EGERTON UNIVERSITY

TEGEMEO INSTITUTE OF AGRICULTURAL POLICY AND DEVELOPMENT

cabe

Centre for African Bio-Entrepreneurship

PROCEEDINGS OF THE WORKSHOP ON STRENGTHENING SEED SYSTEMS AND MARKET DEVELOPMENT IN KENYA: PERSPECTIVES ON POLITICAL ECONOMY AND POLICY PROCESSES.

JULY 19 - 20, 2022

SAROVA PANAFRIC HOTEL, NAIROBI

LIST OF ACRONYMS

ASTGS	Agriculture Sector Transformation Growth Strategy
AFDB	African Development Bank
ASNET	Agriculture Sector Network
AGRA	Alliance for Green Revolution in Africa
CABE	Centre for African Bio-Entrepreneurship
CGIAR	Consortium of International Agricultural Research Centers
CIP	International Potato Centre
FGDS	Focus Group Discussions
GAPs	Good Agricultural Practices
KCEP	Kenya Cereal Enhancement Programme
KALRO	Kenya Agriculture Research Organization
KEPHIS	Kenya Plant Health Inspectorate Service
KENAFF	Kenya National Farmers Federation
ISSD	Integrated Seed Sector Development
ICIPE	International Centre of Insect Physiology and Ecology
IPM	Integrated Pest Management
IFAD	International Funds for Agriculture Development
IFPRI	International Food Policy Research Institute
MoAL FC	Ministry of Agriculture, Livestock, Fisheries and Cooperatives
NPCK	National Potato Council of Kenya
ODA	Official Development Assistant
PWD	Persons with disabilities
SSA	Seed Security Assessment
STAK	Seed Trade Association of Kenya
TOTs	Trainers of Trainers
USAID	United States Agency for International Development
VPCs	Vegetatively propagated Crops

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EXECUTIVE SUMMARY

Seed systems in sub-Saharan Africa (SSA) are central to wider conversations on policy options for agriculture and rural development. Seed systems are affected by key factors that policymakers and stakeholders must address if the systems are to thrive. Limited support for agricultural research, restrictive regulations, inadequate capacity of regulatory agencies, and weak vertical and horizontal coordination among different key actors are fronted as the leading challenges that undermine the seed systems.

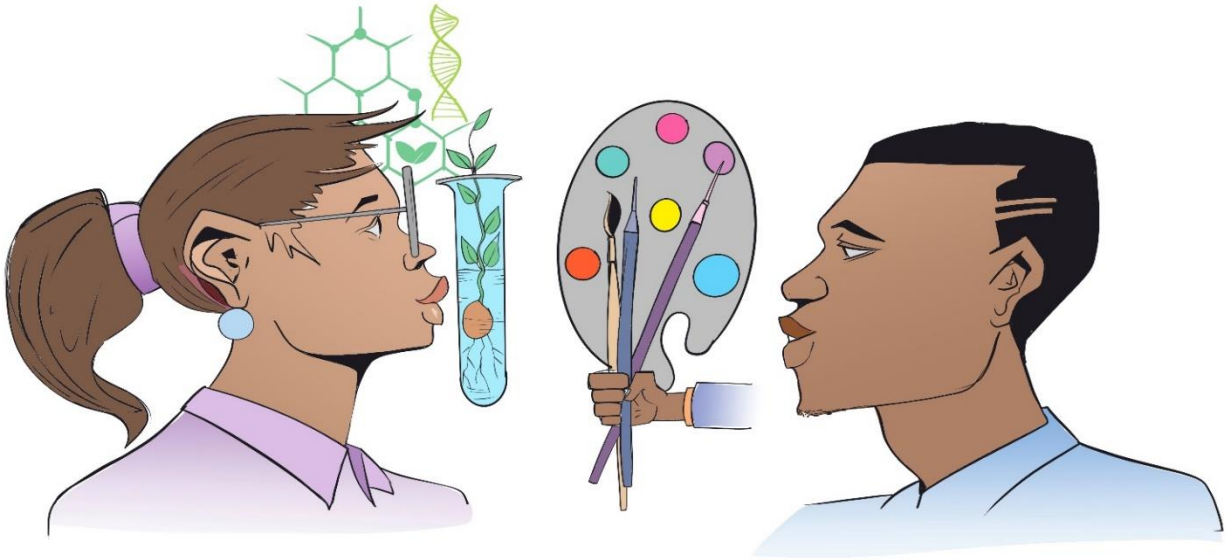
Tegemeo Institute of Agricultural Policy and Development of Egerton University and Centre for African Bio-Entrepreneurship (CABE) in partnership with International Food Policy Research Institute (IFPRI) conducted a study between June and October 2019 to assess the pace and dynamics of policy change and the factors that affect the development of maize and potato seed systems and of markets in Kenya. The study involved a review of key policy, regulatory, and strategy documents relevant to seed system and market development in the country, with a focus on the progress made in strengthening maize and potato seed systems and markets and political economy factors that have influenced policy adoption and outcomes.

Tegemeo Institute and CABE convened a dissemination and validation workshop for the study findings on 19th and 20th July 2022 at the Sarova Panafaric Hotel in Nairobi. Titled “Strengthening seed systems and Market Development in Kenya: Perspectives on political economy and policy processes”, the two-day workshop also provided a platform for discussions amongst various actors representing farmers, public sector, private sector, development partners, NGOs, research institutions and academia that generated insights to support and influence policy for strengthening seed systems and promote market development in Kenya.

The workshop event began with farmers from Meru, Trans-Nzoia and Nyandarua counties sharing their experiences and highlighting challenges farmers face regarding access to seed, other inputs, technologies, finance, extension services and markets. Climate variability and change was highlighted as a significant factor that affects production and which needs interventions that increase farmers’ access to seed varieties that are adapted to the dynamics of local climate conditions as well as water for irrigation. Low market prices continue to expose farmers to losses, dimming their efforts in farming for profit. A farmer from Trans-Nzoia County, reiterated the need for collaboration among key stakeholders to enable farmers to farm for profit and not for loss: “Tuwe tunafanya Kilimo biashara sio Kilimo hasara” – Imelda Wasike, Farmer from Trans Nzoia.

Challenges in market systems call for the unlocking and streamlining value chains, especially for potato, to spur production. This requires a market driven production, exploring contract farming, adoption of cold-storage and value addition technologies as well as reviewing the seed policy and regulatory framework, which currently is weak in addressing the needs of vegetatively propagated crops (VPC).

The workshop brought science and art together to create an influence in the agriculture sector through innovative evidence packaging. The sketches done by a young sketch artist elicited excited responses from participants who applauded innovative story telling of discussions to influence policy.



"Farmers are artists who combine science and nature to put food on the table''. Hannington Odame, CABE

Learning from the Integrated Seed Sector Development (ISSD) in Ethiopia, Kenya needs to move towards a middle ground as pertains to formal and informal seed sector. The discussions from the workshop rallied around providing solutions to key challenges identified during the study and validated by workshop participants. Stakeholders committed to effecting changes and realizing proposed solutions through the following recommendations:

i. Revise legislations on seed, including the Seed Policy 2010 and the Seed and Plants Varieties Act, to align them with the devolved system of governance, increase efficiency of varietal release and turnover, and create room for farmer-driven seed systems especially for the VPCs.

ii. Advocate for increased budgetary allocation to agriculture to address issues affecting production, including access to affordable inputs, technologies and extension services.

iii. Promote innovative solutions to improve access to inputs and extension services. These include, for example, farmer collective action through farmer organizations, leveraging digital technologies for e-extension, facilitating peer to peer learning and output market structuring.

iv. Build the capacity of regulators, research and extension staff, seed variety developers, and the informal seed system actors. There is need to recognize the role of and formalize the informal seed system and explore ways through which stakeholders such as women, youth and other marginalized groups can take advantage of opportunities along the seed value chains.

v. Connect and leverage data and digital technology (e.g., the e-voucher program), art and culture to develop seed value chains, innovatively package evidence and increase uptake to unlock opportunities in financing, markets and research and development for strengthened seed systems.

Key actors committed to work together to develop a regulatory framework for VPCs that is currently lacking. Participants also committed to continue the conversation post-workshop and to collectively work towards a self-sustaining seed sector that will unlock productivity and take advantages of opportunities presented by Kenya's development strategies and the African Continental Free Trade Area (AfCFTA).

BACKGROUND

Seed systems in Africa south of the Sahara have been a central topic in the public discourse as part of wider conversations on policy options for agriculture and rural development. Although seed systems in the region have followed different development trajectories, they do seem to be affected by political economy, farming system, agro ecological, and market development factors that policymakers and stakeholders must address if the systems are to thrive. Political economy issues appear to shape the debate, including limited support for agricultural research, restrictive regulations and inadequate capacity of regulatory agencies, and weak vertical and horizontal coordination among different key actors.

Tegemeo Institute of Agricultural Policy and Development of Egerton University and Centre for African Bio-Entrepreneurship (CABE) in partnership with International Food Policy Research Institute (IFPRI) conducted a study between June and October 2019 to assess the pace and dynamics of policy change and the factors that affect the development of maize and potato seed systems and of markets in Kenya. The study involved a review of key policy, regulatory, and strategy documents relevant to seed system and market development in the country, with a focus on the progress made in strengthening maize and potato seed systems and markets and political economy factors that have influenced policy adoption and outcomes. The review was augmented with information from key informant interviews and focus group discussions with a wide range of actors in the respective seed systems. Findings of the study suggest that Kenya's devolution process and the Jubilee government's Big Four Agenda—alongside political economy factors related to agricultural extension, seed regulations, and public financing—have had and continue to have a considerable effect on the seed systems and markets for maize and potato, potentially enabling and constraining progress on several fronts.

Prioritization of maize by ASTGS and the Big Four Agenda presents an opportunity for maize seed market expansion through demand creation. The focus of the ASTGS and Big Four Agenda on enhancing marketing and storage for grains, area expansion, irrigation, and fertilizer use should both directly and indirectly create demand for seed. However, it would require proper planning and coordination to ensure a supply of seed to meet the potential demand. That calls for greater coordination between the national government (the initiator of the agenda), counties (implementation level of agricultural initiatives), and seed producers and distributors. It would also require strong research–extension–farmer linkage for research and technology to respond to farmers' needs and contribute to increased farmer-adoption of many maize seed varieties being produced by research.

Similarly, prioritizing the potato value chain and emphasizing seed multiplication/ distribution in both the Big Four Agenda and ASTGS should give a big boost to the development of the potato seed system, given the political context of the agenda. But weak coordination between the national and county governments and a lack of transparency in allocation of resources to counties for implementation of the agenda's initiatives may hinder implementation. The scarcity of certified potato seed in the country, lengthy process of seed production and multiplication, and bilateral negotiations between the Kenya and foreign governments all have contributed to allowing importation of basic seed for multiplication and germplasm for production of basic and subsequent classes of seeds. However, there has emerged a contest between domestic and foreign seed and the existence of vast market opportunities in the local potato seed system.

Opposition has emerged regarding importation of foreign potato varieties for multiplication locally. The actors that oppose the idea cite pests and diseases and problems with quality given the different agroecology's in Kenya and Europe, while those that support the idea view the contrary arguments as restricting business. These stances indicate both a contest between domestic and foreign seed and the existence of vast market opportunities in the local potato seed system.

WORKSHOP OBJECTIVES, EXPECTED OUTCOMES AND PARTICIPANTS

2.1 Objectives of the convening

The workshop sought to:

- Disseminate the findings of the research
- Validate the findings of the research
- Provide a platform for the stakeholders to engage in conversations that generate insights to support and influence policy for strengthening seed systems and promoting market development in Kenya.

2.2 Expected outcomes

The following were the expected outcomes of the convening:

- Findings of the research shared with and validated by a diverse group of stakeholders in the maize and potato seed systems in Kenya.
- Insights for supporting and influencing policy for strengthening seed systems and promoting market development in Kenya generated and shared with various stakeholders.
- A platform/mechanism for continued seed systems stakeholders' interaction and engagement mutually agreed upon.

2.3 Workshop participants

The event brought on board over sixty participants drawn from the national and county government, parastatals, research and development organizations, farmer organizations, industry associations, development partners, seed companies, and the private sector as indicated in the list of participants in Annex 1 of this report.

PRELIMINARY REMARKS

3.1 Farmer experiences

The workshop opened with remarks from three farmers drawn from Meru, Trans-Nzoia and Nyandarua counties. The farmers shared their experiences and set the stage for discussions around strengthening seed systems in Kenya.

Ephantus Kiome, farmer from Meru County

"I have over 20 years' experience in potato farming. Despite being a farmer for the several years, I continue to face a range of challenges including access to certified seeds for potato, high cost of seed, and unreliable rainfall. Various organizations have provided support to the seed subsector, most notably the International Potato Centre (CIP) which has helped a great deal in addressing some of the challenges. Initially I relied on using farm-saved potato seeds but the production level was significantly low. Because of the low production, I had to try the certified seeds from approved seed merchants and the difference in the production was very evident. In the potato farming business, simple mistakes such as using wrong seed can result in major losses. Despite the high cost of certified seeds, i.e., Generation 2 costing Ksh2750 per 50 kg bag and basic seed costing Kshs3000-3500 per 50kg bag, which translates to about Ksh's 54,000 per acre, the returns to production under good agricultural practices can significantly surpass the cost of production and provide profit to potato farmer. I would like to call on key actors to work towards mitigating the following challenges in potato production:

i. *Erratic rainfall and unreliable climate variability. The National Irrigation Board (NIB) can provide interventions to address this challenge.*

ii. *High cost of transportation, which impacts the market price of inputs including certified seeds and fertilizer. Addressing this challenge requires collaboration amongst players and aggregation by farmers.*

iii. *Access to finance. Financiers should come in to enable farmers get farm inputs including seeds and fertilizers in good time.*

iv. *Availability of seed. There is need to explore advancement in the new seed multiplication technologies including such as apical root cuttings.*

There is also need to improve online trade platforms like viazi soko for easy input access, and access to seed and specific varieties in good time."

Imelda Naliaka, maize farmer from Trans Nzoia County

"I have 25 years of experience in maize farming. I started as a subsistence farmer with little knowledge about the crop and how it can be cultivated for better yields. The Ministry of Agriculture and other organizations, most notably CGIAR, have been instrumental in transforming my maize yield by ensuring that I plant the right maize varieties, e.g., variety 6213, which is a proven variety suitable for Trans-Nzoia. Some areas that still require intervention for better maize subsector include assessing soil prior to planting to allow farmers understand the soil health status and to know the right inputs, such as fertilizer type, to use. Also, farmers should be informed on the right seed varieties to plant depending on the soil type and the agro-ecological conditions. New technologies such as the push and pull from ICIPE can help farmers like me in pest management. Maize seed companies should also ensure seed availability in good time. Agro-dealers need to be regulated to ensure a reliable and sustained seed sector. Low market prices pose a challenge for us farmers resulting in losses".

"There is need for collaboration to deal with these issues so that farmers can take part in profitable agribusiness - 'Tuwe tunafanya Kilimo biashara sio kilimo hasara' (We want to farm for business and profit and not for loss)." Imelda Naliaka, Farmer.

Rosemary Wanjiru – Nyandarua County

"I would like to thank the various actors who continue to empower potato farmers in Nyandarua County through knowledge dissemination, soil testing, new variety development, supportive projects and input provision. Special recognition to the German Development Agency (GIZ) and the National Potato Council of Kenya (NPCK). Some of the serious challenges I have encountered so far are related to marketing, specifically inadequate market for potato produces as well as disconnect between the potato varieties produced versus the varieties demanded by the market. The regulations about potato packaging (50kg standard weight) have made farmers loose buyers as most traders feel the weight is inadequate. Storage facilities for both potato seed and ware potato are not enough in the county. Processors who buy potato are also not enough. Some possible mechanisms that could be put in place to improve the potato seed sector and marketing include:

i. Exploring contract farming to bridge the gap between demand and supply. This will ensure farmers have reliable market for their produce.

ii. There is need for farmers to be informed and shift their production to be market driven (i.e., farmers should be trained to plant other potato varieties and not the Shangi variety alone).

iii. Potato storage facilities should be established to help in the storage of both potato seeds and ware potato.

iv. There is need for technologies that prolong the shelf lives of potato, either through processing or other value addition mechanisms.

v. Farmer organizations through cooperatives need to be championed to unlock access to markets and inputs."

"Market system for potato in Nyandarua county is comparable to a Big elephant in a room,"
Rosemary Wanjiru, Farmer

"There is need to unlock and streamline market systems to enhance the potential of potato production in Nyandarua county,"
Rosemary Wanjiru, Farmer

3.2 Remarks by the organizing committee and partners.

Remarks by Wachira Kaguongo, NPCK

In his introductory speech to the workshop delegates, Wachira Kaguongo, CEO, NPCK recognized that there have been major milestones in the potato industry in Kenya. "It is true that subsector players from different countries learn from one another and share knowledge pertaining to the betterment of potato subsector. The NPCK mainly works to advocate and lobby for supportive policy and sustained potato subsector which has been made possible through partnership with relevant stakeholders," he continued. He appreciated institutions such as the Kenya Plant Health Inspectorate Service (KEPHIS) and CIP for introducing new potato varieties and technologies to expand farmers' production capacity. He also acknowledged government efforts through subsidy programs, and organizations such as IFAD which have helped transform the potato subsector, especially through providing support to smallholder potato farmers. Building on the farmer experiences shared, he highlighted some of the key issues that need to be addressed as follows:

i. The need to increase access to finance by farmers to allow them access certified potato seed

ii. The need for interventions to unlock new markets for high yielding potato varieties,

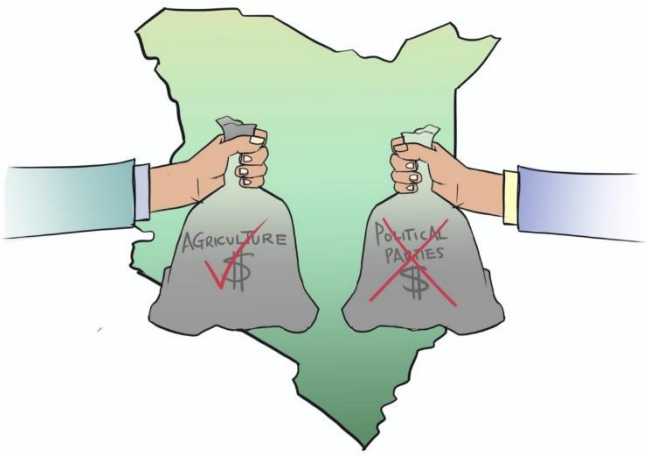
iii. Actualize contract farming through partnerships to unlock new frontiers

iv. Leveraged digital platforms should be supplemented with collective input sourcing and marketing

v. Access to cold storage and the need for organization of farmers into groups for aggregation,

vi. The need to continue advocating for increased public budgetary allocation to agriculture both by the national and county governments.

vii. The need for deliberate efforts to support farmers' access to input.



"Planning is key in all aspects of production and marketing-even in organized production such as contract farming,"

Wachira Kaguongo, NPCK

"If we can allocate budget/money to political parties, then we can definitely allocate more money to agriculture,"

Wachira Kaguongo, NPCK

Remarks by David Ombalo, MoALFC

David Ombalo, the Principal Agricultural Officer at the Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALFC) who represented the Director of Policy at the State Department of Crops Development and Agricultural Research, acknowledged that the challenges farmers experience along the value chain are complex and interconnected. “The national and county governments take the lead in aligning efforts made by various actors to bring economic change and ensure that farmers safeguard food security. One of the key interventions is to ensure farmers’ access to quality seed. Liberalization of the seed sector through the National Seed Policy of 2010 was a major step in opening the market to spur development in the seed value chain. This has resulted in competitive seed systems at the macro and micro level. Collaboration and synergized efforts from all stakeholders are required to provide an enabling environment and support systems to fast track needed changes in the seed systems. The key issues identified in this workshop will inform policy and actions towards creating that environment and support systems.”

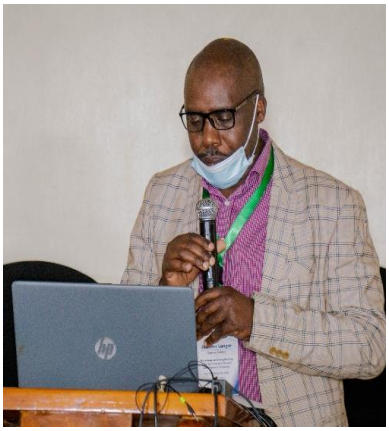
Remarks by Hannington Odame, CABE

Hannington Odame, the executive director of CABE welcomed the delegates to the workshop and appreciated farmers for taking centre stage in transforming the agricultural sector. He mentioned that the efforts towards strengthening seed systems have been an interesting journey for CABE, a capacity building organization. "This journey began with an invite by IFPRI to discuss issues of political economy in 2018 in Accra, Ghana with the main agenda being concerting efforts by all players in agriculture to ensure food security and job creation for the youth."

"The testimony by our farmers in attendance to this workshop has set the foundation for further discussions by the various actors present to come up with possible solutions to the challenges in Kenya's seed systems and markets. This workshop also brings science and art together to create an influence in the sector through innovative evidence packaging. Farmers are artists who combine science and nature to put food on the table. There is therefore need to sustain farmer voices even after the 2022 election campaigns."

"There is need to sustain farmers voices not just during the political campaign period but even after the 2022 election campaigns." Hannington Odame, CABE

Remarks by Jackson Langat, Tegemeo Institute



Jackson Langat introduced the audience to the work of Tegemeo Institute, a co-convener of the workshop, and outlined the workshop objectives. "*Tegemeo Institute is a policy research institute of Egerton University under the Division of Research and Extension. The Institute's main focus is on agricultural policy and development. Its key thematic areas include Monitoring & tracking of indicators at various levels in Kenya's agriculture; policy research in the agricultural sector; Outreach and advocacy, which includes collaboration with other institutions to disseminate research findings to inform policy and development decisions by various stakeholders in the agriculture and development space; and Capacity Building in both public and private sector. In its activities around these themes, Tegemeo's aims are to promote rural incomes and food security among other welfare aspects of farmers and provide empirical evidence to drive conversations among researchers, policy makers, development partners, private sector and other stakeholders that promote growth in the economy*."

He emphasized that one of the workshop's objectives is to disseminate findings of the research by Tegemeo and CABE on strengthening seed systems and allow actors, including farmers, to discuss and validate the findings of the research. He added that the event will provide a platform for the stakeholders to generate and provide insights that strengthen seed systems and market development in Kenya. "*The conversations at this workshop will go on post workshop and continue to shape the seed value chain in Kenya*", Jackson Langat, Tegemeo Institute.

"The conversations at this workshop will persist post-workshop and continue to shape the seed value chain in Kenya." Jackson Langat, Tegemeo Institute.

Remarks by Bockline Bebe, Deputy Vice-Chancellor, Research and Extension, Egerton University.

As the Deputy Vice-Chancellor (DVC), Research and Extension, Egerton University, Bockline Bebe reiterated his commitment to continue to support research, achieve set outcomes and translate findings to targeted messages for those who need to use it. He outlined that through the workshop, participants would determine whether the evidence generated can be translated into action. In this regard, he raised three pertinent questions for participants to address during the workshop:

i. How can farmers access appropriate and affordable seeds at the right time?

ii. How can the workshop participants influence more resource allocation to agriculture?

iii. Can the research evidence generated promote access to improved seed for our farmers?

"*At the tail end of this workshop, our focus is an enhanced and strengthened domestic seed systems and market development in potato and maize value chain. Seed systems are important in the agricultural sector as it determines productivity, and translates to food and nutrition security, resilience to climate change and fosters economic development of our country*."

He urged the stakeholders represented in the workshop to discuss how the evidence presented:

i. Will support a vibrant and holistic seed system.

ii. Will provide access to quality and affordable seeds at the appropriate time by farmers.

iii. Will facilitate development of seed varieties that respond to climate change needs.

iv. Can strengthen public and private functions that shape seed systems in the country.

v. Can address the institutional bottlenecks that prevail?

3.3 Keynote address

Keynote address by Dr. Francis Owino, Principal Secretary, State Department for Crop Development and Agricultural Research, MoALFC

In the speech read on his behalf by Naomi Kamau, the PS expressed his delight at the timely and important convening on strengthening seed systems and market development in Kenya. He recognized the objectives of the convening as being very vital to bringing a shift in the agricultural sector at large.

"Agriculture is a key sector in driving growth and development of the Kenyan economy. The sector, which directly contributes about 23% of the country's GDP, is the main source of income and livelihoods in rural areas and the major foreign exchange earner to the country. Agricultural inputs; namely fertilizers, agrochemicals and seed are critical in ensuring that agriculture remains and sustains a growth path that enables the sector to address national food security needs.
The Government of Kenya recognizes this and has prioritized the development of a vibrant and competitive seed system in ensuring a developed agricultural sector and the realization of the production targets outlined in the national policy documents such as the Agricultural Policy and the Agricultural Sector Transformation and Growth Strategy (ASTGS), which emphasizes increased productivity for various commodity value chains." "Achieving this goal will only be possible through the country having a vibrant and competitive seed system that integrates local initiatives that assure timely supply of adequate quality seed."

The government, he confirmed, appreciates the significant steps that have been made to foster an enabling environment that facilitates the realization of a vibrant seed system. Some of the government initiatives towards this include:

1. The development of the National Seed Policy which was launched in 2010 and continues to guide the seed sub sector reforms to date; and

2. Targeted seed development programmes and initiatives that address commodity specific seed reform programmes, e.g., targeting potato, tea, coffee, and avocado, among others.

Some of the notable achievements from the above reforms include:

1. Improved access to publicly produced hybrid varieties and early generation seed and exchange of germplasm especially from KARLO;

2. Improvement in import and export processes of certified seed;

3. Introduction of seed security labels, which have controlled counterfeiting of certified seed;

4. Authorization of private seed inspectors and analysts that has reduced time taken for seed certification; and

5. Greater collaboration and partnership between the public and private players in the industry. For instance, the industry regulator and the Seed Traders Association of Kenya (STAK) have continued to work together to address emerging challenges in the seed subsector.

"Despite these reforms, the seed industry still faces a number of challenges leading to low production. For example, the average yield of maize in Kenya remains low at less than 2 tons per hectare, which is significantly lower than the average production level in other countries within COMESA region; such as Ethiopia whose average production is about 4 tons per hectare and Egypt with 7.6 tons per hectare.

Some of the seed sector challenges include:

1. *Inadequacy of foundation seed for non-maize crops like beans, cowpea, and sorghum. Seed companies, especially the local seed companies, still face challenges accessing basic seeds from the national breeding programs;*

2. *Inadequacy of suitable maize varieties, especially for marginal and low rainfall areas;*

3. *Inadequate production of certain categories of seed, e.g., for vegetables, legumes such as beans, and potatoes;*

4. *Long procedure for and high cost of variety release process, compared to the process in other countries within Africa that have relatively advanced seed systems;*

5. *Climate change related impacts that have redefined sustainability of agricultural production systems and seed development; and*

6. *Weak extension system to support adoption of recommended agronomic practices.*

I urge the participants of this workshop to interrogate the findings presented during the event with a view of teasing out and providing insights that may influence policy for improving seed systems and promoting market development in Kenya."

The PS recommended policy direction for growing the seed industry and affirmed the relevance of the workshop's objectives to helping establish a lasting relationship among participating institutions and providing a mechanism for continued interaction on matters of seed among various stakeholders. The PS concluded by officially declaring the workshop opened.

SESSION I: Foundational panel discussion on seed systems in Kenya

Moderator: Daniel Gichuhi

Discussants: Wachira Kaguongo, National Potato Council of Kenya (NPCK); Mary Nzomo, CEC Agriculture, Trans-Nzoia County; Mary Wambui, Seed Savers Network (SSN)

Summary of discussions

The reality was that price of potato seed has continued to be high in Kenya and thus there is a need to support seed producers through policy and actions. The government and private initiatives have increased the proportion of seed producers to about 7-10% among farmers. To strengthen the seed sector, there is need to:

- Work with financial institutions and insurance providers to cushion farmers from the impacts of climate change;
- Bring on board players such as the National Irrigation Authority (NIA) to address issues around water availability in potato seed production;
- Invest in apical cutting technologies, which can increase access to high quality seed at affordable prices. Subsidies and other input programs by actors such as IFAD are key;
- Decentralize seed systems to increase access. Travel costs and the perishability of seeds make access to seed, especially potato seed, restricted.
- Reduce marketing and transaction costs in seed. Farmer organizations for collective procurement of seed and other initiatives may be helpful.

Access to seed continues to be a challenge despite agriculture being a devolved function whereby county governments are expected to play a significant role in offering extension services and ensuring access to inputs. Availability of seed, for example maize seed, is not a problem, but getting the seed of choice is the problem. The varieties that farmers are used to planting may not be appropriate in the context of climate change. Therefore, varietal release needs to keep up with changing times. Changing weather patterns, for instance, have resulted in early onset of “short rains” season and this has increased post-harvest losses for “long rains” season crop in some areas such as Trans Nzoia. This calls for maize varieties that mature faster for such areas.

Research and innovation by seed companies in collaboration with farmers should be promoted to produce varieties adapted to the changing climate. Having National Performance Trials (NPT) and inviting farmers to these trials can provide a good forum for farmers to learn/demonstrate best practices and best technologies. There is need to bring back farmer field days and bring together seed producers for knowledge transfer and sensitization on what varieties are appropriate based on climate and soil conditions.

As county governments continue to spearhead reforms in the seed subsector, there is need to revise the 2010 National Seed Policy to align it to devolution to address the gaps that exist.

The recently formed Potato Taskforce by the Cabinet Secretary in the MoALF&C is an 18-member committee representing key institutions that can inform improvement in areas where the NPCK has been lobbying. The taskforce will identify challenges and provide policy recommendations to the MoALF&C to address them in

the entire potato value chain. The taskforce seeks to incorporate lessons from other countries whose systems work better.

What efforts have been put in place to ensure that varieties released counter impacts of climate change?

- Farmers have a tendency of going for familiar varieties. However, counties do technology validation through trials to tell what is adapting best in a region. Some counties do extensive subsidy on proven seeds after trials to promote adoption. Participatory learning through open field days in collaboration with farmers and using model farms enable extension officers to know which varieties work best. Awareness creation is critical to inform farmers about what varieties to choose from.

- There is need to hasten/shorten the process of varietal release in Kenya as this will enable the varietal release to meet the demand for seed (This was part of the green revolution in India). There is also a need to work with research institutions and seed producers to address emerging pests and diseases, in the context of climate change, in the development of varieties.

- The seed exchange policy should also be revised to foster coexistence of farmer driven seed systems as well as commercially driven seed systems. Encouraging farmer organizations is case in point. The Seed Savers Network (SSN) brings together more than 3000 farmers to share and appropriate indigenous knowledge and technologies to avoid loss of indigenous crops and achieve seed sovereignty. The SSN checks on nutritional aspects, taste, flavor among other determinants that inform focus for farmer driven seed systems. The SSN is open to collaborating with research organizations to improve indigenous seed varieties, but after the documentation phase with farmers to promote ownerships. Farmer driven seed systems are impacted by policy systems in place and so the National Seed Policy should be revised to accommodate farmer driven seed system.

- Leveraging technology to automate systems and provide digital platforms to support farmers is key. In addition, is important to intensify conversations around genetic engineering and modification. There is a lot of ongoing research in BT maize, BT cotton and BT cassava but these are yet to be available to the farmer.

SESSION II: Strengthening seed systems and market development in Kenya: Perspectives on political economy and policy processes

Moderator: Anna Wamache

Presenters: Hannington Odame and John Olwande

Background

Seed systems are central to agricultural development and rural development. Several factors affect seed systems in diverse ways - the politics of seed systems, farming systems and agro ecology among others. The report stressed on the need to focus on the gaps that can help chart a way forward. The main objective of the study was to identify key political economy issues and how these affect key stakeholders, most especially the farmers. The study reached 96 respondents through KIIs and FGDs. The respondents represented various key stakeholders in Kenya's seed sector, including agro dealers, seed producers, farmers, policy makers, researchers, seed traders, policy makers, and extension officers.

The report identified research extension and financing, the ASTGS, Big Four Agenda and policies and regulations among the key political economy issues in the maize and potato seed systems.

Maize

Maize occupies 56% of the cultivated land, grown by 98% of small holder farmers and supply 65% of calories required. Maize has received a lot of attention both from government and development partners. The progress made in the maize seed system is tremendous, including having 375 seed varieties released, most of which were released in the last two decades. However, the main challenge in the maize seed system is low varietal turnover on farms as farmers continue to hold on to only a few familiar varieties; only 21% of the total varieties released have been commercialized.

Significant policy moments in the history of Maize in Kenya

1963: Only Kenya seed Company had the mandate to produce seed for pasture and consumption.

1996: Seed industry liberalized and 16 companies entered the industry, 15 of which were privately owned.

2010: National Seed Policy enacted in conformity with liberalized seed industry.

2012: The Seeds and Plant Varieties Act (CAP 326) was revised. KEPHIS was authorized to register private seed inspectors. The scope of breeders right expanded to recognize their role on seed maintenance. 2013: Decentralized system of governance adopted. Devolution has allowed counties to identify problems and local solutions, for example, soil testing for tailored fertilizer recommendations have been conducted by in Trans Nzoia County while Bungoma County government is providing soil testing services to farmers there (at a fee).

Pertinent issues and proposed interventions for consideration

Despite the Big 4 Agenda and ASTGS prioritizing maize and potato, storage & marketing continues to be a challenge despite key innovations such as warehouse receipt system. Interventions in the following key areas would enhance demand for seeds:

- Extension advisory services - Counties need to strengthen public extension service provision. Exposing farmers to available seed varieties and agronomic practices through demonstrations and sensitization activities and strengthening research and extension linkages are needed.

- Bridging the mismatch between what varieties are available and what farmers prefer. This will address the issue of low varietal turnover.

- Digitization and financing are key in transforming the seed sector.

- Shrinking farm sizes has made it increasingly difficult to produce maize seed because of the requirement for isolation distance. Investments in irrigation for seed production and moving to areas with large tracts of land, e.g., around Baringo and Pekerra, can help mitigate the challenge of shrinking farm sizes and isolation spaces critical in the production of maize seed. There is also a need to incentivize farm owners with large tracts of land who are currently engaged in maize seed production to continue doing so. This is important to reverse the emerging trend where maize seed producers in Trans Nzoia County are shifting land from maize seed production to sugarcane production.

Potato

Potato is an important crop in agricultural sector and for Kenya's food security. It is one prioritized crop for reaching the 100% food and nutrition security goals specified in the Big 4 Agenda and ASTGS.

History of the potato seed system

Varietal research, breeding and production began in Kenya in 1903 with varieties obtained mainly from Western Europe. In 1967 potato development program was formed. Between 1986-1997, there was a collaboration between KALRO and CIP in varietal development mainly to address disease pressure in potato. That collaboration resulted in development of new varieties, e.g., Kenya Furaha and Asante initially, and later other varieties including Shangi which is the most widely grown.

By 2019, there were 66 potato varieties released in Kenya out of which 55 were released between 2010 and 2019.

Key policy moments

1903: Varietal research, breeding, and production began. The varieties released were initially obtained from Western Europe.

1967: Establishment of potato development program to address disease pressure on potato varieties. Research facilities were established in the main potato-growing areas to produce breeder seed locally for further multiplication — Kiambu (at Limuru), Nyandarua (at Njambini), Nakuru (at Molo), and Meru (at Marimba).

1986 – 1997: Collaboration between KARI (now KALRO) and CIP in adaptive breeding to develop varieties that could resist late blight, tolerate bacterial wilt, and have acceptable agronomic and postharvest qualities. Three varieties were initially released: Tigoni 1, Kenya Furaha and Asante

Continued collaboration between KALRO and CIP have led to release of other varieties, including Shangi, which is most popular variety among famers. There are currently 15 registered potato seed merchants dealing in certified potato seed production

Political economy issues

Potato has been prioritized for food security reasons in Kenya's ASTGS and Big Four Agenda and in some counties' development plans, e.g., Nyandarua and Meru. The quest to increase potato production has increased the demand for certified potato seeds, as both the national and county governments, e.g., Bungoma, Nyandarua and Meru, directly procure potato seed form producers to distribute to farmers. However, the following challenges hamper the development of the potato seed system:

- Weak coordination between the national and county governments in the procurement and distribution of certified potato seed to farmers.
- Limited supply of land to produce potato seed.
- Limited technical capacity of potential producers about potato seed production.
- Lack of appropriate storage facilities for potato tubers and ware.
- Controversies regarding importation of potato seed varieties for multiplication locally.
- Concerns about restrictive regulations for seed quality control.
- Mandatory certification for potato seed is regarded by many stakeholders as unrealistic because the potato seed system in Kenya is less developed and disease pressure is a widespread problem. Some stakeholders have thus proposed legislation for quality declared seed (QDS), to also cover other vegetatively propagated crops (VPCs).
- Lack of enough capacity for seed inspection, i.e., inadequate number of seed inspectors.
- Public financing to the agriculture sector is low, which has led to high reliance on external funding for research and extension, including varietal research.

Proposed interventions

- Need for adequate and coordinated planning in programs for seed provision and of extension service delivery.
- Given that agriculture functions are devolved, there is need for county governments to strengthen mechanisms for identifying problems and their solutions in the agricultural sector in general and specifically seed systems in their counties.
- There is need for stakeholders to champion and lobby for increased public funding to agriculture, both at the national and county governments levels.
- Develop a policy guide for seed systems of VPCs. The current National Seed Policy does not adequately address the needs of VPCs.

  Development and adoption of new technologies are key in adaptation to climate change and continuing production of potato seed. There is also need to leverage technology and innovation to promote proper storage and undertake value addition of potato.
- Restrictive trade practices make it important to focus on localized solutions and reduce reliance on imports, which usually is uncertain.

Breakout sessions (Summary of discussions)

Theme: Access to Inputs

Critical issues in production and utilization of quality seeds and complementary inputs in maize and potato include:

- Prohibitive cost of seed and complementary inputs, especially for small scale farmers. The cost of seed multiplication is high, partly because of scarcity of land and attendant high cost of leasing land for seed production. This negatively impacts availability, accessibility and affordability of seeds.

- Limited knowledge about new seed varieties. Majority of farmers tend to hold on to old varieties because often they are unaware about existence of new varieties. This happens mainly because of inadequate extension services that would help create farmers' awareness about new varieties and where to get them. In addition, farmers often have to buy only what local agro-dealers stock, and agro-dealers may not be confident to stock new varieties for which they are not certain about their demand.

- Lack of market for certain varieties stymie adoption of those varieties. For example, the popularity of the Shangi variety for potato over other varieties is because of the large market demand for Shangi ware potato, even though Shangi is a lower yielding variety compared to other varieties.

Proposed solutions to improve access to inputs

- Advocating for more funding to the agricultural sector to address areas that are affecting production, especially research and extension service delivery.

- Supporting farmer aggregation, e.g., through cooperatives, for bulk purchase of inputs, including seeds, to reduce input distribution and purchase costs.

- Leveraging on ICT and social media for extension service delivery, to promote farmers' awareness and access to necessary information about seed varieties.

Theme: Access to extension

Key issues affecting extension service delivery:

- Low budgetary allocation to agricultural sector both by the national and county governments.

- Inadequate information about available extension advisory services to farmers.

- Low number of extension officers in almost all counties.

Proposed solutions to improve access to extension services

- Digitization of extension services. For example, adopting the farmer field schools (FFS) and Shamba shape up models of offline and e-extension.

- Lobbying for increased public budgetary allocations to extension service delivery. For example, models such as NPCK's viazi soko an online platform that provides information to potato farmers,

could targeted for funding to increase their reach to a broad base of farmers e-extension messages. Increased budgetary allocation will also allow the available extension officers to have adequate facilitation to reach farmers.

Theme: Access to markets for seed and agricultural output

Key issues affecting farmer demand for and purchase and use of quality seed for maize and potato

- Inadequate targeted production for a particular market, i.e., majority of farmers are not commercially oriented.
- Slow rate of farmers' uptake of new varieties. While some farmers sometimes may be ready to experiment with new varieties, availability of the varieties at local agro-dealer shops at the appropriate time is a hindrance.

Proposed solutions to increase access to markets

- Promoting development and adoption of structured markets, e.g., farmers producing and selling under contract (contract farming). Structured markets should be promoted alongside efforts towards efficient extension service delivery.
- Zoning of agricultural production areas so that farmers know the appropriate crop varieties suitable for their area.

Roles of various stakeholders

- Farmers are key for developing markets; they provide a market for seed and are the supplies of output markets. They thus need support to fulfil these important functions.
- National and County governments have the responsibility of ensuring an enabling environment through supportive policies and regulations.
- The private sector plays a key role in commerce and technology and information generation and dissemination to the masses. They also have a role to play in provision of extension services to farmers.

There is need to mainstream agriculture and issues around it into our education curriculum for posterity and sustainability. Need to involve stakeholders in curriculum development to ensure education meets industry and market needs. (i.e., Market responsive curriculum.)

SESSION III: Policy and regulatory spaces for strengthening maize and potato seed systems and market development in Kenya.

The choice of seed variety is critical in enhancing food security and income generation. There are over 200 seed companies registered in Kenya, 75 of which are actively involved in production. Fifteen (15) of these specialize in potato seed production. The seed industry is very dynamic and there is need to ensure the policy and regulatory frameworks respond to these changes. The seed and plant varieties Act Cap 326 presents guidelines for the formal seed sector. There is need for guidelines to govern the informal seed sector as well.

The National Seed Policy 2010 is the policy framework for the seed industry which outlines interventions for ensuring high quality seed to meet the country's farming and forestry needs. The National Seed Policy has six main objectives:

1. To exploit the potential of improved varieties
2. To facilitate regulation, coordination and activities in the seed sub sector
3. To build capacity and infrastructure to handle research and development. (Do we have research priorities in Kenya, quality control, technology transfer?)
4. To create an enabling environment through legal and policy reforms
5. To harmonize regional policies and regulations for seed border trade
6. To monitor the supply and regulation of seed.

It proposes a range of policy interventions for strengthening seed systems and market development in Kenya, including:

1. Financial support to research, extension, variety development, technology transfer by private and public sectors
2. Review legislations to increase efficiency of variety releases processes. One of the interventions that is urgently needed here is a review of Seed and Plants Varieties Act and Seed Regulations to accommodate the devolution of agriculture functions.
3. Harmonize and review laws and regulations governing seed subsector to facilitate self-regulation and conform to changes in liberalized seed system.
4. Build capacity for informal seed sector to transform it to the formal sector – partially addressed
5. Strengthen the regulator to ensure farmers are availed good quality seed.
6. Invest in surveillance for quality control.
7. Review of the law to introduce stiffer penalties to those who counterfeit seed and compensation of aggrieved parties.

SWOT analysis of maize seed system	
Strengths ▪ Many seed companies provide wide seed market options for farmers. ▪ Seed can be stored for long periods under good storage conditions ▪ Elaborate breeding programmes have developed many improved varieties with high yield potential and other attributes. ▪ Emerging climate smart/ tolerant varieties.	**Weaknesses** ▪ Low adoption rate of new varieties. This is due in part to lack of farmers' awareness of the new varieties. ▪ Seed production requires large tracks of land, which is becoming increasingly unavailable in Kenya. This has made some seed companies in Kenya to produce seed in countries such as Tanzania and Zambia where land is relatively abundant and cheaper to lease. ▪ Seed inspection is a rigorous and time-consuming process. ▪ Hybrid seed production is labour intensive, making production cost high. ▪ Presence of adulterated seeds in the market ▪ Inadequate affordable credit for seed producers ▪ Lack of strategic seed reserves
Opportunities ▪ There are maize varieties for the varied agro ecological zones of Kenya ▪ Dense network of agro dealers. Agro-dealers can be capacity built to provide information about seed to farmers ▪ Maize can be cultivated for silage making, which can translate into increased demand for seed. ▪ Authorization of seed services	**Threats** ▪ Emerging pests and diseases in maize ▪ Low profitability of maize farming, specifically in smallholdings ▪ Open pollinated varieties can lead to reduction of seed quality of the next generation

Proposed interventions for the maize seed system

- Awareness creation for farmers about new seed varieties and capacity building of agro-dealers and seed inspectors.
- Need to identify new areas for seed production, including investment in irrigation for seed production.

Increase the number of seed inspectors and where applicable there should be private inspectors as well.

SWOT analysis of potato seed system	
Strengths ▪ Potential for increasing yield with GAPs (& irrigation where applicable) ▪ Availability if shorter maturing varieties ▪ Clear procedures	**Weaknesses** ▪ High risk of disease and pest spread. (Can we have rotation programmes in pest free areas of seed production?) ▪ Tubers are bulky and therefore more costly to transport.

	▪ High perishability of potato seed and the ware – this calls for more cold storage facilities. ▪ Need for intensive care in seed production due to sensitivity to diseases and pests. ▪ Cost of seed is quite high and generally not affordable for most small-scale famers. ▪ Availability of certified seed is still low; less than 5% of potato seed.
Opportunities ▪ Increased demand for potato ware for processing. ▪ Increasing of contract farming ▪ Availability of varieties for diverse uses ▪ New seed production technologies	**Threats** ▪ Pests and diseases ▪ Climate change impacts

Summary of discussions on how the policies and regulatory spaces can be improved.

- The private sector is key in ensuring seed quality control in maize and potato.
    - There is need to increase the number and build capacity of private seed inspectors.
    - Identify private individuals who have sufficient land and enough capacity and incentivize them to engage in seed production. They need to be supported to access appropriate technologies and skills for seed production; early seed classes should be handled by people with high capacity as they are delicate and quite costly.
    - Audit by the private sector through review meetings will ensure sustainability in the production of quality seeds made available to farmers.
    - Farmer voice is important and is the compass for private sector investment. Farmers need continuous education on available certified varieties and appropriate agronomic practices. Leveraging on field days to create awareness on the various varieties available for farmers can be useful for creating demand for certified seeds.
    - Innovative financing can stimulate private sector investment in the seed system.
- There is need to revise Kenya's tax regime to create an enabling environment to the seed sector players. The cost of production of seed in Kenya is high, due to, among others, high cost of leasing land and high taxation among others.
- The move by the state to open up unused land for purposes of producing seed, e.g., Galana Kulalu irrigation scheme, is a positive step towards attaining growth.
- There is need to recognize the informal seed sector in Kenya, which supplies most of the seed especially for the VPCs. The National Seed Policy 2010, although quite comprehensive, does not address the informal seed sector. Recognizing the informal seed sectors and finding ways to build the capacity of both the formal and informal seed sectors to meet the seed needs of farmers is critical since the two sectors are inter-linked. There is need to support and build the capacity of farmer-driven

seed systems and shift them towards legal recognition, especially at community level, so they can effectively work in their space.

- There is need for continuous dialogue and partnerships among the various actors in the seed system for effective response to issues that affect the seed system, including the need to review policies and regulations as well as. cross cutting issues such as climate change and trade disruptions.

- Accumulation of pests and diseases is a challenge especially for potato. There is need to invest in breeding of varieties that are resistant to pests and diseases. Managing seed quality at the farmer level is also critical and should be put into consideration. Accessing soil testing not just for nutrients but also for diseases, e.g., bacterial wilt and PCM, more classes of seed allowed for VPCs can help reduce cost of seed to farmers.

- Good early generation seed is critical for good seed systems, the process to review new technologies and the dialogue around that needs to be revisited. Good starter seed is important for the potato value chain. There is need to follow through the identified solutions with respect to the specific identified challenges. There is need for continuous review of policies and audit of regulations. There is need for longitudinal data to inform what to do next e.g., the need for new varieties for the chips.

SESSION IV: Promoting integrated seed systems and market development for inclusive and sustainable growth

Supporting the development of a vibrant, pluralistic and market-oriented seed sector in Africa: *Lessons from Ethiopia*

Smallholder farmers in Africa are challenged by access to improved farmer preferred seed varieties at the right place, at the right time and at an affordable price, which in return directly affects production level. It is obvious that there is limited availability of quality seed to farmers in Africa.

There have been several policy and regulatory efforts as well as establishing public seed enterprise to promote an integrated seed sector. The International Institute for Sustainable Development (IISD), generously supported by the Dutch Government, has been working towards promoting an integrated seed sector. It supports the seed value chain in Ethiopia by:

- Establishing stakeholder linkage from local to national levels.
- Varietal and quality seed demand creation – crowdsourcing, mini seed parks and market creation.
- Formalizing contractual terms with owners of varieties.
- Supporting engagement in design and awareness creation on the various regulations.
- Institutional innovation – mainstreaming institutional capacities and operationalization of the Ethiopian seed association.

Key achievements

- Local seed business development. Farmers are supported to have seed producer cooperatives and engage in crops and varieties where there is limited commercial interest.
- Centralized and public driven seed marketing accepted as an approach that allows seed producers to market seeds they produce.
- The push to enact a new seed policy with revised directives and regulations.
- Policy environment - established a new advisory group that advises the government independently. The success on this was the design and approval of the seed sector agenda guiding government interventions in the sector.
- Establishment of regional seed core groups.
- Contributed to the seed marketing directive 2019, which is expected to increase access to quality seed of various varieties.

Key drivers

- Demonstration of evidence of innovation (policy and practice)
- Active public private partnerships and joint experimentation in the generation of evidence used to convince policy makers

- Consideration of the specificity of the various crops, policy context locally
- Promote entrepreneurship through business innovation
- Collaboration with actors along the value chain

Lessons from Ethiopian Seed system

A strengthened seed systems requires an understanding of the policy processes and capacity to implement policy and gradual liberalization of the seed market to allow direct seed marketing. This requires reviewing seed policy to include concepts about seed market liberalization and identify key roles of public seed enterprises to minimize impact on the private sector. It is difficult to associate all the progress in quality and quantity over the years to IISD. The progress has been through addressing emerging challenges, including proactive engagement and development of evidence in developing seed islands during COVID-19. Approaches, innovations and contributions to seed related regulations have contributed to quality and volume of seed in the past 5 to 6 years.

Case study: Local seed businesses: an alternative model from Ethiopia.

Local seed businesses in Ethiopia aim to organize small holder farmers to engage in seed business where there are improved varieties but low commercial interest. There was need for legal status to allow regulatory organs to support smallholder farmers. Less stringent and actor supported quality assurance was also needed. Local seed businesses filled this gap allowing farmers to produce seed through QDS. Production is promoted through farmer cooperatives, some of which were transformed to seed producer cooperatives/seed producers' union. This approach is highly recommended for crops of lesser commercial interest.

Summary of Panel discussion

Discussants: Jacinta Waliaula, County Assistant Director of Agriculture, Trans Nzoia; Anthony Kioko CGA; Onesmus Makhanu, CDA Bungoma County

- Promoting the seed sector in Kenya to achieve an integrated and inclusive seed system requires collaboration of various actors in the system, including farmers who are the ultimate consumers of seed, seed producers and breeders. There is need for joint fora such as field days and demonstrations to promote information sharing. The role of public and private institutions should include provision of technical assistance and capacity building through demonstrating which seeds are adapted in which areas. Demonstrations should encompass both varieties of commercial interest as well as indigenous varieties for nutritional security.

- For increased access to seed and other inputs, linking farmers to seed marketers and agro-dealers is important. High costs of input can be mitigated through sharing transportation costs by aggregating demand through farmer organizations. This also gives farmers negotiation power regarding seed purchase price. Organizing farmers in associations can also help reduce the cost of delivering services and input subsidies.

- There is need to take a holistic approach in transforming the agriculture sector - input sector, farm sector and product (market) sector. County governments should take a holistic view in the sector's investment priorities, including investment in promotion of mechanization and soil testing and analysis, which would help farmers make informed decisions about appropriate inputs, including seed varieties, to use on their farms. Investment in agro-weather and market information systems and

making the information available and accessible to farmers will provide farmers with real time data to facilitate planning. Early warning systems are important especially in the context of climate change and market uncertainties.

Case study: Leveraging innovative approaches to extension and input access in Kenya)

*Famer support programs such as the National Value Chain Support Program (NVCSP), popularly known as E-voucher program, allows smallholders to access inputs. The **E- voucher** program allows seed companies in collaboration with counties to identify varieties suitable for their zones. Collaborations with seed breeders and companies in conducting demonstrations and holding farmer field days and peer to peer learning is useful for awareness and creation for seed varieties.*

The support to and partnerships/collaborations that CGIAR form with seed companies has promoted development and adoption of certified seeds by farmers. Such support and partnerships/collaborations have strengthened dialogue and discourse around seed development.

***Improving access to seed:** Giving farmers starter packs of new varieties to try on their farms encourages farmers' adoption of the varieties. For example, giving farmers 200 grams of trial packs of improved sorghum variety by Advanta in Kenya has been shown to improve farmers' adoption of the variety.*

***Peer to peer extension**: Role models (farmers who have been actively engaged in planting certified seeds) are key in creating awareness about new varieties and promoting adoption. They can also be providers of quality seed. Community based facilitators/advisors – a group of lead farmers trained to be TOTs - are a critical aspect of extension. These facilitators are used to promote GAPs and conduct demos. They can transfer knowledge to other farmers and promote adoption of new technologies and better agronomic practices on farms. Farm Input Promotions Africa Limited (FIPS-Africa) works with community-based advisors to promote new technologies.*

***Inclusion and employment creation:** There needs to be deliberate in targeting and prioritization of women and youth through identifying nodes along the value chain where they can actively participate. For example, in logistics, using motorcycle transport (boda bodas), which is operated by mainly the youth, to transport inputs and produce especially in areas where car transport facilities are inadequate. County governments should also make deliberate efforts to employ youthful extension officers in their effort to increase the number of extension staff as well as replace the staff that are retiring. Women and youth can also be given priority in training of seed inspectors.*

*Farmers are **very rational** from the economic point of view as they are keen on the market overlay on type of extension technology. It is important to **demonstrate** increased **productivity and profitability** of the new varieties including return on investment.*

*It is important to document and package approaches/practices in the seed sector including extension so that counties can learn from each other on what practices can best work for them e.g. the **shamba shape up** model.*

SESSION V: Finance and investment solutions in maize and potato seeds development.

The objective of this session was to draw lessons for innovative financing and investment options for seed systems and market development in Kenya.

Summary of plenary discussions

- Agriculture financing in SSA is generally low, and most of funding to the sector comes from government, development banks e.g., African Development Bank (AfDB) and World Bank, and other development agencies and donors. Commercial lending to agriculture is less than one billion dollars. Kenya is doing poorly especially when it comes to public sector financing. For example, the implementation of the ASTGS 2019-2029 is expected to be financed largely through funds from the private sector, but which is really not guaranteed. Relying on donor funding for the agriculture sector is certainly unsustainable and so there is need to increase public budgetary allocation to the sector as well as incentivize private sector investment.

- Demand for agricultural credit by farmers is strong, but the supply of credit to meet this demand remains low. The limited lending towards agriculture can be attributed to limited understanding of the agriculture sector. However, there have been good progress in recent years due to deliberate efforts to educate financiers on agriculture.

- Opportunities exist in insurance and innovations that leverage input sourcing and financing. There is need to leverage public sector investments, research financing to ensure technologies generated reach the farmers.

- Private sector investment in innovations require addressing policy barriers that hinder commerce and integration of value chains to facilitate competitive advantage.

  Farmer organizations need to leverage on input sourcing and marketing, market structuring (providing opportunities for service providers along the value chain), leveraging opportunities for increased Public Private sector partnerships (PPPs), benefit sharing mechanisms, knowledge and information systems (to resolve challenges such as diseases, recycling seed, adoption of GAPs) that are market oriented. There is also need to review/enforce production standards and structure markets.

> *If farmers are not aware of varieties, then we cannot create demand. Information flow can allow us to generate demand. This can then spur public and private sector investment.*

Summary of Panel discussion

Discussants: John Macharia (AGRA), Agatha Thuo (ASNET), James Mutonyi (AGMARK), Dickson Korir, (National Value Chain Support Program)

Available options for increasing private sector investment in maize and potato seed systems

- AGRA has helped set up 615 seed companies at various scales in SSA. For seed companies to thrive there is need for structured value chains and demand (actual demand not theoretical demand) for seed so that seed companies can be self-sustaining. There is need to ensure and enforce policy and

regulations around standards. Issues around appropriate pricing of seeds that ensure both affordability for farmers and returns for seed companies.

"It is easy to get agricultural personnel talking about finance than it is to get a finance person who is ready to talk about funding agriculture."

- Increasing liquidity within the agricultural value chain requires the government to create an environment with minimum risk for agricultural financing (e.g., the case of India through the National Bank for Agriculture and Rural Development (NABARD) bank). There is therefore a need for an integrated working system to attract investment in agriculture, identifying and addressing cross cutting constraints to financing in the sector.

- The private sector exists to support the public sector, alongside promoting their business and earning profit. Often, private sector encounters challenges in identifying investment opportunities. Therefore, it is important to delineate public goods and services and what private sector can invest in for profit. Some investments made by the public sector are competing with what the private sector should be doing. Hence the call for:

    - The public sector to concentrate on investing in areas where the private sector and PPPs may not invest in. In addition, the public sector should focus on formulation of policies that create conducive environment for private sector investment.

    - Bridging the huge gap existing in capacity in the seed industry (for seed development and multiplication) by investing in adequate capacity building spearheaded by the public sector. There is need to identify and address gaps in imparting knowledge and awareness in seeds, technology transfer and technical services.

    - Escalating research and innovation in seed development, multiplication, and distribution by investing adequately in supportive policy frameworks. There is need to employ effective breeding pipeline for desired traits, including disease and drought tolerance and water efficiency. This requires establishment of a centre of excellence/integrated working system to address these integrated issues in a systematic approach.

    - Addressing the inadequacy of supportive policies to strengthen enforcement of the Irish Potato Regulations 2019 a challenge. The Irish potato regulations 2019 specify standards, and standards are important as they spur private sector investment in such streamlined value chains. Therefore, the recently constituted National Potato Taskforce should identify and propose solutions for addressing issues that hinder effective enforcement of the Potato Regulations.

Case study: Leveraging farmer data to increase access to financing

Modernizing and professionalizing the agro dealer business is likely to increase investment. There has been considerable investment in building capacity of agro dealers in business management skills, including record keeping in Kenya. Several of the agro dealers have farmer data that informs their credit decisions towards farmers. This data helps financiers analyze credit worthiness of farmers and informs their lending decisions to farmers. Credit guarantees from development organizations such as AGRA and USAID have enabled agro-dealers to stock inputs for farmers. Such guarantees should be upscaled to enable rural agro dealers expand their capacity to serve farmers and also participate in the input provision schemes such as the e-voucher program.

Case study: How innovative public sector led approaches can stimulate demand and increase investment in maize and potato seed production: Dissecting the E- voucher programme

The E-voucher programme was designed to implement Flagship 2 of the ASTGS, which is to "Shift nationwide subsidy programme focus for ~1.4 million high-needs farmers to access a wide range of inputs from a variety range of providers through e-vouchers". The focus crops for the e-voucher include maize, potato, coffee and rice. The government pays 40% while the farmer pays 60% of the value of inputs a farmer purchases. For maize, the inputs allowable are seed, fertilizers, lime and agrochemicals (with subsidy of KES 21,000 per acre), while for potato the inputs are fertilizer, lime and agrochemicals (with subsidy of KES 23,000per acre). Through the e-voucher program, new technologies and inputs can be included into the package.

The e-voucher program also offers a demonstration package and builds capacities of agro dealers to stock and promote new technologies. All the seed companies are included in the programme's database but agro dealers which are the main actors in the programme regarding delivery of inputs to farmers. The records of farmers at the agro-dealers presents an opportunity for understanding the capacity of farmers regarding creditworthiness and can be used by financial services providers on farmer lending decisions. Loyalty programs that agro dealers extend to farmers can provide data that can inform on farmer capacity and the need for support.

The e-voucher program creates opportunities for engagement with private sector in the form of directly working with agro dealers. In addition, the programme has engaged a private financial institution to manage payments to agro-dealers and service providers to circumvent the bureaucracy that would be involved if payment were to be made to agro-dealers and service providers directly from the government ex-chequer.

SUMMARY OF CHALLENGES/GAPS, RECOMMENDATIONS AND WAY FORWARD

Policy and regulatory framework

- **Issue**: The National Seed Policy 2010 is inadequate on three fronts. First, the policy is not aligned to the current devolved system of governance, which has transferred most of the functions in the agriculture sector to county governments. Secondly, the policy does not adequately address the needs of some crops, especially vegetatively propagated crops such as potato. This hinders private sector investment in the value chains for such crops. For example, the requirement for millers to blend maize flour with e.g., sorghum millet, sweet potatoes or cassava, could spur private sector investment in such value chains if their seed systems were developed. Thirdly, the policy does not address the informal seed sector, despite the sector's large share in seed provision especially for vegetatively propagated crops and less commercialized traditional cereals and pulses such as millet, sorghum and common beans.

  Recommendation: The National Seed Policy requires reviewing to align to the constitution and accommodate devolution as well as address the needs of crops for which the seed system is much less developed. There is need to develop guidelines for Quality Declared Seeds (QDS) and develop community-based models for QDS and attach these to KARLO/KEPHIS to spur production. Development of the guidelines should change the definition of seed merchants to include not just commercial seed companies but also self-help groups, CBOs and other producers of certified seeds.

- **Issue**: The capacity of the regulator to carry out seed inspection and other roles is a challenge due to low number of staff relative to the activities it has to perform. The low number of staff is to limited public funding to the regulator.

  ***Recommendation*:** There is need for increased budgetary allocation to the regulator and train and license more privatize seed inspectors.

Integrated seed systems for inclusive and sustainable growth

- **Issue**: Existing policy and regulatory framework excludes some actors in/segments of the seed system.

  Recommendation : Review existing policies and regulations to ensure inclusivity of the seed system as well as quality of seeds in the system.

  - Challenges in enforcement of regulations, e.g., the Potato Regulations 2019, need to be addressed. Lack of a coordination mechanism has affected effective enforcement of regulations, therefore a coordinated framework for implementation of policies and enforcement of regulations which clearly specify the roles of various actors, e.g., county and national governments, regulatory agencies and other players is necessary for promoting integrated seed system.

  - Recognize the role of the informal seed sector especially in supplying seed for less commercialized crops

  - The voice /needs of the marginalized (the informal sector, men, women, youth, PWDs and the poor) need to be mainstreamed into policies, regulations, strategies and action plans.

- There is need to increase capacity on implementing policies/strategic actions and enforcement of regulations. A change of mind-set and a shift towards a combination/co-existence of the formal and the informal seed sectors, and indigenous and improved varieties is required. An inclusive business model for the seed sector that is pluralistic and sustainable technically and financially and context specific.

Finance & investment solutions

- **Issue:** Inconsistency in government's financial support to the seed system, e.g., subsidy schemes such as the E-voucher Programme and generally low/inadequate public financing of research, development and extension in the agricultural sector.

  ***Recommendation**:* There is need to explore and seek other complementary/alternative financing options for the seed system, including credit guarantees and private public partnerships. There is also a need to find ways to de-risk the various aspects of the seed and product value chains.

Cross-cutting recommendations

Evidence has been presented from the study report disseminated and should guide policy interventions. One of the biggest challenges as outlined is that even though the evidence points to a specific direction, there is a tendency of not following up on evidence. Policy and practice must follow each other. The participants of the national stakeholder workshop recommended that:

- Policy development need to be followed up with proper implementation. Some interventions recommended by the Seed Policy need review to cater and align to emerging issues and new developments.

- Integrated seed systems can address challenges in meeting existing seed supply gaps in Kenya. Hence, a need to strengthen concerted research efforts culminating in an integrated working system especially in training, research and extension --which is currently disjointed.

- There is need to drive technology transfer and adoption of technologies by fostering research-market linkages. Technologies should respond to market demand to attract private sector investment to extend such technologies to market.

- Most research in seed systems are disjointed --we are producing varieties that are not in demand hence the need for profiling of seed varieties. As well, there is a need to document evidence of successes from counties and build on that.

- We need innovative ways of de-risking agriculture along the entire value chains. This will enhance an integrated value chain financing because problems in seed sector financing may be lying elsewhere in other nodes of the value chain. Also, there is need to explore blended financing and resource mapping and matching among key actors.

Way forward

There is consensus by key actors including, KEPHIS, CIP, CGIAR, CABE and Tegemeo Institute of the need to review existing regulatory framework to address the needs of vegetatively propagated crops (VPCs). Tegemeo Institute and CABE will work with the MoALF&C, Policy Directorate, to develop a concept note for the development of the regulatory framework. The concept note will explain the problem and rationale for a regulatory framework for VPCs, identify stakeholders and engagement guidelines for developing the framework, specify timelines and identify potential sources of funding for the process. The concept will

thereafter be shared and discussed with selected stakeholders, including potential financiers of the framework development process, for implementation.

CLOSING REMARKS

In her closing remarks to mark the end of the workshop, Susan, MoALFC, emphasized the need to work together for easier and assured implementation of suggested solutions which will address challenges identified. Kenya is on a positive trajectory towards quality seed production, but a lot of work still lies ahead. There is also need to work on creating demand and making these seeds available.

The Ministry has interventions e.g., country agribusiness framework that seeks to structure the value chains and opening them up for investment and unlock opportunities. Land commercialization initiative (part of the ASTGS) will ensure utilization of idle government land in seed production and boost food security. The AfCFTA provides an opportunity for seed export. This calls for strengthening of the seed and agriculture sector in our country to take advantage of this.

In his closing remarks, Bockline Bebe, the DVC R&E, Egerton University, recognized and appreciated workshop participants, moderators and facilitators. He noted that indeed there are challenges in Kenya's seed systems but reiterated that there are also strengths to build on, threats to handle critically, and opportunities to take advantage of. He confirmed that all the participants share a vision of strengthening seed systems and have a platform to move forward. He encouraged the actors in the seed system sustain the conversations, steer commitments made and take necessary actions within their spheres of influence and push the agenda for seed systems strengthening and markets development forward.

Vote of thanks

We express our gratitude to the farmers for sharing their experiences and being part of the workshop, to the National Government representatives from the MoALF&C, County government representatives (from Bungoma, Trans Nzoia, and Nyandarua counties), partners, Tegemeo Institute, Egerton University, CABE, NPCK, IFPRI, IISD Africa, CIP, KALRO, KEPHIS, STAK, SSN, Agronomy Plus, AHyRA, Agri Experience Ltd., MEDIAE Ltd, AGRA, CGA, KENAFF, ASNET, AGMARK, E-Voucher Programme and all organizations represented in the workshop. Thank you for your participation and useful insights that will support efforts towards seed systems strengthening and markets development in Kenya.

ANNEXES

Annex 1: List of participants

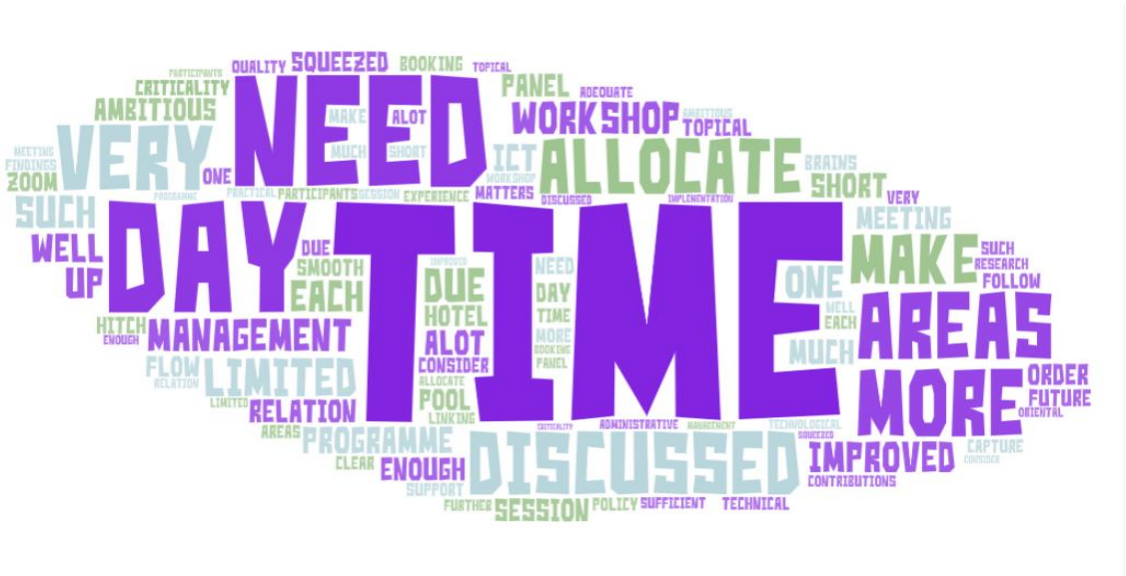
	Name	Organization	Position
1	Bockline O. Bebe	Egerton University	Ag. Deputy Vice-Chancellor, Research & Extension
2	Grace Mugo	MoALFC	Head, research Extension
3	Simon Maina	Kenya Plant Health Inspectorate Services (KEPHIS)	Head, Seed Certification and Plant Variety Protection
4	David Ombalo	MoALFC	Principal Agricultural Officer
5	Wachira Kagwongo	Kenya National Potato Council (KNPC)	Chief Executive Officer
6	John Olwande	Tegemeo Institute	Research Fellow
8	Jackson Langat	Tegemeo Institute	MLE Officer
9	Timothy Njagi	Tegemeo Institute	Research Fellow
10	Fraciah Nyokabi	Tegemeo Institute	Admin Assistant
11	Hannington Odame	CABE	Director
12	Sharon Waswa	CABE	Programme Assistant
13	Chris Ojiambo	CABE	Finance & Admin
14	Nereah Anyango	CABE	Admin Secretary
15	Julius Sila	CABE	Driver
16	Michael Ondalla	Consultant	Consultant, Facilitator
17	Harrison Chege	Consultant	Consultant, Sketch Artist
18	Wafula Mathias	MAoLFC	Extension and Advisory
19	Josephine Helena Love	MAoLFC/ CAADAP Desk	Principal Agricultural Officer
20	Simon Mwombe	Joint Agriculture Sector Steering Committee (JASSCOM)	Agriculture value chain expert
21	Margaret McEwan	CIP	Senior Scientist, Seed Systems, International Potato Centre (Nairobi)
22	Daniel Gichuhi	Agricultural Council of Kenya (AgCK)	
23	Anthony Kioko	CGA	Chief Executive Officer
24	Justus Lavi Mwololo	KESSFF	National General Secretary of Kenya Small Scale Farmers' Forum
25	Mary Nzomo	Ministry of Agriculture,Tranzoia county	County Executive Committee of Agriculture
26	Onesmus Makhanu	Ministry of Agriculture	Ag. Chief Officer Agriculture
27	James Ngandu Karitu	Ministry of Agriculture Livestock and Fisheries	CECM, Nyandarua county
28	David Campbell	MEDIAE Ltd (Shamba shape up)	Chief Executive Officer
29	Duncan Ochieng Onduu	Seed Trade Association of Kenya(STAK)	Executive Officer
30	Agatha Thuo	ASNET	General Manager
31	James Mutonyi	Agmark	Managing Director
32	Sanni Kayode	AATF	Director of The Alliance for Hybrid Rice in Africa (AHyRA)
33	Jack Odhiambo	NPCK	Policy
34	Lilian Gichuru	AGRA	Program Officer - SeedSAT

35	Oliver Nyongesa	IRRI	Rice Breeder & Seed System Specialist
36	Mary Wambui	Seed Savers Network (SSN)	Program Officer
37	Rachel Voss	CYMMYT	Gender & Seed Systems Specialist
38	Sarah Kariuki	CIMMYT	
39	George Magambo	CIMMYT	
40	Joyce Malinga	KALRO	Director Planning, Performance Management and Quality Control
41	Susan Otieno	KALRO	Potato breeder
42	Ephantus Kiome	Farmer(potato seed issues)	Meru County
43	Rosemary Wanjiru	Farmer (Potato Marketing)	Nyandarua County
44	Emelda Naliaka	Farmer	Trans nzoia County
45	Eric Tegei	Kenya seed Company Ltd	Quality Assurance Manager
46	Beatrice Aiyabei	Kenya seed Company Ltd	Export and Distribution Manage
4	Cecilia Limera	AATF	Program officer and nutrition focal person, development and commercialization.
48	Mulemia Maina	Agri Experience Ltd Nairobi, Kenya	Managing Director
49	Jacinta Waliaula	Ministry of Agric, Tranzoia County	Assistant Director of Agriculture
50	Essegbemon Akpo (PhD)	ICRISAT	Scientist, Seed systems specialist
51	Anna Wamache	Le Brit Services Limited	Managing Director &Technical Lead, Agriculture &Strategy Consulting
52	Naomi Kamau	MoALFC	Ag. Deputy Director of Agriculture
53	Benson Maina Kamau	MoALFC	Assistant Agricultural Officer
54	Dixon Korir	MoALFC/NVSP	
56	Nyando Violet	Cereal Growers	Manager Policy
57	Michael Ndegwa	CIMMYT	Associate Scientist
58	Angela Lyimo	Mavuno Seed	
59	Carol Waweru	IFPRI	Research associate
60	Zephania Chebet	Trans Nzoia county	Driver to CEC
61	Linda Kombo	Social Media Team	
62	Joram Waititu	Artmania Creatives	
63	Edward Kimani	Social Media Team	
64	Mike Mulinge	K.N.A	
65	Edwin Baraka	Kenya News Agency	
66	Bonface Kamau	Janeson Medai	
67	Sammy Nabal	Janeson Media	
68	Jeff Kizzilah	Uwezo Media Group	
69	Peter Musa	Media	
70	Henry Owino	Media(Talk Africa)	
71	Ronald Njoroge	Xinnua News	
72	Moses Mutheki	Driver-CEC Bungoma County	
73	Shadrack Rutto	Driver- Ag. Deputy Vice-Chancellor	
74	Henry Were	Driver	

Annex 2: Feedback from participants

What did you like about this workshop?

What could be improved?



What did you like about this workshop?

- The brain stock of those in attendance
- The method of presentation arrangement
- the exchange of experiences
- The discussion was inclusive
- The presenters were diverse
- Great meeting, it was stakeholder inclusive
- Sketch artist: The work of Harrison in capturing the meeting discussion is excellent
- The composition of the participants wide and representative of the main agriculture stakeholders
- The venue and facilitation were very good. Thanks to the organization
- An all-round Programme covering all the aspects of the main workshop objective
- Arts work - very informing and accurate
- Discussions on contract farming, collective marketing, research and extension services
- Creative ideas and team work
- Diversity of participants
- Wide variety of topics
- The theme was great
- Depth of discussion on topical issues
- Facilitation and participant involvement was superb
- all-inclusive invitation of stakeholders
- Graphic presentation of workshop highlights was a good innovation
- Good mix of seed sector thought leaders
- Importance of strengthening seed sector with specific strategies and regulations
- Importance of financing integrated value chain approach to seed development
- Diversity of the stakeholders/ participants
- quality of engagement, in-depth discussions in breakout sessions
- Graphic capture of ideas, messages, presentations
- Inclusivity of every participant in the workshop
- Dispensing of knowledge by participants
- involvement of farmers as the opener of the workshop
- socially advance communication from organizers, welcoming words and hospitality
- MC- really talented
- High quality/representation of stakeholders
- to have meet my fellow farmers from Trans-Nzoia and Meru
- The choice of hotel and being hosted in Sarova
- All the seed systems stakeholders were invited to this workshop therefore great discussions
- structure of the workshop
- The sketch artist
- very interactive and well-coordinated
- The aspect of including art to capture the discussions virtually through the drawings
- Topics presentation/organization was logical and educative
- The discussions were real, timely and relevant
- Real issues presented in the work shop and presentation by Njagi & Kephis
- presenters well versed with their areas of specialization and articulating of issues for improvement

What areas can be improved on?

- The programme may have been ambitious in relation to time allocated
- time management (such meeting needs more time)
- time allocated to each session was very short (allocate enough time for the panel discussions)
- should have been a 3-day workshop in order to capture sufficient contributions from the pool of brains and experience
- Administrative: zoom quality
- technical ICT
- Need to follow up on matters discussed

▪ Need to allocate more days. 4 days' workshop ▪ Limited time for discussion ▪ Time, as much as we squeezed time well, a lot needed to be discussed. Need to make it 3 or 4 days ▪ Time management due to criticality of topical areas. Make it 2.5 days.	▪ Technological hitch. the IT support was not adequate ▪ Limited time for discussions ▪ linking research findings to practical oriental was not very clear - i.e., policy should further implementation ▪ consider booking in participants in one hotel in future for smooth flow

Annex 3: Selected workshop photos