

Promoting commercial and sustainable supply of early generation seed of food crops in sub-Saharan Africa

Synthesis of joint activities implemented by the Bill & Melinda Gates Foundation, US Agency for International Development (USAID) and Alliance for a Green Revolution in Africa (AGRA)

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Introduction

1. Most countries in sub-Saharan Africa face major constraints in the supply of adequate quality of Early Generation Seedⁱ (EGS) of publicly developed varieties of food crops. Multiple studies and multi-stakeholder platforms have identified that Africa's commitment to increased productivity and seed sector development can be met, only if current major constraints in the seed sector and especially the supply of EGS, are addressed. Private seed companies and producers, farmers' organizations, traders and informal suppliers, and other stakeholders cannot provide smallholder farmers quality seed of food crops unless these stakeholders in turn have access to quality EGS of new, improved varieties in an effective, regular and sustainable manner. The access to quality EGS is independent of what type of quality seed they supply, whether certified, quality declared or trusted seed, with the latter referring to informal seed channels.
2. The findings of a widely vetted global study (2014/15)ⁱⁱ on commercial and sustainable EGS supply documented differences in the commercial potential (e.g., profitability) of different classes of seed in the value chain for different crops, and provides insights on the ways EGS supply should be structured for different crop types with distinct responsibilities for public and private stakeholders. The outcomes of the global study were discussed and endorsed in a global convening including key players in the seed sector organized in London (February 2015)ⁱⁱⁱ. A subsequent step was the implementation of national studies in 11 African countries (2015/2016) using the common methodology, building on the outcomes of the global study, and thereby feeding into discussions on the structure of EGS supply within national seed platforms^{iv}. The national studies and the wider context were supported by a series of global and national consultants and a convening organized in Addis Ababa (March 2016)^v. This entire process involved stakeholders from national, regional and international organizations and was embedded as seed system component within the partnership of the US Agency for International Development (Bureau of Food Security) and the Bill & Melinda Gates Foundation (Agricultural Development team), and an active role of the Alliance for a Green Revolution in Africa (AGRA) through its Scaling Seeds and Technologies Partnership (SSTP).
3. This document synthesizes the outcomes of the series of global and national studies, as well as the global, continental and national consultative processes. It highlights key topics on EGS systems and provides a basis for identifying and recommending next steps both for national platforms as well as development organizations (including donors) active in the seed sector.

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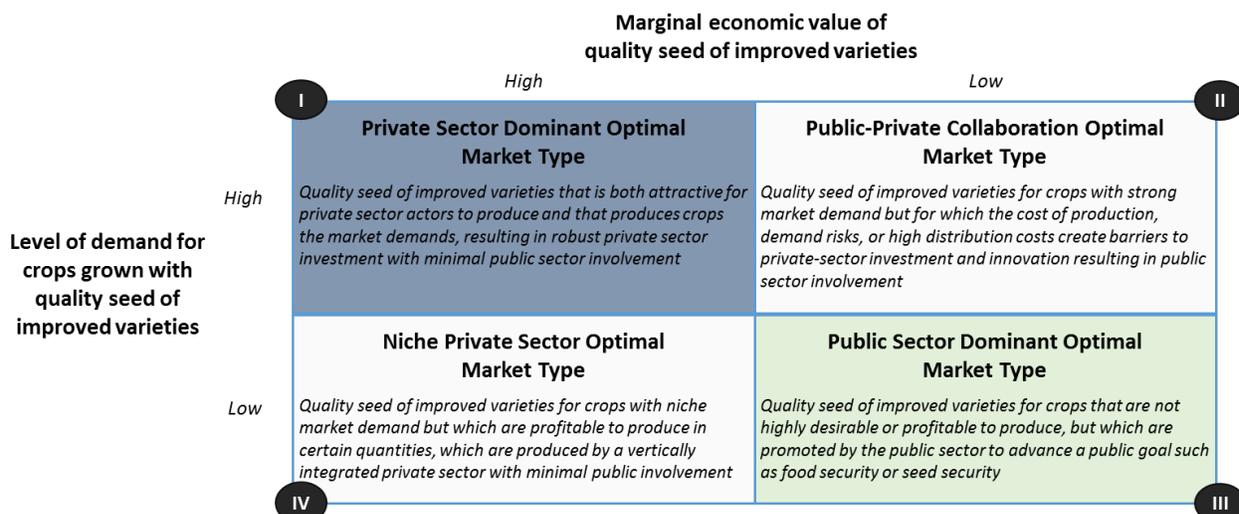
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Methodology

- The EGS country case studies in eleven countries used a framework developed during the global study to identify country- and crop-specific options to overcome constraints to EGS supply. It categorizes EGS systems into optimal market types for crops and crop segments based on the marginal economic value of improved varieties and the size of demand for crops grown with quality seed of improved varieties. The identified optimal market types are: (i) private sector dominant; (ii) public-private collaboration market types where public sector both mitigates demand risk and supports breeder and foundation seed production; (iii) public sector dominant; and (iv) niche private sector (see figure 1).

Figure 1: Economic framework highlighting the economic characteristics of seed that have implications for ideal state value chains and their implications on public and private stakeholders' responsibilities in EGS supply



Source: USAID, Bill & Melinda Gates Foundation and Monitor-Deloitte (2015)

- The amount of EGS required for a given crop is a key variable in categorizing its optimal market type. A demand model was estimated for each crop with sensitivity analysis comparing current demand for EGS with potential demand over 5 to 7 years' horizon. The cost of EGS production is another major factor to influence the categorization of optimal market type, the ability of the current system to scale EGS supply, and the sustainability of the system. Matching the revenue and cost components of EGS production provided a base for understanding the optimal market type for each crop or group of crops. Being able to assign crops to specific crop types allowed for the identification of key challenges in achieving the optimal market, possible PPP mechanisms, and policy recommendations.
- The methodology for analyzing EGS systems was applied in 11 countries (Burkina Faso, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Nigeria, Rwanda, Tanzania, Uganda and Zambia), and covered 17 crops. The selected crops were identified during in-country consultative processes with key stakeholders from the public and private sectors, NGOs and farmers. Crop selection was followed by detailed interviews with key informants on individual crops for specific details on demand, costs, and other seed policy related issues to arrive at optimal market types for each crop and/or crop types. In most countries, the processes have been or are currently being concluded, with the consolidation of the conclusions and elaboration of follow-up action plans within national seed platforms (see also table 1).

Table 1: Status overview of EGS studies, basis for a restructuring EGS supply

	Leading partner	Embedded in functioning seed platform	Government interest / ownership	Private sector interest / partnership	CGIAR presence & involvement	Emerging PPP modalities in study	Initial PPP activities	Opportunity for follow up
Uganda	ISSD UG	±	+	++	++	++	++	++
Ethiopia	ATA/ISSD ET/SSTP	++	++	±	++	+	+	++
Ghana	SSTP/ATT	++	+	++	+	+	±	+
Malawi	SSTP/STAM	++	++	++	++	++	++	++
Mozambique	SSTP/Swiss	++	±	+	+	±	±	+
Tanzania	SSTP	++	++	+	++	+	+	++
Rwanda	AfricaLead	-	++	+	±	++	++	++
Zambia	AfricaLead	±		±	±	+	+	±
Nigeria	AfricaLead	-	+	+	+	+	+	+
Kenya	AfricaLead/STAK/AgriExperience	++	+	++	++	++	++	++
Burkina Faso	CORAF/WAAPP	±	±	+	±	±	±	±

Legend:

++: means very favorable conditions in terms of platform, govt ownership, follow-up etc; +: favorable but some but few issues to be addressed for the topic; ±: major issues in terms of platform, interest, limited involvement CG, etc; -: means not favorable in terms of platform, govt ownership, follow up etc.

7. In Ethiopia, Ghana, Kenya, Malawi, Mozambique, Rwanda, Tanzania and Uganda, validation meetings with stakeholders took place to agree on building on existing institutional structures either developing concrete new plans for the restructuring of EGS supply based on the recommendations from the national EGS studies. Based on the reports and feedback from stakeholder validation, development organizations and donors are exploring future opportunities for investments in a commercial and sustainable supply of EGS supply of food crops.

Key insights

8. A total of 49 crop assessments were included in the 11 country EGS studies. The crops covered and their frequency was as follows: maize (9); other cereals (13) including rice (7), sorghum (3), barley (1), finger millet, teff (1) and wheat (1); legumes (19) including common bean (7), soybean (4), cowpea (3), groundnut (3) and chickpea (1); root and tuber crops (6) including cassava (2), Irish potato (2) and yam (2); and sesame (2).

9. The following section summarizes common insights that emerged from the country EGS studies with key policy recommendations and options for donors and stakeholders towards designing efficient EGS supply systems in future.

10. Market failures, potential market size, and opportunities for EGS interventions

- a. The market failure in EGS supply in a detrimental manner impacts the functioning of seed value chains of all key food crops, and consequently smallholder farmers’ access to and use of quality seed of new, improved varieties.
- b. Hybrid maize is the only food crop in which commercial seed markets in some countries sustainably provide EGS. The private sector optimal market type is the most preferred choice for EGS supply for maize-hybrids, which however contrasts with current public sector involvement in many countries. This finding suggests opportunities for further interventions that result in private sector driven EGS supply.
- c. In all other food crops, private sector provision of EGS has so far been limited due to market-failure for EGS, combined with thin and small seed markets. Other constraints include under-funded public research systems that are handicapped institutionally and financially in their support and collaboration with private sector in EGS systems, oftentimes combined with inappropriate policies and regulations, with limited enforcement capacity in terms of both quantity and quality of EGS supply.

- d. The country studies provide the evidence to propose a variation of PPP opportunities in EGS supply for food crops (other than hybrid maize), e.g. open-pollinated or pure line varieties of other cereals and all legumes, and vegetatively propagated materials of root and tuber crops. In the few specific crops, where high costs or low levels of demand circumscribe market opportunities, these public sector optimal market types can be complemented by innovative partnerships.

11. Status and diversity of seed systems

- a. Most smallholder farmers plant farm-saved seed and/or seed sourced from local markets. Over the recent decades, this situation has not changed for most food crops, except for hybrid maize. Nearly 80-85% of seed is supplied by informal systems in the countries where the EGS studies were conducted; this proportion is almost 95% for legume seed and planting materials for root and tuber crops.
- b. The varieties in use often are improved varieties from CG centers, National Agricultural Research Systems (NARS), and private sector, which have been sourced from local informal markets or from development and food security projects. Besides the farmers save or source locally seeds of well-performing and adapted varieties.
- c. For vegetatively propagated crops such as cassava, sweet potato and yam, the reason most often cited for non-adoption of improved varieties has been the smallholder farmers' lack of knowledge of the varieties and their traits, and lack of availability of quality planting materials of those varieties in local markets convenient to farmers.
- d. Parastatal seed production and distribution systems exist in a few countries; emerging small and medium-size seed companies and local seed businesses play an increasingly important role across the continent supplying in a gradually increased professional manner directly to seed markets or indirectly through agro-dealer networks. The formal markets, however, continue to have major constraints in the dissemination of improved varieties. The performance of seed value chains is constrained in terms of EGS supply, mostly failing quality assurance systems, in weakly implemented variety management systems^{vi}, and constraints in domestic and cross-border commercial seed trade channels.
- e. The country studies provided insights into the diversity and performance of seed systems, revealing insights into the requirements of crop types, and therefore implications on the structure of EGS supply. Most countries are small; they have small formal commercial seed markets but with large and dominant institutional markets, e.g. government input subsidy schemes and food safety interventions; few crops are attractive to commercial companies or government parastatals.
- f. The institutional structures and functioning of seed systems vary widely and thereby affect opportunities and constraints in terms of EGS supply; this diversity is best demonstrated among the countries; we share examples:
 - *Burkina Faso* has a strong public quality assurance system accompanied with by few relatively strong and regionally operating seed companies engaged with hybrid maize and few other crops; besides a diversity of farmer-based organizations have increasingly engaged in professional seed production of other food and cash crops. The performance of the seed sector is hampered by the key responsibility of the NARS to produce and disseminate EGS of improved varieties without ensuring financially sustainable and sufficient systems in place. Strict quality assurance (certification solely) notably hampers organized farmer-based organizations from accessing EGS and engage in seed production and marketing catering for more informal seed markets.
 - *Ethiopia* has a strong research system, an extensive system of federal and regional public seed companies that supply primarily for hybrid maize and wheat seed, complemented with

emerging, and well-functioning seed producer cooperatives that produce and supply quality seed to smallholders for many other crops. All crops operate within the public/private and public optimal market types. The sector is hampered because of unclear distribution of responsibilities in EGS supply and variety management, and limited incentives for the further emergence of a private sector.

- *Kenya* has a unique combination of well-functioning NARS and parastatal seed companies, complemented by private companies and regulatory systems; however critical interactions between public and one dominant private sector player (EGS, intellectual property issues) hamper further progress for crops within the private and public-private optimal market types.
 - *Uganda* has a strong NARS, a weak regulatory system, an emerging private sector built upon small- and medium-size companies and emerging local seed businesses; constraints in the interactions between public and private organizations (IP; licenses; accountability in providing access to new varieties) influence the performance of crops within both private and public-private optimal market types. Major inefficiencies in quality assurance system and its enforcement combined with an emerging seed companies and traders contribute to an alarming degree of counterfeiting.
 - *Zambia* has a strong private sector and adequate regulatory system combined with a relatively constrained NARS, the subsequent supply of EGS, production and marketing of quality seed of improved varieties for food crops in the public-private optimal market type is hampered, while crop in the private optimal market type (maize, soybeans) flourish.
- g. A lesson learnt from this diversity of situations among the countries illustrates that the seed system as well as economic analysis should drive the identification and prioritization of actions in restructuring EGS supply.
- h. Even though the need for public private partnerships (PPPs) is highlighted in all countries, the way they should be designed and operated depends on the structure of the seed sector, strength of research and regulatory institutions, balance in terms of capacities between private and public players, as well as the existence, competence and viability of parastatal companies, small- and medium-size companies, and national seed companies, local seed businesses and seed producers.

12. Capacity of national systems

- a. *Capacity in NARS*: The country studies illustrate the limited capacity and size in terms of structure and sustained public expenditure which impacts directly on the availability of new germplasm as well as the implementation of the responsibilities by NARS in terms of EGS supply and variety management. The capacity to produce and maintain a steady supply of new improved crop varieties and their basic seed in many countries is constrained – especially for small grains, legumes, root and tuber crops.
- b. *Capacity in partnerships between public and private players in EGS supply* There are few instances where successful partnerships exist between NARS/CG Centers and companies in accessing new varieties (ICRISAT, CIMMYT) that result in further multiplication and deployment of quality EGS and quality seed. The partnerships range from outsourcing parts of the seed production cycle to specific companies, e.g. tissue culture labs for cassava planting materials, or sharing the production base, e.g. land for multiplication through private sector or leasing – government seed farms to private.
- c. *Capacity in quality assurance related to EGS supply*: All countries implementing EGS studies have seed policies governing quality assurance in seed production and marketing, but few of them have the regulatory mechanism capturing different crops and crop types, and appropriate institutional and human resource capacity in place to effectively implement and enforce these regulations.

Most countries have seed certification procedures in place, controlled by government agencies; a few countries (e.g. Mozambique, Rwanda, Tanzania and Zambia) have ‘less formal type of certification’ such as quality declared seed (QDS) and allow for accreditation for certain crops and situations. Specific provisions in terms of quality assurance for EGS supply are outlined in regulations in most countries, but enforcement, especially concerning the inspection by public agencies of outgrowers, is a major constraint.

- d. *Capacity in variety management related to EGS supply:* Few countries have passed regulations for plant variety protection, enforcing trademarks or to promote the use of license agreements between NARS and private companies. Incentives for private companies to engage in the production and marketing of quality seed and planting materials of specific varieties belonging to the public-private crop types are lacking. Despite the lack of incentives, such arrangements exist and are successful, for example with legumes and potatoes in Kenya and Zambia.
- e. *Structure and size of public expenditure dedicated to EGS supply:* Because of market failures in upstream segments of the seed value chain (R&D/breeding, EGS), enhanced public funding or specific incentive structures are required. All the studies recommend some sort of public-private intermediary models; they are consistent in terms of seeking commercial structures, e.g. private operationalization, based on public expenditure. The studies do not provide insights on the structure and size of public funding required for a sustainable supply of specific crops or crop types, independent from the investment required in plant breeding or varietal development. More insights are required on the structure and size of public expenditure required to make EGS supply sustainable especially for food crops within the public-private and public optimal market types. This guidance needs to include governance and management systems required to ensure long-term sustainability of such systems that are not reliant on continued injection of external resources.
- f. *Role of PPPs in EGS supply:* The studies neither distinguish between straightforward ‘contracting out’ by public sector to private companies or more sophisticated ‘partnership’ models requiring joint funding or risk sharing by public and private partners in EGS supply. Direct contracts are relatively straightforward but demand public sector contract and financial management skills, which NARS may not be fully equipped to carry out currently. More insights on successful PPPs and understanding of the variation of partnership models are required to design well-functioning PPP within EGS systems that are both commercial and sustainable.

13. Interface with CGIAR-crop improvement and seeds system programs

- a. Crop improvement programs within Consultative Group on International Agricultural Research (CGIAR) are the main source of varieties for maize, wheat, rice, sorghum and millets, various legumes, cassava, sweet potato and yam for NARS. CGIAR maize breeding programs provide much of the germplasm used by both public and private breeders in Africa.
- b. In recent years, these programs have been pushed (or rather pulled) into partnerships such as Africa-Rising and Drought Tolerant Maize for Africa that have forced them to be closer to the field and produced a more demand-driven research program. In some cases, CGIAR centers are producing and maintaining breeder and foundation seeds for NARS and seed companies, or rather supporting financially NARS and companies to take up such a role.
- c. This situation has put the CGIAR centers into a position of driving many seed value chains, fostering a supply rather than a demand-driven orientation, oftentimes setting up temporary structures promoting EGS supply without addressing more structural problems at national levels.
- d. For a national restructuring of EGS supply to be successful, the CGIAR-centers, their donors, will need to review their role and contributions. At least one CG center, CIMMYT, has determined to

limit its role to producing and maintaining breeder seed, retracting its foundation seed production operations.

14. Interface of EGS with variety management, quality assurance and variety promotion

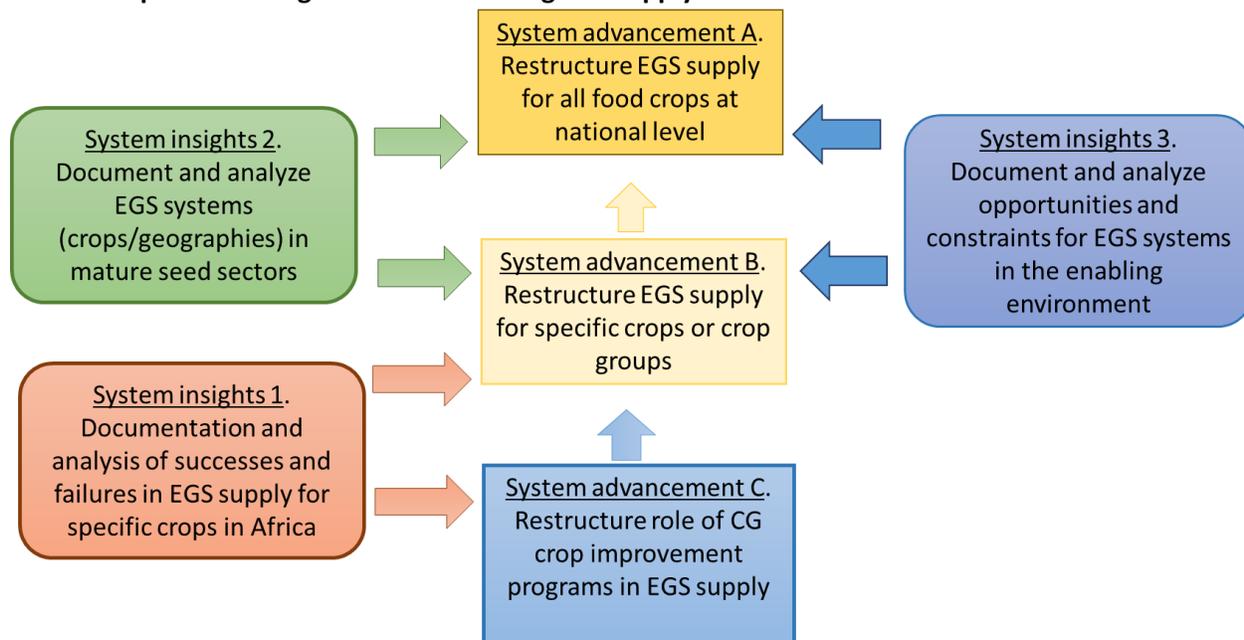
- a. The bottlenecks that hamper a commercial and sustainable EGS supply are interdependent with regulations, their implementation and enforcement concerned with variety management, quality assurance and variety promotion.
- b. Most EGS country studies have highlighted the policies and regulations that affect access to new varieties by stakeholders and which are major constraints to effective EGS supply.
- c. Given the significant efforts to promote harmonization within regional economic communities (ECOWAS, EAC, COMESA and SADC), harmonized seed policies across countries have been agreed but are yet to be implemented in all countries. However, the EGS country studies illustrate their translation into functioning institutions, regulations and enforcement, and thus implementation is slow or not happening, impacting EGS supply and the sector.
- d. Regulations and their implementation related to seed quality influence the functioning of seed value chains and thus EGS supply. In several countries, the quality of EGS available to companies and producers is not assured, due to from limited sanctions applied to especially public providers that operate as monopolists.
- e. Policies relevant to seed subsidies and variety promotion impact the functioning of the seed sector, they create incentives and disincentives for both public and private stakeholders to engage in seed supply. Country studies highlight these aspects and the ways they impact EGS supply. Consequently, in many countries, the seed market is driven by government purchases and donor aid, often resulting in poor estimates of seed market demand with existing market information.

Next steps

15. We propose three types of EGS system advancements and three types of studies providing specific insights into EGS systems (see also figure 2):

- System advancement A: Kick-off design – where willing stakeholders, governments and implementing partners exist - of national level restructuring EGS, first piloting for a few key crops and locations, followed by mainstreaming at scale;
- System advancement B: Kick-off design – where willing stakeholders, governments and implementing partners exist --of restructuring EGS of one specific crop or crop type at national or regional level;
- System advancement C: Restructure of the role of CG-program crop improvement programs in EGS supply, followed by a re-design and implementation of strategies through which they transition from temporary to structural solutions in EGS supply.
- System insights 1: Compile an overview and conduct an analysis of success-stories/failures from individual crop/seed system cases of attempts to restructure EGS supply (focus on cases in African countries);
- System insights 2: Analyze sustainable and commercial EGS systems for various crops within mature seed sectors;
- System insights 3: Compile an overview and conduct an analysis of the status of individual countries in terms of seed policies, regulations and implementation of EGS supply, and related aspects including quality assurance, variety management and variety promotion, identifying opportunities and constraints to be addressed to make the pilots successful.

Figure 2: Proposed EGS system advancements, studies providing EGS system insights, and their relationship contributing to the restructuring EGS supply



16. System advancements A (national), B (crop or crop type) and C (CG-role) are specific trajectories that are highly interrelated. Studies providing insights 1 (African successes and failures for specific crops/crop types), 2 (EGS systems in mature seed sectors) and 3 (policy analysis) provide further inputs into refining the system advancement proposed for A, B and C. The proposed actions are not sequential.
17. The country studies and the way they were embedded within national seed platforms and structures, and commitment of development organizations to the seed sector, provide a basis for a kick-off for restructuring of EGS supply at national level (System advancement A).
18. Table 1 provides insight into the status of the studies and framework in which they have been implemented, and thereby the opportunities for initiating follow up.
19. Restructuring of EGS supply addresses specific roles and responsibilities of NARS, parastatal and commercial seed companies, specialized public and/or public-private EGS/seed units and often associated seed producers (out growers). The aim of restructuring of a company or an organizational system is to achieve greater efficiency and profit (within a commercial setting), and to enhance the capacity to adapt to changing conditions and markets. As such restructuring EGS systems addresses the required capacity in terms of production, financial and marketing management of each of the involved public and private stakeholders. In the case of public-private partnerships, the division of responsibilities and specifics on technical, legal and financial aspects are elaborated. It is critical that the restructuring at national level creates financially viable entities along the seed value chain; and in cases where optimal market types require public investments, outline ways in which public expenditure or other subsidized models can compliment for sustainable but also commercial supply. The EGS studies with the various optimal market types and insights into seed systems should ensure that in the restructuring instead of single blueprint for action, a diversity of PPP-models is designed and recommended for action.
20. The Scaling Seeds and Technologies Partnership (SSTP) with AGRA uses the action plans to engage in pilot activities for crops with an unmet demand for EGS in Ghana, Malawi, Mozambique and Tanzania. It develops a business plan for a proposed intervention produce adequate EGS supply, that might be

done with an existing service provider or put out to competitive bid. SSTP will support a service provider to produce and market EGS and provide technical support to ensure that quality standards are achieved (System advancement B).

21. Additionally, SSTP will establish a web-based seed platform that provides information on EGS seed suppliers and EGS seed availability. It will also explore ways using DNA fingerprint analysis to check EGS genetic purity in some countries where there are concerns. SSTP uses the above and ongoing investments to learn about the intervention strategies and to disseminate the results that can be scaled up (System advancement A and B).
22. Other actions proposed include the proposed establishment of a foundation seed company by African Agricultural Technology Foundation (AATF) in collaboration with AGRA, CIMMYT and several seed companies, which will focus on the supply EGS for maize hybrids in Eastern and Southern Africa; this project is considered for funding by the Bill & Melinda Gates Foundation (System advancement B).
23. The Ethiopian Agricultural Transformation Agency (ATA) has developed an initial five-year plan for a phased restructuring and decentralization that gradually will cover EGS supply for all food crops in regions of the country (System advancement A).
24. The next phase of Integrated Seed Sector Development Uganda project considered for funding by the Dutch Government proposes to restructure of EGS supply through the establishment of specialized EGS company associated with the NARS (System advancement A).
25. Given the critical role of CG crop improvement programs in the development of new varieties and their current involvement in EGS supply, a review and redesign of their role, and exploring ways in which CG programs can contribute to more structural solutions in EGS supply (System Advancement C). As their involvement is mostly crop-based, this action is highly related to crop based interventions (System advancement B) but ultimately is embedded within a more national restructuring (System advancement A).
26. Documentation, analysis and widely sharing information on a diversity of PPPs operating within optimal market type II (System insights 1) is an important input to the crop based (System advancement B) and national programs (System advancement A). Promising examples are:
 - a. Pan-African Bean Research Alliance (PABRA) has established well-functioning PPPs including seed companies, outgrowers, NARS, CGIAR Centers and donors.
 - b. ICRISAT's seed revolving funds for groundnuts and pigeon pea provide another example for a PPP that involves a variety of stakeholders.
 - c. MEDA and national public and private sector partners in Tanzania engage in the development of models for the commercial supply of cassava EGS.
 - d. IITA and partners in Ghana and Nigeria are developing models for the commercial EGS supply for yam within the YIFSWA project.
 - e. Syngenta Foundation is engaged in supporting various PPPs with diversity of crops including various grain and root and tuber crops in both Eastern and Western Africa.
27. A diversity of EGS systems, structured as PPPs, exist in various states in the USA and Provinces in Canada, and other countries with mature seed sector, such as India, Brazil and Turkey. System insights 2 proposes a documentation and analysis of these mature EGS systems; this will inform on a diversity of PPPs, the role of public expenditure and specific business, technical, financial and legal structures. The analysis and insights obtained show that the work on PPPs on EGS in Africa does not have to start from scratch, however these overseas lessons learnt needs adaptation to local conditions.
28. The interface of EGS supply with variety management, quality assurance and variety promotion is highlighted in all studies; many indicate ways that regulations and weak enforcement/implementation hamper EGS supply. Therefore, it is proposed to analyze and document at national level the enabling environment for aspects of quality assurance, variety management and variety promotion with a specific focus interface with EGS supply (System insight 3). The insights

gained will support interventions under system advancement A and B, which also can provide lessons learnt across countries promoting necessary reforms in terms of the enabling environment.

ⁱ Early Generation Seed (EGS) is the intermediate seed used by seed companies and producers, non-governmental organizations, farmer's groups and other stakeholders who use it as basis to produce quality seed or planting material that farmers cultivate in their fields. For example, 1600 smallholder farmers growing half a hectare each of cowpeas require about 1,000 tons of seed. But to produce 1000 tons of seed requires about 25 tons of 'foundation seed' or 'basic seed' to produce the final seed those farmers will use; to produce that foundation seed in turn requires about 63 kg of 'breeder seed'. These two intermediary steps -- breeder and foundation seed - are referred to as Early Generation Seed. Quality seed is produced by suppliers, e.g., seed companies and producers, NGOs, farmer groups in formal, intermediary and informal seed systems, who subsequently disseminate and market seed to farmers.

ⁱⁱ USAID, Bill & Melinda Gates Foundation and Monitor-Deloitte (2015), Early Generation Seed Study – Summary ([link](#))

ⁱⁱⁱ Lion, K.D., W.S. de Boef, M. Huisenga and D. Atwood, 2015. Convening report: Multiple Pathways for Promoting the Commercial and Sustainable Production and Delivery of Early Generation Seed for Food Crops in Sub-Saharan Africa, 23 March 2015, London. Bill & Melinda Gates Foundation, Seattle, WA, and United States Agency for International Development, Washington, DC ([link](#))

^{iv} Seed platforms are formal or informal multi-stakeholder gatherings in which the diversity of stakeholders within the seed sector (multinational, national, medium and small size commercial seed companies, parastatal seed companies, regulatory bodies such as quality assurance and variety testing organizations, NARS, relevant ministries, agro-dealers and trader networks, NGOs, other development organizations and donors, and farmer organizations) engage in a dialogue on ways to promote the development of the seed sector and tackle major bottlenecks that require involvement of all stakeholders in coming to concerted action for reaching solutions (EGS, counterfeiting, PVP, etc). In few countries, platforms are established and facilitated through Seed Trade Associations such as in Malawi and Kenya, in other cases, seed sector development programs such as SSTP or other donor interventions are critical to their development and facilitation such as in Ghana and Mozambique and Tanzania.

^v AGRA, 2016. Communiqué on Commercial and Sustainable Supply of Early Generation Seed (EGS) of Food Crops in Sub-Saharan Africa ([link](#))

^{vi} Variety management covers plant variety protection, intellectual property rights, aspects related to licensing, variety release and registration, specific mechanisms related to variety turn-over and use of regional variety catalogues.