning Approach

ANNEXES 2: TEMPLATE FOR STRATEGIC PLAN FOR IMPROVING THE SEED SECTOR

- SWOT analysis
- External environment
- Internal environment
- The snow card technique
- Problem tree analysis
- Setting out strategies to address challenges, gaps
- Short term goals
- Long term goals
- Activities
- M&E framework





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