



Innovation for seed system development: The case of Tanzania and Malawi

Centre for Development Innovation
December 2010



Executive summary

Background, introduction

- Boosting productivity of African agriculture through commercial and local SME-driven seed systems is crucial. Successful partnership arrangements can form the basis for higher national productivity, development of sustainable food chains and markets, and improved food security and market access mechanisms. The overall goal of this 2-year action research project is to research, conclude and suggest on successful partnership models for robust systems in the commercial, SME-driven seed sector in Africa.
- The surveys that provide the basis of this report's content were conducted in Tanzania and Malawi in 2010. Their purpose was to gain first-hand insights in SME-driven seed chains. Over 30 in-depth interviews were held and expert meetings organized with African SME seed companies. The outcomes resulted in this report – it provides insights in key challenges and potential innovations for improved seed systems as *seen through the eyes of the seed company's entrepreneurs themselves*.
- The purpose of this report is to support the Agricultural Counselor (at the Netherlands Embassy in Nairobi) with commercial insights in the East African seed sector. The project team aims to support the Counselor in being well-informed when taking part in donor strategy and policy discussions, namely when participating in the Alliance for the Seed Industry in East and Southern Africa (ASIESA) platform discussions. Second, in this report the project team provides building stones for more in-depth research on the role that Dutch private investments may have in supporting overall performance of East African seed sector. This will be the key focus of further research in 2011.

Key challenges

- The challenges of the seed sector (as indicated by the 30+ African seed companies) are structured using a mapping tool designed by IFAD, introducing 5 strategic areas: Policy; Production/technology; Business/economic; Awareness/social; and Environmental. The main challenges as they are experienced by the seed companies are:
 - *Challenges in the Policy area:*
 1. Barriers to regional trade: Unlike the situation in Malawi, the seed certification unit in Tanzania, TOSCI, does not have ISTA certification, which would enable Tanzanian seed companies to freely export to neighboring countries and consequently gain access to a larger market. Also for seed companies with a branch in Tanzania but a mother company located elsewhere this export limitation forms a serious constraint.
 2. Fake seed distribution: Both in Tanzania and Malawi fake seed distribution is occurring. Even though fake seed is estimated to be only 2-3%, it victimizes farmers as well as seed companies losing trust from their clients. Seed companies stress that the punishments for fake seed distribution are too low and do not pose a threat to fake seed traders since the business is too lucrative.
 3. Limited seed supply: All local seed companies, as opposed to multinationals, did express concern about the limited availability and supply of foundation seed to seed

companies. Main causes are limited resources of the research stations/ government agencies, and the fact that an increasing number of seed companies request seed.

4. Government competition/ exclusivity: In Tanzania the Agricultural Seed Agency (ASA), which is mandated to produce foundation seed, is also involved in production and sales of own certified seed. Seed companies view this as direct competition, particularly in combination with the limited supply of foundation seed to commercial seed companies. Meanwhile, seed companies are not allowed to produce foundation seed themselves unless the varieties are owned by the company – yet in order to develop and own varieties seed companies need to employ expensive scientific staff that now works for the public sector. Hence there is an issue of ownership; seed companies may actively promote publicly available varieties (as if it were their own) but support their competitors' business in doing so.

- *Challenges in the Production/ technology area:*

5. Limited adoption of hybrids: Multinational companies mainly focus on production of hybrids, while local seed companies are still involved in producing and trading OPVs. The backside of OPVs is that farmers can easily regenerate the seeds, which is not possible with hybrid seed. Since most hybrid seeds are still being imported they are relatively expensive. Local production of hybrids would decrease costs and, as a result, (most likely) increase farmer adoption.
6. Limited processing and irrigation facilities: Processing and irrigation equipment is fairly expensive for (starting) SME seed companies – often facing difficulties in obtaining loans due to a lack of collateral. In Malawi, local seed companies frequently use (rent) processing equipment of the multinationals. In Tanzania, ASA also rents out its processing facilities – it will however first require to process its own output resulting in delays for the seed companies.

- *Challenges in the Business/ economic area:*

7. Exacerbating transport costs: Most seed companies have their farms more remotely located due to limited land availability in urban areas. Disadvantages are that at these locations no processing facilities are available which increases transport costs to and from the nearest urban area. In light of transport cost minimization, seed companies aim to locate their outgrowers nearby their offices and will often opt to hire transport instead of investing in own trucks due to the often weakly developed infrastructure.
8. Limited access to finance: All seed companies interviewed feel that credit poses a serious constraint on its business. Due to unrealistically high interest rates and high requirements, local seed companies do not have access to finance and use own equity for investments in their business.

- *Challenges in the Awareness/ social area:*

9. Limited knowledge on the importance of certified seed and seed treatment: Seed companies often experience that their outgrowers are maltreating seed during the planting and post-harvest stages. Meanwhile, since government funding for promotional activities among research agencies is limited, the private sector is faced with creating awareness among farmers themselves, using demonstration plots and radio announcements.

- *Challenges in the Environmental area:*
 10. Natural disasters: Seed shortages mainly occur in case of natural disasters, such as droughts and floods. As most seed companies do not have irrigation facilities, seed production due to water shortages does not reach its potential.

Areas of innovation

- Related to these challenges, seed companies also suggested areas of innovation. In this report these have been structured around the 4 main objectives of ASIESA: to Strengthen the role of the seed industry and enhance industry competitiveness at national and regional level; to Enhance company competitiveness of seed value chain enterprises in East and Southern Africa; to Facilitate trade and access to markets, improve linkages with public institutions, and enhance public registration, testing and seed handling capacity, and; to Provide farmer level knowledge transfer and create demand that leads to productivity improvement.
- *Innovation: Enhance industry competitiveness at national and regional level*
 1. Harmonization seed laws: Seed companies all feel that the seed harmonization process in SADC would be very beneficial to companies (in particular multinationals); in this way new releases do not have to take place in other SADC countries once it is released in one SADC country.
 2. Fake seed distribution: To eliminate fake seed distribution seed companies suggest local seed trade associations to play a more considerable role in this field. Seed trade associations should strengthen their relation with certification agencies. In Tanzania, seed companies feel that their seed association should be mandated to certify agrodealers and take their certification away in case of fake seed distribution.
- *Innovation: Enhance company competitiveness of seed value chain enterprises*
 3. Auctioning public varieties: In Tanzania, seed companies want the Agricultural Research Agency to license its public varieties. This licensing will be like an open-bidding mechanism with some conditions (it is for example questionable whether multinationals can participate in bidding process). A license could be given for a 5-year period, and during these 5 years private companies receive exclusive rights to produce, market and promote these varieties under their own name at the market.
 4. Transparency for business planning: For commercial seed enterprises to do business knowledge of and access to proper seed statistics is required. Seed companies feel that there is no reliable data/ exact figures to be able to determine seed demand based on data per district. This data can not only be obtained from agrodealers since these are also dealers for their competitors. Seed companies suggest that a platform or centre should be established that gathers and makes accessible farmer-based information per district in a central database.
 5. Private land redistribution: Seed companies have a serious lack of land – in particular of irrigated land. Seed companies note the possible role Government can play here in mediating between villages and seed companies. Another way of redistributing land is by making use of private resources. An initiative from the Tanzanian seed trade association is to look for possibilities amongst its members for private redistribution/ selling of land.

- *Innovation: Facilitate trade and access to markets: linking to public institutions*
 6. Supportive financial mechanisms: Due to high interest rates at commercial banks and unrealistic requirements for agribusiness start-ups (including of a seed company), the Government in Tanzania is in the process of establishing the Agricultural Bank. A similar initiative is taking place in Malawi where the Farmers Union plans to incorporate a bank facility which will have considerably lower interest rates. These initiatives are very much encouraged by the private sector.
 7. Incentive mechanisms for research agencies: research stations often agree that funding is a constraint in developing breeder seed. Donor funding is limited as well, and it is felt that Government should be able to provide own (sustainable) capital injections in its research institutions. Research agencies and private sector actors feel that bonus incentive schemes would help to motivate researchers to put more effort in working market oriented and reaching its end-users: the farmers.
 8. Certification agency going semi-public: Several seed stakeholders in Malawi feel that the Seed Services Unit, which is responsible for certification, should become an autonomous organization. In this way it would become more business-driven and have its own financial administration. The national seed trade association, on behalf of the private sector, currently advocates to make the certification agency semi-public.

- *Innovation: Provide farmer level knowledge transfer and creation of demand*
 9. Educational promotion: Many (most) farmers use own saved (or generated) seed. Most seed companies address the need for increased educational promotion of improved seed. Seed companies feel that everyone has a role to play: by NGOs using demonstration plots, by government through expert extension officers, and through stockists and agrodealers managing demonstration plots near villages of farmers. Seed companies feel that the stockists and agrodealers should receive training through joint efforts by the private and public sector, and with the help from NGOs.
 10. Output marketing: Many seed chain stakeholders address the need for more focus on output marketing. In the seed sector there is a general tendency of focusing on input supply and increased production – farmers however will not see the need to increase production if there is no market or purchasing party. Agrodealers have a role to play and could be motivated to enter Buy-Back schemes as incentive mechanisms.

Next steps: 2011

- Based on the challenges and areas of innovation as seen by seed companies in Tanzania and Malawi, in 2011 the project will further zoom in on investigating what partnership arrangements can contribute to robust systems in a commercial, SME-driven seed sector in East Africa.

- The challenges and areas of innovation will be further tested in Kenya and Uganda, yet now with specific research questions in mind: What partnership arrangement exist, what works and what does not, and why? Partnerships will be looked upon from a broader perspective, with local African SME seed companies taking a central role in collaboration

with national and international (Dutch) private investors, as well as with Government agencies, donors and national and international development partners.

- Specific research questions in 2011 are: Which arrangements are sector specific, i.e. are there partnership arrangements that work in staple sector and not in the horticulture seed sectors, and why? What are the key actors in successful partnership arrangements? What is their role in creating an enabling environment for market-driven seed sector development? And what are the required capacities of different partnership actors to carry out their roles? What specific capacities do commercial seed enterprises require to enhance their business activities, making use of potential partnerships?

DRAFT

List of abbreviations

TOSCI	Tanzania Official Seed Certification Institute
ASA	Agricultural Seed Agency
CIMMYT	International Maize and Wheat Improvement Center
STAM	Seed Traders Association Malawi
TASTA	Tanzania Seed Traders Association
SSU	Seed Services Unit
NARS	National Agricultural Research Station
ASSMAG	Association of Smallholder Seed Multiplication Action Group
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
ATC	Agricultural Trading Company
WASAA	Woman in Agri-business in Sub Sahara Africa Alliance
SARI	Selian Agricultural Research Institute
QDS	Quality Declared Seed
ATCC	Agricultural Technology Clearing Committee
OPV	Open Pollinated Variety
SIDO	Small Industry Development Organization
DALDO	District Agriculture Livestock Development Office
ASIESA	Alliance for the Seed Industry in East and Southern Africa
ISTA	International Seed Testing Association

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1. Introduction

1.1 Context

Boosting productivity of African agriculture through commercial and local SME-driven seed systems is crucial. Successful partnership arrangements can form the basis for higher national productivity, development of sustainable food chains and markets, and improved food security and market access mechanisms. The aim of this multi-year action research project is to research, conclude and suggest successful partnership arrangements that can contribute to robust systems in the commercial, SME-driven seed sector in Africa.

The challenges in this report are structured according to a mapping tool by IFAD, namely Policy, Production/Technological, Business/Economic, Marketing/Social and Environmental. Data presented in these challenges purely come from the viewpoint of SMEs in Tanzania and Malawi. Based on these challenges, SMEs have also come up with areas of innovation which have been structured according to the four main objectives of the Alliance for the Seed Industry in East and Southern Africa (ASIESA), that is: 1) Strengthen role of the seed industry and enhance industry competitiveness at national and regional level; 2) Enhance company competitiveness of seed value chain enterprises in ESA; 3) Facilitate trade and access to markets, improve linkages with public institutions, and enhance public registration, testing and seed handling capacity, and; 4) Provide farmer level knowledge transfer and create demand that leads to productivity improvement. These innovations are either in the public or private domain. Following these areas of innovations the next phase of this project will compare the outcomes of this research with two new cases: Kenya and Uganda and will make an assessment in which areas NL BV is currently playing a role in Kenya and Uganda and how this can be translated to Tanzania and Malawi.

1.2 Kick off meeting

In February 2010 project partners from CDI (WUR) and IFDC met in Nairobi for a project kick-off meeting. The first day's focus was on clarifying the project's entry point (agreed: commercial seed enterprise point-of-view) and overall direction (agreed: working towards seed enterprise-supportive interventions). The Dutch agricultural attaché, Mr. D. Bruinsma, actively participated in this meeting. The next two days were used to better clarify detailed objectives, expected results, approach, activity plan, and roles/responsibilities. A concrete output was a draft table of contents of a publication. Getting to this ToC forced the project team to look at the context of potential partnership arrangements for SME-driven seed systems from a '*SME tries to do business*' point of view, rather than taking a helicopter-view of the seed sector. From this ToC a draft questionnaire was designed, which was then used (and tested) during interviews and expert meetings with seed companies in Malawi and Tanzania.

1.3 Interviews

The aim of the interviews/expert meetings is to map the constraints for commercial seed enterprises *as seen by them*. Following the kick-off meeting a first batch of interviews and meetings with seed companies was carried out by IFDC in February, with East-African Seed, IFFA Seed, Northern Seed and Tansseed, as well as informal meetings with Alpha Seed, Meru Seed, Match Maker (business support service provider), the Tanzanian Seed Trade Association (TASTA), and AVRDC Seed Marketing (donor program).

A second batch of interviews/expert meetings was organized in April. CDI held in-depth interviews with Popvriend Tanzania and Meru Seed, and, supported by TASTA, organized an expert round table meeting in which eight of its member seed companies participated: FAMCO, SATEC, Meru Seed, Mount Meru, IFFA Seed, Popvriend Tanzania, East-African Seed, and Alpha Seed.

CDI conducted a third batch of interviews in September in both Tanzania and Malawi. More than 30 seed companies and agrodealers have been interviewed as well as government officials and NGO representatives. The complete list of resource persons can be found in the annexes. To conclude the first phase of this project an expert meeting was held with seed specialists at Wageningen University and Research Centre where a draft version of this report was discussed and finalized.

2. Challenges in SME-driven seed systems

2.1 Policy

2.1.1. Barriers to regional trade

According to IFFA seed is regional seed trade to a certain extent possible, but only import (from e.g. Zambia/Malawi) but not export since it is 1) not allowed; 2) they cannot even live up to the local demand. Another reason for limited regional trade is that the dollar is not stable.

With respect to regional trade, the seed company Northern seed receives enquiries from Zambia and Congo, however since Tanzania doesn't have ISTA accreditation they cannot export seed. For this to happen, TOSCI should have ISTA accreditation but they don't have it. ISTA would enable Tanzanian seed companies to freely export. For seed companies it would be very good to be able to export, it would lead to more market.

Now people from other countries come to Tanzanian Seed companies to buy vegetable seeds but this is not legal. Agrodealers can also sell to neighboring markets (Kenya-Tanzania border). Cross border trade is occurring, the government cannot control it. Some companies are importing vegetables from nearby countries which is allowed, hence cross border seed trade does exist only one-way in the case of Tanzania.

TOSCI is working to get ISTA accreditation; they have to live up to the following requirements:

- Quality manuals
- Training of staff
- Clean/hygienic factory

If there is ISTA accreditation, seed companies that have TOSCI certification can export. Some companies have inspectors from their own certification agency abroad and then they can export to their own country (like Netherlands and Germany).

For FICA seeds the fact that Tanzania doesn't yet have ISTA accreditations is also limiting their opportunities. FICA has an establishment in Uganda and they would like to export to Uganda and also regional. The reason that they would like to be able to export is that it would enable them to sell the whole year through and not only seasonal like in Tanzania (just in 1 country). Because the season differs between regional countries so in case you don't sell all the seed during the Tanzanian season you can still sell to neighboring countries. You keep on producing → selling local → exporting, by just following the seasons in regional countries. It is estimated that ISTA accreditation will most probably come in the coming two years.

The headquarters of East-African seed are in Nairobi, Kenya. In Tanzania (Arusha) and Uganda the company has branches. East-African seed is in the process of releasing hybrid

maize, they received their parent seed from Kenya and now they sent it to release committee after having performed the National Performance Trials in Tanzania. In Kenya the seed is already released but because there are no seed harmonization laws, they have to release/register the seed in each EA country. Hopefully this maize is released next year.

2.1.2. Fake seed distribution

CNFA/RUMARK notes that the victim of fake seed distribution is always the farmer. The agrodealer steals indirectly from the farmer. An estimation of fake seed supply is 3% or even less than that, this is similar to the estimation by TASTA of 2% fake seed distribution in Tanzania. Just like STAM, TASTA is engaged in radio announcements that farmers should buy their seeds from certified agrodealers.

For CNFA/TAGMARK a related issue is the forging of the CNFA agrodealer certificates. Now CNFA will make it more difficult for them and is in the process of creating large stickers that certified agrodealers have to place in front of their shop (window/door/wall).

According to Seed Co Malawi the current seed law doesn't recognize punishment for fake seed. They want punishments in the law for perpetrators, like a 200.000 Kwacha fee. Because now the fee is around 5000 kwacha but this will not prevent/stop a fake seed trader from continuing his successful business. Reference is made to the system in Zambia where there are high punishments (high fee + prison). Seed Co mentions that STAM and seed companies should always be on alert. This year they have already caught 4 perpetrators. STAM is giving warnings by publishing in newspapers, radio, magazines, to warn the farmers about fake seed trade.

SSU also notes that one of the main constraints in the seed sector is fake seed traders. There are limited resources at SSU/seed companies to check upon fake seed. Fake seed control is in fact everyone's responsibility. But in the end, SSU is responsible to monitor the quality of seed on the market.

The agrodealer Kibo Trading & Services mentions that people who have a farm can produce maize and make the seed look like the one from a seed company (dressing, colour, etc.). They can make similar packaging and then sell directly to farmers. These fake seed traders cannot sell to agrodealers since they will know.

Qsem notes that hybrid seeds looks similar to OPV so there is a large change that also hybrids will be faked. For that reason they will create a unique package with special logo so it becomes more difficult to copy.

2.1.3. Seed supply

Almost all companies interviewed express their concern about the limited availability and supply of foundation seed to the seed companies. Main causes for this are limited resources

of the research and government agencies and the fact that more and more seed companies that are requesting seed. Also few varieties are produced by the research agencies which forces seed companies to produce the varieties themselves and to partner with CGIARs, like CIMMYT.

As a Tanzanian seed company put it: “If we are depending on ASA it is very difficult to rely on their foundation seed. The best way is to allow private seed companies to produce foundation seeds. However this is not currently possible because breeders and ASA are attached to the government.”

Seed Co Malawi mentions that their headquarters have varieties of many crops however it takes 3 years to conduct the trials in Tanzania of these crops. So currently they obtain germplasm of certain varieties from international (CGIAR) organizations. Because the import of their own varieties takes a considerable time, it is also sometimes quicker to use NARS varieties.

CGIARs are also partners of the Association of Smallholder Seed Multiplication Action Group (ASSMAG). ASSMAG partners with CIAT for beans, CIMMYT for maize, IITA (before SANET) for Cassava, Sweet Potato and Soy, and ICRISAT for groundnuts.

There is a general consent amongst the interviewed seed companies that it is easier to get the required quantity of seeds from CGIAR than from NARS.

ASSMAG notes that other organizations should assist NARS with funding for the plant breeders. The breeders don't have enough resources for basic amount of production. The funding of the government is not sufficient, this money is only for maintenance of infrastructure and salary, but doesn't involve the production side.

A seed company explains that:

- Training is the responsibility of a university/college;
- Marketing is the responsibility of the private sector;
- Production is the responsibility of the private sector

However the government puts its hands in all phases and is involved in all processes, this is what causes the trouble.

According to ASA, the reason that sometimes there are/were shortages in basic seed supply is that the breeders do not have enough land for production of breeder seed. In case there is not enough breeder seed, ASA Headquarters aims to evenly distribute the seed to the companies requesting it. However up to a certain extent it also depends upon the connections between HQ/ASA and the seed company, if the company defaulted payment last year or delayed payment than its reliability is affected and there is a higher chance that the seed will be given to another seed company that is reliable and credible. Next to that, who first comes, first gets.

Seed companies should provide ASA with their production forecasts 3-4 years ahead and then ASA will use that to plan the basic seed production. Hence ASA produces upon demand. The process of producing seed takes time. E.g. this season ASA receives breeder seed from the NARS, ASA multiplies this seed. Then next year (season), the seed company can multiply the seed to get certified seed. Before the breeder seed gets to ASA 4 years have passed at

the research station (2 years to conduct research and 2 years of testing the seed). After successful tests, the variety is released and ASA can get the breeders seed. According to TASTA, if the NARS and ASA would have irrigation facilities then the production time could take half of the time, because then they can still produce in the 'off-season' and have 2 production seasons per year instead of 1. For this reason, seed companies should, in fact, hand in their projections 6 years before. And this is the main challenge/cause of foundation seed shortages. The projections do not match the current seed requests (which are higher).

Local Tanzanian seed companies experiences difficulties due to the shortages in maize and vegetable foundation seed. Also for vegetables there is a high demand but there are not many varieties. For example Tomato Tanya is the only variety produced in Tanzania. For this reason e.g. Northern seed experiences much competition from import (which is often higher quality seed). The breeder seed from NARS is not always of high quality. Imported varieties have higher yields (due to better research equipment and more innovative and incentives for researchers abroad). Local varieties do not have such high yields as compared to European varieties. Quality from China and India is not reliable, only European seeds. For the farmer this is good, high quality, and with competition prices are stabilized. However, for the Tanzanian economy this is not good according to TASTA, since high quality seed should be produced also within the country. To buy European products, you need to get foreign currency, and this leads to inflation. Tanzania uses a lot of foreign exchange.

For companies (both local and foreign) who have their own qualified breeders and certification the shortages are not a problem. International organizations provide germplasm for free. So the problem is that there are not enough breeders. Breeders are trained by the government and have signed a contract with the government so they cannot go easily to the private sector.

Another Tanzanian seed company mentions that ASA first uses the certified seed for themselves that they sell to the farmer and the leftovers go to the seed companies. That is direct competition. Opposing the argument of ASA that they only sell to farmers who come directly to the ASA farm, this seed company says that ASA sells to everyone, they have their own packages. Seed companies want to produce their own foundation seed, but if ASA would not produce certified seed there would be no problem at all. An additional bother is that ASA gets subsidies and they don't have to pay taxes, so they can sell their price also lower to agrodealers, however the agrodealer sells the seed of ASA for the same price as other seed, but they are getting a bigger margin. For this reason the agrodealers also first sell the seed of ASA. According to several seed companies, there are 2 solutions:

- 1) ASA stops with certified seed production;
- 2) Seed companies are also allowed to multiply foundation seed.

A Tanzanian seed company mentions that sometimes also NGOs like FAO come to buy seed from seed companies and then give it for free to farmers (that have approx. 3-5 ha) so that at least they have seed to plant for next season. They do not supply to big farmers, only to small ones, in order not to create competition. Other big NGOs present are Compassion (USA) and World vision.

According to AVRDC there are two main reasons behind the seed shortages:

1) Seed companies should forecast their seed demand minimum 1 year before. So if a seed company comes late than ASA cannot be blamed.

2) Environmental factors play a role as well (e.g. diseases, natural catastrophes). Then the projected production decreases, so they have less seed available.

ASA has enough breeder seed (incl. a 10% backup storage) from AVRDC, so it is not a question of limited breeder seed supply from AVRDC.

2.1.4. Exclusivity

In Malawi there is a big distinction between the large multinational seed companies who can use their own material from their Headquarters and they have exclusive rights on their seed. However other 'local' seed companies use public material and for many starters this is no incentive to enter the seed market.

For public varieties, the foundation seeds have to be produced only by agricultural seed agencies. A Tanzanian seed company notes that ASA does not produce enough seeds. The hybrid varieties are not going to the farmers, since ASA has not produced the foundation seeds. All the varieties are there in the research stations but they are not being distributed.

Another aspect is that public money is used to produce the pre-basic seed. Seed companies cannot, freely, copy this technology. ASA is not paying royalties to the researcher, they only buy it. The reason that they do not pay royalties is because both are government agencies.

For seed companies it is not allowed to produce foundation seeds unless the varieties are owned by the company. There is an issue of ownership. A company can spend money on promotion of maize (variety) but if this maize is used by all farmers, they don't care from which company. So the investment in promoting is not beneficial. So nobody is willing to invest in new varieties. Additional to this, Open Pollinated Varieties (OPVs) are not protected. Once seed companies sell to farmers, many will regenerate without legal consequences. In years of plenty harvest it is very difficult to sell seed because every farmer just regenerates their own seed. Popvriend mentions that from a short term perspective this is good since it reduces farmers' expenses, but from commercial point of view it is not sustainable.

The Tanzanian seed company Northern Seed mentions that multinationals can hire foreign as well as local researchers/scientists to develop varieties, but SME seed companies cannot afford that. And most of the scientists work for the government (ASA) and you cannot hire them since they are in the public and not private domain.

TASTA is encouraging seed companies to work/hire their own researchers/scientists to develop their own variety and to work together with big organizations (foreign) like CIMMYT. However this is only possible for a small number of bigger seed companies. This system needs to be developed more for also smaller seed companies so that they are not only dependent on ASA for all their varieties. For some varieties the seed companies will still need ASA but some they should be able to start developing the varieties themselves.

Like Tomato Tanya is an ASA brand. A seed company cannot and will not market this brand name because it will also bring benefits to other seed companies as well. Therefore for seed companies it is crucial to build their own brand name.

AVRDC explains that seed companies can own a variety, but only if they further improve/adapt the seed obtained from AVRDC. Then the seed company can release the variety under their own name as long as it is mentioned that the germplasm comes from AVRDC. Of course the seed company must be able to maintain the line; they should have enough capacity for maintenance of genetic integrity.

In case AVRDC already released a variety, then it cannot become a private variety. AVRDC also provides technical assistance to the seed companies. It is mentioned that in Asia exclusivity is frequently occurring. In Tanzania, only East-West seed, Afrisem and soon also East-African seed do this. These companies focus on hybrids, in particularly Afrisem. AVRDC thinks that it is good Afrisem is here, good for the farmers, if Afrisem can produce local, it is much cheaper than importing these hybrids.

AVRDC thinks that ASA will still have business for those smaller companies who cannot have their own scientists. The larger companies that will release seed and get germplasm from AVRDC will focus on hybrids. Exclusivity is only good if seed companies can maintain the pure line, but in general it would be very good → more vegetable production → good for farmers. According to TASTA, in the field of exclusivity, seed companies should be trained on material transfer agreements and IP. AVRDC is a member of the IP Innovation Platform, together with a.o. TOSCI, ASA, TASTA, Seed companies, Sokoine University, HORTI Tengeru, TAHA, and NGOs.

2.2 Production/Technology

2.2.1 Hybrid vs. OPV

According to Qsem hybrids provide better protection/resistance to diseases and fungus. With OPVs farmers can regenerate seed however this implies that the seed quality decreases over time.

The advantages of producing hybrid seed are:

- Higher yields
- Better quality
- Less spraying with fungicides.

Hybrids have to produce 30% more as local OPV and lead to:

- Stronger resistance to fungus
- Consistency during transport
- Longer shelf life (e.g. for African eggplant)
- Good taste

OPV seeds are good for two days once in the market, whilst hybrids can even be good for seven days. This ensures a better price for the farmer since the farmer does not have to sell their product instantly. The farmers have more power then. On the other hand, to develop a hybrid it can take 5-10 years of work so companies engaged in hybrids have a considerable vision for the future.

Qsem mentions that there will be market in Tanzania for vegetable hybrids, since:

- Increase in middleclass
- More urbanization
- Households do not always have their own garden anymore hence they have to purchase vegetables

ASA mentions that seed companies focus on profitable crops (high-value crops) and ASA focuses on OPVs. However seed companies do not like OPVs but prefer hybrids since they can get a higher price for hybrids, but not all farmers can afford this hybrid seed. That is why ASA will remain active in basic seed production to ensure farmers get the right seed at the right time. ASA has now recently started producing hybrid. Hybrid seed is a cross of 2 different lines. The main time consuming part is the detasseling (=process of removing the tassels) of the female seeds. These tassels have to be removed before opening the maize leaves. The hybrid program of ASA has started this year. ASA notes that you need more than 20% of workforce as compared to producing OPV basic seed. More man days are necessary leading to higher costs of production.

ASA's hybrid basic seed is only (at start) being sold to seed companies. From the basic seed that is left, ASA will produce certified seed. The first harvest of the certified seed will be in January/February 2011. The outgrower for this seed is USA farm.

Many multinationals only focus on maize hybrid seed. ASSMAG focuses on Legumes, Groundnuts, Beans and Soy.

The main goal of ASSMAG is to enhance production of OPV maize and legumes and sales at affordable prices.

Seed companies focus on maize hybrid seed, but farmers want legumes and maize OPVs so it is very important that these seeds also remain and become available, but it implies that SSU has to do inspection of a lot of small fields which proves to be very difficult.

IFFA estimates that 70% of the hybrid seeds come from abroad and only 30% is produced in Tanzania. Agrodealers would prefer to buy local hybrid (maize) seed since they can obtain it for 4400 Ts as compared to hybrids from abroad, which can lead up to 7500 Ts for 2kg. According to seed companies for this reason the government should invest more in the seed sector.

The Tanzanian seed company Meru-Agro Tours & Consultancy remarks that most farmers are now moving to hybrids and that the market for OPVs consists mainly of local governments, NGOs and a few farmers. The companies producing the hybrids are the multinationals with whom it proves very difficult to compete for SMEs. So as a seed company you can still produce OPVs but nobody will buy it anymore in the near future. Meru-agro concludes that the market for OPVs is shrinking and for this reason seed companies need to have their own varieties.

Kibo seed is a Tanzanian company producing a variety of seeds: cereals (maize OPV and hybrid), oil crops (sunflower); pasture seeds and vegetable seeds (tomato, onion, carrots, cabbage, spinach, eggplant) but also crops like okra. Kibo mainly produces high-value crops and limited indigenous crops since there are fewer margins involved with the latter group. According to Kibo, farmers can use their own farm saved seed for indigenous crops. Also some of the vegetables they have are hybrid, like cabbage, onion and tomato. The OPV maize is produced locally and forms 20% of their total maize production, the hybrids are mainly imported from Kenya and form the other 80%.

According to TASTA, for maize hybrid you get higher yields but you need a lot of fertilizer and rain. This is less needed for OPVs. All hybrids can only be used in the highlands, but certain OPVs can be used on medium altitude but this is more difficult on high altitude since OPVs cannot adjust to the rain. OPVs are ready to be harvested in 3 months whilst hybrids seeds need 6 months. That is why OPVs will rot in the highlands, the seed should be drying when in the highlands it is still raining. Hybrids need longer since they have different characteristics.

- Hybrids: need little sun and a lot of rain → high altitude
- OPVs: need a lot of sun and a bit of rain → medium altitude

According to TASTA, the reason that there is less production of hybrids:

1) Policy; no land is set aside by the government in Tanzania. In Kenya there is land set aside by the government. During communism it was also like that in Tanzania. It would be ideal if the private sector can lease land from the government. The government deals with the private sector through TASTA/TOSCI. Now the government has started renting land to ASA that can be used for the private sector;

2) High interest rates; in other countries less interest is charged with loans

2.2.2 In-house vs. outsourcing

2.2.2.1 Seed multiplication

The company Hortanzia is involved in many activities and the origin of their business is flowers. Due to the economic situation the company also diversifies to other sectors (coffee, maize seed, maize commercial production, French beans, and hay). Currently the company is outgrowing maize seed for Kibo Seed. Hortanzia clarifies that the bags and transport are costs of Kibo (depends on the arrangement). With the other seed companies the outgrower pays/arranges the transport but includes this in the costs charged to the seed company.

The seed companies provide the seed free of charge, but if the seed company also provides fertilizer/pesticides (chemicals) than the seed company deducts the price from the costs charged by the outgrower. Hortanzia has also been growing inbred lines (breeder seed) for the seed company Highland Seed (in the Southern Highlands), since Hortanzia has good isolation, capacity and irrigation.

According to TASTA, these kinds of companies could be granted by the Agricultural Bank due to their favorable location near Arusha and the irrigation and labour capacity.

The Tanzanian outgrower company Redding Farms multiplies seed for seed companies and also grows food crops for the local market. Approximately 25% of the land is used for food production and the rest for seed. About 40% of his land is irrigated and he uses this irrigated land for seeds and vegetables. He explains that when seed companies are looking for an outgrower, the companies come to the farm to make an assessment of the land: on irrigation and labour availability. If e.g. ASA would come to Redding Farms with a good offer for outgrowing, they would take it and become an outgrower for ASA. Redding Farms was also involved in hybrid maize seed with Cargill before it was taken over by Monsanto. Monsanto has moved production to other countries now.

Currently the outgrower is growing tomato seeds for the seed company Alpha Seeds. Redding Farms explains that the seed company is in contact with TOSCI to arrange for the inspections and that the seed companies frequently come to check progress themselves as well.

Redding farms has approximately 30 permanent employees, and in peak seasons even up to a 100 casual farmers. Normally only once a year a seed company comes with a contract, so in fact his company could produce more, but the outgrower mentions that there is not that much demand for their services. The company does not do any formal promotion of the land available. Seed companies hear of the outgrower by word-of-mouth and with support from TASTA to bring the outgrowers in contact seed companies.

Redding Farms explains the procedure of contract growing and mentions that normally an outgrower does not pay for the seeds but the contract that is signed means that the output can only go to the seed company that has provided the foundation seed.

The price outgrowers charge the seed companies include, irrigation, fertilizers, pesticides (however in some cases seed companies provide the fertilizer and pesticides), transport, labour, fuel (for land preparation with tractor).

The outgrower also confirms that the costs of production of OPV are lower than of hybrid:

- For hybrid 2 lines are needed, for OPV only 1
- More manpower is required for hybrid (due to detasseling of female lines) than for OPV

The Tanzanian seed company Zenobia Seeds is engaged in a diverse range of seed production activities. They are also involved in breeder seed production because Zenobia also has irrigation facilities. This company has a farm of 1000 ha solely devoted to breeder seed production. International organizations come to Zenobia to test new varieties since the quality assurance/control is very high, there is a lot of distance between other fields so there is no chance of contamination as opposed to ASA farms.

Zenobia has 3 main functions:

- 1) Assisting projects from e.g. ICRISAT by multiplying and testing. The projects accordingly sell the seed to the private sector. Zenobia in this case can also get the variety but not own it
- 2) Zenobia is producing their own varieties from the maize germplasm they get from CIMMYT
- 3) The company also obtains foundation seed from ASA which they multiply and sell to agrodealers

Zenobia also tenders for NGO seed requests, which depend on price, quality and time of output and the company with the best offer wins the tender. FAO can order up to 200 tons of seed, so sometimes Zenobia cannot even supply the local market since the NGOs buy large quantities of seed.

A Tanzanian seed company, IFFA seed, imports seeds from the Netherlands and also uses outgrowers for amongst others tomato seed production. However, IFFA does not use that many outgrowers because the supervision costs are high to ensure high quality.

According to IFFA there are 3 main constraints in seed production:

- 1) Weather dependency → irrigation is needed
- 2) Transport costs to e.g. cleaning facilities
- 3) Capital constraint to live up to demand

SSU mentions that ASSMAG and ICRISAT are very helpful since they organize farmers. According to SSU the ideal solution would be if farmers are grouped together. So that the farmers for example multiply seeds in one big estate and not scattered and this is possible for e.g. legumes where not much distance is needed. SSU referred to an NGO called SelfHelp that is planning to have one big estate where farmers can multiply.

Kibo Seed company identifies outgrowers based on location, for the OPV maize and vegetable production that they produce locally, the company has 20 outgrowers and they are all located nearby Arusha. Processing is also done locally. The hybrids are produced in the southern highlands and they are also doing the processing there. Kibo Seed gives the outgrowers the basic seed that Kibo receives from their Headquarters in Kenya and from

ASA on contract basis. When it is harvesting season, the company gets back the seeds and pay the outgrowers per kilo and take of the difference for the basic seed.

The seed company Meru Agro Tours & Consultancy use contract growers to multiply the seed. Meru Agro notes that the disadvantage of using contract growers is that seed companies do not have control over productivity. Next to that, contract growers are lacking 2 things 1) they do not have technical knowledge 2) they do not have irrigation facilities. So assurance of getting high quality seeds will depend on environmental condition (drought, flood). For this reason the seed company aspires to have their own research and development firm and also production firm equipped with irrigation facilities. If the company has its own farm it can produce higher quality seeds since it has control over all processes.

Monsanto in Malawi also produces seed using contract growers. Monsanto gives the farmers foundation seed (only maize hybrid) for multiplication purposes. Every week Monsanto sends a team for supervision (inspection). The company deals with outgrowers that have an average size of in between 10-20 ha, but some are bigger like 100 ha. Monsanto Malawi has more than 80 growers (hence more than 80 different fields). The total land amounts to approximately 1000 ha. Monsanto does not deduct costs for foundation seed. Under the contract that is signed the outgrowers are required to arrange the transport. Monsanto has a pricing model for the outgrower which includes all inputs used e.g. costs of transport.

ASSMAG (formerly NSSPA) started in 2001. ASSMAG deals with 2400 smallholder seed producers who have an average of 1 ha for seed production. 40% of the farmers are female headed. The organization was initiated by the government of Malawi and supported by the EU. The goal is to produce certified seed, and a small number of smallholders (with high quality standards) are allowed to produce basic seed from breeder seed. These smallholders have sufficient isolation + capacity (manpower). There are in total 30 smallholders that produce the basic seed.

2.2.2.2 Transport

The seed company East African Seeds has their own processing facility, transport and in-house warehouse. However the company notes that in the long term it is better to rent transport instead of using own trucks considering costs of breaking parts. EA Seeds also sells to agrodealers, stockists, etc. But in fact he doesn't make a difference, he sells to a dealer either big or small (stockists). With respect to seed prices and transport costs, the company mentions that the further away the seed is sold, the price of the seed increases so directly or indirectly the farmer pays for all costs made. EA seeds have approximately 50 outgrowers in a 200 km radius.

The outgrowers of FICA seeds are in Moshi, Arusha and Manyara so in a radius of 100-200 km away from their office in Arusha. FICA has in between 10 to 20 outgrowers and prefers to have the outgrowers not so far away located of Arusha. But in case they are located further away this should have its benefits; meaning that the further away the outgrowers are the larger they should be, otherwise there are high distribution costs for limited seed supply. The closer by the seed outgrowers are to Arusha the smaller they can be.

The outgrower company Redding Farms calculates all input costs in the price charged to the seed company. The outgrower mentions that transport cuts in his margin anyway and for this reason prefers to sell to seed companies that are not distant located (luckily most seed companies are based in Arusha). This outgrower has his land located nearby Arusha. This land the company leases from the government (typical 99 year lease contract like in the land policy). Then when the government sees the land is properly used they can lengthen the lease. However now there is not much land available by the government.

The seed company Kibo Seed confirms that the cost of maintenance of own trucks/cars is more expensive than to hire. Since the infrastructure in Tanzania is not well established and costs of repair (tires etc.) are very high. They do have trucks but they use them only to transport to their shops (so only for proximate locations), for far away distances they hire transport, e.g. to and from outgrowers.

Multinationals like Monsanto and Seed Co or organizations like ICRISAT in Malawi also frequently outsource their transport to e.g. Peacock Enterprises Ltd. They mention that for a seed company in general it can be useful to have 1 or 2 trucks but more not due to high maintenance costs.

For IFFA Seed their main problem is unnecessary costs. Their seed company is 180km away from their farm. For them the highest production costs are transport costs. And they have to hire a cleaning facility nearby their office in Arusha since there is no facility nearby his farm. After the cleaning and packaging the seeds go back to the same farmers for sales purposes.

2.2.2.3 Processing

According to ASA, seed companies, such as Kibo Seeds and East African seed, frequently rent the processing equipment of ASA hence ASA shares their infrastructure with the private sector. In particular grading and cleaning equipment, the companies directly take the seed after the treatment and do not store it there due to limited storage space at ASA.

Procedure for usage processing facilities

In order for seed companies to use the processing facilities of ASA, the seed companies have to make a formal application. The procedure is as follows:

- 1) Seed companies send an official letter to ASA to hire the machine
- 2) ASA sends this request to the Headquarters
- 3) If approved, ASA has to schedule together with the seed company to plan the processing
- 4) ASA Arusha determines the price based on electricity costs, etc.
- 5) ASA has to confirm the price with Headquarters (Internal Control)

However, it is not always possible to use ASA's processing facilities; it depends on the processing necessities and planning of ASA itself. In order to prevent contamination the processing machines cannot be used for both ASA as well as the seed company at the same

time, so first ASA will use the equipment and then the seed company. However in some cases this can thus create a delay for the seed company in their production planning.

According to IFFA Seed, in case a seed company wants to rent the processing equipment of ASA there is a chance of delay since ASA will first need to process their own foundation seed and they cannot process at the same time similar crops as other seed companies in case of contamination. So it is not useful to request for their processing equipment at peak time. IFFA seed processes their seed at Manico, which is a large farm that also has processing facilities. For IFFA seed, processing costs are 15% of the value of the seeds. Only the cleaning and transport could save a lot.

Kibo seed company is also leasing ASA's processing equipment but in the future (in 2-3 years) Kibo would like to have their own processing facility. According to Kibo it would be cheaper to process themselves cost-wise and also for convenience purposes (no delay or possible contamination if ASA is using the equipment themselves).

East-African seeds estimates that their costs of processing are considerably higher. The company mentions that the ex-farm price is 58% and from that point 42% of the costs include all processing costs, such as electricity, packaging, dressing, cleaning, loading, warehousing, etc.

The Tanzanian company Nyirefami produces Quality Protein Maize (QPM). Their clients are hospitals, schools and supermarkets. QPM has a higher nutritious value and is hence better for the health. This company has high standards of products and quality control. Nyirefami are tenants from the Small Industry Development Organization (SIDO). SIDO has a large area in Arusha that consists of small companies and Nyirefami is one of them. This company has all necessary processing equipment however the company mentions that no other (seed) companies are using his processing facility. This is an idea the company will consider (to rent the cleaning and drying machines (silo) to e.g. other maize seed companies).

A problem that seed companies and so also Nyirefami faces is that farmers cheat and give low quality of produce. It frequently occurs that farmers put stones and sand in the bags to increase the weight. For this reason the company hires large outgrowers to ensure quality. Farmers should not mix seed during planting/harvesting, but this happens frequently with smallholder famers.

A Tanzanian grain processor mentions that in the past years the companies that request usage of their processing facilities decreased. The processor arguments that many seed companies now have their own facilities; crops that need to be processed have decreased in quantity; and the facilities have increased.

According to STAM, NARS has very basic processing facilities so it is not possible that private seed companies rent the NARS processing facilities. However smaller seed companies that do not own processing equipment can go to the larger seed companies like Monsanto, Pannar and Seed Co. These bigger companies can help them in processing and packaging but not warehousing, in general, due to contamination/diseases, etc. For example, Peacock Enterprises is using the processing facilities from Monsanto. STAM explains that before in

Malawi there was only one seed company, a national seed company. However when this company was privatized, the government was no longer in the possession of commercial processing facilities. It became in the hands of the private sector (Monsanto).

DRAFT

2.3 Business/Economic

2.3.1 Distribution

2.3.1.1 Sourcing channel

Monsanto has two representatives in Tanzania, 1) Kibo Trading and Services for seeds and 2) Union Stores for chemicals. The agrodealer Kibo Trading and Services sources their seeds from import and they also purchase local from the seed companies Kibo Seeds, Pannar and Seed Co. Kibo Trading and Services obtains hybrid seeds from multinationals and OPV seed from ASA. The agrodealer Union Stores imports from Monsanto since 7 years and also from the Kenyan seed company Kibo seeds. Union Stores also sells seed from Suba Agro, East African Seed, Zenobia Seed and the Ugandan company Fica seeds.

Fica Seeds is originated in Uganda, however this company wants to detach themselves from its mother company and want to become an independent company (independent subsidiary). Fica Tanzania already started producing for themselves, they only get the parental seed, mainly maize (OPV+hybrid), from Uganda. Fica started with tomato and maize, however next year Fica wants to include more vegetables in their portfolio. This company does not have land, and hence uses outgrowers (10 growers), but the coming season its aim is to double the amount of outgrowers. According to this seed company it proves very difficult to find credible outgrowers. Fica also gets maize and tomato seeds from ASA.

The NGO BRAC in Tanzania is also involved in seed production (maize: hybrid+OPV; rice and vegetables: both OPV). The hybrid maize seed they get from CIMMYT and the OPVs this NGO sources from ASA. To produce the seed outgrowers are used. According to BRAC in Tanzania more than 90% of the farmers regenerate their seed (which is of less quality) and only less than 10% are organized farmers that do purchase seed. For this reason BRAC sees the necessity to also be involved in seed production.

The value chain of BRAC is as follows

- 1) Obtain foundation seed from ASA for vegetables and maize
- 2) Multiply the seed using outgrowers
- 3) Process the seed using processing facility ASA and Manyara Estate, which is a large private company that exports French beans that also offers processing facilities for rent to private companies
- 4) Packaging of the seed, BRAC seed is a brand on its own with packages of 2 kg of rice and maize and 25+100 grams for vegetables.

BRAC receives germplasm from the following organizations:

- CIMMYT for maize
- AVRDC for vegetables
- WARDA for rice

ASA mentions that they are getting tomato germplasm indirectly from AVRDC. AVRDC provides this germplasm to horticultural centres and ASA gets the pre-basic seed from these

centers. AVRDC delivers to HORTI Tengeru and HORTI Tengeru to ASA. Actually ASA obtains seeds from 7 research centers, since each centre has different varieties. SARI is one of them and this center gets the germplasm mainly from CIMMYT.

The value chain from ASA is as follows:

Research Station → ASA → Seed companies and other authorized organizations (like BRAC and smallholder seed growers) → farmers

In Malawi there is the Malawi Seed Industry Development Project by ICRISAT, funded by Irish Aid. The goal is to help improve the livelihoods of rural smallholders. Seed is the starting point – access to improved seed.

Objectives from this project are:

- 1) Building capacity in local seed companies-outgrowers; certified seed (legumes) should become available to smallholders. They should get training on seed production and marketing, technical and marketing aspects. ICRISAT provides basic seed to the outgrowers to produce into certified seed. ICRISAT will then buy-back the certified seed and distribute to e.g. Peacock Enterprises who then (after packaging) places it in the sales channel
- 2) Coverage; viable distribution networks. More seed can be produced but if there is no network then it cannot get to the farmers. ICRISAT brought in agrodealers/stockists which are located nearby the farmer. This will reduce transportation costs and access to certified seed is increased at the selected agrodealers
- 3) Policy; policy advise/issues channeled through STAM. ICRISAT financially supports STAM so STAM can do advocacy and awareness creation

With respect to objective 2: ICRISAT has different groups of agrodealers and uses 2 groups:

- 1) Direct sales to CNFA/RUMARK – AISAM – NASFAM
- 2) Indirect sales to medium to large scale retailers like ATC, FarmersWorld, Kulima Gold and Chipiku (which have outlets across the country).

The value chain of the seed company Peacock Enterprises that collaborates with ICRISAT in this project is as follows:

- STEP 1: Outgrowers produce certified seed
- STEP 2: Dispatch of certified seed to ICRISAT
- STEP 3: ICRISAT is involved in cleaning, grading, packing the seed in 50kg bags
- STEP 4: Weighing the seed using facility from Monsanto and Seed Co.
- STEP 5: ICRISAT sends the seed to Peacock for repacking in 2kg bags, weighing, stitching and then bagging in 40kg bags
- STEP 6: Peacock dispatches the seed to agrodealers (provision seed on consignment)
- STEP 7: After sales the seed company approaches the agrodealers for coupon and cash collection
- STEP 8: Submission of these coupons to the government
- STEP 9: The government accordingly pays the value of the coupons to Peacock
- STEP 10: Peacock pays the commission to the agrodealers

2.3.1.2 Sales channel

The Tanzanian agrodealer Bajuta International imports agrochemicals from all over the world (China, USA, Italy, France, Germany, etc). The veterinary equipment this agrodealer mainly gets from Denmark and the Netherlands. Bajuta International owns trucks and a warehouse and is hence a relative large scale agrodealer (agrovet). The agrodealer gets seed from a.o. Popvriend, East-African Seed, Kibo seed, Suba Agro. Bajuta International covers the whole country with their cars and sells to stockists all over the region. At the start, this agrodealer offered the seed on credit to the stockists, but a lot of stockists defaulted. Now Bajuta only offers 10% of the stockists credit and the other 90% have to pay direct in cash. This agrodealer has 3 branches, in Arusha, Morogoro and Mwanza and explains that often NGOs go to agrodealers to buy seed and less to seed companies. Bajuto explains that agrodealers have in between 10-14% margin on seeds but this depends on the competition. This margin also goes down with transport costs.

The Tanzanian agrodealer Size by Size shop sells mainly seeds and some equipment. The agrodealer mainly sells seeds of Popvriend but also a.o. from Kibo Seeds, Pannar. Size by size shop explains that Arusha is the main centre of supply for all the regions since all the big seed companies are based in Arusha, such as Popvriend. Farmers, stockists and NGOs come to the shop to purchase the seeds. According to Size by size shop bigger NGOs like FAO go directly to Popvriend. Also churches come to buy seed to distribute it to farmers.

Some agrodealers mention that it takes considerable time to get seeds from Popvriend (too much time between placing request for seed and receiving the seed). According to Size by Size shop there is in general always a shortage of Popvriend seeds, because everybody wants these seeds, in particular vegetable seeds.

The agrodealer Kibo Trading and Services notes that stockists (which are in fact smaller agrodealers more remotely located near the farmers) cannot buy directly from seed companies due to the limited quantities they order. Agrodealers provide seed on credit (small loan) to the stockists or 50% before payment and 50% after. According to this agrodealer, in general there is a 1-2% default. The agrodealer would like to reach more stockists but has limited capacity and would need more trucks and lorry's. Kibo Trading and Services explains that Monsanto gives seed to the agrodealer on consignment, but smaller seed companies prefer to be paid directly or 1-2 months on credit.

Monsanto in Malawi uses distribution chains like Chipiku, ATC and FarmersWorld. These retailers order from Monsanto and have outlets across the country.

The Tanzanian seed company Northern Seed provides seed to agrodealers on credit and when agrodealers sell the seed they will pay Northern Seed. This seed company produces seeds in a more remotely located farm, of this seed 70% is sold in Moshi and 30% to agrodealers nearby the farm. However Northern Seed notes that it has to use the same price for all agrodealers – a fixed price – even though transport costs for seed distribution differ. For this reason Northern Seed uses an average price, panterritorial costs, that balances short and long distances.

The Tanzanian seed company IFFA Seed sells to 10 agrodealers but some of them are located more than 900 km away. The seed company notes that the price of the seed it sells in Arusha is cheaper than in more remote markets, hence IFFA calculates part of the distribution costs in the price of the seed package. The fact that most agrodealers are remotely located makes it difficult for IFFA to know for which price the agrodealers are selling IFFA seed. When the seed stocks get limited at the agrodealer, this dealer can control (increase) the prices.

IFFA explains that the reason why most seed companies and IFFA seed are still located in Arusha is because:

- 1) The experience in seeds is in Arusha
- 2) TOSCI is near Arusha

Farmers in other regions focus for example on rice, hence that specific knowledge is not useful in vegetable or cereal production.

The Tanzanian seed company Meru Agro Tours & Consultancy sells directly to large-scale farmers, local governments and NGOs. The smallholders are reached via agrodealers. According to this seed company one of the most critical efforts are marketing efforts. Agrodealers often do not have enough working capital and require that seeds are sold on consignment, so defaulting agrodealers is a common phenomenon. The company also notes that the infrastructure of agrodealers is a constraint since the dealers do not have storage facilities and cannot store large quantities of seed.

The NGO BRAC in Tanzania mentions that it sells seed through BRAC agrodealers that are only located in the villages and not in urban areas. These agrodealers however also sell seeds from other seed companies which makes BRAC one of the seed companies distributing seed. According to BRAC their seed is sold to their model and general farmers. BRAC notes that they do not sell to stockists.

The Agricultural Trading Company (ATC) in Malawi focuses on agricultural input supply. This company sells all farm related inputs (fertilizer, chemicals, seeds, hardware items) and has 19 outlets across the country. ATC is in fact a retailer of a.o. Monsanto, Seed Co., Pannar, Peacock, MASA, all kind of seed companies and varieties.

The distribution network of the Seed Co Malawi is very extensive, this company reaches 95% of the country and supply to all small outlets. Seed Co has three distribution centers in Malawi and contracts supermarket chains to use them as dealers next to an agrodealer network. In 2009 Seed Co supplied 90 agrodealers and in 2010 already 150. Seed Co has 11 retail chains which have approximately 80 shops across the country, amongst them also ATC. So they have more or less 1000 retail outlets across the country, which has made the travelling distance for farmers from 5 km to 2 km. Seed Co. supplies to all middlemen on consignment. Disadvantages of selling on credit is according to Seed Co mainly that the seed that is not sold and taken back is often deteriorated and leads to considerable transport costs. However Seed Co sells on cash basis to NGOs such as FAO and commercial farmers with larger estates.

2.3.1.3 Costs seed production

This sub-chapter has not been analyzed yet

Size by size shop

They are now renting their warehouse (there are private warehouses to lease) in Arusha, but they would like to have their own warehouse. They pay 5-6 million Sh per month for rent (storage = 800 metric tons)

Kibo seed company

Kibo seeds rents 2 warehouses and each of them can take up to 500 metric tons. They use these warehouses all year long and pay 850\$ per month for each warehouse. They would like to have their own warehouse.

Monsanto

At Monsanto they have the processing facilities. With respect to whether private seed companies can use the processing equipment of Monsanto, he mentions that Monsanto uses Toll-processing (like a community service he sees it). Local seed companies can bring their seed to Monsanto who will then process the seed. It is approx. 120 USD per tonne to rent the equipment.

FICA Seeds

They have a processing facility in house, however they don't have their own transport, they rent trucks. He says that it is much better to have his own processing equipment. He used to pay 100 Ts/kg but now 200 Ts/kg (higher costs → dollar fluctuation/electricity + fuel increase, wage increase etc). And he cannot go much higher with his prices because there is still the competition. He only produces maize and tomato so far, so he doesn't know the costs for other crops.

Seed Co

Smaller seed companies and ASSMAG sometimes use the processing facilities of Seed Co. The costs for renting are 15.000 Kwacha/tonne.

East-African seed

He estimates that only cleaning is 100-150 Ts/kg .

Zenobia seeds

Zenobia has their own processing facility. To processing seed it costs approx. 300 Ts/kg for maize OPV. These costs involve extraction, cleaning, preparation of land, etc.)

The crop cess costs between 600-1200 Ts/bag 100 kg this depends on the district. For beans this is 2500 Ts/bag 100 kg and for sorghum/wheat this is 2000 Ts/bag 100 kg. In general the price of foundation seed (for seed company) is larger than the price of certified seed (for farmer).

Kibo seed company

With respect to transport, Specific costs for transport are 3.4 Mln Ts for 30 tons which comes down to 115 Ts/kg for transport.

For processing renting now ASA charges Kibo seeds 100 Ts/kg so it is better to have their own facility plus it could also be cheaper if he could process himself, like 80 or 90Ts/kg. Additional to that, they will then be able to control the quality of the seeds. The risk of contamination of seeds is quite high at ASA. Limited quality control.

Monsanto

They pay the outgrowers per tonne. 82.000 Kwacha/tonne. Which is approx. 546 USD/tonne for certified maize hybrid.

Redding farms

When he delivers the seed to the seed company he rents a truck. The costs are his. For tomatoes he doesn't have to hire a truck, but for maize the transport costs him like 30.000 Ts/tonne. Maize can be up to 100 tons and a truck can carry approx. 20 tons, so he has to go 4-5 times back to the field to gather the seeds. So the transport costs for 100 tons of maize are $30.000 \times 100 = 3.000.000$ Ts.

Peacock

The certified seed that Peacock gets from ICRISAT costs 800 kwacha/2kg of groundnuts. The subsidy program with voucher is 740 kwacha/2kg. So the agrodealers has 60 kwacha margin if he sells in cash (to farmers not participating in voucher programme), because the original/commercial price is 800 kwacha. But to farmers with voucher they can only charge 740 kwacha/2 kg. For groundnuts there is not top-up (only for maize and for fertilizer, but not for vegetable seeds). However the agrodealer does get a commission. The commission is 40 kwacha, so $740 - 40 = 700$ kwacha that Peacock gets back.

The vouchers/serial numbers are then transferred to Peacock for checking. Then peacock sends the coupons to logistic department of government. Then government crosschecks if the coupons are genuine, then 740 kwacha * number of vouchers = kwacha for peacock. For groundnuts there is no top-up so commission for dealer is included so when government pays money to Peacock. The agrodealer has to make sure that the vouchers are genuine.

IFFA Seed

IFFA buys the tomatoes from the neighbours and then extracts it. He pays them 150 Ts for 1 kg of tomatoes. In the market 1 kg of tomatoes is 120 Ts. Of 210 kg of tomato you get 1 kg of seed. And 1 kg of seed is 50.000 Ts after packing. Per 1 hectare of tomato you get 50 kg. The plants grow up to 100 cm if you put the strings. He has 22 ha of only tomato.

IFFA seed

Manico charges 0,06 \$ per kg which is 60 \$ per tonne. For processing.

The cleaning and packaging costs 100 Ts per kilo and IFFA gives material for packing. To hire a truck the costs are 400.000 Ts and can carry 10 tons. And all the 10 tons have to be cleaned at the rate of 100 Ts per kilo. So if IFFA Seed had their own cleaning facility nearby the farm the money that can be saved is 90.000×140 (100 cleaning + 40 transport per kilo).

The costs of transport are 40 Ts per kilo for only transport.

Additional to the costs of transport from the farm to Arusha and the cleaning, the seed company also has to pay 500 Tsh per bag for tax. There is 90 kg per bag and 100 bags fit in a

truck. Which costs then 50.000 Tsh and this could also be saved if the cleaning facility would be nearby the farm. It is an unnecessary tax places upon seed for every bag (which still has to be processed). Bags that are ready to be sold and are in commercial packaging material are not taxed, so it is only the trip from the farm to Arusha where the bags get taxed.

2.3.2 Finance

The main donor of BRAC Tanzania is the Bill and Melinda Gates foundation. The other main donors are Oxfam, NIKE foundation, BRAC USA and City Foundation. However they also collect funds from commercial banks as loans. These funds are also used for seed production.

BRAC Tanzania receives 60% from donor funds and 40% from commercial banks (at relatively low interest rates). This NGO mentioned that every activity is made with profit and they are getting their margin from their borrowers. Via microfinance BRAC also obtains interest. According to BRAC there is no big gap between BRAC price and other seed companies. However according to several seed companies the price of BRAC is considerably lower than the market price. BRAC is not yet involved in the voucher scheme but that they are in the process of becoming involved, since now farmers go to other agrodealers that can accept the vouchers and BRAC cannot yet cash these vouchers.

Almost all SME seed companies mention that obtaining credit is really a problem due to high interest rates that banks charge. If a seed company or agrodealer has collateral finance can be obtained. Starting seed companies in the beginning do not have collateral and finance comes from own equity. Banks ask for 3 years of cash flows and bank statements which a starting company simply does not have.

Popvriend confirms that access to finance is difficult in Tanzania. Companies need computer skills (to log on to donor finance) since finance through the normal banking system almost impossible and if possible, it is very expensive due to the high interest rates.

Kibo Trading and Services also note that the inflation rates also affect the seed sector. Seed becomes expensive and the inflation eats the margin of the agrodealers since it is not possible to change the prices to the farmers, farmers will not understand this change. This agrodealer mentions that on average the margin per kg is +/- 0,10 cents \$ for seed. For this reason no agrodealer can only be involved with seeds and that is why Kibo Trading and Services also sells insecticides, veterinarian products since these products provide more margin. There is a general consent amongst agrodealers that for them it proves not realistic to run a business of only seeds since there is too little margin involved.

The agrodealer Union Stores mentions that in times with seed shortages the seed companies only want to sell to agrodealers on cash basis and not on consignment. Hence agrodealers with limited cash flow suffer during natural catastrophes.

According to FICA seeds the banks are competing and looking for customers, however the interest rates are plus 20%. Therefore seed companies prefer to do without the banks.

Another factor here is that in case seed companies do have collateral it is still a risky business, because in case the harvest is not optimal and companies cannot pay back the loan, the bank is in a position to take possession of all the collateral (e.g. processing equipment) listed.

According to TASTA a new initiative of the Tanzanian government is the Agricultural Bank which should be operational in 2011. The WorldBank has provided a loan to the Tanzanian government to establish the Agricultural Bank.

According to research centers in Tanzania the government of should set a scheme, like what is already happening in South Africa. In this scheme private sector actors who are direct beneficiaries of the seed of research centers, should provide part of their profits to research centers. Hence part of the taxes – government revenue should be redistributed. TASTA is currently advocating this. Now the money/benefits from seed trade go back to the government but nothing goes back to the research centers. According to seed stakeholders, everyone has to consolidate their efforts together.

2.4 Marketing/Social

2.4.1 Promotion

During the yearly farmers' day in Tanzania, Nane Nane day, (8th of August), there are demonstrations of seed companies and NGOs. Several seed companies have a permanent demonstration plot and others only come on the 8th of August. At this day, in all the regions of Tanzania it is farmers' day and there are demonstrations. Even farmers from Kenya come to see the demonstrations. The organizer of this demonstration is the Tanzania Agriculture Society Organization (FASO). They have a government permit of the Ministry of Agriculture.

The agrodealer Size by size shop also remarks that farmer education on improved seeds is crucial. If the farmers have shortages of seeds, they come to the shops of agrodealers to purchase seeds. The more promotion and education on the importance of improved seeds by extension officers the more farmers come.

The seed company Kibo Seed in Tanzania are active in the following promotional activities:

- Organization of field days – on village level. This is organized together with extension officers
- FM radio
- Demonstration plots
- Nane nane and other trade fair shows

Before the start of the season, this company calls together all their agrodealers/stockists to inform them about the seed characteristics and about which products are good for which zone.

The Tanzanian company East-African Seed links with TAHA, CNFA and the government, mainly for extension activities. According to this company it is really important to have educational promotion because 50% of the seeds of farmers die in nursery since the farmers have limited knowledge on proper production of vegetables.

Also AVRDC is very active in community outreach and promotions. In terms of community outreach they have seed kits, which contain 18 kinds of varieties. AVRDC offers this package for example to NGOs and for training purposes.

Other educational activities of AVRDC include:

- Field day at AVRDC to show their best material and also all the other material that is not released. Around 200-400 farmers come to the field day;
- Seed fair, seed companies are invited and AVRDC shows their best performing lines;
- Nane Nane, AVRDC already received 2 trophies of Nane nane;
- Farm field days (participatory) which are held in Moshi, Iringa, Dodoma, etc;
- Leaflets on production and nutrition kit;
- Market shows where farmers can try and taste the food '*eating is believing*';
- Invite farmers for training on cooking recipes and post-harvest handling.

Also research centers, such as Selian research, are active in educational promotion. This center is also active in Nane Nane and has several demonstrations plots. However according

to SARI there are limited funds for promotion and it is difficult to reach all the necessary sites for demonstration. Also extension officers are limited in their activities due to transport and promotional material to hand out such as colorful leaflets for farmers to better understand. Seed companies confirm this and mention that governments and NGOs are doing little about creating farmer awareness, according to some companies the NGOs are only active in workshops but do not provide training and do not go to the fields, just like the extension officers do not go as much to the fields as necessary. In this way research about seed takes a very long time to reach the farmer. NGOs like BRAC, FIPS, WorldVision, Farm Concern International however do have demonstration plots.

The Tanzanian company Nyirefami also highlights the need for creating farmer awareness. This company showed a video about farmers who are trashing the crops on the ground to get the seed, implying that farmers do not know what to do post-harvest. For this reason companies like Nyirefami are going to farmers themselves to explain about post-harvest treatment of crops. Nyirefami are agroprocessors, this company processes all kinds of cereals: maize, finger millet, sorghum. Finger millet is also used to make local beer in the villages however it can also be used as food (commercial). People did not know that before but due to Nyirefami's promotional activities awareness is created. This company also had difficulties showing that sorghum can be used for food as well since it is really nutritious. However sorghum is in some tribes known as food for poor people.

Qsem also points out that many farmers are not educated in proper usage of seeds and that farmers frequently throw the seeds in the ground, but then e.g. due to strong rainfall the seeds disappear and it can occur that farmers only get 30% output. Hence farmers' education is needed so that farmers will not put the seeds in the ground only until the seeds have become small plants which will lead to higher output.

2.4.2 Agrodealer strengthening

Organizations like CNFA/TAGMARK and CNFA/RUMARK are active in agrodealer strengthening programs.

CNFA/TAGMARK so far has certified 2121 agrodealers after an intensive training program and this organization has formed associations of agrodealers so that now there is also the agrodealer association at the national level. The fee for a certificate of CNFA is 50.000 Tanzanian Shilling and the training duration is 6 days. AGRA is the main funder of CNFA/TAGMARK. In East-Africa, CNFA is active in Tanzania, Kenya and Malawi but also in other African countries.

CNFA/TAGMARK explains the selection procedure of agrodealers:

- 1) The agrodealer writes a letter to the District Agriculture Livestock Development Office (DALDO). DALDO establishes whether an agrodealer is really an agrodealer
- 2) The district then sends the letter to the Ministry of Agriculture in Dar es Salaam
- 3) The ministry accordingly approaches CNFA/TAGMARK based on which CNFA approaches the agrodealer for training

CNFA encourages agrodealers to get to more rural areas, and are also a provider of grants on construction materials (such as shelves and doors) which leads to more shop renovations. This grant ranges from 0-2500 USD per agrodealer. The arrangement is that CNFA pays 50% and the agrodealer also 50%.

CNFA/RUMARK in Malawi has trained 1501 agrodealers already, however not all dealers have sufficient facilities/capacity. There are 400 active dealers and most of them are located in rural areas. Costs amount to 7000 kwacha for a 1 week program.

CNFA/RUMARK is involved in training in business management and technical product knowledge (generic), the product specific training is given by seed companies. Agrodealers have to explain and advise farmers on the best seed for them according to for which area/what kind of field the seed is intended.

The grants that CNFA/RUMARK provide are:

- 1) Start-up grant – matching grant where the agrodealer has to contribute 50% themselves. This grant can be used for construction materials (cement floor/iron roof/shelving, etc).
- 2) Add-one grant for e.g. setting up a warehouse
- 3) Linking agrodealers to agro-input suppliers (wholesaler). CNFA guarantees for possible default. CNFA has to pay the input supplier in case the agrodealer defaults. The default that CNFA is responsible for is 75% of the costs of fertilizer and 50% of the costs for seed.
- 4) Grant for output marketing

Seed stakeholders however mention that guaranteeing agrodealers for possible default implies that in fact the defaulter gets a bonus in this way and the faithful person does not.

2.4.3 Linking farmers to markets

The organization Woman in Agri-business in Sub Sahara Africa Alliance (WASAA) in Malawi is active in 10 countries and predominately in South and Eastern Africa. WASAA is involved in the formation of entrepreneurs along these countries. The international market for legumes exists. But locally there are no economies of scale (no organized production). This is what WASAA wants to establish, economies of scale. This organization wants that smallholder farmers (mainly female) produce for commercial markets and supply high quality. According to WASAA, business and technical skills are necessary for this it seeks out organizations that give trainings like ICRISAT and SSU. One country alone cannot supply the amount needed on the world market but several countries together can, which is where WASAA comes in. In Malawi approximately 50 women agrodealers have a contract now. Each agrodealer deals with more or less 100 smallholder farmers. So now WASAA reaches almost 5000 smallholder farmers.

Also the Malawian organization ASSMAG links farmers to markets. Farmers feed ASSMAG with info on the output they have and consequently ASSMAG approaches the private sector, government, NGO, and agrodealers to inform them about the output available. So in this way ASSMAG is linking farmers to the market. It is difficult for individual smallholders to sell their produce to a seed company, but together they can. ASSMAG identifies potential

farmers and negotiates prices. The organization keeps a strong track record of the quantity that each farmer supplies and after sales ASSMAG gives the money to the grower. ASSMAG facilitates where the smallholders can purchase the foundation seed and sometimes it procures seed on the behalf of the farmers, however on pay-back terms. ASSMAG members are also inspected by SSU, in fact all seed producers in Malawi have to live up to the inspection. Smallholders pay for the certification costs themselves, sometimes however ASSMAG pays first, in case the smallholder cannot afford it, but then the smallholder pays back later after having sold their harvest. So ASSMAG sometimes helps them with SSU and transport as well.

DRAFT

2.5 Environmental

According to IFFA Seed seed production does not reach its potential amongst others because of insufficient capital and natural catastrophes (droughts/floods). For this reason IFFA Seed wants to drill water in case there are other droughts. So now instead of moving forward, IFFA is taking a step back, and ensure that its production will be less dependent upon the weather and hence will drill water and install irrigation but produce less. According to IFFA Seed, for now, it is better to produce less but consistent/stable, instead of producing more with a higher level of uncertainty/risk.

Kibo Seed company also notes that there are only seed shortages when there are natural catastrophes, like floods and droughts. Because the contract farmers are weather dependent and they do not have irrigation facilities.

For processors, natural catastrophes also have a big impact on their business, since there is less produce to process. For this reason processors sometimes are diversifying their business and outrenting space.

3. Areas of innovation

3.1 Enhance industry competitiveness at national and regional level

3.1.1 Harmonization seed laws

For multinational companies the certification procedure is an issue. According to a seed company the seed harmonization process in SADC would be very beneficial to the companies since new releases do not have to happen in another SADC country if it is released in another already. The company also notes that in other countries seed companies can certify their own seed and suggests that STAM can assist in certification issues. Seed companies in fact want to fund STAM to hire seed certification staff to inspect STAM members' fields.

Malawi does have ISTA accreditation (SSU has ISTA), however TOSCI in Tanzania does not yet have ISTA accreditation. According to Kibo Seed, a Kenyan seed company with a branch in Tanzania, it would be ideal if Tanzania would also have ISTA and that East African seed regulations are harmonized. A change should definitely be made for regional trade improvement. Seed companies also mention that it would add much value to their business if East Africa would be using one currency. In 2012 it is expected that there will be a common currency for East Africa, this process is currently in the pipeline. This will increase the market share for seed companies, particularly if they can also export their seeds with the ISTA accreditation.

3.1.2 Fake seed distribution: joint effort

In order to eliminate fake seed distribution, CNFA/RUMARK in Malawi suggests that the relation between STAM and RUMARK should be strengthened. STAM is planning to hire an additional staff member responsible for quality and certification. Also according to the seed company Seed Co, in the near future STAM should have inspectors which should check for fake seed distribution.

The Seed Services Unit also sees a role for STAM in the field of eliminating fake seed distribution, STAM and SSU can work together in this field. STAM is the ideal organization to stop fake seed distribution since it should be aware where all the seed companies get their seed and the companies should all be registered.

In Tanzania a number of seed companies also have problems with fake seed, one of those companies is IFFA Seed. IFFA notes that the transparent normal bags are very easy to replicate and several seed companies even use paper bags. In order not to be a victim of fake seed and losing client loyalty, IFFA developed new bags which are more expensive but more difficult to replicate.

According to IFFA Seed, fake seed distribution in Tanzania could be solved if TASTA would have the permission to certify agrodealers. This would imply that if agrodealers fake seeds then TASTA will take away their certification. Currently, agrodealers get a certificate from the government however the consequences if agrodealers are caught distributing fake seed

are minimal. Seed companies can take the agrodealer in question to court and consequently the agrodealer will have to pay a small fee, but afterwards business goes on. TASTA on the other hand could enforce to take the license/certification away from the agrodealer, and since agrodealers profit a lot from faking, this is a more serious threat for them. Also a problem is that a seed company cannot travel to the other side of the country to check whether indeed the seed is fake. Popvriend suggested inserting numbered fiches or tokens (plastic coins) in the SME's seed bags, and by issuing, numbering and registering these tokens against seed enterprises. In this way the end user can verify the authenticity of the seed by communicating with TASTA. However, according to IFFA Seed the problem is that these coins can also be faked. For that reason, IFFA Seed places their phone number on every bag it sells so his customers can always call IFFA.

TASTA does not yet get the mandate to certify agrodealers because it would imply that amendments have to be made to the law. 'By-laws' should be made so that TASTA can get this mandate. TASTA is already in the Seed Act but should now also play a role in the elimination of fake seed (mandate of certifications).

3.2 Enhance company competitiveness of seed value chain enterprises

3.2.1 Auctioning public varieties

Seed companies estimate that operational costs of producing foundation seed by seed companies will be lower than at ASA, and predict that seed companies can produce seed more economically efficient. Seed companies can use facilities at the research stations. Scientists of SARI can assist seed companies to develop a variety. Many seed companies also remark that they will produce more and market more if they have their own variety, this will also be beneficial for agrodealers, since it would imply more sales.

According to ICRISAT, licensing of public varieties to the private sector is a matter of Intellectual Property Rights. With royalty agreements licensing would be possible. The most ideal situation would be that researchers and the government should get part of the profit which so far only comes in the hand of seed companies. According to ICRISAT the seed act would have to be reviewed in order for licensing to happen. Also research institutions in both Malawi and Tanzania mention that the seed companies and processing industry, which are the beneficiaries (and get considerable income out of seed trade) should give part of their profit to the government. Part of their taxes should go directly to research. So the research institutions can obtain the necessary research facilities/equipment and get higher salaries. Research institutions do not benefit at all now, they are not getting any profit.

According to TASTA, it is not explicitly written down in the Tanzanian law that private companies can access/incur public varieties. But if the private sector does want to access/own these varieties an amendment has to be made to the law. It would imply that ASA has to work out modalities such as which varieties ASA wants to be licensed. Private companies can in this way get exclusive rights to produce/market/promote these varieties under their own name at the market. A license could for example be provided for 5 years

and after these 5 years an assessment will be made and the number of years could accordingly be enlarged. Officially the government would still 'own' the variety.

The seed company will have to sign an agreement (e.g. quantity of tons produced per year and the seed has to be marketed all over the country). The seed companies will also have to pay royalties, for example 1000 tons per annum should be produced and a percentage of the value of the produced seed goes to the government/research center as royalties.

This licensing will be like an open bidding mechanism, but TASTA notes that there should be certain conditions that for example multinationals cannot bid for the seeds, only local companies. However for all this to happen, an amendment to the law has to be made. TASTA expects that by the end of 2011 this amendment will be there and that this system will both be public and operational. In any case, all seed companies conclude that ASA has to step out of certified seed production. The mandate of ASA is for foundation seed production, not for certified seed production.

Popvriend also notes that a solution would be that national research centers develop new varieties, and *one* seed company buys the rights and keeps control over regeneration. In this way the seed company has a full market and this may give enough market to be profitable. As soon as there are two or more seed companies producing/marketing the same variety it will not be traceable how farmers regenerated. Ideally every 2-3 years there would be a release of 2-3 new varieties of different crops (chick peas, cow peas, pigging peas, food beans, sugar beans, onion), than a seed company claims it and is fully responsible to keep it generic (research station should keep a bit of base seed). In this way there are also no foundation seed farms needed that would have to ensure for foundation seed for whole country. Popvriend suggests that open biddings could be organized through TASTA.

3.2.2 Transparency for business planning

For commercial seed enterprises to do business, one specific key constraint is the limited knowledge of and lack of access to proper 'seed statistics'. 'We know there is market demand for drought resistant varieties in a number of districts, but we have no reliable data on exact figures [of number of farmers etc.]', said one of the SMEs interviewed. Among commercial seed enterprises there is a real need observed to be able to determine seed demand based on data per district. Seed companies now make use of their own intelligence, primarily obtained from agrodealers, to forecast demand. In practice this means that most seed companies have to rely on data related to past sales.

From this data commercial seed enterprises can decide to increase their supply to agrodealers in the next year, but this remains risky: most produce is based on own equity, and if an agrodealer in one district is unable to sell this quickly it results in an evaporation of profits made in another district, or in an overall negative profit. For commercial seed enterprises to do proper business planning and to invest in production and marketing of good solutions, a platform or centre should be established (public-private, private-private) that gathers and makes accessible farmer-based information per district in a central database.

At a more specific level, looking at usage of processing facilities of ASA, TASTA recommends that these prices are standardized for all the ASA farms and that the costs are standard costs, consequently ASA should publicize the prices for using the processing equipment to the seed companies. Transparency is the key thought here.

3.2.3 Private land redistribution: role seed trade associations

Additional to constraints in the enabling environment of seed companies, also often one of their key production factors is missing, namely land. As possible solutions to this constraint, seed companies often note the important role the government has to play here. IFFA seed company notes that the Tanzania government should mediate in this area and that seed companies should be able to hire land from the government. According to IFFA there is a need to review the land law, TASTA is currently campaigning for this. IFFA recommends that the government should approach the relatively bigger seed companies, that have processing facilities, and assist them in order to facilitate seed production, e.g. in the provision of land.

According to TASTA, there should be a large farm in at least each district and this land should ideally be set aside by the government. However, there would still be the question of expertise (knowledge of seed production), but mechanization and irrigation could partially solve this. Also SARI notes that ASA should have more farms in other districts or at least distribute more so that smallholders that are more remotely located can also access seeds. TASTA notes that the government should provide this land to ASA and then the seed companies rent from ASA. ASA is mandated to produce basic seed, however there are simply not enough farms to live up to the demand. IFFA Seed thinks that there should be a partnership between seed companies and the government with respect to land. The government should mediate between villages and seed companies for land availability / land lease.

Another way of redistributing land is instead of using public resources, making use of private sources. An initiative from TASTA is asking its members, private sector actors, that have sufficient land available, if they require all their land or whether there could be private redistribution of land, which implies private selling of land.

3.3 Facilitate trade and access to markets – linking to public institutions

3.3.1 Supportive financial mechanisms

Tanzania is in the process of creating the Agricultural Bank (which is a government initiative, advocated by TASTA). According to TASTA, the interest charged at the Agricultural Bank will be lower than the current interest rates charged by other banks which can range in between 18-22%. The interest of the bank can be lower (most likely between 10-15%) since the government will provide subsidies to the bank instead of to individual seed companies. Since the government is coming with the initiative of launching the Agricultural Bank, TASTA

expects that also other banks will lower their interest. Shareholders of the Agricultural Bank will be the government and other finance institutions.

Many of the banks in Tanzania are foreign banks with foreign investors. The Agricultural Bank will be purely local and will not require large profits. Banks with foreign investors often require high profits also leading to high interest rates.

A similar initiative is taking place in Malawi, STAM notes that Farmers Union wants to get a bank facility. In Malawi the interest rates at commercial banks are just like in Tanzania very high 23%. The difference between both initiatives is that the Agricultural Bank in Tanzania will be government run.

The seed company Qsem in Tanzania also highlights the fact that more capital should be injected into the seed sector. This company notes that also the farmers union could be a good medium for this by providing loans. According to Qsem this should be happening much more in East-Africa.

3.3.2 Incentive mechanism for research agencies

A number of researchers also admit that funding is a constraint in developing breeder seed. Donor funding is limited (sometimes they get help for making bore holes/drill), but the government should have its own sustainable capital injection in the research institutions. Bonus incentive schemes could indeed help to motivate the researchers, more effort would be done to reach the farmer. But also if they would just get a higher salary it would help. Seed companies mention that the researchers are, understandably, now not motivated to be innovative, they do their own business for half of the time. They spend their efforts on activities that provide more money than the limited salary that is given by the government.

A research institution mentions that the working facilities at e.g. SARI are either not present or not up to date (e.g. laboratory for breeding is not there). Researchers work in the field but they can for example not do any publications because visual observations are not sufficient for official research/publications. They also mention that the government alone cannot provide these facilities; they do need help from abroad.

Popvriend also strives for a bonus structure for research stations. However, if a public bonus structure would not be feasible, a solution could be that AGRA and the government finances the research station and that the private sector introduces a transparent bonus incentive. Popvriend suggests that NGOs should not get involved in this area and that it is a public and private responsibility (with possible AGRA funding). For this to happen, public research stations would need to be in much closer contact with market (farmer) demand. Researchers should actively run demand-driven research programs and know of, for example, specific and current diseases, by conducting ongoing market surveys among farmers and processors/exporters. According to one commercial seed enterprise, private sector players (organized farmers, commercial farmers, processors/exporters) always require good quality / tailor-made seed. For this reason they will be very interested in partnering with business-driven researchers.

Commercial seed enterprises recommend that researchers are awarded a bonus based on the outcomes of 'their' new variety in terms of bringing solutions to specific end-user problems, and as a result of 'sales' at the auction. A bonus mechanism is also recommended by Tripp (2006), who suggests adopting an incentive structure where researchers' rewards will depend on adoption of their varieties, with 'the future depending on technology adoption rather than the mere release of varieties'.

3.3.3 Certification agency going semi-public

According to several seed stakeholders in Malawi the Seed Services Unit that is responsible for certification should be autonomous; this unit should be more business-driven and have their own financial administration. Several organizations note that currently the government blocs seed business with its bureaucracy. A seed company notes that seed regulators could make the process better by making SSU semi-public (so not purely public). So that this unit can become more efficient, it will become a more commercial enterprise. The company also notes that at the moment the government does not provide enough funding to SSU.

STAM suggests that it could start becoming involved in basic seed production to support NARS since it has limited resources. NARS and STAM could be working together in this field. The main objective is that STAM could facilitate production of basic seed so that in the end the seed companies do not have difficulties accessing seed. STAM would facilitate based on cost recovery basis "social enterprising". Also according to STAM the inspection unit (SSU) of the government should become semi-public so that it can live up to the private sector demands which require efficiency. The unit should function based on cost-recovery and it should manage its own funds. STAM is advocating on behalf of the private sector to make SSU a semi-public unit. Government control should be there but SSU should get out of government administrative issues. The private sector is increasing in numbers and the government cannot support the private sector in this way. For example, now the government pays for ISTA but these costs should be borne by the private sector. According to STAM, socialism should be removed with respect to seeds.

According to a Malawian seed company there should be a board that accredits people within seed companies or even individuals to accredit/inspect on behalf of the certification board. In Malawi there is no other accredited lab to certify seed, only the government is allowed to accredit. SSU is doing all inspections themselves with the limited resources this unit has. Above all, the seed authorities should become semi-public (related to cost-recovery/more professional). In the end everything comes down to the start of the seed chain. With a semi-public certification agency the whole chain will function more professional. Reference is made to the system in Zambia.

3.4 Provide farmer level knowledge transfer and creation of demand

3.4.1 Educational promotion/Branding

According to the Tanzanian seed company Meru-Agro Tours & Consultancy creative and unique packaging is currently one of the only ways for seed companies to distinguish

themselves from their competitors. Most SME seed companies are selling public varieties so the companies can brand by means of packaging however their product is the same. Meru-Agro strives for seed companies to have the exclusive right to varieties and to associate brand name with a particular variety. Additional to packaging, the seeds should also be attractive to the farmers, seed companies can do that by means of investing in cleaning, grading and coloring. But also promotion materials, posters, all these items should be created in order to make a difference.

According to the agrodealer Kibo Trading & Services for agrodealers it is very beneficial if there is more promotion of the seeds. Kibo advertises on radios and promote using demonstration plots. This agrodealer also collaborated with the NGO FIPS which deals with farm input promotions.

According to the agrodealer Bajuta International it is problematic for him that many farmers use own saved seed, and that for this reason more educational promotion of improved seed is necessary by NGOs through demonstration plots, government through extension officers, stockists and agrodealers. Everybody has a role to play here. In particular there should be more demonstration plots surrounding the villages, and that that is a role of stockists. However, these stockists should be trained by seed companies, NGO, government, etc.

3.4.2 Output marketing

Several seed stakeholders addressed the necessity of output marketing. In the seed sector there has been a general tendency in focusing on input supply and increased production. However farmers will not see the need of increasing production if there is no market or purchasing party. Currently a number of organizations place increased attention on output market. One of those organizations is also CNFA/RUMARK in Malawi. The ultimate aim is to increase productivity as well as the income of smallholder farmers. CNFA/RUMARK has a output marketing grant, which implies that the organization will support agrodealers by means of transport/infrastructure facilities. The aim is that the agrodealer can buy excess produce of the farmers. CNFA motivates agrodealers to Buy-Back by means of providing the necessary infrastructure facilities. Consequently, CNFA links the agrodealer to the market to resell the produce he/she purchased from the farmer. In this way farmers have an incentive to produce surplus and not only subsistence.

In Tanzania a similar idea is that of the recently established Crop Board with members such as WFP, UNDP and FAO. The scheme implies that agrodealers buy all crops of the farmers (main market for produce is then the agrodealer) and then put it in a warehouse. The only requirement is that the agrodealer has a relatively large warehouse. The way this scheme works is that the government provides guarantees to agrodealers and the agrodealers can go to the bank with the guarantee to get money, hence it will function as a Warehouse Receipt System. This mechanism would enable big aid organizations to purchase large quantities from agrodealers which would be beneficial to seed companies, agrodealers and farmers and ultimately lead to food security. The difference between both approaches is that with the Crop Board, agrodealers would get money/loans to Buy-Back produce of farmers and with RUMARK the dealers get a grant for infrastructure.

BRAC Tanzania is another organization which currently mainly focused on growth but not yet market assurance. BRAC notes that BRAC in Bangladesh is already engaged in output market. BRAC Bangladesh buys the grains of the farmers after producing/harvesting and uses it for the poultry industry. Now BRAC Tanzania is also considering using the farmer produce for poultry feed.

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4. Next steps: Towards supportive interventions

Will follow

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5. Annex

5.1 Background seed sector

5.1.1 Overview

A number of alliances exist in Africa that address seed trade harmonization laws. In West-Africa, the West African Seed Alliance (WASA) is present, which helps build the capacity of existing and emerging seed companies while expanding agrodealer networks. WASA also addresses seed trade harmonization laws across the five countries it works in, facilitating cross-border trade. In East and Southern Africa there is the Alliance for the Seed industry in East and Southern Africa (ASIESA), which is a public-private partnership between African governments, donors, and the seed industry. The main objectives of ASIESA are to 1) Strengthen the role of the seed industry and enhance industry competitiveness at national and regional level, 2) Enhance company competitiveness of seed value chain enterprises in ESA, 3) Facilitate trade and access to markets, improve linkages with public institutions, and enhance public registration, testing and seed handling capacity, and 4) Provide farmer level knowledge transfer and create demand that leads to productivity improvement¹.

One of the aims of the alliance is to achieve a regional seed policy environment that allows for the unimpeded import and export of seeds across borders within Africa. Small and fragmented national markets and a lack of regional integration due to poor policies discourage seed trade. Policies to facilitate the import and export of seeds across borders would allow national markets in Eastern and Southern Africa to grow to support a viable, thriving seed industry. The Eastern and Southern Africa regional market would become commercially viable and attract investment. Policy harmonization across the region is hence a critical step to realizing this and will require the involvement of regional economic institutions and national governments.

During communism there was only one (national) seed company, called Tanzania Seed Company, TANSEED. After TANSEED collapsed in 2002, ASA was mandated by the government 4 years later in 2006 with the production of pre-basic, basic, and certified seed I and II. ASA is producing basic seed. Basic seed (=foundation seed) is produced from pre-basic seed (=breeders seed), which is procured from the breeders at the national research station (NARS) The basic seed is then sold to private companies who accordingly produce certified seed. This certified seed is sold to agrodealers. The majority of the private companies use outgrowers for multiplication.

ASA currently owns seven farms and they are located according to ecological zones; low, medium and high altitude areas. Since the seed characteristics should be different in each ecological zone, each of the farms procures pre-basic seed from the NARS that is located in the same ecological zone. Hence the farms are linked to the NARS. ASA is the only agency in Tanzania mandated with the production of foundation seed. Currently they only focus on

¹ ASIESA Executive Summary

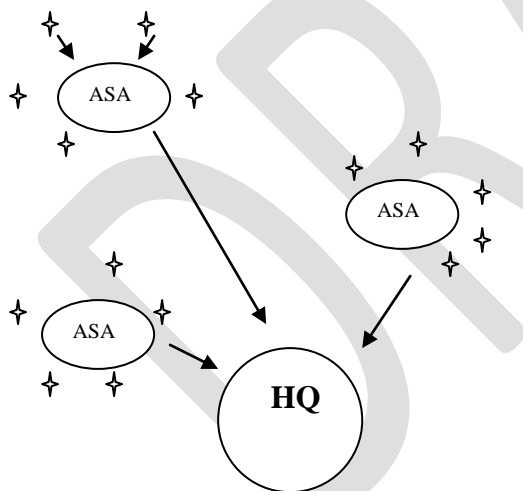
local demand however in the future they want to supply worldwide. ASA actually then will have 2 functions, that of maintenance (of pureness of basic seed) and that of a seed company.

According to ASA, seed companies can manage to produce basic seed but they will focus on high-value crops. Seed production is labour intensive. Smaller seed companies will face problems with land, credit and infrastructure. When seed companies are allowed to produce basic seed, they will however, most likely, still come to ASA (in particular the smaller seed companies) since no seed company can produce all the seeds/varieties that ASA is producing. Additional to that, ASA has got finance and they have land, which are 2 main resources that often seed companies are lacking. And the government will not provide subsidies for the seed companies.

Procedure for obtaining basic seed in Tanzania:

The procedure that seed companies have to follow in order to obtain basic seed is as follows:

- Seed companies hand in a formal request for basic seed at their nearest ASA farm (crop name, variety, quantity).
- ASA sends this request to ASA headquarters (HQ) in Morogoro who are receiving all the seed requests from all the farms.
- Seed requested in Arusha does not only have to come from the farm in Arusha but can also come from the farm in e.g. Tanga if they have excess seed.



† = Seed Company

According to ASA, the certified seeds they produce go directly to the farmer. They charge the same price as the seed companies since the price is set by government. Hence ASA notes that there is no competition with prices.

There are 2 kinds of certified seeds:

- Certified Seeds I (For OPVs, is grown from basic seed)
- Certified Seeds II (is grown from Certified Seeds I).

ASA has the unique mandate to produce Certified I from basic seed, this is because of their close relation with NARS. Seed companies only produce Certified II. ASA can do I and II. TOSCI can only give Certified II to seed companies. ASA has close cooperation with the research station, that is why the research station trusts ASA to make I (both government agencies). However some seed companies mentioned that ASA sometimes mixes certified I with certified II (which is of less quality).

In Malawi the seed system is in fact similar as in Tanzania, the only difference is that in Malawi there is no distinction between Certified I or II. In Malawi anybody can purchase basic seed from the NARS, anybody who is allowed to produce this basic seed according to the requirements laid out in the Seed Act (requirements involve isolation, distances etc.).

According to Qsem there is not yet a vegetable hybrid on the East African market (at least no high quality). There are hybrids on the market coming from the EU. An example of this is Popvriend, they are getting their hybrid seeds from the Netherlands. Also Multiflower is doing the same; however they focus on OPV production and not hybrids. According to Qsem there is a future in hybrids, local hybrids.

However, for local companies it is difficult to start producing vegetable hybrids, since next to the capital investment also the following elements are crucial:

- Technology
- Large scale production (economies of scale)
- Time consumption

In general a lot of less quality seeds are being dumped in Africa. These seeds are older varieties (stocks are dumped). And for those seeds farmers need good technology that the farmers, generally, don't have in Africa. Same counts for East-Africa/Tanzania.

A seed company reflected on the future of East Africa and noted that the population is very large (also household size). Farmers should really farm and the majority should divert to the industry sector. In South-Africa some farms have over 7000 ha. If the average plot size in East Africa would even be 400-500 ha (economies of scale) than loans can be provided. Also smaller farmers will still be there but should farm more efficiently.

The seed company Meru Agro Tours & Consultancy mentions that in Tanzania in order to start a seed company you have to register with the Ministry of Agriculture, after being registered. You will need minimum requirements such as:

- 1) Stable financial situation
- 2) Technical personnel
- 3) Required equipment

There are certain procedures that have to be followed, depending on the type of product you are dealing with. If you are dealing with public varieties, in Tanzania they have to come from ASA.

5.1.2 Subsidy Program

During a workshop on technology dissemination the seed subsidy was discussed. The seed system should not go through the tendering system; the aim is to provide farmers a choice (of the variety that he/she prefers). For some crops like maize there is a top-up, this top-up has an impact on farmer decision-making since some farmers cannot pay the top-up of 100 Malawian Kwacha. They will opt for crops where there is no top-up. The subsidy program has led to increased adoption of certified seed, from 20% to 43%.

The Malawian seed company Peacock Enterprises clarifies that farmers can purchase seed with these vouchers at agrodealers. Agrodealers then transfer the vouchers/serial numbers back to the seed company who accordingly send the coupons to the logistical department of the government. The government then crosschecks if the coupons are genuine and will then pay the seed company the value of the vouchers. (e.g. for vegetable seed: 740 kwacha * Nr. of vouchers = income for the seed company). The agrodealer thus has to make sure that the vouchers are genuine.

A seed company in Malawi highlighted that In 2005/06 there were problems when the government introduced the subsidy program. The government emphasized on OPVs (which farmers can recycle). So the logic behind this system was questionable. The private sector was not very happy with this, because the government was prescribing what farmers should get, which was OPV. Hence the private sector showed disagreement, and advocated that farmers should be allowed to decide what to purchase and where. Now the distribution model (subsidy program) is much more ideal. Farmers can choose what they want, even though according to CNFA/RUMARK still 97% of the farmers opt for OPV and 3% for hybrids.

At the start of the subsidy program the government used a tendering system. This system implies that only one seed company is responsible for supplying all seed to the farmers. Due to the disagreement from the local seed companies the government instead opened market trade for the subsidy program. With open market trade, farmers get a voucher and can choose which seed (and of which seed company) they want. So they can make the decision.

STAM explains that the beneficiaries of the seed subsidy change yearly. Now 1.6 Million farmers are beneficiaries of the subsidy. Each farmer gets 3 vouchers:

- One for maize (either 5 kg of hybrid or 7.5 kg of OPV)
- One for fertilizer (2 bags of 50 kg)
- One for legumes (2 kg and the farmer can freely choose which legumes)

The farmer doesn't have to top-up for legumes so that they feel free to test and by that develop the legume market.

Value of the vouchers:

Maize: 1650 kwacha (100 top-up)
Fertilizer: 500 kwacha (500 top-up)
Legumes: 740 kwacha (no top-up)

The government and the seed companies negotiated on the break-even price, which is in fact the minimum price for seed companies not to make a loss). But the subsidy is created to

develop the market, so in the long term the private sector will benefit, but today it is just to recover the costs.

Requirements for farmer beneficiaries are:

- 1) They should have land
- 2) The farmer is not able to purchase seed & fertilizer at commercial prices.

In some cases also other factors play a role in identifying and narrowing down the beneficiaries, like disabled people, people with HIV, female or child headed households.

The government is going to communities to identify the beneficiaries; they organize a community consultation and ask which farmers should be part of the subsidy program.

5.1.3 Quality Declared Seed

In order to reach the farmers in more rural areas, the Ministry of Agriculture is collaborating with groups of smallholder farmers so they can produce Quality Declared Seed (QDS). In each district there are 1 or 2 field officers who are authorized seed inspectors. In an area with a lot of livestock activity there will be only 1 field officer, but in areas of high agricultural activity there will be 2 field officers. These field officers are trained by TOSCI. So they are not TOSCI but have received training.

ASA supplies basic seed to the district directors who are supposed to make sure that the farmer groups are getting sufficient seed. These farmers don't produce certified seed but they produce QDS. Each farmer group only has a maximum of 2ha and they cannot sell the QDS across districts.

Tanzania is organized as follows:

Country → Regions → Districts → Divisions → Wards → Villages → Sub-villages

A single farmer (that is authorized to produce QDS) can only sell in its own ward. But on group level it can only be sold within the district, so QDS is not for commercial purposes. QDS systems are installed so that farmers in remote areas, which are not reached by seed companies, can still have access to high quality seed.

QDS however is only intended for OPV, not for hybrid. If there is a shortage of OPV seed then ASA asks permission to TOSCI to sell Certified I. QDS is only an official system in Tanzania (in the law/regulations). In Malawi and Kenya this is also happening but it is not stated in the law. All prices for which ASA sells the basic seed are the same, to farmers, and to seed companies.

TOSCI only comes 2 times (during growing and during harvesting) to check what the trained field inspector has done. The fields (each farm) and also all farmers have to be registered before growing QDS. And each field has its own field number. Sometimes a field gets rejected for example if there is no isolation.

In these remote areas, not always processing equipment is available so sometimes the farmer groups use the facilities of private companies. There are however strict quality rules

on farm and processing facility. The quality control remains tight until the product is packaged.

The seed company Meru-Agro mentions that QDS is not a problem for his business. The quantity of QDS seeds that is produced is very small. Farmer organizations who produce these QDS seeds will sell them to individual farmers. Quality Declared Seeds are produced by farmers groups and not by seed companies. That is because the farmers want to increase accessibility and affordability to seeds.

5.1.4 Seed Certification

The Seed Services Unit (SSU) in Malawi is mandated with seed certification, similar like Tanzania Official Seed Certification Institute (TOSCI) in Tanzania. According to Seed Co, SSU inspection can be 4 times for OPV and between 7-10 times for hybrid.

The costs for this inspection are:

- 4000 kwacha/ha for hybrid
- 3500 kwacha/ha for OPV

In these costs also inspector allowances and transport costs are included.

A seed company mentions that the structure at SSU is still the same as compared to when there was only one seed company in Malawi. The personnel/offices/resources are still the same however now there are many more seed companies. It is mentioned that seed certification is very expensive and requires a lot of time. Limited staff for numerous fields.

The main constraints in the seed sector according to SSU are (additional to fake seed traders):

- 1) The free system of the seed sector. A lot of farmers who are multiplying seed have small plots of less than 1 ha and this land is scattered. It is a challenge for SSU to inspect all these fields
- 2) The seed industry is growing daily, and SSU has limited vehicles/resources to inspect all fields

SSU clarifies that In Malawi there are breeders who breed varieties of different crops. When the breeders have finalized conducting trials (multilocational) and they want to release the specific variety they will have to go to the release committee, better known as the Agricultural Technology Clearing Committee (ATCC). So after selecting the varieties that perform well in different locations and when all data is compiled they have to go to ATCC.

Breeders seed –	can be produced when the variety is released and registered as a variety at ATCC
Basic seed -	is provided to seed companies (and farmers) for multiplication
Certified seed -	no further multiplication

Certification procedure:

A farmer has to register at the SSU (seed certification and quality unit). The farmer can only register if he/she has obtained the varieties from a reliable source, in order to start multiplying this seed. In Malawi, farmers can get access to breeder seed. Seed companies (in particular the big ones) have their own varieties. The big companies breed their varieties abroad but they have to undergo the same process of evaluations and then go to register at ATCC. If the variety performs well (after taking samples) it will be released. If a variety that is released in Malawi and when it is e.g. exported to Zimbabwe than it also still has to be tested (samples for inspection).

Many seed companies import any class of seed (breeders or basic seed), also hybrid (parent lines). Seed companies can also import certified seed and sell it at the market.

Seed companies contract farmers, often not small farmers but farmers who have larger estates (often +10 hectares). Frequently the seed companies advertise in newspapers that they need outgrowers and can then make a selection. The seed company will have to pay for the inspection and registration fee (instead of the outgrower itself).

The seed sector in Malawi is a free system. Anyone can get access to seed for multiplication (depending on capacity, land history, isolation, etc.). However it is always obligatory to register at SSU. The registration fee is 1000 Malawian Kwacha. Inspection costs however vary per grower (depending on distance, number of hectares, crop, etc). Most farmers are involved in associations so then they can share the costs. On the other hand, farmers often cannot multiply breeders seed in order to get basic seed because of the high requirements for breeders seed production. But it is allowed if the requirements are met. SSU controls seed multiplications of maize/legumes.

The procedure if a seed company wants to multiply for example groundnut seed is that it directly contacts the breeder for breeder seed (private arrangements) and then registers at SSU.

The job of SSU is just to monitor (also at selling points/warehouses). Breeders only produce breeder seed and seed companies/farmers produce basic seed from this breeder seed. Amongst others Seed Co and Monsanto import varieties from abroad. There are breeders who have projects/grants from AGRA and the Bill&Melinda Gates Foundation. But also ICRISAT supports SSU (with vehicle – see newsletter, and resources). There is also the Agricultural Development Programme Support Project (ADPSP) from the Ministry that supports SSU as well as the Upscaling Breeders Seed Program from the government.

5.1.5 National Agricultural Research Stations

NARS are located in different ecological zones and are hence producing different crops. NARS are the custodians of the gene bank. The mandate of the NARS is to produce breeders and basic seed, however they rely on limited government funding.

According to STAM, the constraints of NARS are mainly related to:

- 1) Capital
- 2) Time

In Malawi, ICRISAT (pigeon peas, groundnuts), CIAT (beans) and NARS (maize OPV and hybrid) deliver to seed companies. According to a number of seed companies it is more efficient working with CGIAR organizations since NARS not commercially oriented and not formalized or transparent (w.r.t prices and processes). The seed companies all have private arrangements with NARS and directly with breeders. NARS in Malawi is only involved in breeders and basic seed production, however not in certified seed production, unlike in Tanzania (ASA).

Seed companies mention that the Malawian government blocs growth of the private sector. The prices that it sets are at a social value, affordable value (subsidized). Prices are not set at commercial prices – which are higher. Since the breeders costs / processing facilities are not included in the price so it is very low. In the short term this is good – low price for farmers However, in the long term this is not a sustainable mechanism

A project of IOWA University aims to organize/formalize the seed system so that the seed sector knows costs/route/transparency. However according to some seed companies this doesn't mean that in 2014 the government system will change. Some government officials profit from this system due to the private arrangements. Particularly the breeders are benefiting since they are the direct beneficiaries of the private arrangements. Too much is still done in socialism thinking – everything is done by the government, which is not sustainable.

In Malawi the procedure for variety release is as follows:

Breeders department → Select variety → NARS → ATCC
(E.g. maize/groundnuts) (Desired traits) (Trials) (Variety release)

Seed Co Malawi explains that if they like a variety (they can choose themselves). Seed Co breeders develop varieties for all countries/zones. In case there are varieties in the public sector that are very good, then they will work together with NARS Malawi. But also for Seed Co breeder seed that is imported must go through a panel of people (ATCC) who inspect/make trials. They need 3 years (done by NARS, not SSU) of local plus sometimes even regional data (multilocational and on-farm trials). Then if it performs well, it can be send to ATCC.

In Tanzania there is Selian Agricultural Research Institute (SARI) and HORTI Tengeru;
- Selian research develops germplasm themselves and via CIMMYT (CGIAR institutions). They get sorghum from ICRISAT. Selian is involved in Cereals – wheat, sorghum, beans, millet and maize.
- Horticulture Institute, HORTI Tengeru, is funded by the Netherlands and is active in vegetables. They obtain the germplasm from AVRDC.

In the early days SARI used to deliver breeder seed to TANSEED that has now become ASA. Selian has hybrids from 2002 that are not yet marketed. And ASA doesn't want to license the varieties, they don't want to hand over the hybrids to the seed companies, they are holding them. For this reason SARI has approached the government so that the government will now force ASA to release these hybrid varieties. ASA started this year with the production of this hybrid seed and will have the first harvest beginning 2011.

Activities of SARI include:

- Multi-regression trials for seed companies
- Variety development
- Maintenance breeding of purity of public varieties
- Training / demonstrations / field days for farmers

ASA's mandate is to make foundation seed of these hybrids, but ASA doesn't have the necessary capacity, so ASA saves the seed. Seed companies need the license to get the hybrids to produce them themselves if ASA is not capable. This should happen according to a number of seed companies. According to SARI, ASA should have more farms in other districts or distribute more so that other small farmers can access seeds. Because now, more distanced farmers cannot access foundation seed.

SARI concludes that the following is necessary to improve the seed sector:

- 1) Capacity building (training of staff) of ASA/SARI/Seed companies
- 2) Get proper equipment
- 3) Licensing of the seeds to the private sector. The seeds should go from the researcher to the intended farmers where they belong.

5.2 List of resource persons

NAME	ORGANIZATION	COUNTRY
Bob Shuma	Tanzania Seed Traders Association	Tanzania
Peter Bloch	Consultant	Tanzania
Ekko Oosterhuis	Popvriend	Tanzania
Emmanuel Temu	Popvriend	Tanzania
H.O. Mongi	Alpha Seed	Tanzania
Chacha Watanga	Meru-Agro Tours & Consultancy	Tanzania
Babu N. Odedra	FAMCO Seed Ltd.	Tanzania
Sarah Muya	Suba Agro Seed Company - SATEC	Tanzania
Zawadiel Mrinji	Agricultural Seed Agency	Tanzania
Hellen Kintebwe	Agricultural Seed Agency	Tanzania
Mohamoud Ahmed Mohamed	IFFA Seed Co. Ltd.	Tanzania
Alson A. Shangali	Northern Seed Co.	Tanzania
Mossi W.C.	Kibo Trading & Services	Tanzania
Evarist Silayo	Union stores	Tanzania
Zephania N. Mkiramweni	Bajuta International	Tanzania
Tadei Joseph	Size by Size shop	Tanzania
Hezekiah Keitany	Kibo Seed Company Ltd.	Tanzania
G.L. Minja	Fica Seeds Ltd.	Tanzania
Pragnesh Lotia	East-African Seed Ltd.	Tanzania
Wycliffe Ingdi	East-African Seed Ltd.	Tanzania
Dharampal Singh Mand	Zanobia Seeds Ltd.	Tanzania
Chris Ojiewo	The World Vegetable Center	Tanzania
Marilyn Belarmino	The World Vegetable Center	Tanzania
Rose Ubwe	Selian Agricultural Research Institute	Tanzania
Mboyi Mugendi	Selian Agricultural Research Institute	Tanzania
Arnold S. Mselle	CNFA/TAGMARK	Tanzania
Robert M. G. Nyirenda	Nyirefami Ltd.	Tanzania
Gulamabbas E. Sheriff	Tanzania Grain and Seed Processors	Tanzania
Peter Redding	Redding Farmers	Tanzania
Paul M. Wainaina	Hortanzia Ltd.	Tanzania
Harald Peeters	Qsem	Tanzania
Abdus Salam	Bangladesh Rehabilitation Assistance Committee - BRAC Tanzania	Tanzania
Uttam Kumar Barman	Bangladesh Rehabilitation Assistance Committee - BRAC Tanzania	Tanzania
Bakari A. Mrutu	Bangladesh Rehabilitation Assistance Committee - BRAC Tanzania	Tanzania
Felix Jumbe	Seed Trade Association Malawi, Farmers Union and Peacock Enterprises Ltd.	Malawi
Supply Chisi	Seed Trade Association Malawi	Malawi
George James Magai	Woman in Agri-business in Sub Sahara	Malawi

	Africa Alliance	
Francis Maiden	Seed Services Unit	Malawi
Grace Kaudzu	Seed Services Unit	Malawi
Felix M. D. Sichali	International Crop Research Institute for the Semi-Arid Tropics	Malawi
Paul S.C. Chimimba	Monsanto	Malawi
Donald Mavindidze	Monsanto	Malawi
Daniel Dandalo	Monsanto	Malawi
Abiel K.H. Banda	Association of Smallholder Seed Multiplication Action Group	Malawi
Hustone A.K. Banda	Association of Smallholder Seed Multiplication Action Group	Malawi
Nessimu Nyama	Association of Smallholder Seed Multiplication Action Group	Malawi
John Lungu	Seed Co	Malawi
Dellings Phiri	Seed Co	Malawi
Richard Chapweteka	CNFA/RUMARK	Malawi
Godfrey Chapola	CNFA/RUMARK	Malawi
Adamson S. Tong'o	Agricultural Trading Company	Malawi

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