Access to foundation seed of varieties in the public domain

Background

What is the issue?

The production and delivery of early generation seed (i.e. breeder and foundation seed) is a key bottleneck in the performance of seed value chains in sub-Saharan Africa (ISSD Africa, 2015). Seed producers are failing to satisfy an estimated demand for seed of public varieties due to insufficient access to foundation seed (also referred to as basic seed) of these varieties. The availability of foundation seed is often restricted due to limited availability of breeder seed (or pre-basic seed) of public varieties, hence the combined constraint of access to early generation seed.

There are problems with availability, access and use of early generation seed (EGS), and foundation seed in particular.

- **The availability** refers to a variety being listed in a regional or national catalogue, which is by no means a guarantee that breeder seed is available. At variety release stage this is often a requirement (although the quantity is not always stated in all variety release regulations), but continuity of supply is never guaranteed. Furthermore, the breeder seed is often too expensive to produce, while prices are frequently too low, notably for smaller crops such as groundnut and okra, for which breeder seed is rarely available.

- **The access** to foundation seed can be compromised because the cost of foundation seed becomes too high due to regulations (on the intensity of inspection, on the need to involve a breeder, or the need to use formal breeder seed). The challenge then is to identify how to innovatively reduce the costs of foundation seed or finance its purchase by seed producers. Legal options for the production of foundation seed by seed producers are sometimes limited, and transaction costs for the privatization of foundation seed production are becoming too high.

- **The use** of foundation seed is not a common practice of all seed producers. The formal seed systems use certified and quality controlled foundation seed. Small-scale seed producers can purchase foundation seed if affordable, but informal seed producers often use certified seed as starter seed for the production of second, third and fourth generation certified seed (C2, C3 and C4 respectively). At the same time, foundation seed is often produced as ordinary seed, without special care, quality control or investment.

In recent years, the issue of access to EGS has been articulated through various programmes and studies. A study by the Syngenta Foundation for Sustainable Agriculture (Le Page and Boettiger, 2013) concluded, based on its analysis of access to foundation seed in eastern and southern Africa, that there is a need for greater transparency, communication and (public-private) partnerships in the seed value chains to improve access to foundation seed for seed producers. Similarly, the theme on EGS was addressed in a study prepared for the Bill & Melinda Gates Foundation (BMGF) and the United States Agency for International Development (USAID), in collaboration with Monitor Deloitte (BMGF/USAID, 2015). This study takes a seed value chain and market archetype approach towards EGS. This study led to the organization of a workshop for international and African experts in London, in March 2015, to examine the availability of EGS for different crop types (Lion et al., 2015). The availability of EGS was examined in terms of excludability, i.e. the degree to which seed producers must rely on a given EGS producer; and rivalry, i.e. the degree of pluralism expected in the market, and the number of seed producers demanding quality EGS of specific varieties, in order to distinguish between different public and private business models. EGS business models were further determined by market demand and cost of production of EGS. In this study, the following four market archetypes were identified (see also Figure 1):
• Private sector dominant – quality seed of crops high in demand, and attractive for the private sector; for example, hybrid maize and vegetables.
• Public-private collaboration – quality seed of crops high in demand, but public investment needed because of the cost of production or demand risks; crops include open-pollinated varieties (OPVs) of maize, as well as common beans and rice.
• Public sector dominant – quality seed of food crops not highly desirable or profitable but important for food or seed security; for example, sorghum OPVs and cowpea.
• Niche private sector – quality seed of crops with a niche market demand; often closed seed value chains in which seed production is integrated into the commodity value chain; crops include cotton or sorghum for beer brewing.

Based on the above-mentioned study and the recommendations of the meeting in London, BMGF and USAID supported an analysis of access to EGS in eleven countries in sub-Saharan Africa, through their existing seed sector related programmes. Initial results were submitted to a meeting on EGS, which was held in Addis Ababa, 25-27 February 2016. The meeting, entitled “Promoting the commercial and sustainable supply of early generation seed of food crops in sub-Saharan Africa”, was jointly organized and sponsored by eleven organizations, and aimed at developing practical solutions to technical, institutional, and systemic constraints that hamper the supply of EGS. The meeting in Addis resulted in the formulation of guiding principles for access to EGS. The guiding principles are based on i) the global EGS study (EGS Africa Convening, 2016; Lion et al., 2016); ii) follow-up national studies in Ethiopia, Rwanda, Uganda and Zambia; and iii) a series of discussions held during the EGS meeting in Addis Ababa. These principles guide the formulation of recommendations for promoting the commercial and sustainable supply of EGS of food crops in sub-Saharan Africa. The principles, which are outlined below, are a synthesis of discussions held during the EGS meeting, and are endorsed by the eleven convening and sponsoring organizations (EGS Africa Convening, 2016):

• Farmers drive seed value chains and systems, and their diverse needs for seed of different crops lead to a diversity of seed systems (formal, intermediate and informal seed systems).
• Genetic gain at farm level needs to be the priority, but must take into consideration the diverse needs of farmers and hence different seed systems and seed value chains.
• EGS (breeder and foundation seed) supply is needed for all seed systems, whether formal, intermediary or informal seed systems, resulting in different types of private seed producers (national and international companies, seed cooperatives, local businesses and communities).
• Seed producers need to be empowered in seed value chains, by involving them in the management, planning and production of EGS.
• The role of the public and private sector and donor investments should be revisited in view of the need for the seed sector to become more commercial and sustainable.
• National agricultural research institutes (NARIs) are responsible for breeder seed production of their own varieties, but foundation seed needs to be produced by other seed value chain actors (seed producers), through agreements that fit particular seed systems.
The CGIAR is to refrain from EGS production of their respective varieties but will facilitate the supply of EGS through NARIs and other local stakeholders.

- Seed quality assurance of NARI-produced breeder seed should only be conducted in partnership with third parties, in order to reduce and avoid conflicts of interest between quality control and seed production.
- Regional seed legislation harmonization can contribute to commercial and sustainable EGS supply through the development of mechanisms that facilitate movement of EGS.
- Donors are expected to refrain from direct intervention in the seed value chains, and should instead support services and capacity development, while concentrating on the pull function of the seed value chain rather than supporting supply.

Focus of this study

The current study, which is expected to complement the above-mentioned studies, has emerged from the analysis of seed sector constraints in eight sub-Saharan African countries (ISSD Africa, 2015). The available studies and guiding principles, together with the action learning project in Mali, will form the basis of the following analysis and overview. A special integrated seed sector development (ISSD) lens will guarantee an integrated approach towards addressing the constraints on access to foundation seed, by considering different seed systems (also referred to as archetypes) and seed value chains (with public and private actors).

The focus of this study, taking into consideration all the studies and programmes discussed above, is on the relationship between private seed producers and public suppliers of varieties in the seed value chains, with regard to foundation seed production. Private seed producers exist in all seed systems (formal, intermediate and informal). The focus here is specifically on the role of these various types of seed producers and their empowerment in the seed value chains for access to foundation seed.

Seed value chain empowerment can be seen as a combination of chain management and chain integration (see Figure 2). Seed value chain management for access to foundation seed by seed producers is about the coordination, planning, and management of the quantities and type of foundation seed (and breeder seed) needed based on seed sector demands. Value chain integration of seed producers is about their direct involvement in foundation seed production, whether as seed companies, local seed businesses, seed production cooperatives or communities. The assumption is that seed producers, who recognize farmers’ demand for quality seed, are the seed value chain actors most interested in getting access to foundation seed (and breeder seed), in terms of planning for supply or producing it themselves.

Through action learning in Mali and meta-analysis of the studies by ISSD Africa, BMGF/USAID and the Syngenta Foundation for Sustainable Agriculture (SFSA), lessons may be learned on the empowerment of seed producers for access to foundation seed in the seed value chain.

Figure 2. Seed value chain empowerment

Source: Adapted from KIT, Faida Mali and the International Institute of Rural Reconstruction (2006)

1 See www.ISSDseed.org, accessed 1 February 2017
Action learning method

The following research questions will be addressed in this study: What innovative experiences can be shared in access to foundation seed for commercial and non-commercial crops, for formal and informal seed systems? What innovative models have been developed to facilitate access for seed producers to EGS and other forms of quality starter seed of publicly released varieties and locally adapted germplasm and local varieties? Taking a value chain approach, we consider the following three key elements: Availability – is EGS actually available? Access – can EGS be accessed in terms of price, space, information and time? Use – are seed producers interested in using the EGS that is available and accessible, in terms of varieties, quality etc.?

The West African Seed Programme (WASP), which is being implemented by the West and Central African Council for African Research and Development (CORAF/WECARD), supports access to EGS in the West African region. The programme operates in 15 countries of the Economic Community of West African States (ECOWAS). One of the member countries, Mali, was selected by WASP for an action learning project (Dagnoko and Asiedu, 2016). The aim was to analyse the Malian seed sector (comprising research organizations, seed producers and farmers’ organizations) in order to share and learn from experiences, and guide future interventions that target the development of the seed sector. The specific objectives were to provide an overview of the Malian seed sector, and identify innovative experiences in accessing foundation seed of varieties in the public domain. The analysis concerns both the formal and informal seed systems, and the commercial and non-commercial crops and corresponding seed value chains. Specific issues addressed include sources of foundation seed for different crops (seed value chains) and seed systems; access to foundation seed for different non-commercial crops; foundation seed production schemes for non-commercial crops; and foundation seed production schemes for different crops (including successes and failures).

The survey was conducted with seed actors in the district of Bamako, and the regions of Koulikoro, Ségou, and Sikasso. Tools and instruments used included a desk study, literature review, interview guides, questionnaires, and key informant interviews. The use of both the literature review and interviews provided the opportunity to triangulate the data for meaningful comparisons and interpretation of field findings. Initially, questionnaires were designed to target all categories of stakeholders involved in the seed value chain, in both the public and private sectors. The sampling methodology used in the study included all the stakeholder categories in the seed value chain, notably research organizations, seed producers, farmers’
organizations and service providers. The involvement of a wide variety of seed actors in the study led to diversified views and facilitated the triangulation of data and information among stakeholders. Furthermore, the survey targeted most crops found within the prevailing seed systems in Mali. There was a limited diversity of seed cooperatives in the sample, as the majority interviewed originated from one region (Sikasso), and were mostly involved in the maize seed value chain. The sample size was determined by the available resources, but made as wide as logistically feasible. Participation in the survey was based on prior informed consent from the stakeholders. In total, 81 actors involved in the seed value chain were interviewed during the survey. However, care was taken to include the value chains found within the types of seed systems described above. The actors originated from the following segments of the value chain: breeding, seed regulation and quality control, and seed production, distribution and marketing segments. Most of the respondents (89%) came from the private sector, including seed companies (31%) seed cooperatives (56%), and non-governmental organizations (2%). Nine percent of the respondents were female.

Other lessons, such as the need for chain transparency and communication, public-private partnerships, as well as the inherent unprofitability of foundation seed production, were drawn from EGS studies conducted by SFSA and BMGF/USAID. SFSA analysed access to foundation seed in Ethiopia, Ghana, Malawi, Mozambique, Tanzania and Senegal. BMGF/USAID and partners are supporting seed in Ethiopia, Ghana, Malawi, Mozambique, Tanzania and Senegal. BMGF/USAID and partners are supporting the analysis of access to EGS in the following countries: Ethiopia, Ghana, Nigeria, Tanzania, Zambia, Burkina Faso, Ivory Coast, Mali, Malawi, Mozambique, Kenya, Rwanda, Senegal and Uganda.

**Results**

The Malian seed sector comprises a regulatory framework, seed catalogue, released varieties, and public and private sector stakeholders; investments in the sector are made by both public and private actors. However, a number of factors are slowing down the progress, such as traditional beliefs related to seed, the complexity of the seed systems, lack of reliable statistics, and difficulties in law enforcement. Nonetheless, key seed value chains are developing, such as irrigated rice, hybrid maize, hybrid sorghum, and onion. The WASP action learning activity in Mali yielded findings on access to foundation seed that are described below.

**Malian seed sector**

The National Seed Policy (NSP) of Mali was adopted in 2009, followed by the National Seed Law (NSL), while the decree for implementation of the NSL was issued in 2010. The official variety catalogue of plant species and varieties in Mali includes 70 entries of sorghum varieties, 65 for rice, 44 for millet, 27 for cowpea, 21 for maize, and 13 for groundnut. During the 2014/2015 season, 108 varieties (cereals, legumes, oil crops, and forage crops) were submitted for seed quality certification, out of a total 240 released varieties (i.e. 45%). All these varieties are in the public domain, while certified seed production of these varieties is handled by the private sector. Farmers access information on the released varieties in the official seed catalogue by various means, most notably through extension services (57%), research organizations (38%), seed enterprises (20%), and seed fairs (18%). Information on new varieties is also accessed through training workshops; other cooperatives; friends, relatives and neighbours; and to a lesser extent through posters, TV, radio, and written documents such as books, booklets and training manuals. Internet and telephone were not mentioned by the private seed enterprises and cooperatives as methods for obtaining or exchanging information on new varieties.

Two main types of seed systems exist in Mali – the formal and informal seed systems. The formal seed system produces certified seed of improved varieties that have been officially released in the country. There are two sub-systems within the formal seed system: the first works under a public-private partnership and mainly concerns hybrid maize, irrigated rice, and exotic vegetables such as onion and tomato; the second involves cotton and operates as a closed public sector seed system, incorporated within the cotton value chain. The informal system, which comprises farmer and community-based (FCB) seed systems, provides farmers with seed from local and improved varieties for their own use. Farmers also multiply and exchange seed with neighbours, relatives, and friends on an in-kind or cash basis. Major commodities in this seed system are sorghum, pearl millet, rice, open-pollinated maize, and fonio (Digitaria spp.), as well as legume crops like cowpea and groundnut, and indigenous vegetables such as open-pollinated okra, rose, chili pepper and African eggplant.

The survey revealed that 80% – 99% (depending on the crop) of the seed sown by farmers is from informal seed systems, including the community-based seed system in which farmers are organized into groups or associations that officially produce quality seed of both local and improved varieties. This community-based seed system operates as a quality declared seed (QDS) system or trusted quality seed system, although QDS is not formally recognized in Mali. Farmers also acquire seed through many informal sources, such as farmer-saved seed, and grain from their own produce or purchased from the market. The latter is often cleaned, sorted, packaged, and sold as seed. This is common with maize, groundnut and
cowpea. Communities are also sometimes involved in formal seed systems; for example, when producing seed that is subjected to certification, in programmes run by public extension services and non-governmental organizations (NGOs). During the cropping season of 2014/2015, 41% of the seed actors in the region of Koulikoro (and also in other regions) that had their seed certified by the national seed certification agency, were seed cooperatives. Another source of seed used is seed rejected during the certification process. Statistics are not available on the use of this rejected seed, although it was recognized by seed-producing cooperatives in three regions of Mali. All of these seed systems have their specific demands for EGS, be it foundation seed, breeder seed or any type of starter seed.

**Mali early generation seed production**

The production of EGS, mostly in the public sector, is very limited. Out of the 65 rice varieties listed in the official variety catalogue, breeder seed was produced for only 17 varieties (26%). Likewise, for maize and sorghum, breeder seed was produced for only one variety of each crop: ‘Sotubaka’ (maize) and ‘Fambe’ (sorghum). No breeder seed has been produced for the other crops in the formal seed system. Statistics are not available on the use of this rejected seed, although it was recognized by seed-producing cooperatives in three regions of Mali. All of these seed systems have their specific demands for EGS, be it foundation seed, breeder seed or any type of starter seed.

The quantities of certified seed supplied via the formal seed system are insufficient for all crops, with deficits ranging from 85% for maize to almost 100% for groundnut. The theoretical or potential total quantity of seed needed annually for food and cash crops was estimated to be 147,246 tonnes in the 2014/2015 season. However, the amount of quality seed available for improved varieties amounted to only 44,788 tonnes. Subsequently, the country had a seed deficit of 69.4%. The effective demand for seed would nevertheless be much less, as the average seed replacement rate is only one-third, hence a demand of 15,000 tonnes was expected. Statistics of certified seed supply are themselves often lacking, but were reported to be 4,600 tonnes (Dagnoko and Asiedu, 2016). Small- and medium-sized seed enterprises were involved in seed production of vegetables (25% tomato and onions, and 29% okra). Most enterprises produced maize seed (89%), which was followed by sorghum, millet, and rice. Cowpea and groundnut seed business was practiced by 49% and 31%, respectively.

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West-Africa Seed Programme

The West Africa Seed Programme (WASP) emphasized, amongst other seed sector support measures, improvement in access to EGS for seed producers. A number of actions were supported in Mali and other ECOWAS countries. The programme has contributed to innovation and change in access to EGS through public sector coordination; brokering of public-private partnerships (PPPs); harmonization of regional seed regulations; establishment of electronic seed supply and demand platforms, establishment of the Alliance for the Seed Industry in West-Africa (ASIWA); and organization of seed fairs.

The programme facilitates access to EGS by brokering tripartite PPP contracts or memoranda of understanding involving WASP, research institutions (NARIs/CGIAR centres) and small- or medium-scale private seed enterprises or cooperatives. Through these contracts, WASP provides technical and financial support for research organizations to produce an agreed amount of breeder seed of specified crop varieties. The technical assistance provided by WASP is meant to identify and link the actors involved, facilitate the process of quality control and certification, and monitor the implementation of the agreement until the delivery of the seed produced to the private sector stakeholder. The Seed Association of Mali (ASSEMA) identifies the partners through direct contacts (email, telephone) or through special events such as field visits of demonstration plots, partnership days, or stakeholders’ meetings. Private sector actors contribute to the payment of the cost of the seed produced. During the first year of implementation of this approach (2014/2015), the contribution of the private sector was fixed at 20%; this increased to 30% during the second year of implementation (2015/2016). From its inception in 2014-2015, tripartite agreements for EGS production were signed in Mali and successfully implemented for rice (one agreement, 2014), sorghum (one agreement, 2014), groundnut (one agreement, 2015), millet (one agreement, 2015) and maize (two agreements, 2015).

A number of mechanisms were established by WASP to support the seed sector in general and the production of EGS in particular; these include:

- West Africa Seed Information Exchange (WASIX), which is an electronic seed platform for information on stakeholders and their activities, seed markets, and seed business forecasting (see www.wasix.net).
- ASIWA, which comprises a regional platform, national affiliates, and working groups on (i) communication and information exchange; (ii) regional seed quality initiative; (iii) market facilitation and investment solutions, and (iv) regional seed harmonization/trade.
- Annual national seed fair in Mali, which is co-organized by the National Directorate of Agriculture and ASSEMA.
- ASSEMA also brings together hundreds of seed stakeholders from the private and public sectors in a meeting to exchange information related to the national and sub-regional seed markets, and contribute to estimating the effective demand for seed, and hence the demand for EGS.
- WASP contributes to improved multi-stakeholder management in the seed sector for planning timely EGS production, and supports direct EGS production by the private sector, through tripartite agreements.

Lessons learned

The practice of EGS production in the public domain generally follows a supply chain model, ignoring the relationship between demand for quality seed and demand for EGS. The production of EGS is merely driven by the availability of varieties in the public domain. A number of measures are being developed to improve access to EGS by involving seed producers more in seed value chain planning and EGS production, and strengthening the voice of the demand side in seed value chains. In addition to WASP, other programmes have also illustrated the importance of policy change in relation to EGS production, which used to be firmly in the hands of the public sector, at least for public varieties. Many countries, such as Uganda, Mozambique, Tanzania, and Kenya have opened up foundation seed production by supporting private sector involvement. Others have gone further, involving farmers’ groups and cooperatives in the production of foundation seed in intermediate or informal seed systems.

Integration of seed producers into the seed value chain

The integration of seed producers into the seed value chain means that they move up a step, taking on foundation seed production, rather than waiting for the public sector or seed unit to come up with the required seed. The public sector (governments and international donors) is beginning to realize that in open economies the role of the public sector in seed value chains is changing. The seed value chain concept, as with the produce value chain, emphasizes the need to focus on the demand of the customer (in this case the seed user) rather than focusing on supply as in traditional seed supply chains.

The trend in stronger involvement of demand and market actors in value chains has many implications for the role of the public sector in seed value chains. Seed marketing and distribution is now widely accepted to be a role for the private sector, even public subsidy programmes are now implemented largely through the private sector (e.g.
use of seed vouchers). Seed production itself is mostly in the hands of the private sector, although some public seed companies still exist in certain countries. The further privatization of the seed value chains is also affecting foundation seed production. More and more seed producers are getting involved in foundation seed production of publicly released varieties, mostly through special contracts and arrangements, based on the interest of seed producers to have sufficient, timely and quality foundation seed for their enterprise. This trend is referred to as seed value chain integration of seed producers; it is more elaborate for some commodities than for others, as was illustrated in the introduction. It is a development that continues to expand, and eventually seed producers will take over almost all primary functions of the seed value chain, such as breeding and variety development. The role of the public sector is envisaged to be in conservation of genetic resources, pre-breeding, policies, and services (including variety release, quality control etc.). Among the examples of private interest in foundation seed production are individual entrepreneurs in Ethiopia, as well as cooperative seed enterprises, such as Faso Kaba, in Mali; similar examples can be found in Malawi and Tanzania (Maereka et al, 2016). In West Africa, private companies had been used to getting foundation seed free of charge, but they are now being weaned off that practice by WASP through an annual increase in the costs they pay for the foundation seed. The privatization of foundation seed production, also for small-scale and micro seed producers, is continuing, and has been made possible by changing the regulations on foundation seed production.

Currently, not all seed companies are interested in foundation seed production for less commercial (food) commodities. Seed value chain integration can still be an option for these commodities, but will require support from the public sector in the form of market guarantees (e.g. institutional buyers), as well as the subsidized production of foundation seed, e.g. providing breeder seed free of charge. At the same time, private stand-alone units for producing foundation seed have not been found to be very profitable (Le Page and Boettiger, 2013). An intermediate option that is practiced in many countries is the outsourcing of foundation seed production to small-scale seed producers, as the public sector is failing to meet the demand for some commodities, even with autonomous foundation seed production units – for example, the Basic Seed Unit (USEBA) in Mozambique, Zonal Agricultural Research and Development Institutes (ZARDIs) in Uganda, and the Agricultural Seed Agency (ASA) in Tanzania. However, foundation seed production contracts between research organizations and the private sector (i.e. seed companies and community-based organizations) can fail due to side-selling. The cause of this is a combination of pricing (low, while the true value of foundation seed is high) and timing. Besides that, registering foundation seed growers is a lengthy process involving careful selection criteria and training. Involvement in side-selling can lead to the termination of long-term contracts. Proper pricing of foundation seed in various countries reduces side-selling. In many countries, it is notable that foundation seed does not often attract the right price.

Foundation seed production in general is considered extremely costly, as it needs to be subsidized either by seed companies that require the foundation seed for themselves, or by the public sector, where production may be contracted out by seed units to private actors for subsequent redistribution (e.g. PPPs in Mali). In some countries, the production of foundation seed is tendered by research institutes and the winning seed company produces the seed for all the others (e.g. beans in Tanzania). PPPs facilitated by WASP in West Africa have led to the production of foundation seed by the private sector, but it is still subsidized. The public sector in ECOWAS countries is no longer directly involved in foundation seed production, but engages in breeder seed production only. Initially, West African seed companies did not want to pay for foundation seed, as it had previously been fully subsidized. The proposal was for companies to pay 60%, but it was agreed they would pay 20%, which would increase gradually every year. In Zambia, the Zambia Agricultural Research Institute (ZARI) signs contracts with seed companies for the supply of foundation seed, and provides subsidies indirectly, by not charging for all the overhead costs of breeder seed
and support. Situations in which seed companies pay fully for their own foundation seed production of public varieties has only been accomplished in certain countries for specific commodities (e.g. in Zimbabwe for maize).

In the formal seed system, this privatization is ongoing, but it can also take place in intermediate and informal seed systems. Increasingly, cooperatives and farmers’ associations have a similar level of access to foundation seed and can also be involved in foundation seed production (e.g. in Uganda, Mali, Zambia, etc.). In Mali, cooperatives can get foundation seed production subsidized by WASP. For the informal sector, there are many examples of minor, orphan and, above all, vegetatively propagated crops for which farmers’ groups produce “foundation seed” for local seed production. The emphasis here is on the dissemination of new genetic material, rather than certified quality seed, which is maintained in informal seed systems. However, seed value chain integration of informal and intermediate seed system producers is still often confronted with legal obstacles, e.g. the lack of recognition of the importance of seed other than certified seed. Incentives for producing foundation seed of non-commercial crop varieties are needed as part of exclusive licence agreements with private companies, but new varieties of small crops can be popularized by public agencies; an example of the latter is the strategy of the public bean improvement programme in Tanzania, which engages in tendering processes to identify which foundation seed producers will get time-bound exclusive agreements.

Emerging from this is the principle of subsidiarity, which could be added to the guiding principles listed above, and interpreted in this context as follows: foundation seed is best produced by private seed producers (from seed companies to qualified small-scale seed producers), and only when this is not possible should the public sector become involved.

Seed producer involvement in seed value chain planning, management and coordination

Another component of the seed value chain empowerment of seed producers of different kinds and nature is seed value chain management. Traditionally, public research organizations and EGS production units have been supplying foundation seed to seed producers (in the public and private sector) without much consultation and coordination (driven by supply rather than demand). In this scenario, the amount of seed to be produced would be determined by the amount of EGS produced.

The introduction of demand orientation and entrepreneurship in the seed value chain has also led to questions about the quantification of the effective demand (demand backed up by payment), while the demand before was basically all the seed that farmers were using every season. Seed producers know the demand for their product in a given year, whether in the formal or informal seed system. This demand is determined by the market for the produce resulting from the seed planted, in addition to interest in certain new varieties, problems with the quality of recycled seed (diseases, mixtures), the replacement rate (in time and space) of seed and varieties, price and (timely and nearby) access. Seed producers know how much foundation seed they need, but often do not inform the relevant research organizations or EGS producers in advance (i.e. the year or season before they require the seed). This is the main challenge in seed value chains that, contrary to common produce value chains, run over several years and are therefore very demanding in relation to planning.

Joint and timely planning with all key stakeholders is essential for securing access to (breeder and) foundation seed. Crop-specific strategies are needed for formal, intermediate and informal seed systems. The Uganda National Seed Potato Producers Association (UNSPPA) now produces foundation seed based on joint planning with the National Agricultural Research Organisation (NARO) and Kachwekano Zonal Agricultural Research and Development Institute (KAZARDI). Crop-specific strategies have been developed for groundnut, as well as cassava under disease pandemic pressure. Seed planning workshops have been facilitated by WASP, encouraging countries to organize planning meetings to estimate seed needs. NARIs have connected with seed companies and inform them about varieties; the companies then provide their requests. In West Africa, in the future this will be handled by the national seed trade associations (NSTAs), who will collect requests from the private sector for public sector suppliers of breeder seed. Agricultural extension services interact with local seed producers in informal seed systems and could play a potentially supportive role in access to foundation seed, but eventually the smallholder farmers’ organizations, and local seed producers associations in particular, will take on this role (e.g. UNSPPA in Uganda).

Seed producers, as well as EGS and variety suppliers (research organizations), are beginning to organize more platforms (also virtual platforms, as in West Africa) and meetings to improve this type of coordination in the seed value chain; this is referred to as seed value chain management by seed producers. Many of the planning arrangements have been supported by donors and collapse at the end of the project. Alternatives are bilateral planning meetings. WASP facilitated the development of an online platform for suppliers and buyers of foundation seed of public varieties of the ECOWAS catalogue of varieties (www.wasix.net). Such meetings and platforms can lead to contracts and agreements between public and
private seed value chain actors (brokered by others, such as WASP), and with specific multi-annual arrangements for certain quantities and qualities of foundation seed, e.g. the Genetics Access and Transfer Scheme (GATS) in Zambia. These agreements would elaborate on finances, prices, down payments, insurance etc., and could have components of public subsidies in transition stages (e.g. WASP). The above-mentioned planning meetings can be organized and brokered by the public sector (e.g. WASP and the National Seed Committee in Mali, or the Seed Control and Certification Institute in Zambia), but they can also be facilitated by the private sector through national seed trade organizations that have an oversight function (e.g. Mali and Zambia). In some specific cases, the seed demand and the subsequent planning is organized by actors in the produce value chain (mostly processors). This is very common for the traditional cash crops such as cotton (cotton giners organize seed production), but also for sunflower hybrid seed (e.g. in Uganda, oil processors assess the demand for seed and organize supply). Seed producers will sell foundation seed as ordinary seed or even grain once the market prices are falling. In western Kenya, this was referred to as side-selling foundation seed of new varieties, but often results from inadequate contractual arrangements.

Access to foundation seed for non-commercial crops requires some special attention. Informal seed producers often require starter seed in order to get access to varieties through informally multiplied quality seed. In such cases, any type of quality seed can serve as starter seed (foundation seed, certified seed or grain). Quality foundation seed is preferred but often access is limited due to distance, timing and prohibitive costs. Crop-specific strategies are needed to enhance access to varieties in the first place, and quality in the second place. Groundnut seed production is an example of this. Companies in the formal seed system are hardly interested in groundnut seed production (and consequently in buying or producing foundation seed) for reasons of production costs, transport and storage problems, and market uncertainty. However, local seed-producing groups (notably female farmers) are interested, and hence need to be involved in foundation seed production and management of the groundnut seed value chain. For example, in Uganda, research organizations, such as NARO and the National Semi-Arid Resources Research Institute (NASARRI), have contracted farmers’ groups for foundation seed production; and in Zambia, cooperatives are producing QDS of ZARI bean varieties (Ntare and Mastenbroek, 2015; Maureka et al., 2016).

Capacity building will be needed for the private sector on how to produce foundation seed, notably for the small-scale seed producers. A number of such capacity development programmes have already been initiated e.g. in Zambia, with ZARI responsible for the training; in Senegal, with training from the Seed Enterprise Management Institute (SEMI); in Kenya, with the Alliance for a Green Revolution in Africa (AGRA), and also the training of seed potato producers by the Kenya Agricultural and Livestock Research Organization (KALRO); in Uganda, with training for UNSPPA by KAZARDI, training of groundnut foundation seed producers by NARO, and the use of a NARO licence for foundation seed production (Lung’aho and Schulte-Geldermann, 2016).

Next

The BMGF/USAID and SFSA studies, as well as the action learning project with WASP in Mali, have illustrated that access to foundation seed varies across countries, seed value chains and seed systems. This leads to an overall recommendation for learning from these experiences, particularly in relation to closing the gaps between systems, and making access to foundation seed of varieties in the public domain more inclusive.

The ISSD Africa stakeholder community of practice (Nairobi, 2016) and the national synthesis workshops suggested therefore to support:

- Learning from other countries on the role of the private sector in foundation seed production for different commodities and seed systems.
- Collecting experiences of seed demand articulation and seed value chain planning.
- Learning on the role of subsidies in private foundation seed production.

Key partners in such activities, also represented in national meetings and in the ISSD platform meeting in Nairobi, are:

- CGIAR networks; the Forum for Agricultural Research in Africa (FARA); and sub-regional research organizations, such as the Centre for Coordination of Agricultural Research and Development in Southern Africa (CCARDESA), the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), and the West and Central African Council for Agricultural Research and Development (CORAF/WECARD).
- Seed certification agencies.
- Many national actors in platforms, including seed trade associations and seed producer organizations.
- International and regional partners such as BMGF, USAID, the Swiss Agency for Development and Cooperation (SDC), the African Seed Trade Association (AFSTA), and the regional economic communities (RECs).

The process of analysing national EGS systems in a total of eleven sub-Saharan (SSA) countries, as supported by BMGF/USAID, will continue, also on the basis of the guiding principles formulated for EGS development (BMGF/USAID, 2015). An overall synthesis of these reports is being developed.
References


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ISSD Africa is a community of practice that unites African seed experts, seed programmes and associated organizations, and which aims to increase farmers’ access to quality seed through the development of a market-oriented, pluralistic and vibrant seed sector in Africa.

The ISSD approach is a farmer-focused and demand-driven seed sector development approach, which caters for the diversity of seed demands. Through this approach interventions are designed that are tailored to specific crops, value chains and seed systems. It is a seed sector-wide and inclusive approach.

ISSD Africa is coordinated by a consortium of Wageningen Centre of Development Innovation (CDI) of Wageningen University & Research, the Royal Tropical Institute (KIT), the Future Agricultures Consortium and Tegemeo Institute of Agricultural Policy and Development in Nairobi Kenya.

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