How to boost African food production to increase resilience in times of pandemics: Innovation, investment and policy priorities

Side session at Cultivate Africa, 18 November 2020
Session overview

Chair: Dr. Felister Makini, Kenya Agriculture and Livestock Research Organisation


Targeting and scaling innovations to raise productivity in smallholder farming systems - Dr. Oluwole Fatunbi, FARA

Prioritizing investments in mechanization along the value chain to increase productivity, efficiencies and resilience - Dr. Oliver Kirui, ZEF

Building inclusive markets for income generation, resilience and food security - Dr. Getaw Tadesse, Akademiya2063

Dr. Heike Baumüller, Center for Development Research (ZEF), University of Bonn
Research approach

• **Research question:** How are (domestic and foreign) Covid-19 related containment measures impacting African food and beverage manufacturers and their staff?

• **Focus countries:** (Ethiopia), Kenya, Nigeria and South Africa

• **Data collection:** 2 rounds of phone surveys (May and Sept./Oct. 2020)

• **Impacts assessed:** status of operation, production patterns, input costs, employment, cross-border transactions

• **Findings of Rd 1:** [bit.ly/C-19andAfrica](http://bit.ly/C-19andAfrica)
Status of operation by country

As a result of the corona pandemic, which of the following four options best describes your current state of operation?

Source: Baumüller et al. (forthcoming)
Status of operation by company size

As a result of the corona pandemic, which of the following four options best describes your current state of operation?

Source: Baumüller et al. (forthcoming)
Price of inputs

Because of the situation, which of the following have you experienced with regards to raw materials?

Source: Baumüller et al. (forthcoming)
Other findings

• Companies mostly held on to their employees, but at times had to reduce salaries.

• Many companies were impacted by delays and additional requirements at the border.

• Many Kenyan companies saw their exports fall while South African and Nigerian companies saw drops in imports.

• Companies most frequently called for practical and business-survival interventions rather than fundamental changes e.g.
  • re-opening of the economy
  • financial support
  • tax relief
  • assistance in the area of health & safety.

Source: Baumüller et al. (forthcoming)
Targeting and scaling innovations to raise productivity in smallholder farming systems

Oluwole Fatunbi, Forum for Agricultural Research in Africa
Background

The Hypothesis
Technologies and brilliant approaches remains in pilot until complementary processes that enable scale is in place.

Scaling
• Reaching more people
• Greater efficiency per person reached
• System change and sustainability

Scaling out
Providing access to and facilitating effective use of specific or group of technologies for benefits.

Scaling Up
Provision of appropriate institutional support to aid the adoption, use and successful benefit from specific technologies
Mediators of Scaling Technological Innovation

Planned scaling of Technology

Technologies developed with benefit pathway in view
Technology packaging
- Cost effective / Socially acceptable
- Less drudgery (time; rigor; complication)

Market stimulation
- Commodity competitiveness (price/quality)
- Development of new product
- Market science and packaging
Iterative loop scaling strategy

- Scale-up
- Scale-out

- Impact
  - Lesson learning
  - Strategy refinement

- Iterative loop
  - Capacity building
  - Multistakeholders
  - Gender
  - Nutrition
Invest in the enablers factors to bring technologies to scale

Technologies rides on **benefits** to come to scale
Invest in the enablers factors to bring technologies to scale
Suitable Model for Scaling-up Innovative Approaches

1. Develop the scaling plan

2. Task 5: Legitimize Change
   Task 6: Build a Constituency

3. Task 7: Realign and Mobilize Resources
   Task 8: Modify organizational structure
   Task 9: Coordinate Action

Task 4: Track Performance and Maintain Momentum
Way Forward

1. Scaling technologies and approaches out and up requires strategic actions.

2. Successful scaling of approaches requires the specific enables which should function to drive the approach.

3. Scaling technologies as well as approached requires effective market end action.

4. Active policy and institutional order is still largely required to ensure coherence in action and profitability of the various enterprise.

5. Investment in the research system is vital for continuous growth and attendance to emerging trends and adverse occurrences.
FARA recently published two books on scaling technologies and innovative approaches:

1. Strategies for Scaling Agricultural Technologies in Africa
   - Available at: https://farafrica.org/wp-content/uploads/2018/02/STRATEGIES-FOR-SCALING-AGRICULTURAL-TECHNOLOGIES-IN-AFRICA.pdf

2. Spreading the Gains of Agricultural Innovations in Africa: A Strategy to Scale-up and Scale-out the IAR4D Concept
Prioritizing investments in mechanization along the value chain to increase productivity, efficiencies and resilience

Dr. Oliver Kirui, Center for Development Research (ZEF), University of Bonn
Entry points for mechanization along agrifood VCs

Agricultural mechanization: use of animal or mechanical power along agrifood VCs

Baumüller et al., 2020
Challenges and reality of mechanization in African

- Africa is the least mechanized region in the world
  - Land preparation for cereal production: <10% of farmers use tractors, 15% use animals
  - Mechanization levels down the value equally very low

- Several Implications:
  - Main constraint to increasing domestic food supplies and productivity
  - Solution to labor shortages but also raises the demand for labor because yields increase
  - Increase the amount of cultivated land and reduce loss during harvesting.

- Beyond farm: lack of processing, preservation, transportation & storage technologies:
  - Reduce the amount of already produced food, thus, affecting food supply by
  - Considerable losses during postharvest handling
  - Storage losses and contamination (e.g. with aflatoxins)
  - Increased food losses especially for highly perishable commodities (fish, fruits, vegetables)
Why promote mechanization?

- Reducing drudgery of labor has significant benefits (nutrition, health, wellbeing)
- Poverty reduction is not possible without increasing the productivity of labour
- If land expansion is possible, mechanization can increase employment
- Smallholder farmers can benefit, if appropriate business models (e.g., service providers; cooperatives) are developed

Drivers for mechanization:
- Rise of medium-scale farmers – can buy machinery and often serve smallholder farmers
- “Uber”-type digital services – reduce transaction costs
- Falling machinery prices due to increased price competition (manufacturers from India & China)
Opportunities for change?

- Neglected field from the 1990s onwards due to lack of success of state-driven mechanization projects of the 1970s/1980s

- Renewed interest in recent years:
  1. Strong interest by policy makers in Africa: overcoming the “hoe and cutlass” culture to make agriculture attractive for the youth
  2. Interest by private sector (and manufacturers of machinery): Africa identified as a major future market
  3. New technological options: smallholder farming in digital age – e.g. Uber tractor
Conclusions and policy priorities

- Public action should focus on the entire agrifood VC: from land preparation to postharvest handling and food processing.
  - Strengthen knowledge and skills – capacities for the development and production of machines, and use and repair of machinery.
  - Improve financing and risk management of agricultural machinery – Policies to create a conducive environment for private providers of credit & insurance.
  - Promote public research to support an environmentally, socially and economically sustainable expansion of mechanization.
  - Create a favorable business climate for local suppliers of machinery, e.g. through fiscal and trade policy measures and investments in infrastructure.
Building inclusive markets for income generation, resilience and food security

Dr. Getaw Tadesse, Akademiya2063
The roles and challenges of market participation

**Performance of Resource Markets**
- Input markets
- Financial markets
- Labor markets
- Land Markets

**Market Participation**
- Food security and poverty (Income effect)
- Growth and transformation (Investment effect)
- Resilience (wealth effect)

**Performance of Output Markets**
- Staples
- Perishables
- Live animals
- Cash crops

**Specific challenges**
- Low value per unit cost
- Risk and uncertainly
- Marketing costs
- Competition
The effect of COVID-19 on markets performance

Global Markets

Energy

Food

Minerals

Millet market in Senegal

Maize market in Malawi

Source: https://akademiya2063.org/covid-19.php
Building competitive and resilient markets

**INCENTIVES**
- Subsidies, tax, tariffs, protections

**INFRASTRUCTURE**
- Public Investment: roads, ICT, energy, market centers,

**PRIVATE SECTOR**
- Farmers
- Trading firms
- Processors
- Transporters
- Storers

**INSTITUTIONS**
- **Regulations**: property right, marketing controls, licenses, quality grading etc
- **Promotional supports**: Collective actions, contracts, MIS, human capital,

**MARKETS FOR SMALLHOLDERS**

- **Structural**
  - Rural income diversification
  - Promoting value addition
  - Land consolidation

- **Functional**
  - Developing local markets
  - Promoting FMOs
  - Promoting contract Farming
Impacts of market access interventions on food security

**Availability Dimension**
- supply and yield

**Access dimension**
- Income and price

**Stability Dimension**

**Utilization Dimensions (HDDS)**

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<th>FMO on market supply in Ethiopia</th>
<th>FMO on yield of rice in Benin</th>
<th>CF on income in Kenya</th>
<th>CF on farmers income</th>
<th>CF on price received by farmers</th>
<th>LG on household asset growth</th>
<th>FMOs on farmers asset in Kenya</th>
<th>Off-farm income on HDDS in Ethiopia</th>
<th>Off-farm income on HDDS in Tanzania</th>
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The need for building inclusive market access

• Poor farmers and rural households are marginalized
  • Participate less in income diversification programs
  • Participate less in FMOs and CFs
  • Impact of FMOs/CFs on income is higher than on poverty and food security

• Best practices
  • Livelihood grant over credit for the poor
  • Specialized and targeted FMOs than multi-purposes
  • Expansion of CF for food products
  • Priority investment in rural producers markets
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