



INITIATIVE ON
National Policies
and Strategies

KENYA

FOOD SYSTEMS CONFERENCE

*Recommendations and actions
to support the implementation
of the Bottom-Up Economic Plan
in Kenya*



April 4, 2023

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Maize Productivity Growth: Addressing Uncertainties for further Growth



Presentation Outline

Introduction

Factors influencing maize production

Adoption of Improved maize Varieties

Input Use – Fertilizer

Farm size structure

Maize productivity and production trends

Opportunities and Potential for growth

Conclusions and recommendations

S



Introduction

- Maize is the major staple food and the most important cereal crop in Kenya and SSA
 - For food and feed industry
- Contributes significantly to income generation for rural households with a high per capita consumption of 103kg per year, 31% of calories and 28% of protein supply.
- Maize accounts for 56% of cultivated land and 98% of 3.5 million small-scale farmers in Kenya are engaged in maize production.
- On average, 1.5 million Ha are under maize, with annual production between 26 to 47 million bags (2.6 and 3.7 million metric tons (MT)).
- Despite the centrality of maize to the Kenyan food system, the country has for the last several decades been trending toward a structural deficit in maize.

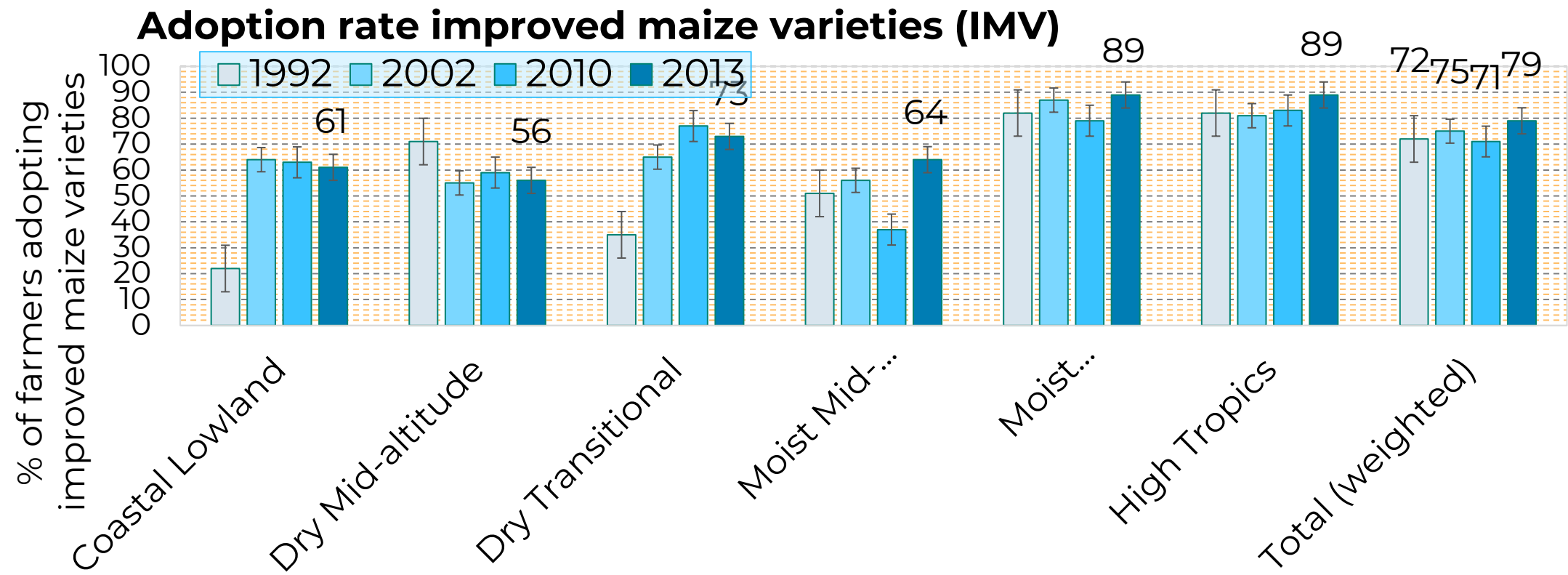


Factors Influencing maize productivity in Kenya

1. Climate Change (Pests, diseases, drought, heat, floods)
2. Quality and High costs of inputs (Seed, fertilizer and chemicals).. High prod. costs
3. Sub optimal agronomic practices – e.g. Low use of inputs
4. Soil degradation (Low N, Acidity soils, other nutrient depletion...trace elements)
5. Limited diversification in utilization
6. Low use of mechanization technologies - weeding, harvesting and drying
7. Low market values of grains
8. Land demarcation into small uneconomical units

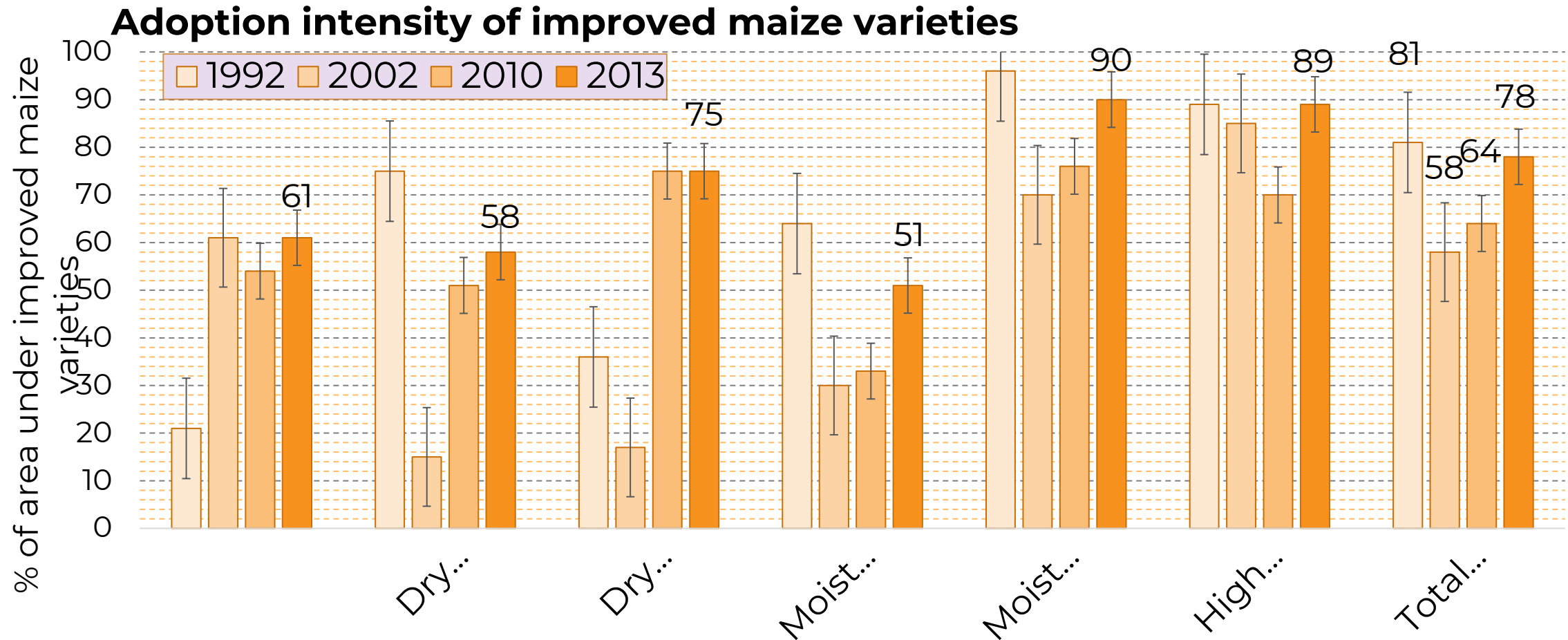


Adoption of Improved Maize Varieties (IMV)



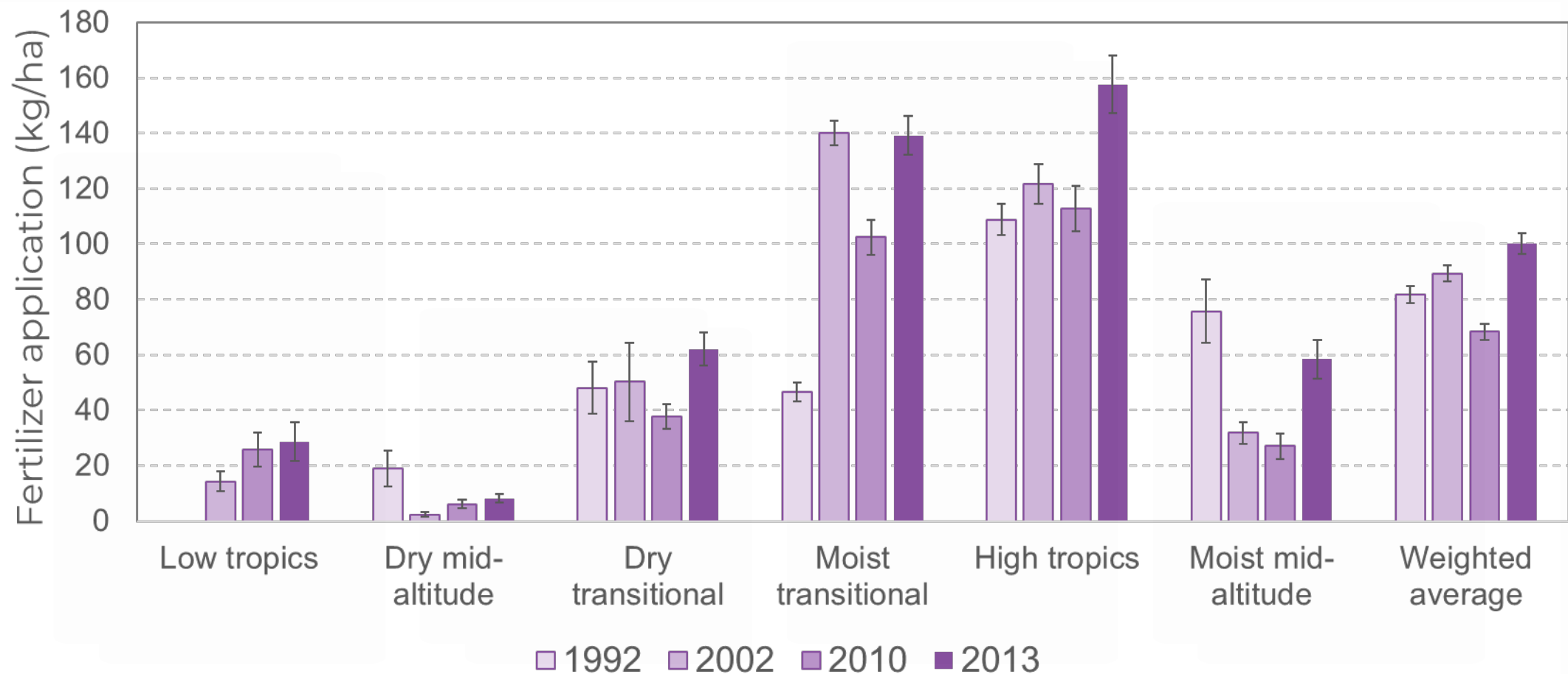


Adoption of IMV - Intensity





Application Rates of fertilizer





Farm Size Structure in Kenya

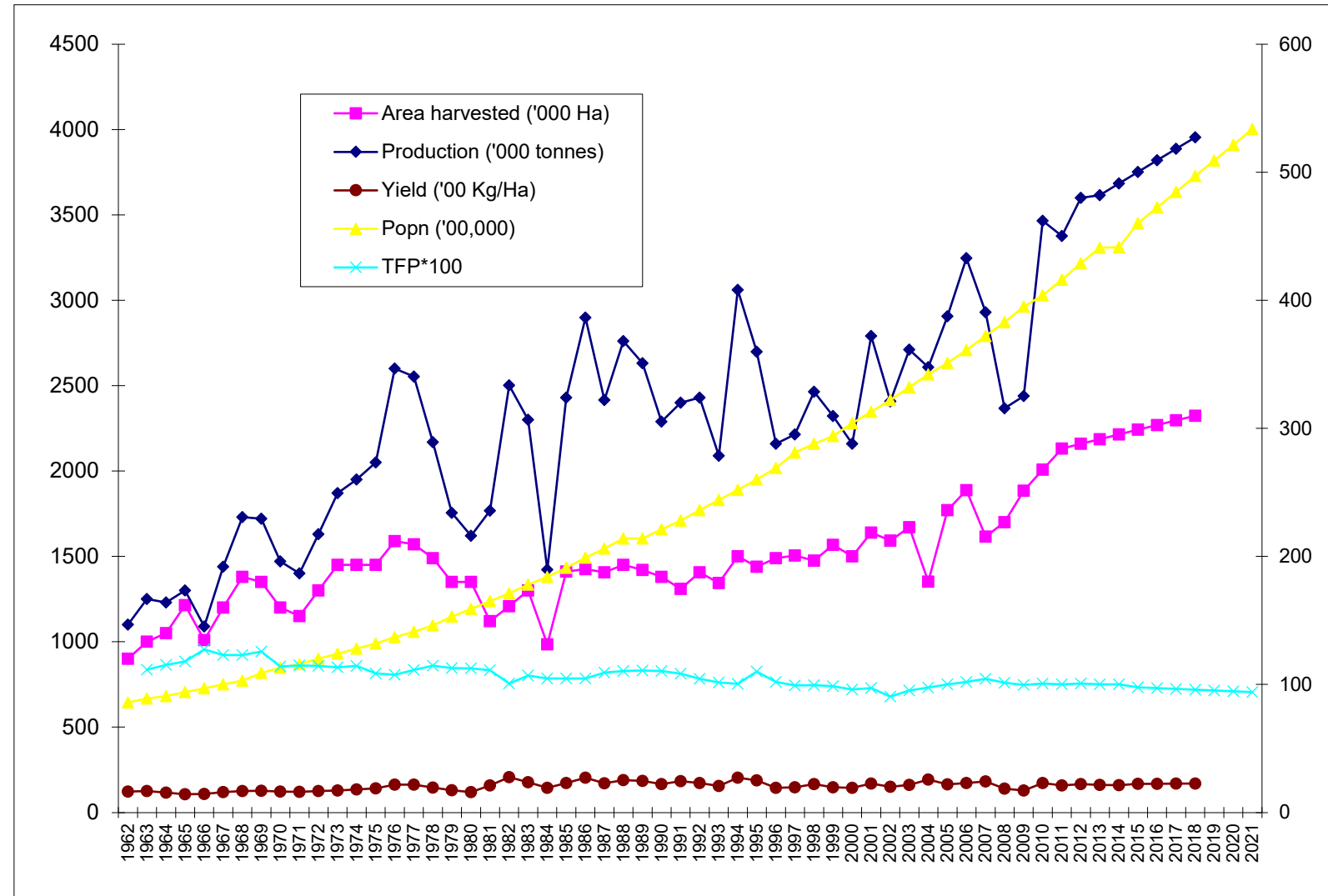
Land demarcation into small units has affected maize production

Size	1994	2005/06	2015/16	% change
0 – 5 Ha	2,217,706	2,972,031	7,638,834	55
5 – 10 Ha	93,871	17,451	15,821	-71
> 10 Ha	92,498	19,493	6,714	-86
Total	2,404, 075	3,0089,75	7,661,369	



Maize productivity Growth Trends

- Population growth rate index increasing faster than production indices
- Per capita production index on the decline
- Need to increase production per resource investment (land capital Labour)

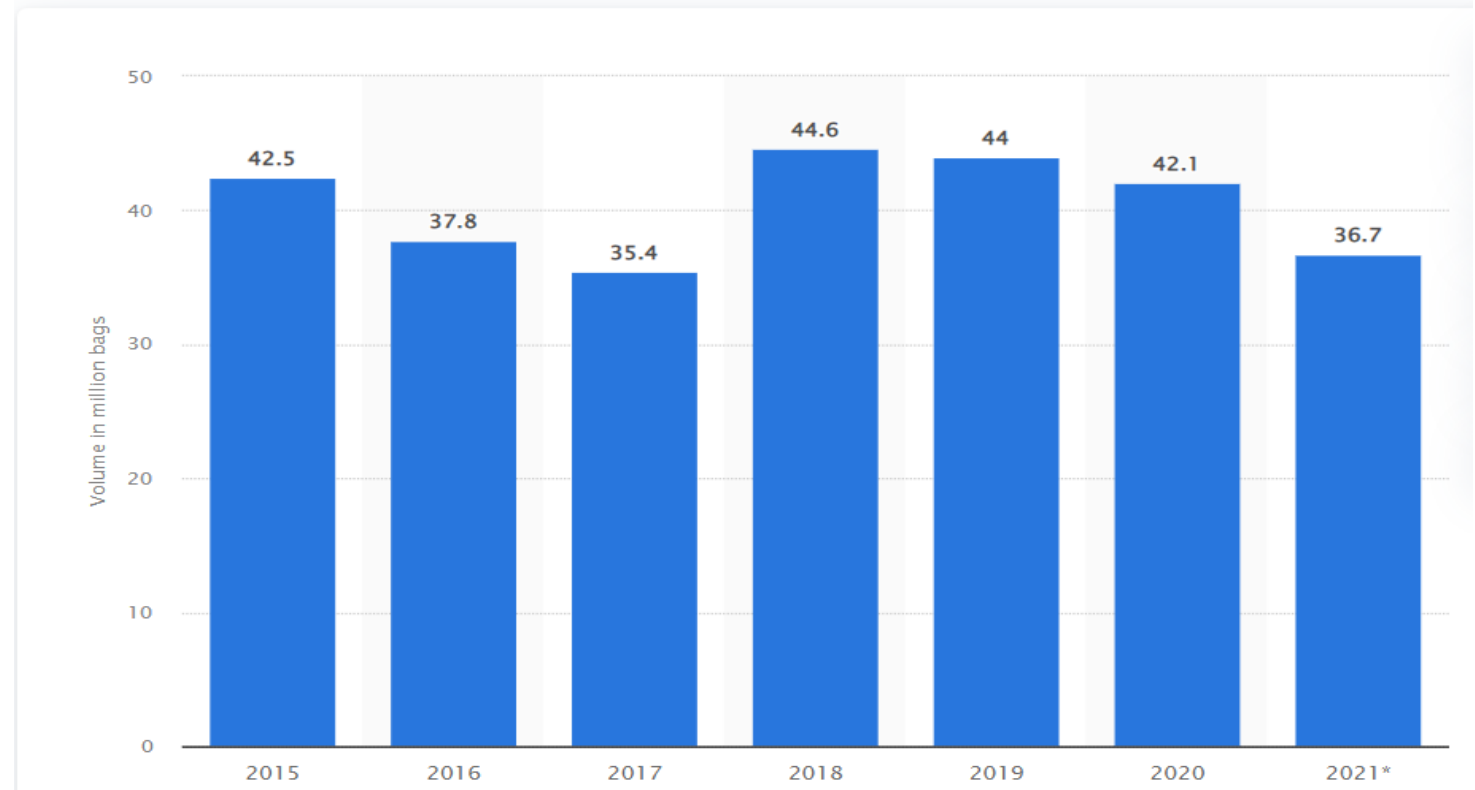




Maize production Trends in Kenya

- Production trends in the last 7 years

Production volume of maize in Kenya from 2015 to 2021
(in million bags)





Opportunities and potential for growth

- Increase acreage under maize by moving to the arid and semi-arid lands (ASALs) through Irrigation – policy
- Increase productivity (yield/Ha) and climate smart
- Use of stress resistant varieties
- Use of high yielding varieties - phase out older varieties through policy
- Introduction of appropriate machinery for small and medium scale farmer categories and improved agronomic packages
- Address the problem of land sub-division through policy intervention



Opportunities and potential for growth

- enhance smallholder commercialization to expand maize productivity and marketed surpluses, coupled with effective agronomic and post-harvest management practices
 - Opportunity for aggregation
 - Address price volatility
- Upgrading infrastructure in remote areas would facilitate timely and cheaper access to markets and market information
- Maize innovation platforms that brings stakeholders together to promote information sharing would be desirable – Maybe through policy



Conclusions and recommendations

- Several factor depress the maize sub-sector in Kenya
 - Low use of improved technologies
 - Biotic and abiotic stresses
 - Inconsistent and knee-jack policy interventions
- As a result there is need to:
 - Design novel ways to promote the use of improved maize technologies
 - Particularly used high yielding varieties, appropriate mechanization technologies and optimal agronomic packages
 - Policy intervention – on land subdivision, mechanization, input-output pricing, land use, irrigation and promotion (Innovation platforms)

Thank You

KENYA

FOOD SYSTEMS CONFERENCE

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April 4, 2023

John Olwande
Research Fellow,
Tegemeo Institute,
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AGRICULTURAL INPUTS:

AVAILABILITY, AFFORDABILITY, AND ADOPTION





Outline

- Introduction
- Availability, Affordability and Adoption of:
 - Fertilizer
 - Seed
 - Pesticides
- Implications for policy



Introduction

- Agricultural inputs are critical in supporting the farming sector and contributing to the productivity dimension of the food system.
 - Farm productivity growth is largely a function of use of quality agricultural inputs (e.g. fertilizers, seeds and agro-chemicals)
- Kenya has achieved significant progress in the use of agricultural inputs, but adequate access to quality inputs is still a major challenge to majority of farmers,
 - limited supply
 - high cost.
- This presentation highlights issues about availability, affordability and adoption of agricultural inputs in Kenya,
 - Fertilizer
 - Seed
 - Pesticides

Fertilizer





Fertilizer: Availability

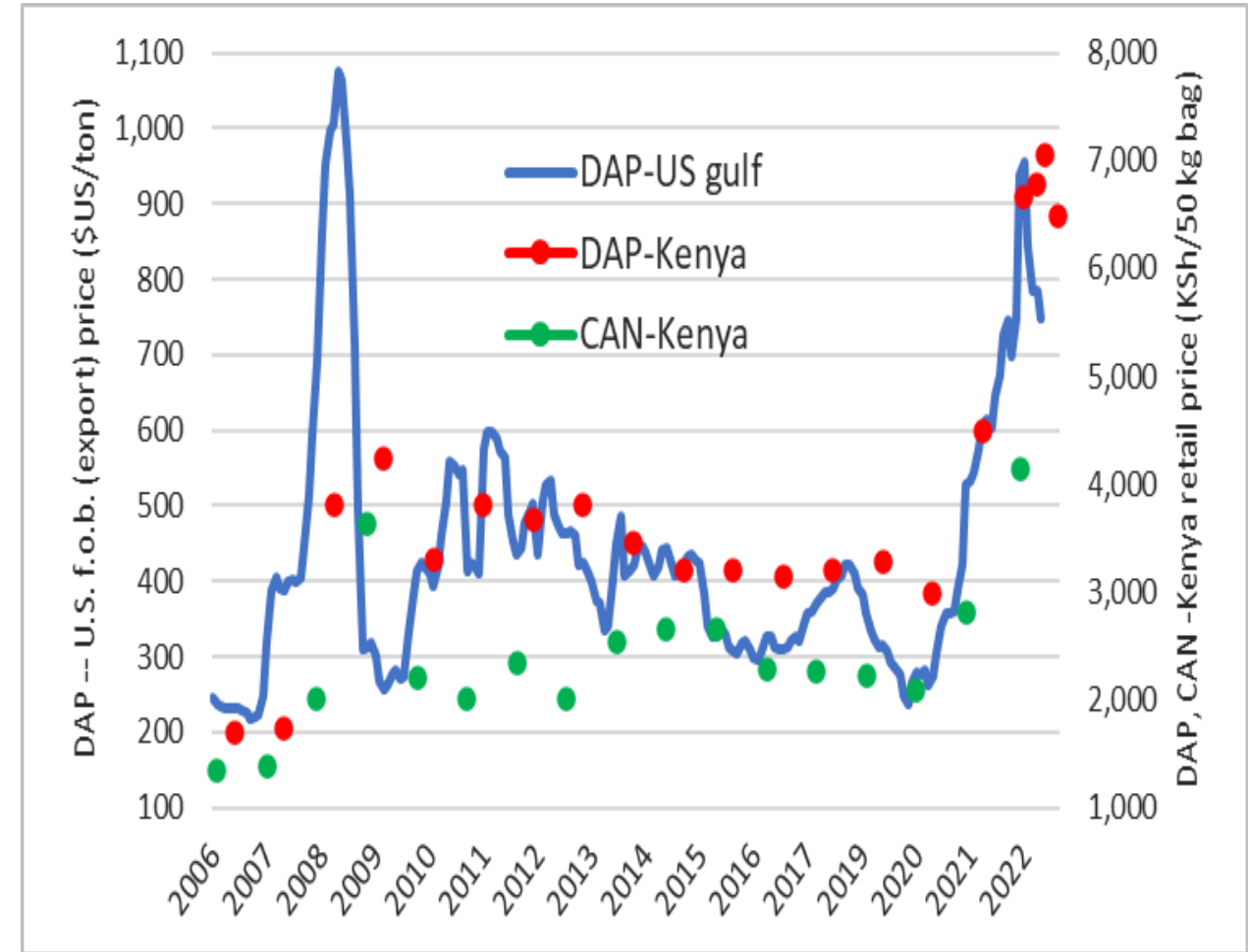
- Fertilizer availability has generally increased over the past three decades:
 - Increased imports
 - A network of private traders in fertilizer
 - About 18 active importers, 150 hubs (wholesale agro-dealers) and 5,611 registered retail agro-dealers.
 - Reduced average distance travelled by households to a fertilizer shop – e.g. from 8.1km in 1997 to 3.4km in 2010 (Tegemeo Institute Household Survey data)
 - Local blending of fertilizer – 4 companies currently





Fertilizer: **Affordability**

- Steep increase in domestic fertilizer prices in 2008 and 2022
 - Due to increase in global prices
- Government subsidies to make fertilizers affordable to farmers
 - Targeted subsidy through the NAAIAP program (2007-2015) and E-Voucher program (Since 2019)
 - Non-targeted subsidy by the National government (since the 2008 price spike)
 - About 21% of the total consumption btw. 2008/09 and 2018/19
 - Subsidies by county governments (e.g. in Kakamega)

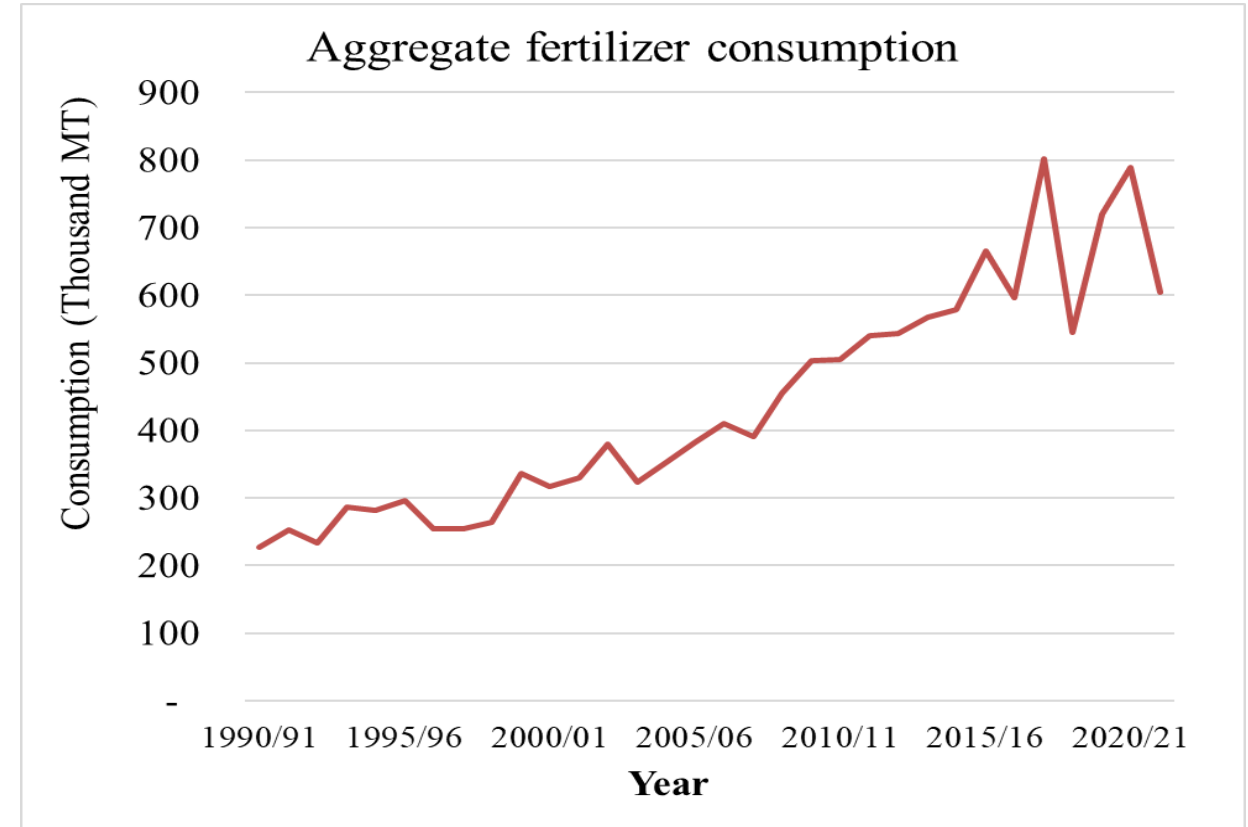


Sources: World bank; Kenya Ministry of Agriculture and Livestock Development



Fertilizer: Adoption/Use

- Aggregate fertilizer consumption has risen steadily over time, indicating increased demand:
 - Expanded private sector trade in fertilizers
 - Government support through
 - Subsidies (about 21% of total consumption)
 - Public investment in transport infrastructure
 - Policy reforms that have supported private investments in fertilizer sector

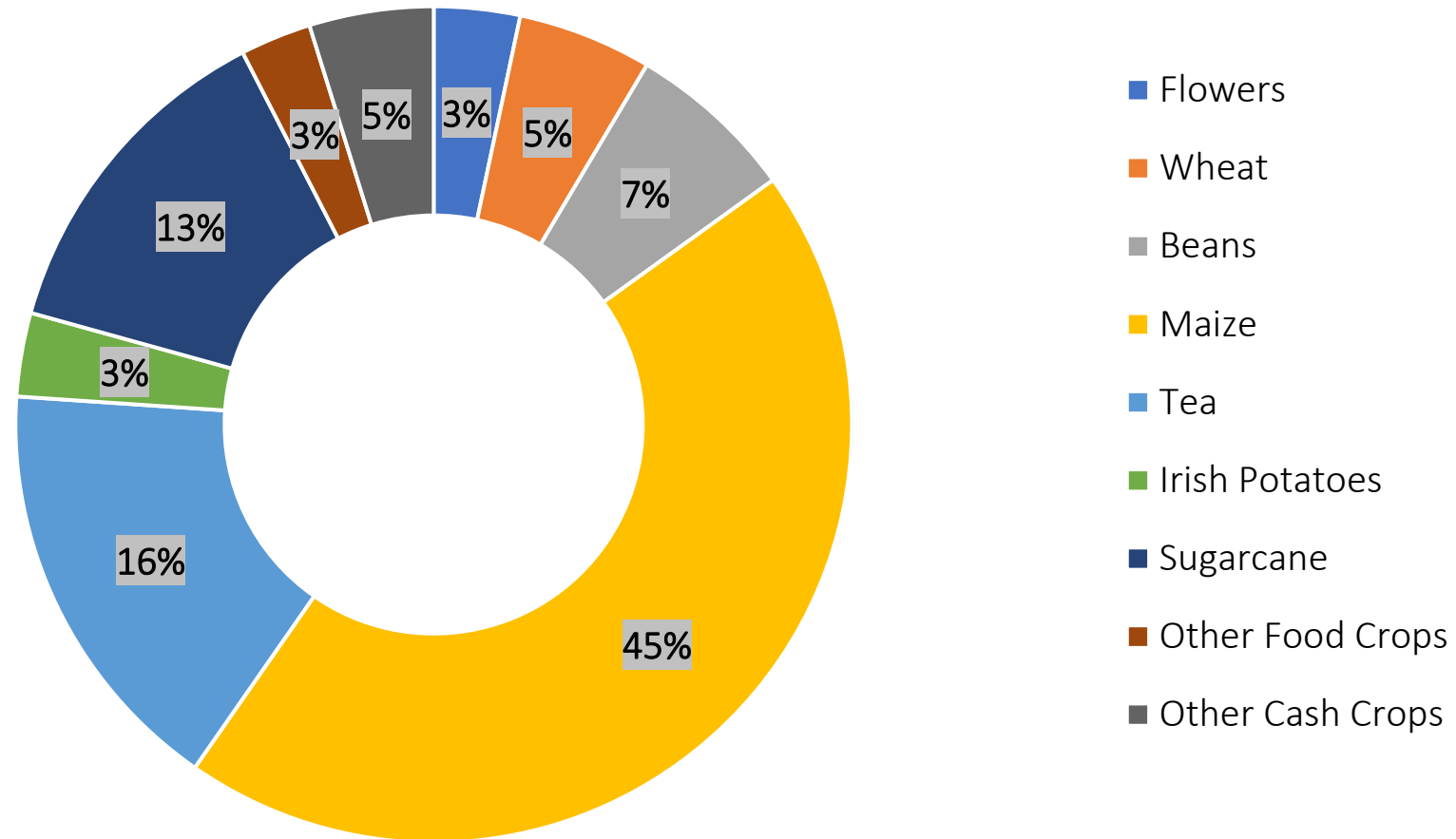


Sources: Authors' compilation using data from the Ministry of Agriculture and Livestock Development and AfricaFertilizer.org (<https://vifaakenya.org/#/kenya/use>)



Fertilizer: **Adoption/Use**

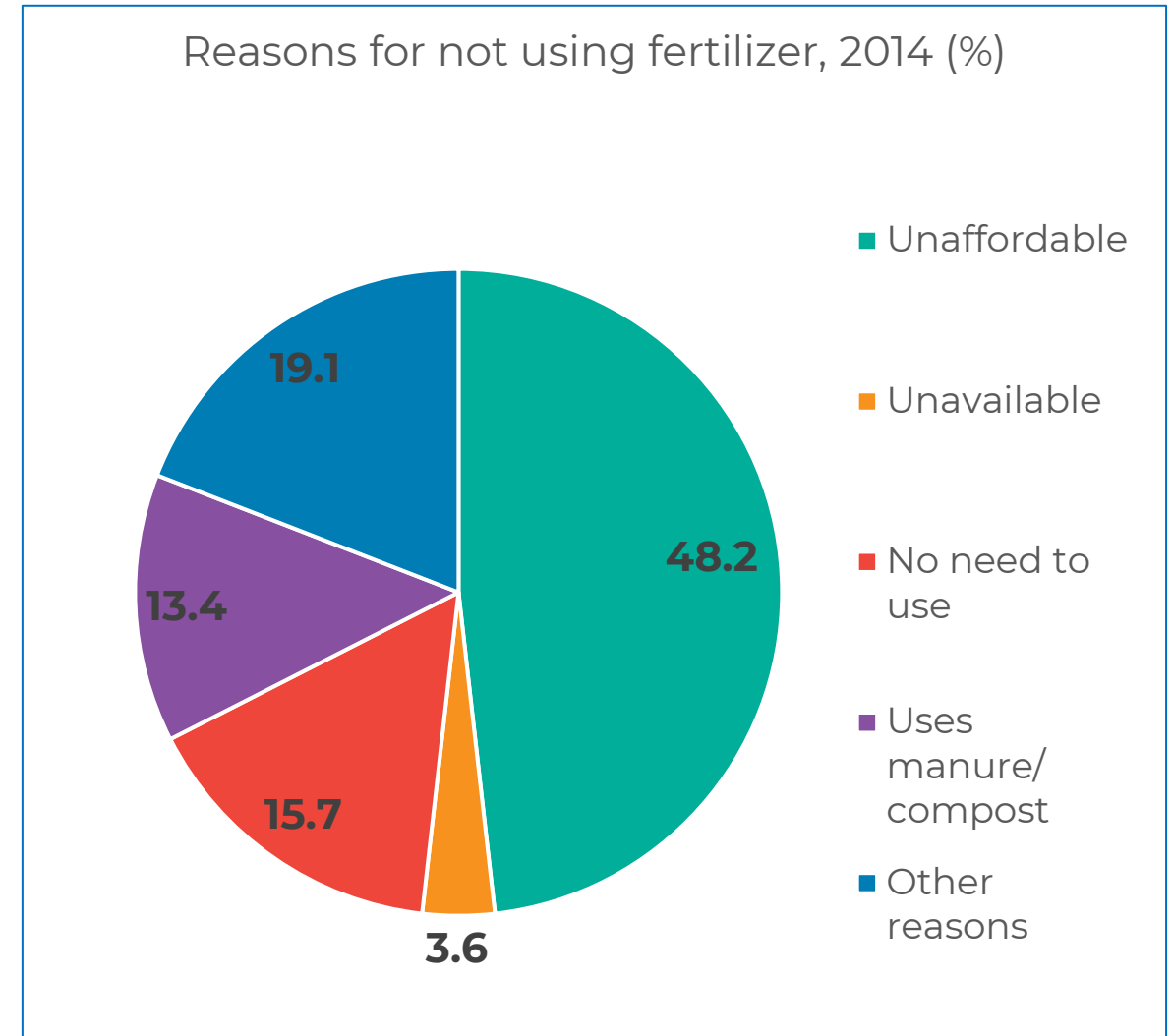
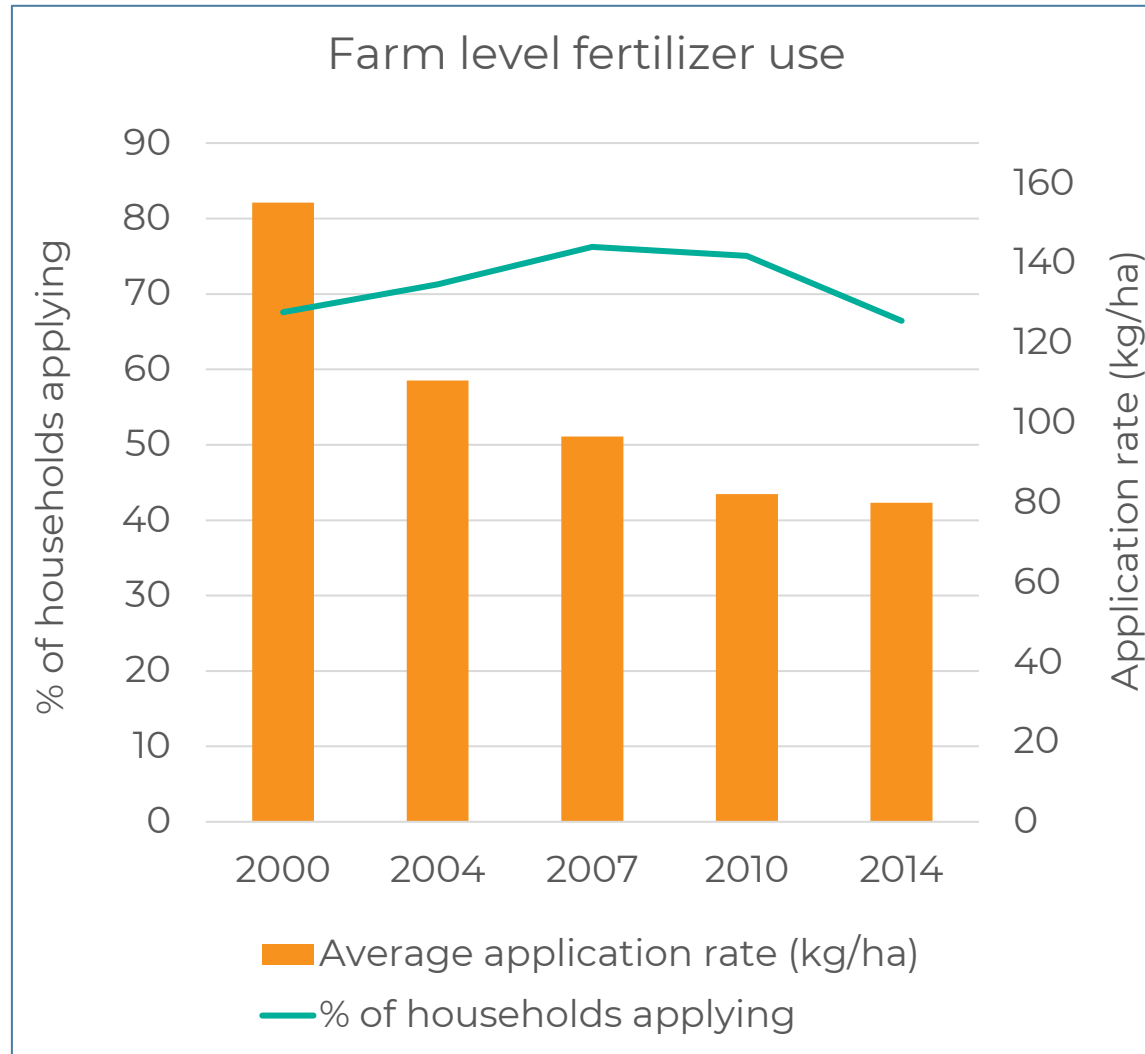
Share of crops in aggregate fertilizer consumption (average for 2011 – 2016)



Source: Authors' compilation using data from AfricaFertilizer.org (<https://vifaakenya.org/#/kenya/use>)



Fertilizer: Adoption/Use



Sources: Tegemeo Institute Household Survey Data – 2000 – 2014



Seed



Seed: **Availability**

- Kenya's seed system consists of formal and informal sectors in terms of seed supply
 - Formal sector: Seed production, certification and sale is regulated, and standards are observed
 - Informal sector: No standards or regulations for production and sale of seed
- Informal sector supplies 78% of the seed needs
 - Ensuring the supply of quality seed for majority of food crops is a challenge
 - Access to data on performance of the informal seed sector is also a challenge.



Seed: Availability

- Maize has the lion's share of the formal seed system,
 - Majority of the registered seed companies are engaged in the production of maize seed.
- Sales of certified maize seed has been on the rise and is way above those of other crops

Crop	Number of registered seed companies (government data)	Number of seed companies surveyed (TASAI data)
 Maize	15	18
 Bean	9	14
 Cowpea	5	5
 Sorghum	6	10

Source: The African Seed Access Index, 2022

Sales of certified seeds (MT)					
Crop	2013	2015	2017	2019	2021
Maize	35671	38835	43954	45822	49651
Beans	428	2332	1165	1421	2463
Cowpeas	424	463	310	400	180
Sorghum	274	1075	887	655	392



Seed: Prices and affordability

- Certified seed prices for maize, beans, cowpeas and sorghum have remained fairly stable since 2017
- For potatoes, the price of a 50-kg bag of certified seed ranges between KES 2500 and KES 3000, which is quite costly – planting an acre needs about 15 bags

Crop	Average retail seed price (KSH/kg)		
	2017	2019	2021
 Maize (hybrid)	201	210	210
 Maize (OPV)	181	192	188
 Bean	191	225	246
 Cowpea	161	168	202
 Sorghum	171	175	209

Source: The African Seed Access Index, 2022

Pesticides



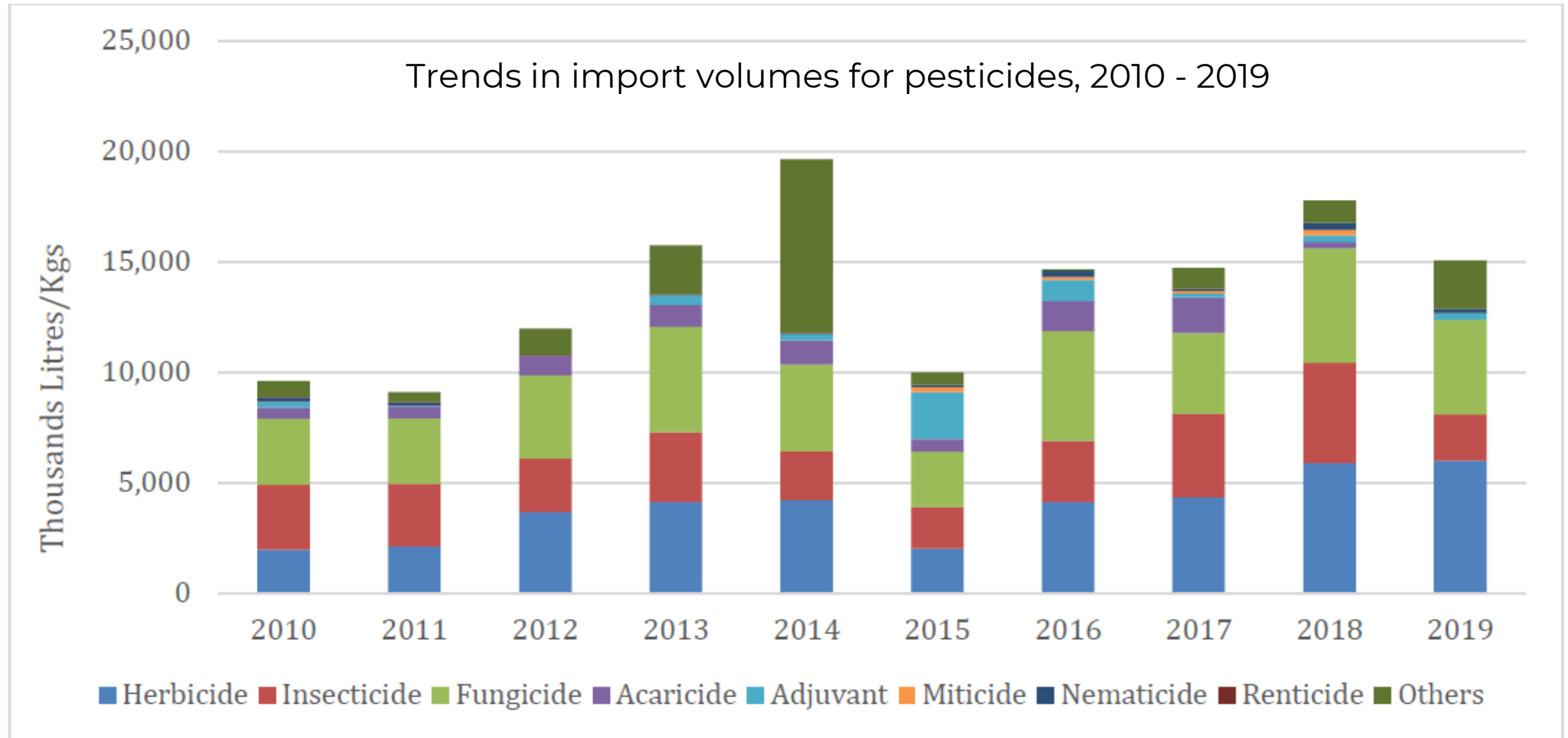


Pesticides: **Availability**

- Pesticides are critical for plant protection
 - Increasing incidences of pest and disease outbreaks due to climate change
 - Increased transboundary trade that makes countries with lax regulations a risk to others
 - Migratory pests, e.g. locusts
- Kenya imports about 90% of chemical pesticides – herbicides, insecticides, fungicides, acaricides, fumigants, nematicides.



Pesticides: **Availability**

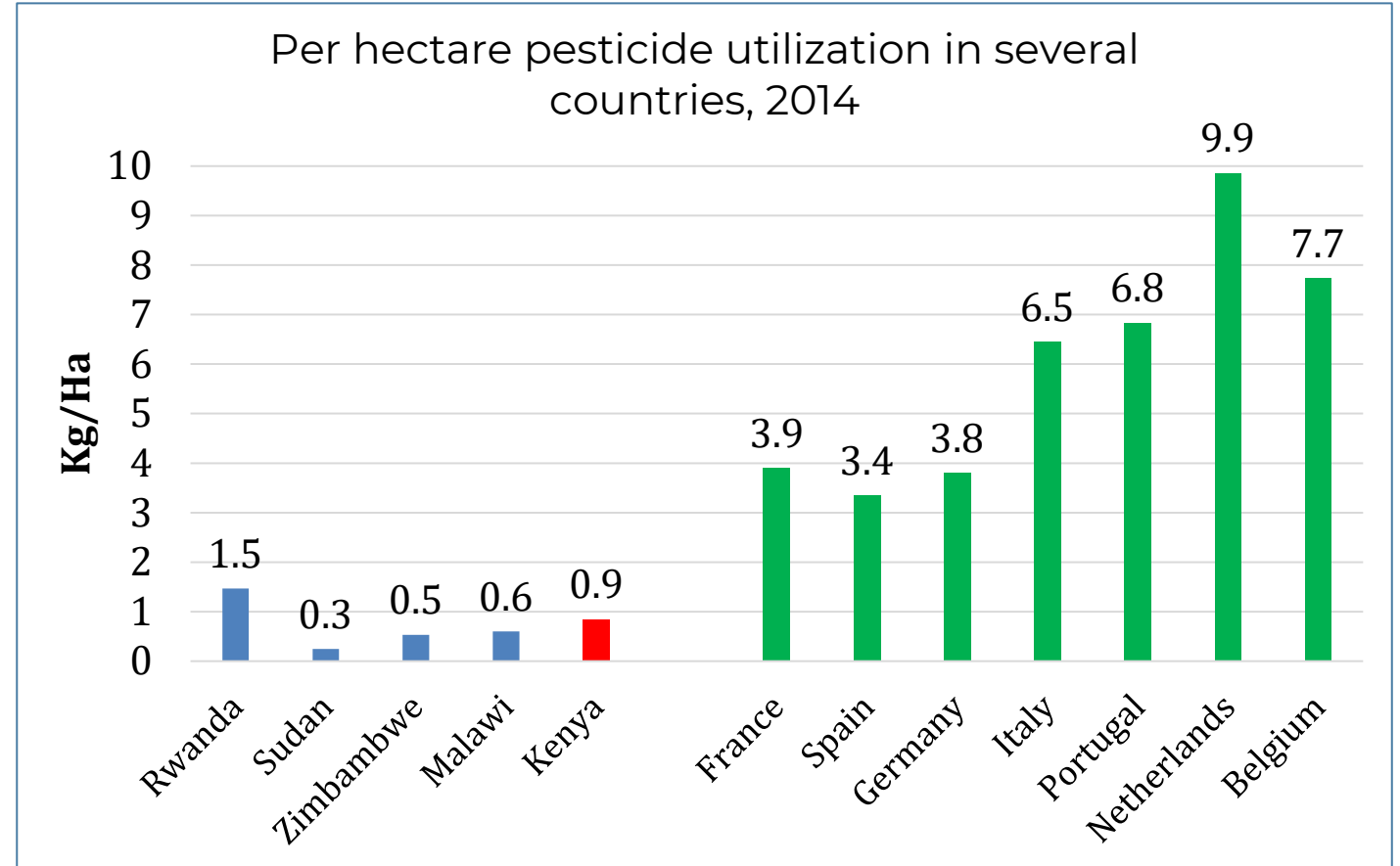


Source: Data from AAK, 2020



Pesticides: Use

- Data on pesticide use per hectare is limited
 - a key gap in addressing food safety
- Pesticide use in Kenya (and other SSA countries) is significantly low (<1kg/ha) compared to in Europe (3.4 – 9.9 kg/ha)
 - Majority of farmers in Kenya (and SSA) are smallholder and subsistence producers



Source: Secondary Data (WHO 2019)



Implications for policy for **fertilizer**

- Kenya has achieved impressive growth in fertilizer use with little government subsidies
 - Gains in expanding private sector trade in fertilizer should be sustained.
 - Partnering with private agro-dealers to distribute subsidized fertilizer can help sustain growth of the distributional networks and support the SMSEs in that space
- Reliance on imports for most of the fertilizer needs means greater vulnerability to instability in global fertilizer prices
 - Encourage domestic fertilizer blending
 - Support demand creation for locally blended fertilizers among farmers
- Pay greater attention to improving soil health for increased efficiency and profitability of fertilizer use.



Implications for policy for seed

- The size of the informal seed sector suggests a need to consider the sector in government investment plans in research and development
 - Improve availability of quality seeds for majority of food crops



Implications for policy for pesticides

- Although currently low, pesticide use will likely rise with commercialization of agriculture and as incidences of pests and diseases increase.
- There is need to balance increased productivity and safe use of pesticides:
 - Development and adoption of varieties resistant to specific pests, diseases and weeds;
 - Integrated pest and disease management practices;
 - Climate-smart crop production practices and technologies;
 - Crop rotation;
 - Biological control of vectors.



Thank you.

Improving Postharvest Management Systems: for Food Security and Environmental Sustainability

Prof. Jane Ambuko
Dept. of Plant Science & Crop Protection
Faculty of Agriculture
University of Nairobi



Kenya Food Systems Conference, 4-5 April 2023, Safari Park Hotel, Nairobi

I Extent of Food Loss and Waste, Causes & Data Gaps

Harvest &
initial
handling



Storage



Transport/
Distribution



Processing



Retail



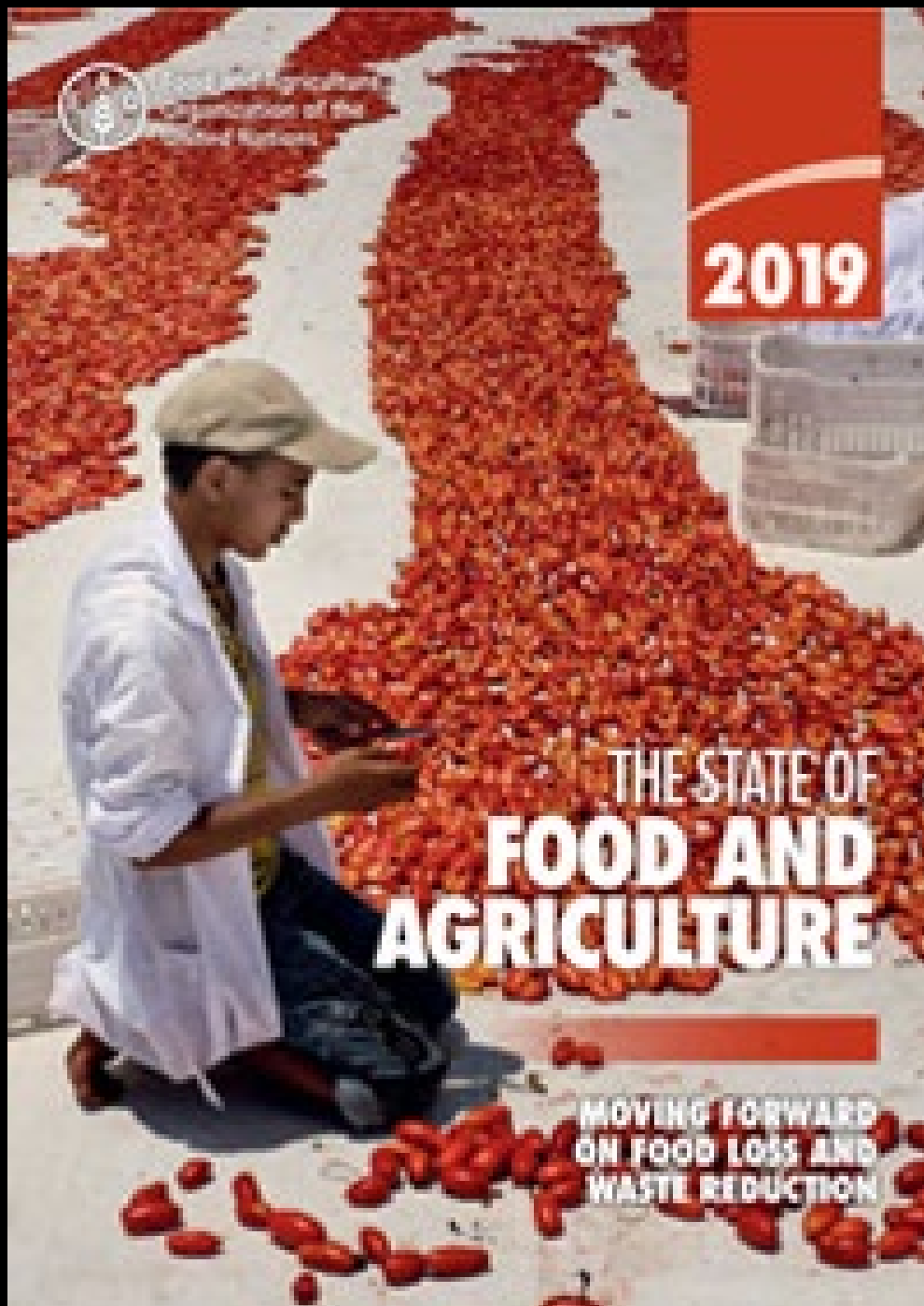
Consumption

Food Loss – 14%

Food Waste



Food Loss = food that gets spilled, spoilt or otherwise lost, or incurs reduction of quality and value - prior to the retail stage of the supply chain



Harvest &
initial
handling



Storage



Transport/
Distribution



Processing



Retail

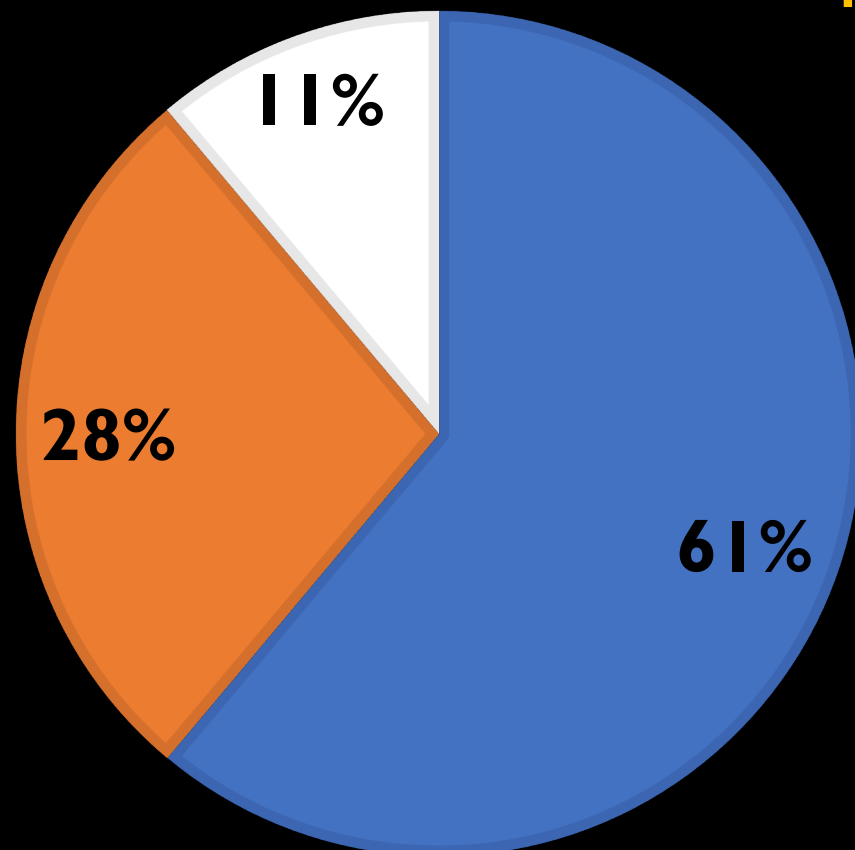


Consumption

Food waste refers to food of good quality and fit for consumption that doesn't get consumed – occurs from the retail to consumption stages

Food Waste – 17%

**17% = 931 Million MT
Food Waste**



■ Households
■ Food service
■ Retail



Serious Data Gaps...

- ❑ The data presented is based on estimates
 - Lack of reliable, verifiable and replicable data
 - The actual loss/waste is much higher in Kenya/Africa – no evidence/data
- ❑ Data on extent of qualitative losses (nutritional, safety, other attributes) is almost non-existence
- ❑ **Reliable** data is required to inform policy/targeted interventions to reduce FLW
- ❑ Urgent need to address data gaps....

Multi-disciplinary/multi-sectoral teams



“TARGET-MEASURE-ACT’ APPROACH TO ADDRESS DATA GAPS

Target

- Countries/Countries/Companies should **set targets** for FLW reduction which are aligned to the SDG 12.3 target of halving FLW by 2030 or Malabo 2014 target of halving losses by 2025
- Targets will create ambition which will motivate action towards FLW reduction.

Measure

- Each entity should **measure** their own FLW.
- Quantifying FLW within borders, operations, or supply chains can help decision makers to better understand how much food is lost/wasted, where and causes
- This evidence-base provides a solid foundation for targeted and prioritized FLW reduction interventions. It is also key for monitoring progress towards achieving the set targets
- **What gets measured gets managed**

Action

- **Urgent action** towards FLW reduction is needed to deliver results and progress towards the set targets
- All actions/interventions should be context-specific taking into consideration the socio-economic dynamics for each situation.
- **A call to action by all actors in the food supply chain**

Causes of Food Loss and Waste



- ☐ Poor production/preharvest practices – affecting quality
- ☐ Poor harvest, handling, storage practices
- ☐ Lack of technologies
- ☐ Poor market access
- ☐ Low processing capacity
- ☐ Others

Causes of FLW are interrelated and vary with the context

2 Why Food Loss and Waste Reduction Matters

For Food Security, Environment & Economics

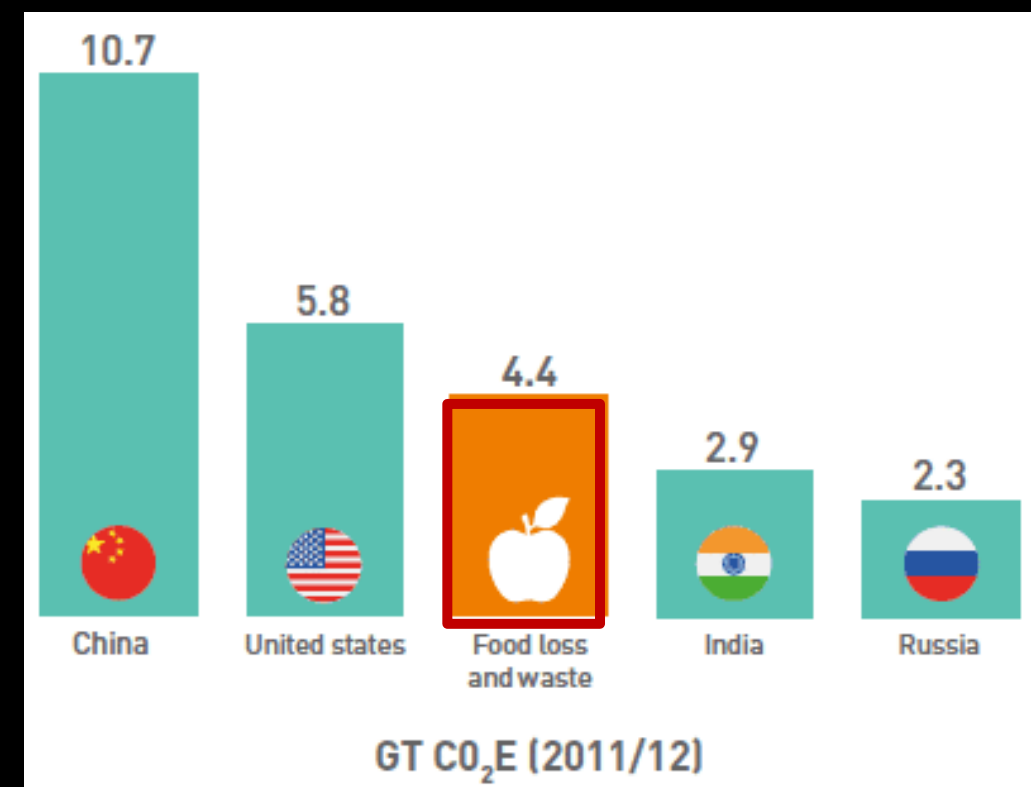
FOR FOOD SECURITY & NUTRITION

- ❑ Redistribution of food that goes to waste could address hunger, undernutrition and malnutrition
 - Globally > 1.6 billion people could be nourished from the food lost/wasted annually
 - Wasting food in a world where 828 Million people are hungry and malnourished is a moral issue
 - How many starving Kenyans could be fed on the lost/wasted food – research evidence?
- ❑ FLW affects access to safe food and healthy diets
 - Less than 6% Kenyans eat the recommended amounts of fruits and vegetables
 - FLW affects access to nutritious foods
 - Disease burden associated with unsafe food



FOR THE PLANET/ENVIRONMENT

- ❑ FLW means all resources (land, water, energy...) used in producing, processing, transporting, preparing, and storing discarded food are also wasted
- ❑ FLW exacerbates the climate change crisis with its significant greenhouse gas (GHG) footprint.
 - Globally 4.4 GT of GHGs (~8%) come from FLW
- ❑ FLW reduction can contribute to the national climate change adaptation/mitigation initiatives



THE ECONOMICS OF FLW

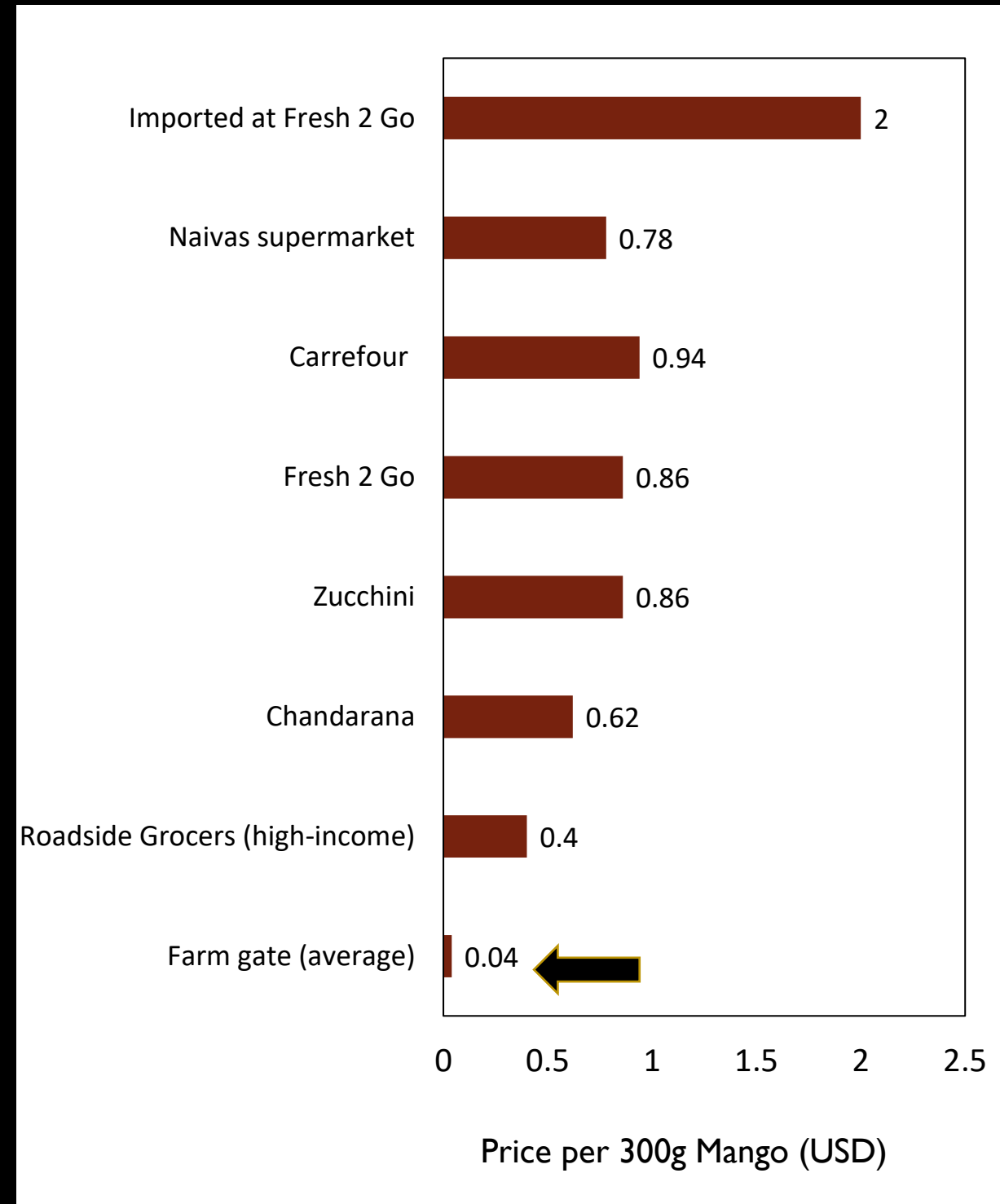
□ What does FLW mean in monetary terms

- 750 billion to 1 trillion USD – globally; KES 72 billion in Kenya

□ Plugging the food deficit – partly occasioned by FLW

- Import bill stands at about KES 184 billion (10% goes to maize imports)
- What if we saved the 30% food lost/wasted?

□ FLW negatively impacts income and livelihoods for farmers income



3

Food Loss & Waste Reduction Efforts

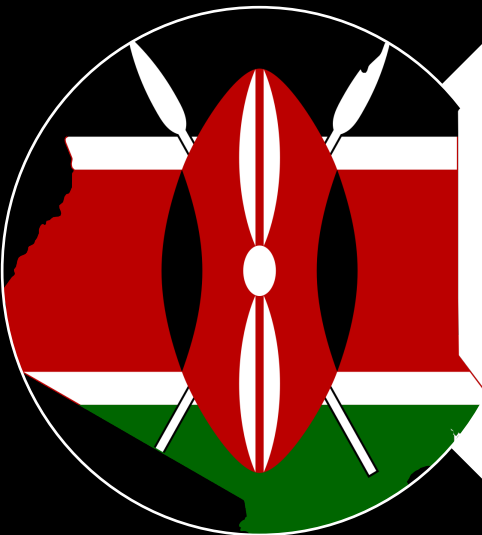
Commitments/Targets to Reduce FLW



SDG 12.3: Halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains including postharvest losses by **2030**



Malabo Declaration, 2014: Commitment 3 on ending hunger in Africa by 2025. **Commitment 3b: Halve** the current (2014) levels of Post-Harvest Losses, by **2025**



Big Four Agenda – Reduce postharvest losses from 30% to 15% by 2022 as part of the government's big 4 agenda (Food Security Pillar)

Postharvest Management Focus – Continental & National

Key challenges to PHL Reduction in Africa

- ❑ Lack of awareness and communication on the impact of post-harvest losses
- ❑ Lack of awareness of standardized post-harvest loss measurement methodologies
- ❑ Lack of targeted PH policies and strategies at the national level
- ❑ Lack of appreciation of the economic value of PHL and its impact on food security
- ❑ Lack of evidence-based PHL assessments from Research
- ❑ Lack of support for generation and dissemination of PHL best practices, technologies and knowledge
- ❑ Lack of targeted financing and investment in PHL activities

Strategic Pillars for Kenya's Postharvest Management Strategy

Policy and regulations

Institutional arrangements

Technology, Research and Development

Knowledge management, capacity building and awareness

Infrastructure and market systems

FAO, Government, Private Sector, Researchers/academia, Devpt partners...

Categories of Solutions to Reduce FLW

- ☐ Appropriate technologies
- ☐ Good practices
- ☐ Capacity building at all levels
- ☐ Coordination in value chains
- ☐ Valorization of food/ food byproducts
- ☐ Behavior changes
- ☐ Investment
- ☐ Coordination of policies & actions

Food losses and waste in the context of sustainable food systems

A report by

The High Level Panel of Experts

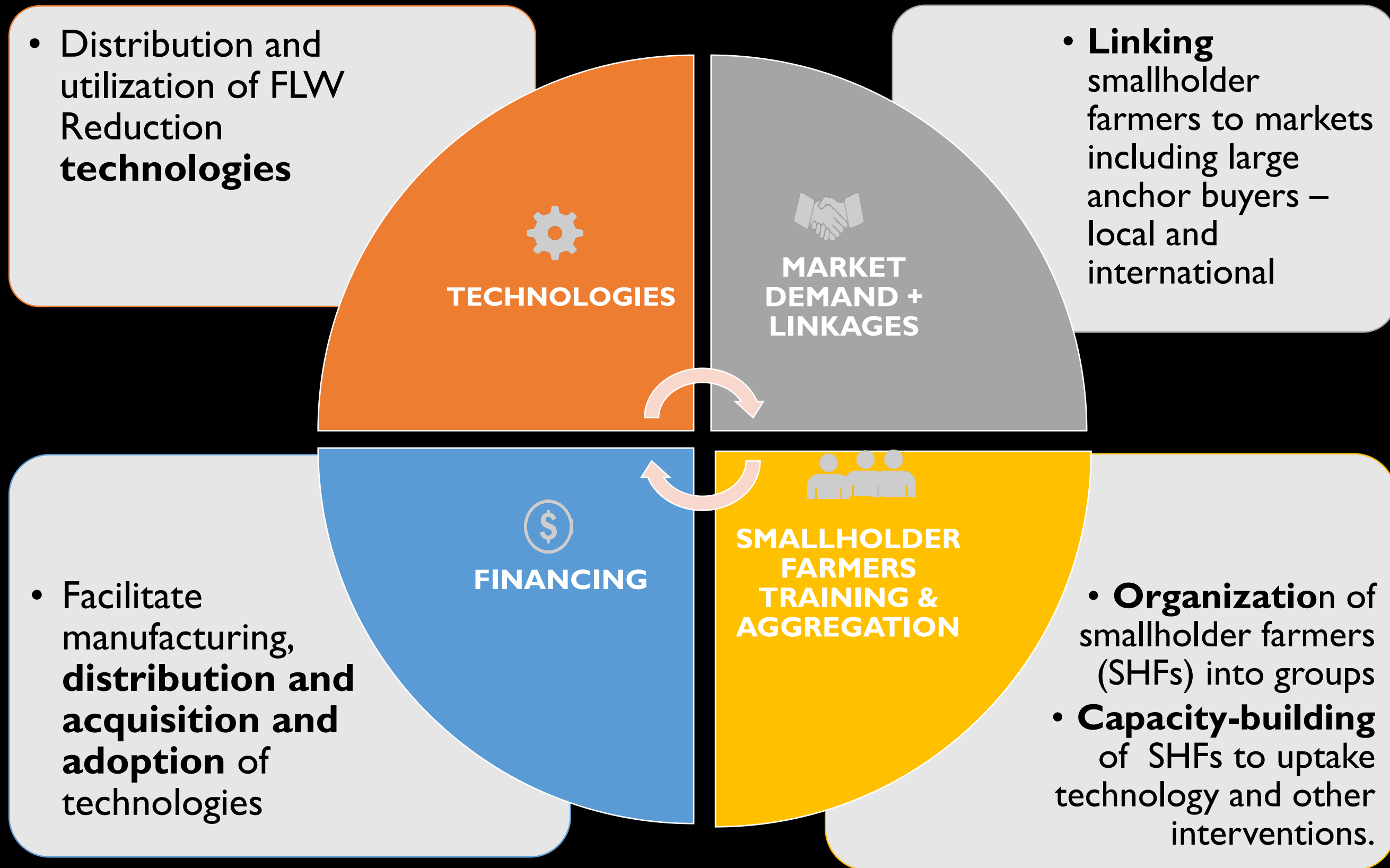
on Food Security and Nutrition

June 2014



HLPE Report, 2014

YieldWise Strategy for FLW Reduction (RF, 2016)



***Applied in Mango (Kenya); Maize (Tanzania) and Tomato (Nigeria)**

YieldWise Strategy at Zero-loss Centers for Mango



Organization of Farmers in Groups

- Produce aggregation
- Better market access – quantities, quality, consistency can be realized
- Better bargaining power
- Group access to credit to improve their operations

Introduce technologies for FLW reduction

- Cold storage, handling, small-scale processing, shelf-life extension technologies, valorization of waste from mango processing
- Joint ownership of technologies

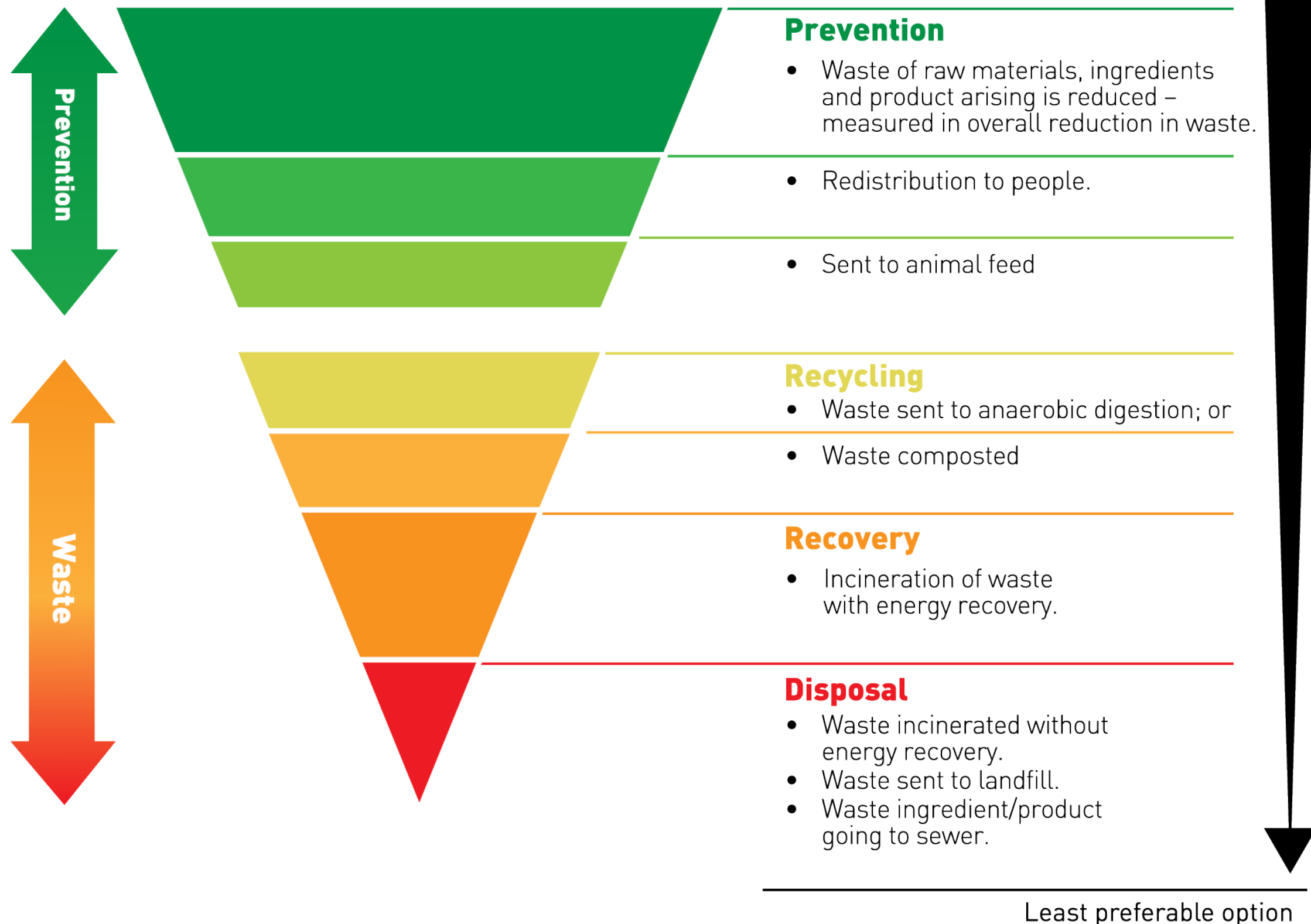
Capacity Building

- Good postharvest handling practices
- Small-scale processing
- Technology know-how
- Record keeping and agribusiness skills



The Food Waste Hierarchy

Most preferable option



Need for enabling policies (including incentives & sanctions), to support FLW reduction interventions by private sector, institutions, individuals...

Call to Action & Conclusion

- ❑ FLW reduction is integral in the efforts to address food security and nutrition in sustainable food systems
- ❑ FLW reduction is a shared responsibility by all
 - Government/Policy makers
 - Private sector
 - Development partners
 - Civil society
 - Research and academia
 - Consumers
- ❑ Need for concerted efforts by all actors playing their individual and collective responsibility
- ❑ Evidence/data on FLW and its impact - required to inform policy interventions
- ❑ An enabling policy environment is key in FLW reduction efforts



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April 4, 2023

Michael Keenan, PhD

Associate Research Fellow

International Food Policy
Research Institute

Knowledge Transfer

Building capacity through extension and digital
services





Knowledge Transfer through the Lens of Value Chain Development

- Knowledge $\neq$ Capacity
- Digital technologies have the potential to accelerate VCD by improving ways to increase productivity, create market linkages, and disseminate information
- Flagship 8 of ASGTS address digital solutions, as well as key policies such as KCSAP and NARGIP under the 1 Million Farmer Platform
- Kenya is well-placed to leverages digital technologies for VCD – 30% of Africa's Disruptive Agriculture Technologies are in Kenya (Kim, 2020)
- But, digital technologies are nascent and have not reach scale (Abay, *forthcoming*)



Presentation Objective and Outline

- To show how research can support policy in reaching its objectives of scaling effective, digital technologies

01

Demonstrate a framework of digital technologies and Value Chain Development

02

Discuss the role of extension and capacity building

03

Address the role of research in supporting policy



An Example of Green Grams

- A hypothetical farmer who grows maize two seasons per year
- The farmer learns about a KALRO Technology, Innovations, and Management Practices (TIMPS) for planting green grams in short rains
- What needs to be in place for the farmer to begin producing green grams?

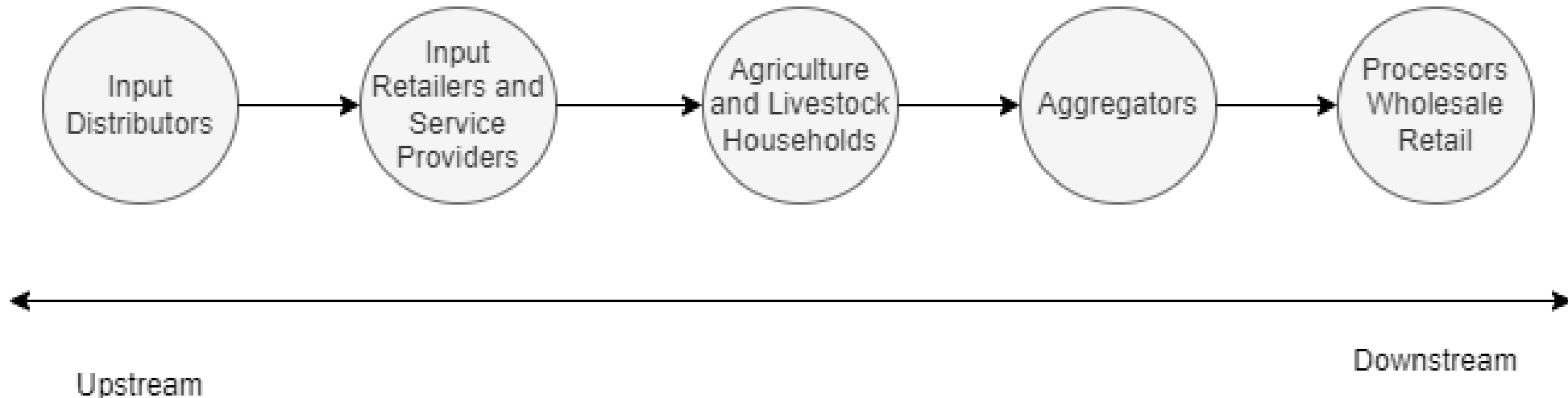
Digitally Enabled Value Chain Development





Value Chains Link Food System Actors

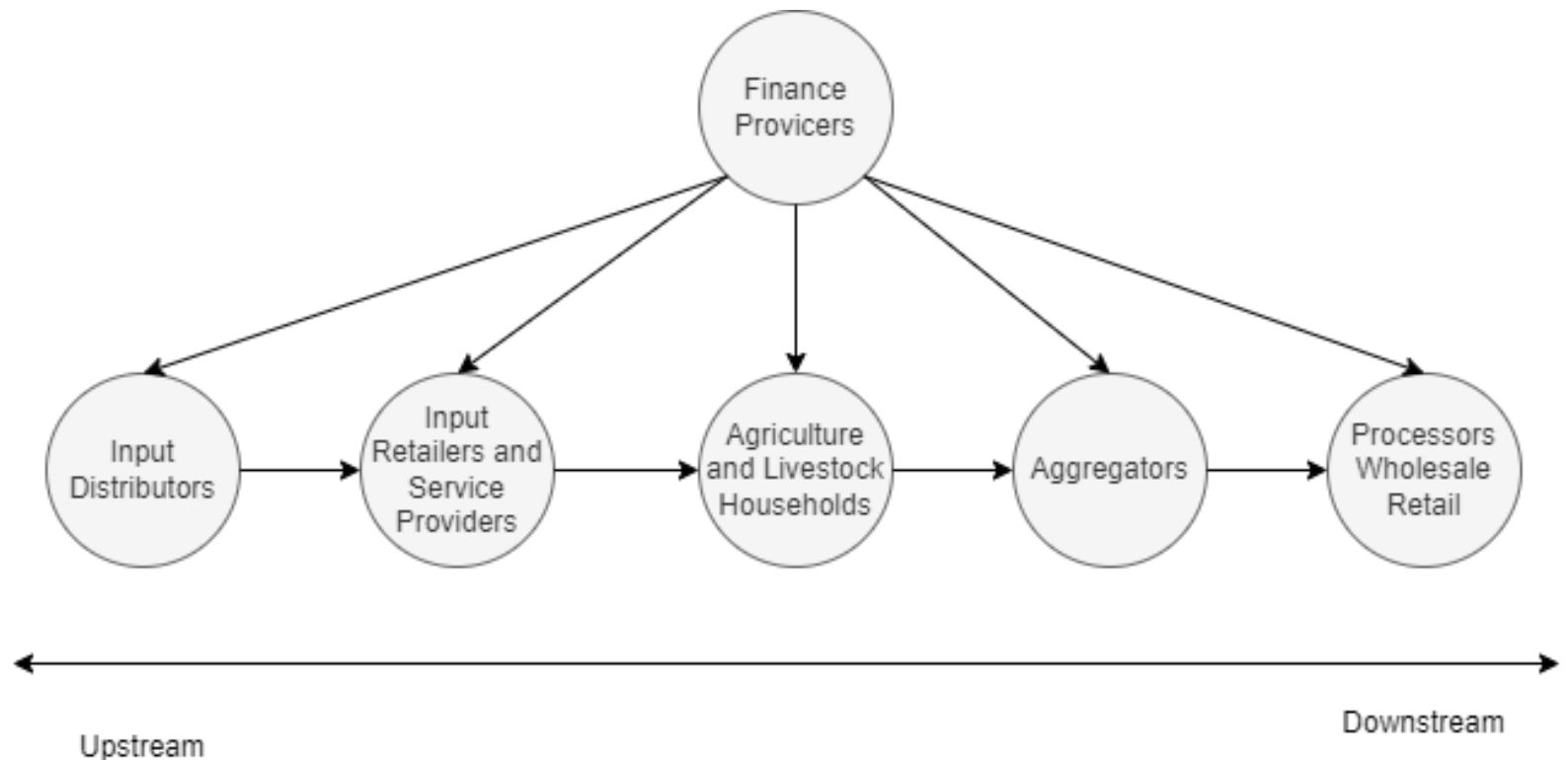
- Platform (digital) technologies facilitate market linkages
- Each node is critical to value chains functioning





Digital can facilitate finance through information sharing

- All actors have financing needs
- Their needs differ
- Knowledge and information must flow from actors to and from financiers
- Digital can facilitate information flows



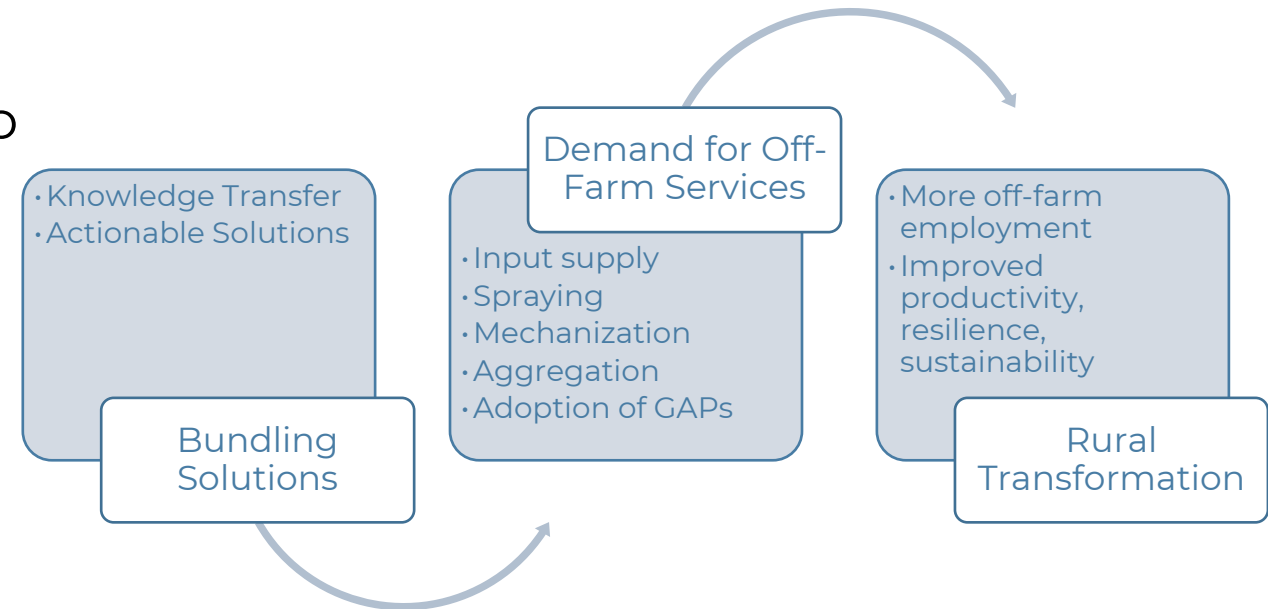
Digital Knowledge Transfer





Digital Knowledge Transfer for Farmers

- Bundling knowledge transfer with actionable solutions can contribute to transformation
- Direct to farmer models (e.g. KAOP) vs. mediated (e.g. Community Based Facilitator) models
- Inclusion and delivery models of extension
- Lack of cost-benefit studies on digitally enable extension (Spielman, et. al., 2021)
- Not just agronomic training, but business training too





Building Capacity Across the Food System

- Many interrelated actors in the food system
- Problems in one node affect behavior and outcomes in other nodes
- Off-farm actors – input suppliers, aggregators, processors, retailers, etc. – face capacity issues too
- Extension and training can go to off-farm actors, e.g. promoting food safety by training butchereries

Knowledge Transfer From Research to Policy





How Research Can Support Policy

- The 'Digital Revolution' offers a unique opportunity to build evidence-based policy throughout the policy cycle
- Data is generated at each node of the food system
- Foresight and predictive analysis can guide policy design
- A/B testing for delivery models can enhance policy implementation
- Data can bring innovations in impact evaluation for continuous evaluation designs



Creating Evidence-Based Policy

Research to adapt for better research:

- **Relevant:** aligning objectives/incentives better with policy
- **Rigorous:** using state-of-the-art methods
- **Rapid:** delivering results quickly

Policy can support in:

- Coordinating with researchers throughout policy cycle
- Facilitating data sharing between private sector, public sector, and research
- Creating “Smart” data regulation frameworks
- Investing in Human Capital for food system actors and ICT sector

Thank You

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De-risking agriculture through crop insurance? Insights from an impact evaluation of novel insurance solutions

The Kenya Food Systems Conference, 4th April 2023

Presented by: Berber Kramer

Joint with: Francesco Cecchi, Benjamin Kivuva, Lilian Waithaka, Carol Waweru

Introduction

- Climate change has led to increased production risks especially for smallholder farmers who often tend to be more vulnerable
- Sub-Saharan Africa (SSA) has several climate change hotspots and is more vulnerable to weather shocks compared to other regions.
 - >363 million people affected by drought between 1980-2014 causing > US\$31 billion in losses – with 19 billion in East Africa (FAO, 2015)
- Agricultural insurance is a risk management tool for extreme weather events; however, its coverage remains lowest in SSA (Hess and Hazell, 2016).
 - *Ex post* – insurance payouts help coping with losses
 - *Ex ante* – risk reduction can increase investments in agriculture
- However, traditional indemnity-based insurance is characterized by high transaction costs and information asymmetry problems
 - Index-based insurance to address these challenges is plagued by high basis risk

Innovation

- This study elicits perceptions of and demand for “**Picture Based Insurance (PBI)**”, and assesses the impacts of PBI on development outcomes
- PBI aims to combine the best of both indemnity-based insurance and index-based insurance, by using satellite remote sensing data and cellphone imagery to:
 - ❑ Verify losses to minimize basis risk and improve farmer trust
 - ❑ Observe management practices to reduce monitoring costs and moral hazard
 - ❑ Solution designed to enhance social and gender inclusion
 - ❑ (Other options: Bundling with seeds of stress-tolerant varieties and advisories)



SeeitGrow explained

1



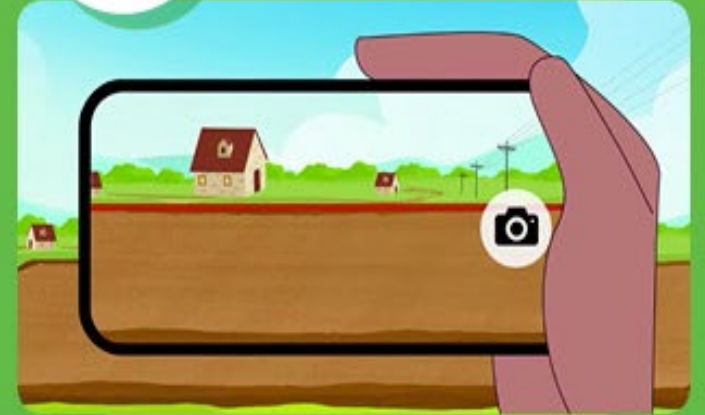
Farmers download a free app onto their smartphones.

2



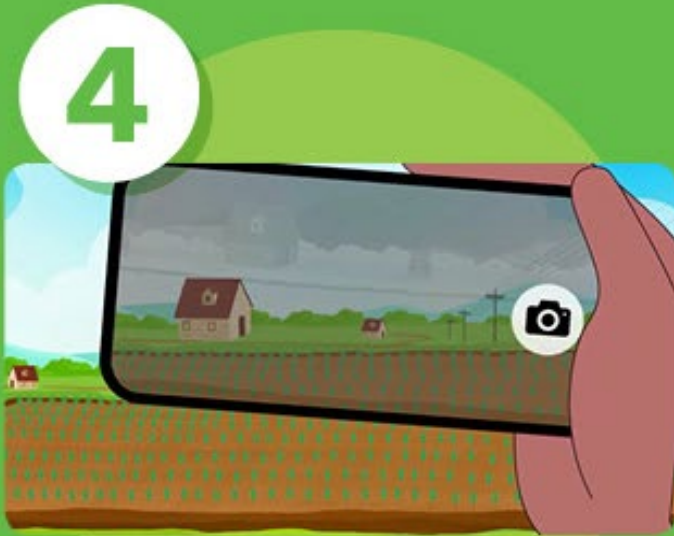
Within the app, they enroll as many sites as they prefer.

3



For every enrolled site, they upload an initial overview picture.

SeeitGrow explained



Every few days from sowing to harvest, farmers upload new pictures for the same sites with the exact same viewframe, aided by the app.

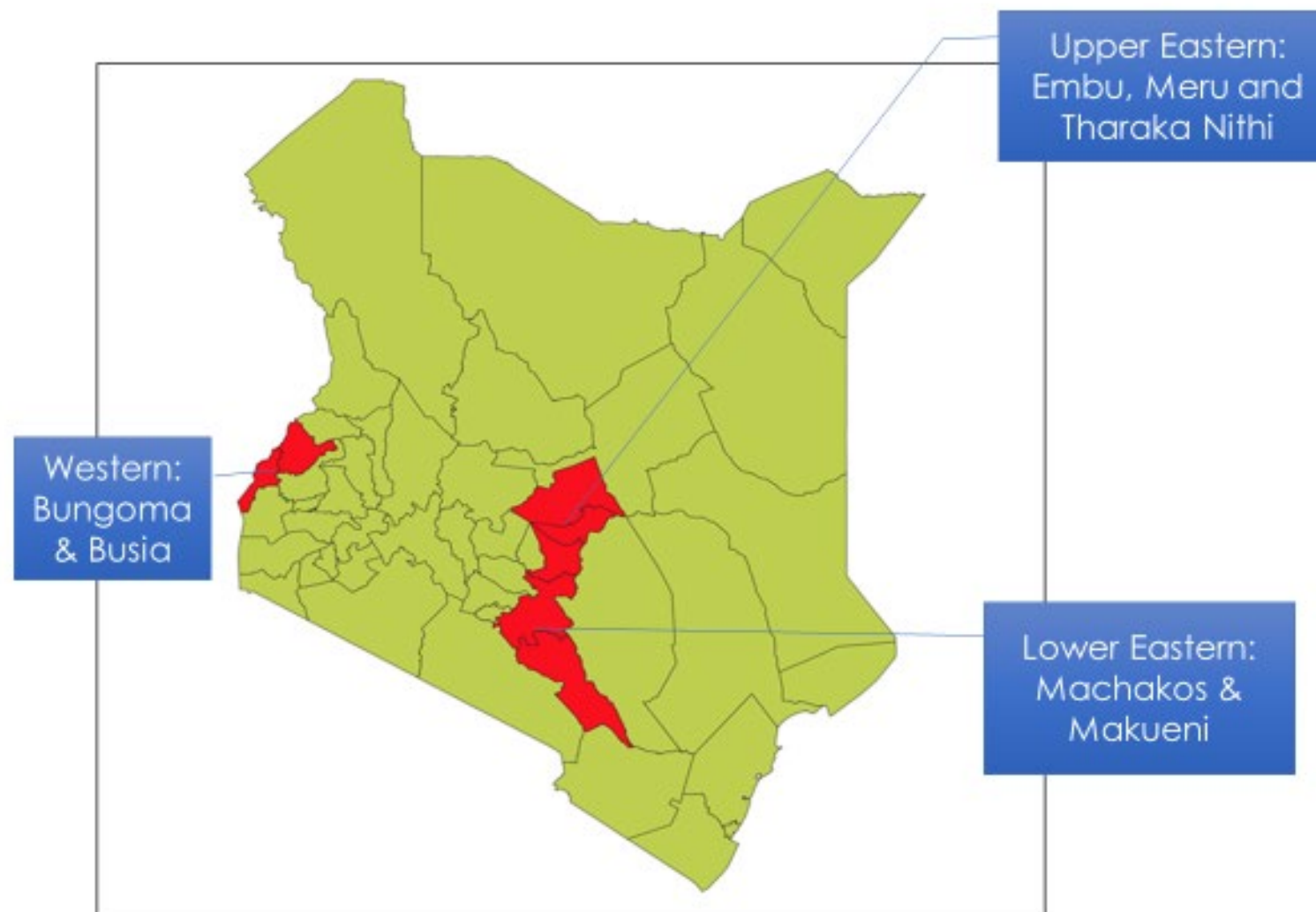


After harvest, local agronomists analyze the pictures to verify losses (while data science and image processing techniques are being used to estimate losses from the pictures).



Farmers who suffered crop damage receive insurance payouts directly into their **MPESA accounts**

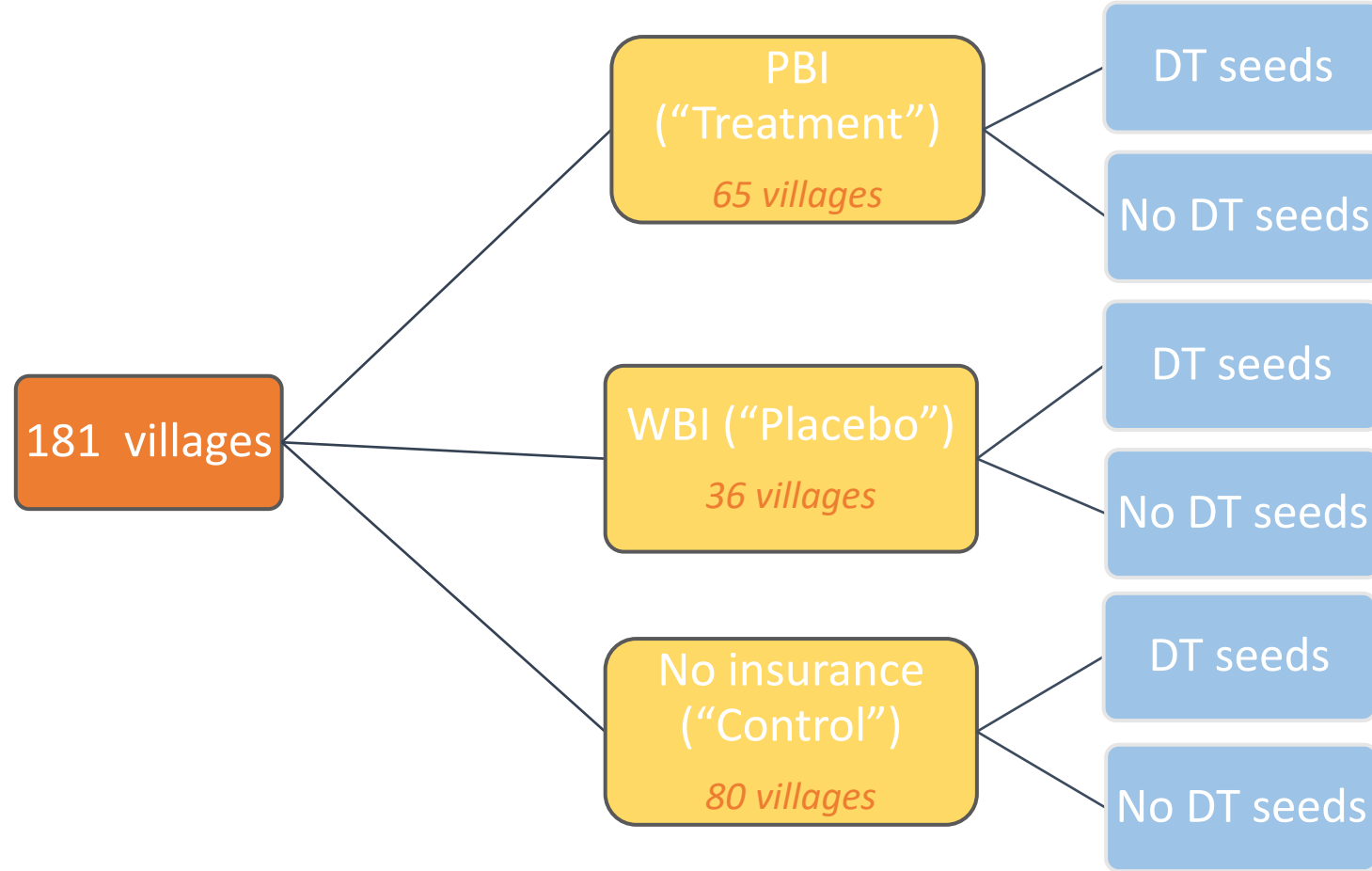
Study areas



acre
AFRICA



Study design



Each village had 20 project farmers whose farms were monitored via SeeitGrow, and, in the PBI and WBI arms, targeted with insurance.

Project period and interventions

Season	Activities and interventions	Insured farmers		Received payout (%)		Payout waiting months
		WBI	PBI	WBI	PBI	
Short Rains '19/20 <i>(Pilot in upper eastern)</i>	- Free insurance in WBI and PBI treatment arms - Photo-based crop monitoring	756	1428	12	76	8
Long Rains 2020 <i>(Conducted baseline study)</i>	- Free insurance in WBI and PBI treatment arms - Photo-based crop monitoring (champion farmers only)	38	55	37	80	6
Short Rains '20/21	- Free insurance in WBI and PBI treatment arms - Photo-based crop monitoring	645	1313	57	62	6
Long Rains 2021 <i>(Conducted midline survey)</i>	- Free insurance in WBI and PBI treatment arms - Photo-based crop monitoring - Marketing of non-DT seeds vs also DT seeds	542	1007	37	59	10
Short Rains '21/22	- Sale of partially subsidized insurance in all treatment arms - Photo-based crop monitoring - Marketing of non-DT seeds vs also DT seeds	7	80	14	41	8
Long rains 2022 <i>(Conducted endline survey)</i>	- Sale of partially subsidized insurance in all treatment arms - Photo-based crop monitoring - Marketing of non-DT seeds vs also DT seeds	742	582	17	64	6



What did we
find at endline?

Description of target population (all farmers)

	Champion farmers		Other farmers		p-value [†]	
	Male	Female	Male	Female	(1) vs (3)	(2) vs (4)
	(1)	(2)	(3)	(4)	(5)	(6)
Youth (18-35 years)	0.306	0.346	0.216	0.233	0.092	0.012
Middle aged (36-55 years)	0.633	0.615	0.543	0.561	0.222	0.493
Elderly (above 55 years of age)	0.061	0.038	0.241	0.206	0.000	0.000
Owens a phone	1.000	0.974	0.970	0.959	0.000	0.432
Owens a smartphone	0.878	0.795	0.311	0.262	0.000	0.000
Land cultivated in prior season^{††}						
- Did not cultivate any land	0.048	0.060	0.096	0.077	0.053	0.427
- Cultivated 0.1 - 1 acres	0.313	0.414	0.401	0.425	0.101	0.829
- Cultivated 1.1 – 2.5 acres	0.325	0.250	0.245	0.261	0.095	0.706
- Cultivated 2.5 – 5 acres	0.253	0.233	0.201	0.187	0.281	0.219
- Cultivated more than 5 acres	0.060	0.043	0.057	0.050	0.924	0.858
Has ever been trained on insurance	0.612	0.590	0.301	0.328	0.000	0.000
Has ever had insurance	0.429	0.423	0.160	0.176	0.000	0.000
Randomly selected (long survey)	0.551	0.436	0.503	0.504	0.471	0.254
Number of observations^{†††}	83	116	14,296	22,011		

[†] Derived from a linear regression of variable on an indicator for 'champion farmer' controlling for county and clustering standard errors by champion farmer. The p-value is derived from a t-test of the null hypothesis that the coefficient on 'champion farmer' is equal to zero. ^{††} only 34,866 farmers answered this question only 127 champions answered this, 91 from the LR2020 and 36 from SR2020. ^{†††} only 199 champions filled the self-interview forms, but 237 champions registered farmers in both seasons

Champions are younger, more often own a (smart)phone, were trained on insurance, and ever had insurance.

Description of target population

	Champion farmers	Other farmers	p-value for difference†
	(1)	(2)	(3)
Marital status: Single	0.205	0.108	0.051
Marital status: Married	0.795	0.836	0.434
Marital status: Divorced or separated	0.000	0.056	0.000
Can read and write	0.833	0.711	0.001
Has not completed primary education	0.026	0.089	0.004
Completed primary education	0.141	0.463	0.000
Completed secondary education	0.500	0.374	0.031
Completed post-secondary education	0.333	0.074	0.000
Has non-crop income	0.538	0.579	0.355
Household Dietary Diversity Score (HDDS)	3.857	2.706	0.000
'Poor' Food Consumption Score (0 to 21)	0.526	0.630	0.013
'Borderline' Food Consumption Score (21.1 to 35)	0.103	0.092	0.667
'Acceptable' Food Consumption Score (above 35)	0.371	0.278	0.025
Decides on seed use alone	0.537	0.660	0.000
<i>Decides on seed use jointly with others</i>	<i>0.451</i>	<i>0.334</i>	<i>0.001</i>
Decides on finance use alone	0.537	0.648	0.002
<i>Decides on finance use jointly with others</i>	<i>0.451</i>	<i>0.346</i>	<i>0.003</i>
Decides on where to sell crops alone	0.520	0.649	0.000
<i>Decides on where to sell crops jointly with others</i>	<i>0.469</i>	<i>0.344</i>	<i>0.001</i>
Decides on how to use income alone	0.549	0.644	0.010
<i>Decides on how to use income jointly with others</i>	<i>0.440</i>	<i>0.350</i>	<i>0.015</i>
Number of observations	175	18,285	

Champion farmers are more often single and less likely divorced or separated

They have higher levels of literacy and education

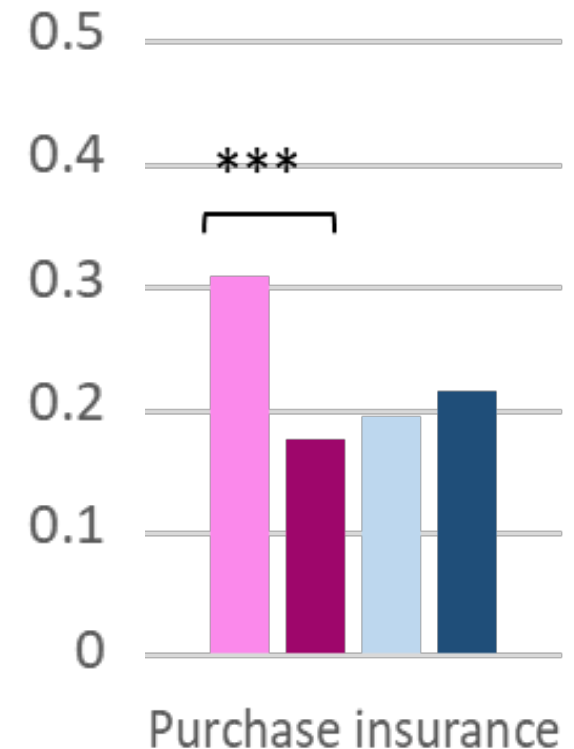
They score higher on the generally poor dietary diversity and consumption indicators

They are more likely to engage in desired joint decision making

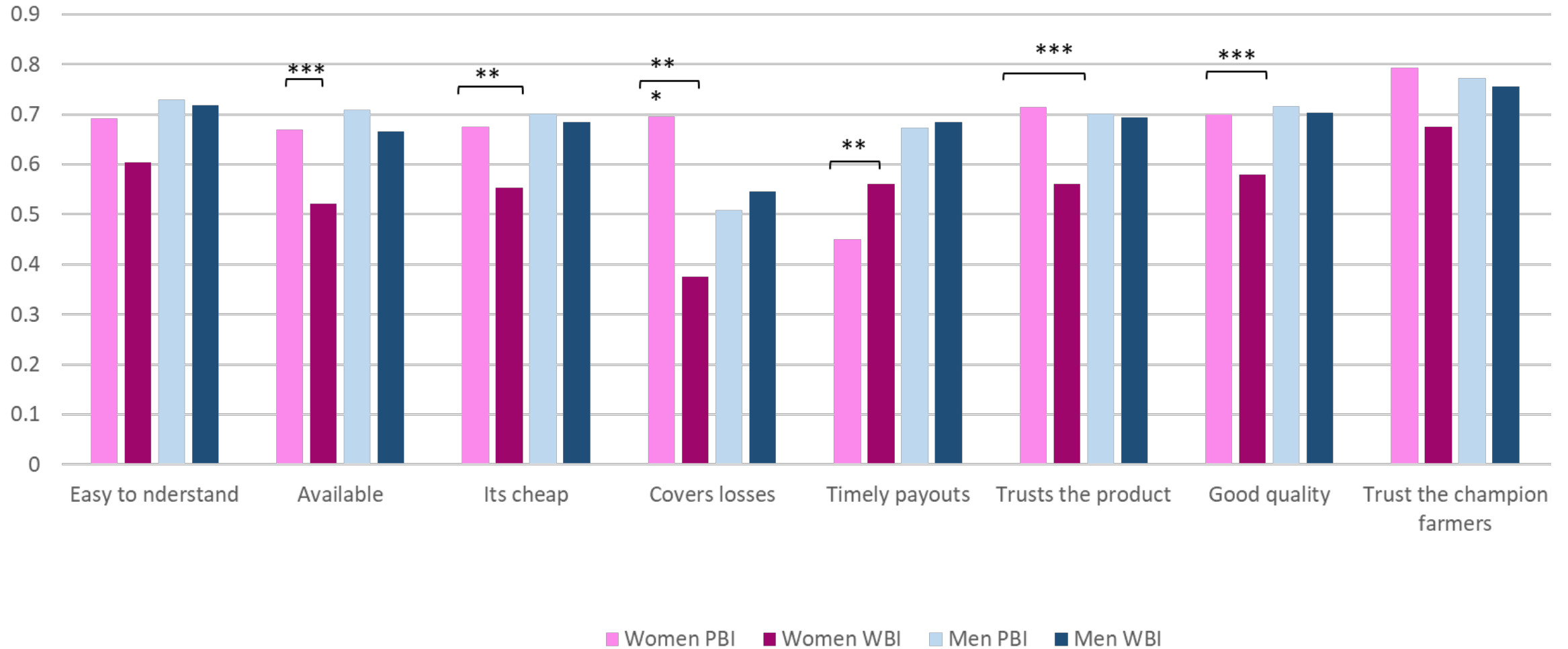
Improved insurance take-up

- Insurance take-up was significantly higher in the PBI treatment than in the WBI treatment, especially among women.
- This was related to significantly improved perceptions of insurance among study participants in the PBI treatment arm.

■ Women PBI ■ Women WBI ■ Men PBI ■ Men WBI



A closer look at perception



* Significant at 10% level ** Significant at 5% level *** Significant at 1% level

Both WBI and PBI have modest impacts on investments in production, but limited impacts on productivity.

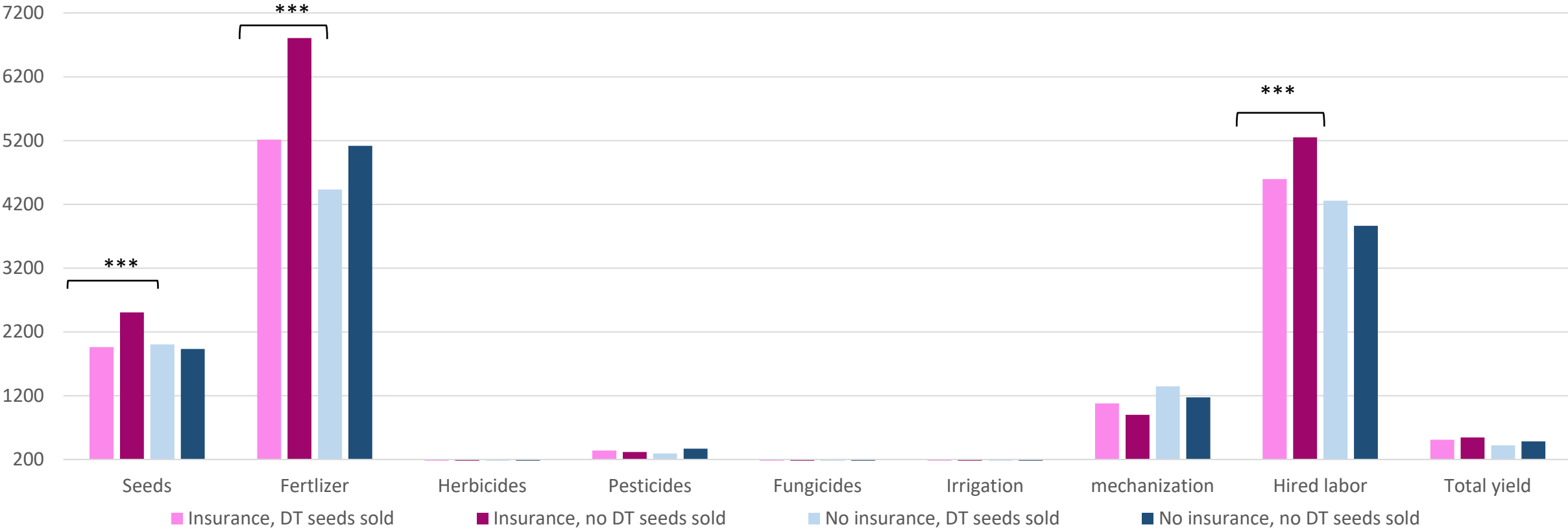
	Men			Women		
	Control	WBI	PBI	Control	WBI	PBI
Expenditure on...						
Seeds	2,013	2,442	2,383	1,941	2,177	2,148
Fertilizer	5,182	6,731*	6,576*	4,491	6,098**	5,550**
Herbicides	100	129	127	90.8	106	104
Pesticides	353	346	307	310	383	303
Fungicides	4.01	8.77	8.26	1.19	10.6**	3.10
Irrigation	19.5	0.47	34.2	6.11	34.1*	6.85
Mechanization	1,203	1,672**	888*	1,300	986**	803***
Hired labor	3,942	5,315***	4,585	4,140	4963*	4,981**
Total expenditure	12,816	16,644***	14,909*	12,281	14,759**	13,901*
Yield (Kg/ha)	525	828***	624	404	525*	379
Observations	412	209	281	686	293	592

What happens when early rains fail?

	SR2020		LR2021	
County	experienced damage at germination	% that did not cultivate (6.9%)	experienced damage at germination	% that did not cultivate (1.6%)
Bungoma	0.00	17.40	0.00	0.16
Busia	0.00	10.50	0.00	0.19
Embu	1.00	4.00	0.38	2.30
Meru	1.00	3.70	0.78	4.23
Tharaka Nithi	0.96	1.07	0.99	0.50
Machakos	0.65	7.62	0.72	0.78
Makueni	0.30	1.26	0.68	2.00

Note: Farmers tend to buy insurance when planting

Promoting stress-tolerant varieties alongside insurance does not have additional impacts



** Significant at 10% level ** Significant at 5% level *** Significant at 1% level*

Conclusions

- PBI can improve demand compared to other insurance products, especially among women, by enhancing farmers' trust and product perceptions
 - *However, delayed payouts remain a challenge: work with in-house agricultural experts throughout the season, trigger early payouts, and automate image processing.*
- The improved (perceived) coverage provided by PBI can encourage farmers to invest more in their farms, *ex ante*, regardless of whether a shock occurs
 - *But limited impacts on productivity and total household incomes from agriculture – no evidence justifying public investments in this type of program for the full population*
 - *Need to better understand impacts by farmer typology, and why there were no impacts in villages where champions could also sell seeds of drought-tolerant varieties*
- The study is unable to estimate impacts of insurance *payouts* on ex post coping strategies, and investments in subsequent seasons, due to delayed payouts.
 - *Related challenge: Farmers are not covered when they do not plant. But seasons that they cannot plant are often the worst. How to cover farmers for such events?*

Asante

Thank you



EGERTON



UNIVERSITY

**TEGEMEO INSTITUTE OF AGRICULTURAL
POLICY AND DEVELOPMENT**

Options for addressing high food prices and for making food more affordable

Lilian Kirimi

Presentation at the Kenya Food Systems Conference, Safari Park Hotel, 4-5 April 2023

Drivers of high food prices

- Global events and crises
- Trade restrictions and market volatility
- Policy failures & poor policy enabling environment
 - Uncertain government policy—erodes investor confidence
 - Incoherent policies
 - Counterproductive policy support
 - Subsidies may crowd out development of private sector input markets
- Low funding for agriculture and R&D

Potential solutions

- Key lesson from global crises
 - Improving nutrition and food security requires more resilient global and national food systems
- Explore demand & supply sides—short-term and long-term options



Supply side options

Imports

- Remove/reduce tariffs and quotas on food imports
 - Increase competition and lower prices for consumers—time of crisis
- Reduce dependency on food/feed imports
 - Short-term-- blending of wheat flour with flour derived from locally available crops (cassava, millet, sweetpotatoes, sorghum)
 - Medium-long term---linked to ag productivity growth (especially for rice, wheat, soybeans and climate smart local crops)

Improve agricultural productivity & profitability

- Adoption of technologies, innovations & management practices
- Investment in ag research & development
- Reduction input costs

Improve adoption of suitable drought adaptation measures/ sustainable agricultural practices

- Climate-smart technologies, innovations & management practices
- Rainwater harvesting
- Soil and water conservation technologies
- Soil health management

Improve adoption of suitable drought adaptation measures/ sustainable agricultural practices

- Drought tolerant crops (orphan/high value traditional/climate-smart)
 - Guaranteed harvest; reduce overreliance on maize
- Establish kitchen and urban gardens
 - Indigenous vegetables and drought tolerant crops
- Use agro-weather information---weather forecasts, drought monitoring and early warning systems



Investment in agriculture and research and development

- Develop new and improved crop varieties through innovative technologies including genetic engineering
 - Resilient to climate change and pests, more productive and nutritious
 - E.g., water efficient maize
- Develop new production and processing/value addition technologies
 - Improve efficiency, reduce costs for farmers and food processors
 - E.g., regenerative agriculture
- Develop local solutions and adapt latest technologies to local conditions/contexts (including irrigation)
 - Agrifood tech start-ups & other agricultural innovations

Reducing costs of inputs, raw materials & irrigation

- Input subsidies
 - Smart--for resource poor farmers & short-term during a crisis
- Supporting local production of crops and insects (protein) for feed industry
- Irrigation technologies & solutions (e.g., drip, solar power)—reduce tariffs

Improving market access

- Investment in infrastructure (roads, modern markets and storage facilities)
- Development of efficient and transparent markets
 - Market information systems are key for trade

Reducing food waste & increasing food reserves

- About 1/3 of all food produced globally is lost or wasted annually (FAO) ---includes post-harvest losses
- Better storage and processing techniques
 - Drying vegetables at household level (during glut periods)
- WRS & food reserves
- Improved transportation, logistics & market information
 - Reduce transaction cost & encourage arbitrage/food trade
- Consumer education campaigns



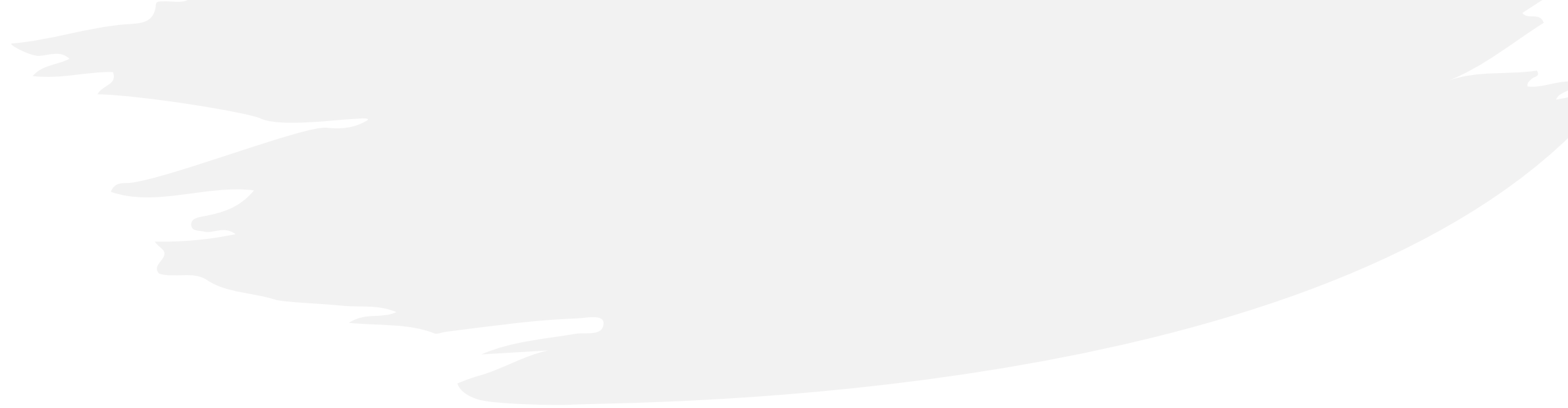
Demand side options

Social protection programs

- Cash-based transfers, food vouchers & school feeding programs
 - Vulnerable populations can access food during times of crisis or high prices
 - E.g., Hunger Safety Net Program; maize flour subsidy
 - School feeding programs can use locally sourced produce
- Right design is critical for success
 - General input & maize flour subsidy—not fiscally sustainable
 - Focus on targeted subsidies that cost less (cash transfers & E-vouchers)

Demand side options

- Diversify foods on the menu & blending of staples—reduce upward pressure on maize prices
- Change our eating habits from maize, rice, and wheat to more climate resilient local foods (cassava, sweetpotatoes, millet, sorghum, green peas, cow peas)
- Nutrition awareness campaigns (diets are sticky!)
- Improving the economy to increase purchasing power
 - Industrialization and manufacturing; services sector
 - Modern & efficient machines, up-skilling/re-tooling workers and investment in technological research



Thank you!



INITIATIVE ON
National Policies
and Strategies

KENYA

FOOD SYSTEMS CONFERENCE

*Recommendations and actions
to support the implementation
of the Bottom-Up Economic Plan
in Kenya*



April 4, 2023

Erastus K. Kangethe

Professor,

**Food Safety
Consultant**

Improving Food Safety



Transforming the food consumer environment and behavior





Food Safety is a Requisite.

- Food Safety is a catalyst for National Social Development
- Unsafe food affects the effort to:
 - End Poverty [16 million living < \$2/day]
 - End Hunger [11 million]
 - Improve the well-being (26% stunted of this 25% multiple diarrhea episodes)



Food Safety is a Requisite

- Unsafe food is costly (Jaffee et al, 2019)
 - increases Public Health costs (135 million cases per year)
 - \$4 billion in treatment costs per year
 - 180,000 deaths per year
 - disruption of markets -RVF
 - Used as nontariff barriers – Aflatoxin in Maize
 - Loss in productivity of \$800 million for Kenyans (LMIC 95.5 \$ billion)

FIGURE 10.2—ESTIMATED “PRODUCTIVITY LOSS” DUE TO FOODBORNE DISEASE, AFRICA, 2016 (US\$ BILLIONS)



Source: Jaffee et al. (2019), based on data from WHO-FERG (2015) and World Bank (2019).

Note: The estimated loss for the indicated countries totals US\$19.5 billion. The estimated loss for all other African countries totals US\$0.5 billion.



Food Safety Governance

- Single Agency
 - There is coordination
 - Everyone works under the same authority
 - Inter-agency culture conflicts
- Multiagency system -13 Agencies
 - No coordination
 - Duplication of roles
 - Wastage of Resources
 - Increases cost of doing business for FBO
 - Ad hoc Interventions



Food Safety Governance

- **An Integrated System**
 - Coordinating authority
 - Providing coordination across the agencies
 - Reduces duplication of roles and wastage of resources



Improving Food Safety

- An admission and firm commitment by the Government to address food safety
- Restructure food safety policy to align with the vision and ideals of an integrated safety system
 - Data sharing (surveillance etc) between National and county governments and the private Sector;
 - Collaboration between agencies, industry, and consumers;
 - Employing comparable standards,
 - Improving response capabilities during food-borne emergencies
- Draft a progressive food safety law – that recognizes the strengths and weaknesses of the agencies, delineates their boundaries;



IMPROVING FOOD SAFETY

- Sets an independent food safety authority
 - Get funded independently from the parent Ministry from the exchequer to deliver on its mandate
- Our food safety performance has not been below average
- JEE (2018) scored food safety at 40%; SPAR (2022) scored 40% while financing food safety was estimated at 30% (SPAR 2022)
- Establish an effective surveillance and food inspectorate Service. Majority of our food types are not inspected (1:100 and 1:1000),



Improving Food Safety

- Build the capacity of the FSI, considering the many value chains,
- Employ – Food safety inspectors – JEE (2018) scored 40% on human and Animal human resources; 2022 SPAR = scored 30% below the regional average of 43%.
- BSc in Food Safety benchmarks



Improving Food Safety

- Informal markets are critical to the country's food supply
- Food handlers lack the capacity to adhere to food standards
 - Information alone is not adequate, also provide equipment and infrastructure
- FBOs are increasingly bearing more responsibility for food safety.
 - Improve the capacity of sFBO to achieve GHPs
 - Incentivize meaningful food safety management change



Improving Food Safety

- Food Safety Surveillance
 - Regular and comprehensive
 - Focus on risky foods
 - Rank and prioritize hazards and their associated food source attribution.
- Leverage the Private Sector
 - Self-regulation
 - Co-regulation
- Leverage consumer demands for Safe food.
 - Provide information on risky foods and recommendations



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*Recommendations and actions
to support the implementation
of the Bottom-Up Economic Plan
in Kenya*



April 4, 2023

Dr. Christine Chege
Agri-Nutrition & Food System
Scientist,

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International and CIAT

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Last mile retail:

*A Look at Mama Mboga (informal
retailers) and supermarkets*



Background





Background

- Most developing countries are experiencing rapid food system transformation since the past decade
- Transformation is driven by changes in consumer preference due:
 - Increasing incomes
 - Globalization
 - Urbanization
 - Increasing number of working women
 - Changes in food environment



Figure: mama mboga in Mathare
Photo credit: K.Onyango/CIAT



Food environment

- Food environment , “the context in which consumers interact with food and what influences their choices; it encompasses key elements such as food availability, accessibility, affordability, desirability, convenience and marketing” (Herforth & Ahmed, 2015).
- Informal food retailers e.g., Roadside vendors, *mama mboga*, *kiosks*, open air markets, mom & pop shops are key actors in the food environments
- Supermarkets are also important source of foods especially for middle- and-higher-income consumers



Study results: slums of Nairobi and Kisumu

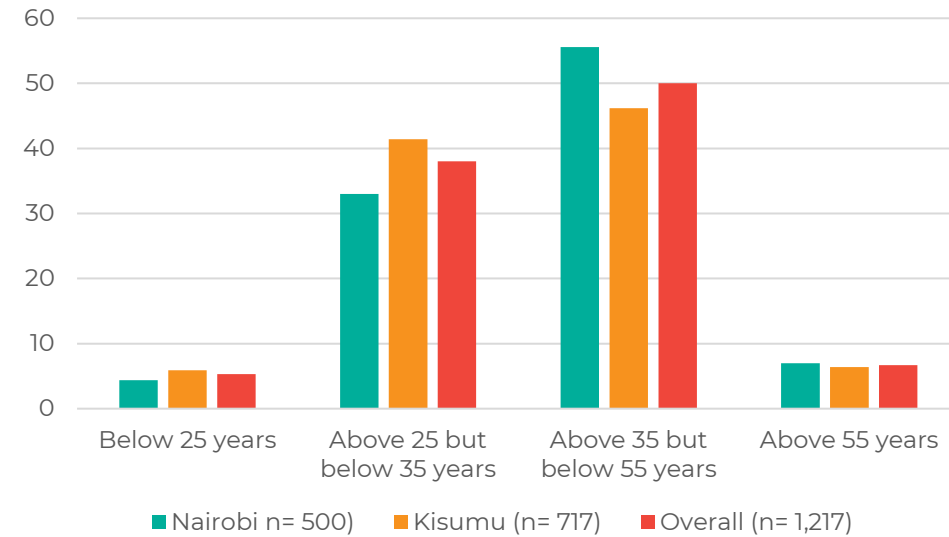
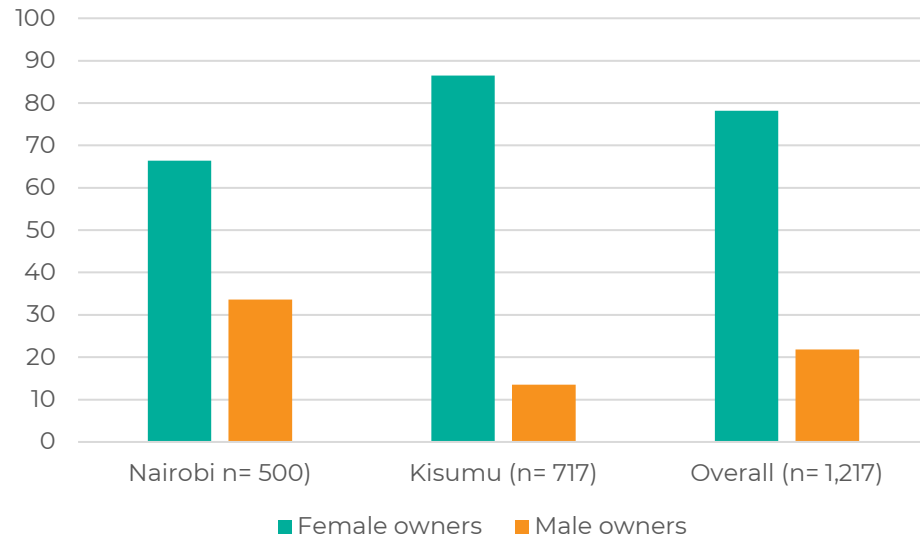
- Conducted a study Nairobi & Kisumu in 2021
- Target: food retail outlets in low-income urban areas
- Nairobi: Kibera, and Mathare –Total 500 vendors
- Kisumu: Nyalenda A/B, - Total 717 vendors



*Figure: Display of fruits and vegetables in Mathare
Photo credit: K.Onyango/CIAT*



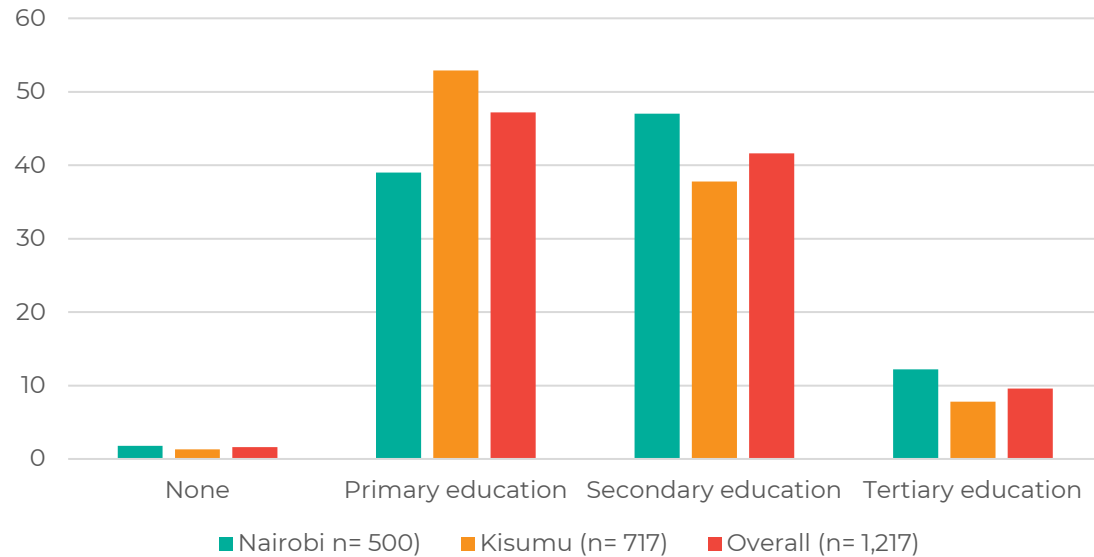
Characteristics of the informal retailers



- 80% female retailers (owners)
- Most retailers are 35-55 years and 25 -35 years old



Characteristics of the informal retailers ...



- Majority have primary and secondary school education levels



Figure: Mom & Pop store in Kibera
Photo credit: C.Chege /CIAT



Food item sale by retailer type and food groups (%) in Mathare & Kibera

Food Group	Kiosks	Mom-and-Pop Shops	Super markets	Cereal Shops	Open-Air Markets	Informal Restaurants	Tabletop Vendors	Street Vendors	Total
Cereals	25.78	29.92	32.14	34.11	1.2	12.43	-	15.58	23.11
Roots and Tubers	2.48	0.99	1.02	0.47	10.84	4.14	5.94	11.00	2.96
Legumes, Nuts, Seeds	1.55	3.47	8.16	59.35	1.2	12.43	0.5	13.00	10.84
Vegetables	1.24	1.65	-	-	40.96	-	67.82	-	9.78
Fruits	2.17	0.66	-	-	33.73	9.47	21.29	5.00	5.45
Meat	0.62	-	-	-	-	1.78	-	3.00	0.42
Eggs	5.90	4.13	3.57	0.93	-	12.43	0.99	13.00	4.71
Fish	-	-	0.51	-	-	0.59	-	0.93	0.21
Milk and Milk Products	9.01	10.91	9.18	2.34	-	11.24	-	3.00	7.4
Oils and Fats	10.25	9.59	10.2	1.4	-	12.43	-	17.00	8.04
Sugars and Sweets	22.05	20.33	19.9	0.47	-	10.65	-	5.00	13.59
Spices, Condiments, and Beverages	18.94	18.35	15.31	0.93	12.05	12.43	3.47	13.00	13.48

Source: Chege et al 2022



Importance of supermarkets (Mathare & Kibera)

- Low use of supermarkets in the low-income areas- only 21% of the interviewed households purchased foods from supermarket
- Use of supermarket increases with increase in incomes
- Slum dwellers are not yet part of the supermarket revolution experienced in most parts of Africa

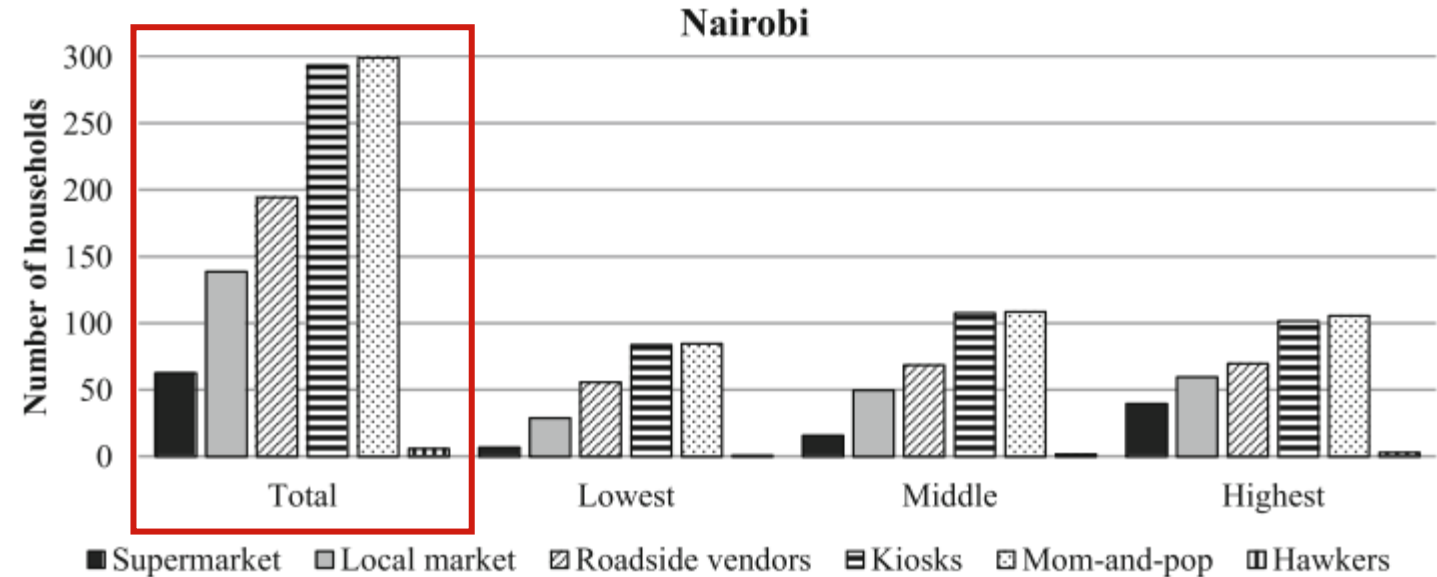


Figure: Use of different outlets by expenditure tercile by households in Kibera and Mathare: Source, Wanyama et al 2018.

(Use: Household purchased at least one food item from any of the outlets in the past 7 days)



Importance of informal retailers

- Source of food –including nutritious foods, at affordable prices for low-income consumers
 - Proximity to consumers
 - Sell small portions/quantities- favorable to low-income consumers
- Source of livelihood (employment) especially for women and youth



Policy actions for informal markets ... (1)

- Informal markets are important sources of nutritious foods and livelihoods: policies should be designed to include informal actors in the food systems-should be gender and youth sensitive
- Food safety
 - Some of the most nutrient-rich foods (e.g. fruits, vegetables, animal source foods- are the most contaminated
 - Food borne diseases has huge global burden – illnesses, deaths, economic effects to the countries
 - Need for food safety policies at the vendor's level



Policy actions for informal markets ... (2)

- Commodity quality
 - Quality may deteriorate with long poor storage and handling
- Food loss and waste
 - As a result of poor transportation, handling and storage
- Infrastructure:
 - Poor commodity storage contributes to food loss & unsafe foods
 - Need for infrastructure support in the markets e.g. well organized storage spaces with cooling systems; clean water; sanitation; etc
- Commodity traceability
 - Mostly source commodities through informal sources
 - Potential to have better linkages with producers



Thank you!

Dr. Christine Chege

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INTERNATIONAL
FOOD POLICY
RESEARCH
INSTITUTE

Promoting Healthier Diets and Influencing Consumer Preferences

Olivier Ecker (IFPRI)

CGIAR NPS – MoALD Kenya Food Systems Conference
Nairobi, Kenya | April 4-5, 2023

Main messages

1. Poor diet quality is the leading cause of all forms of malnutrition.
2. Underconsumption of nutrient-dense foods and high consumption of calorie-rich foods—with increasing shares of ‘empty calories’—is the main diet problem.
3. Kenya’s diet problem is primarily a poverty problem.
4. A related problem is large price differences between calorie-rich foods and nutrient-dense foods, esp. for animal-source protein foods and vegetables.
5. Consumer preferences for some nutritionally important, plant-based foods (esp. pulses and nuts) are weak.
6. Economic policies and technological innovations can be effective in narrowing the consumption gaps for only some nutrient-dense food groups.
7. Changing consumer preferences is possible but often slow, requiring decisive and sustained efforts.

Kenya's nutrition challenge

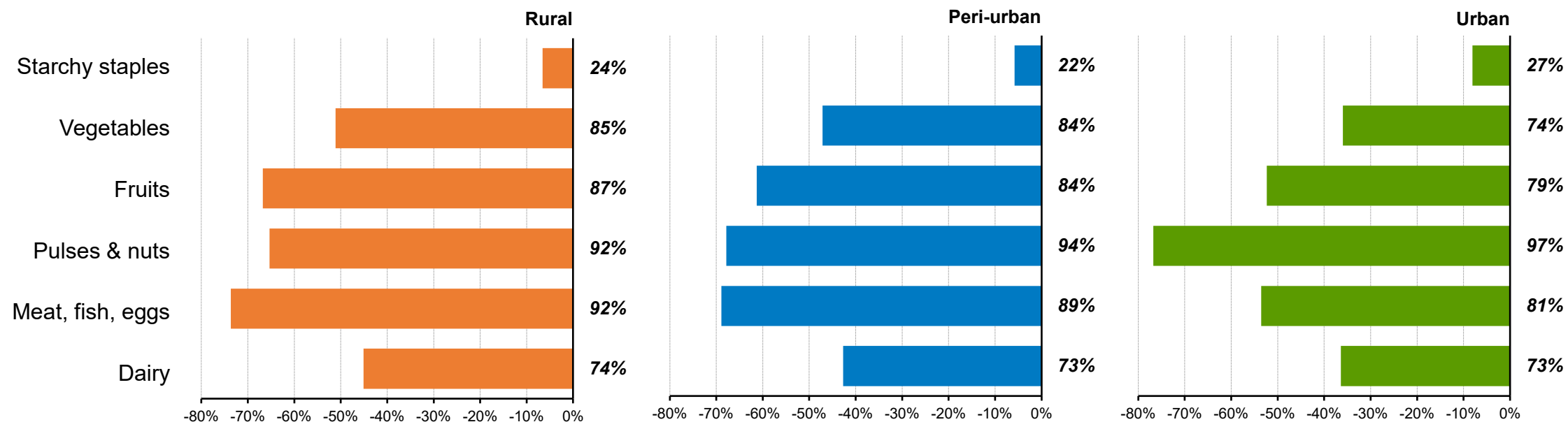
- Shifting toward more complex, multiple burdens of malnutrition.
 - Chronic child undernutrition remains high: 19% of children <5y were stunted in 2020.
 - Overweight/obesity among adults increases rapidly: 33% of women 15-49y were overweight/obese in 2014, compared to 23% in 2003.
 - Number of deaths resulting from NCDs (incl. coronary disease, type 2 diabetes, and cancer) is projected to surpass malaria and tuberculosis by 2030.
- Rather than primarily treating the outcomes of malnutrition, a stronger focus on the main root cause—people's diet—is needed.
- Current food systems and consumers' food environments do not promote healthy diets, calling for transformational change.

Note: The main determinants of food choice—hence, policy levers—are household income, food prices, and consumer preferences (partly influenced by nutritional knowledge).

Diet deprivation

- Underconsumption of animal-source and plant-based protein foods is most prevalent and most severe, followed by vegetable and fruit underconsumption.

Percentages of the population with consumption amounts below the optimal intakes and mean consumption gaps (bars) by major nutritious food group of the EAT-Lancet healthy reference diet

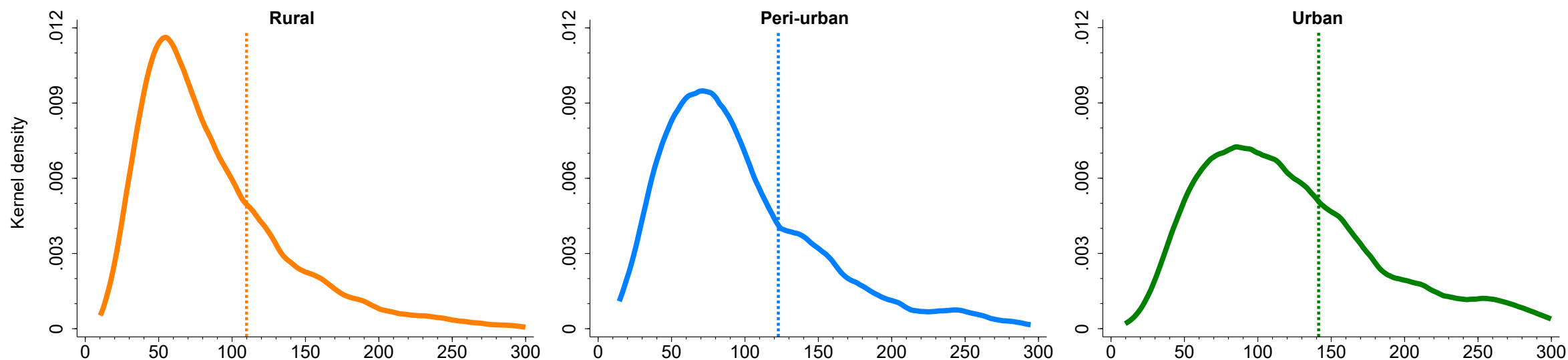


Food consumption amounts and optimal intakes are measured in calorie equivalents.

The poverty problem

- Most Kenyans cannot afford a healthy diet.
- Poverty reduction measures are likely to have nutritional benefits.

Distributions of food expenditures and median costs of the EAT-Lancet healthy reference diet

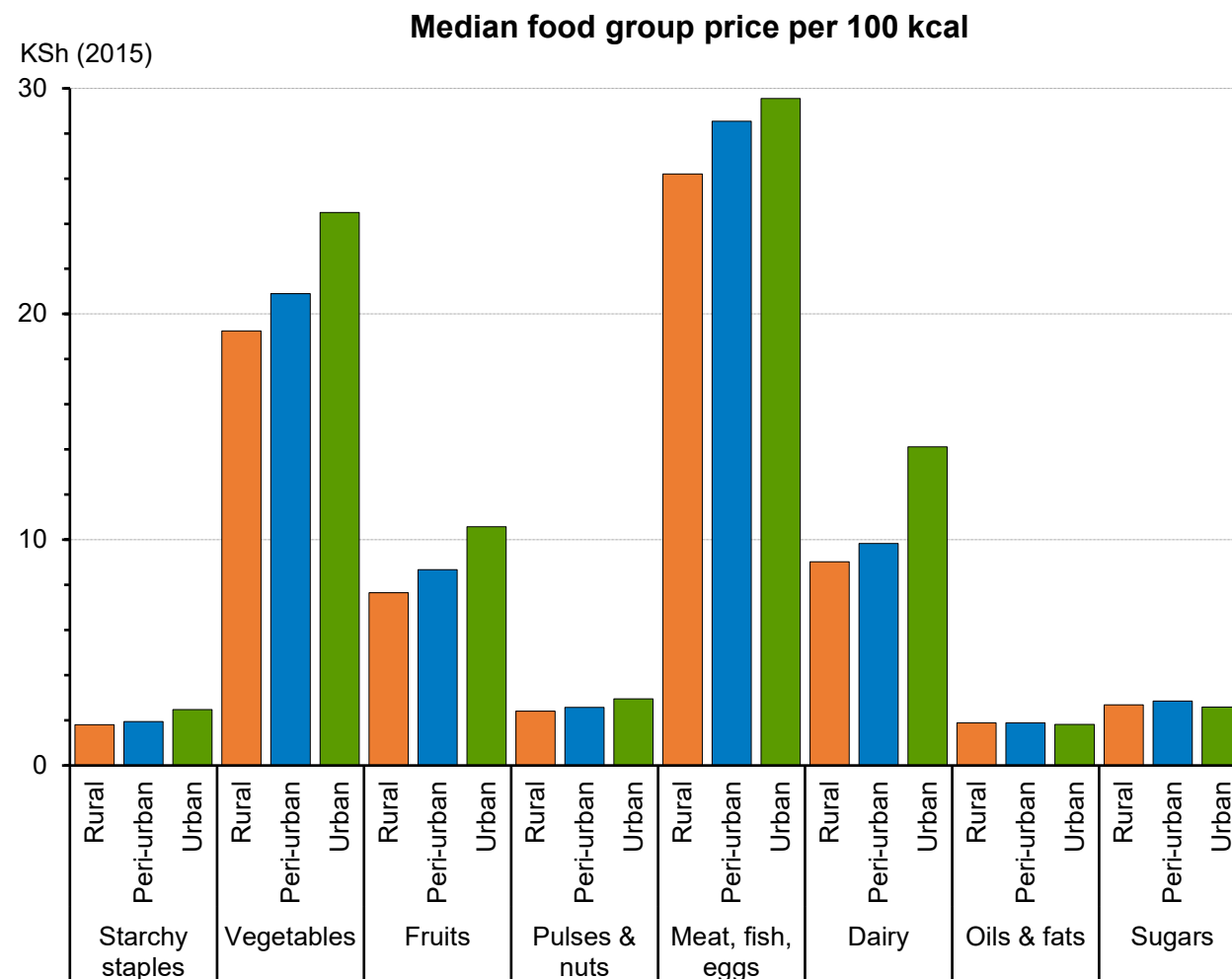


y-axis: household food expenditure per AE (KSh/day, 2015).

dashed line: median costs of the EAT-Lancet healthy reference diet per AE, calculated by using local food prices.

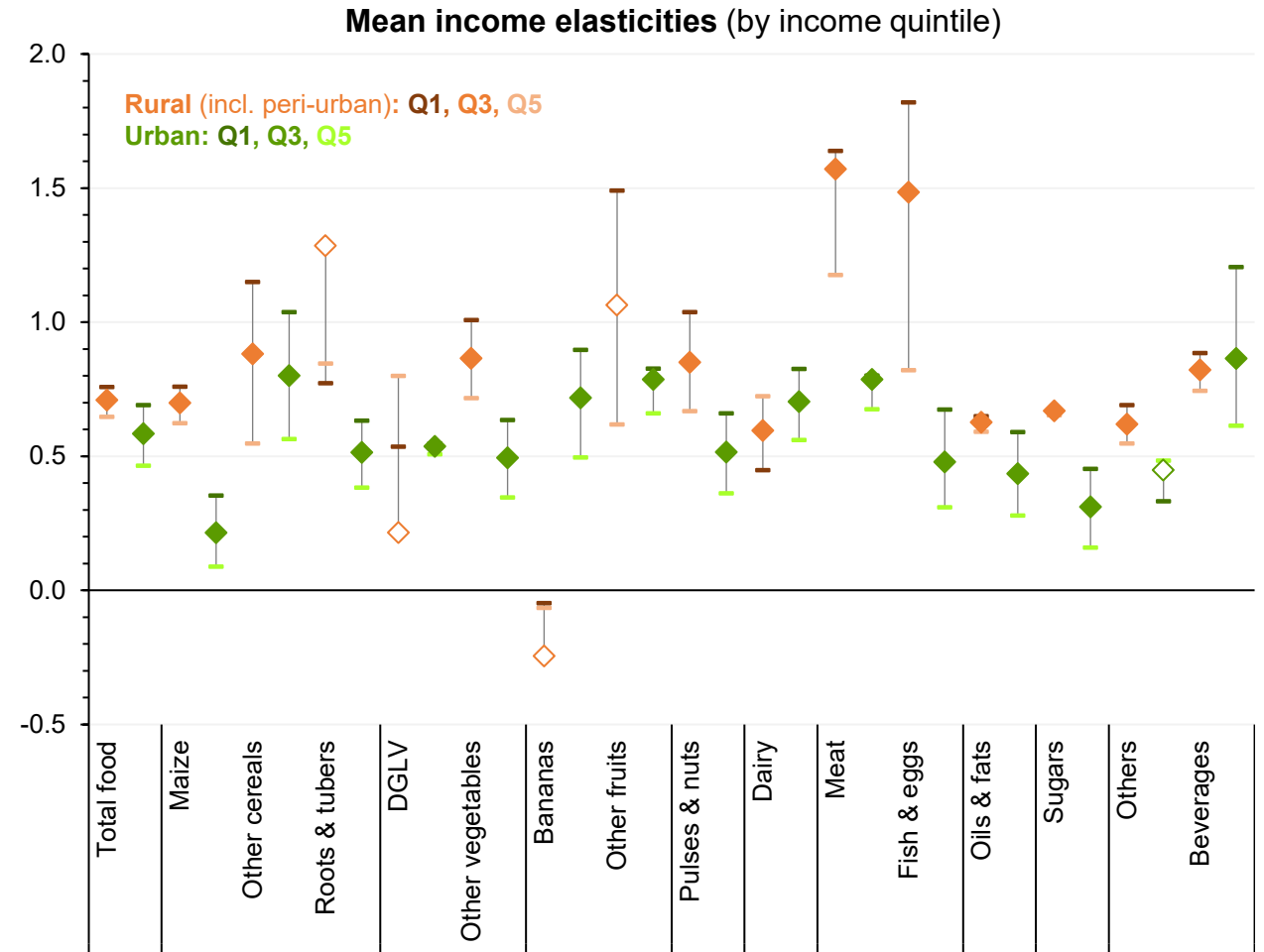
The relative food price problem

- Food choices are often driven by food insecurity and geared toward (over-) satisfaction of calorie requirements.
- Large differences in food prices per kcal:
 - Cheap: starchy staples; pulses & nuts; oils & fats; sugars.
 - Expensive: meat, fish, eggs; vegetables.
- High costs for meeting dietary guidelines for key nutrient-dense foods (esp. animal-source protein foods), and low costs for obtaining adequate amounts of staple foods and maximum amounts of calories from non-required foods (esp. sugar).
- Price-affecting policies and technologies can boost consumption for some nutrient-dense food groups—if responsive to price signals.



The weak preference problem

- Kenya's nutrition challenge goes beyond economic issues. See esp. pulses & nuts:
 - Good source of protein and micro-nutrients, decent source of calories,
 - Inexpensive,
 - But low consumer preferences.
- Overall, income growth tends to over-proportionally increase the demand for animal-source protein foods and cereals, not so the demand for highly nutritious, inexpensive plant-based foods.
- Behavioral change interventions (e.g., public awareness campaigns, nutrition education and healthy meal programs in schools) are needed for complementarity.



Hollow diamond-shaped markers indicate that the elasticities are statistically insignificant at the 5% level as per bootstrapped standard errors.

DGLV = dark green leafy vegetables. Other cereals are mostly wheat, wheat products, and rice. The food group of bananas includes plantains. Other foods include sweets, snacks, and condiments. Beverages include sugar-sweetened beverages



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INTERNATIONAL
FOOD POLICY
RESEARCH
INSTITUTE

KENYA

FOOD SYSTEMS CONFERENCE

*Recommendations and actions
to support the implementation
of the Bottom-Up Economic Plan
in Kenya*



April 1, 2023

Speaker

Title, Division,
Organization

Developments and forecasts for global food, fertilizer, and fuel markets

Dr. David Laborde

Director of the Agrifood Economics Division (ESA)

Food and Agriculture Organization of the United Nations

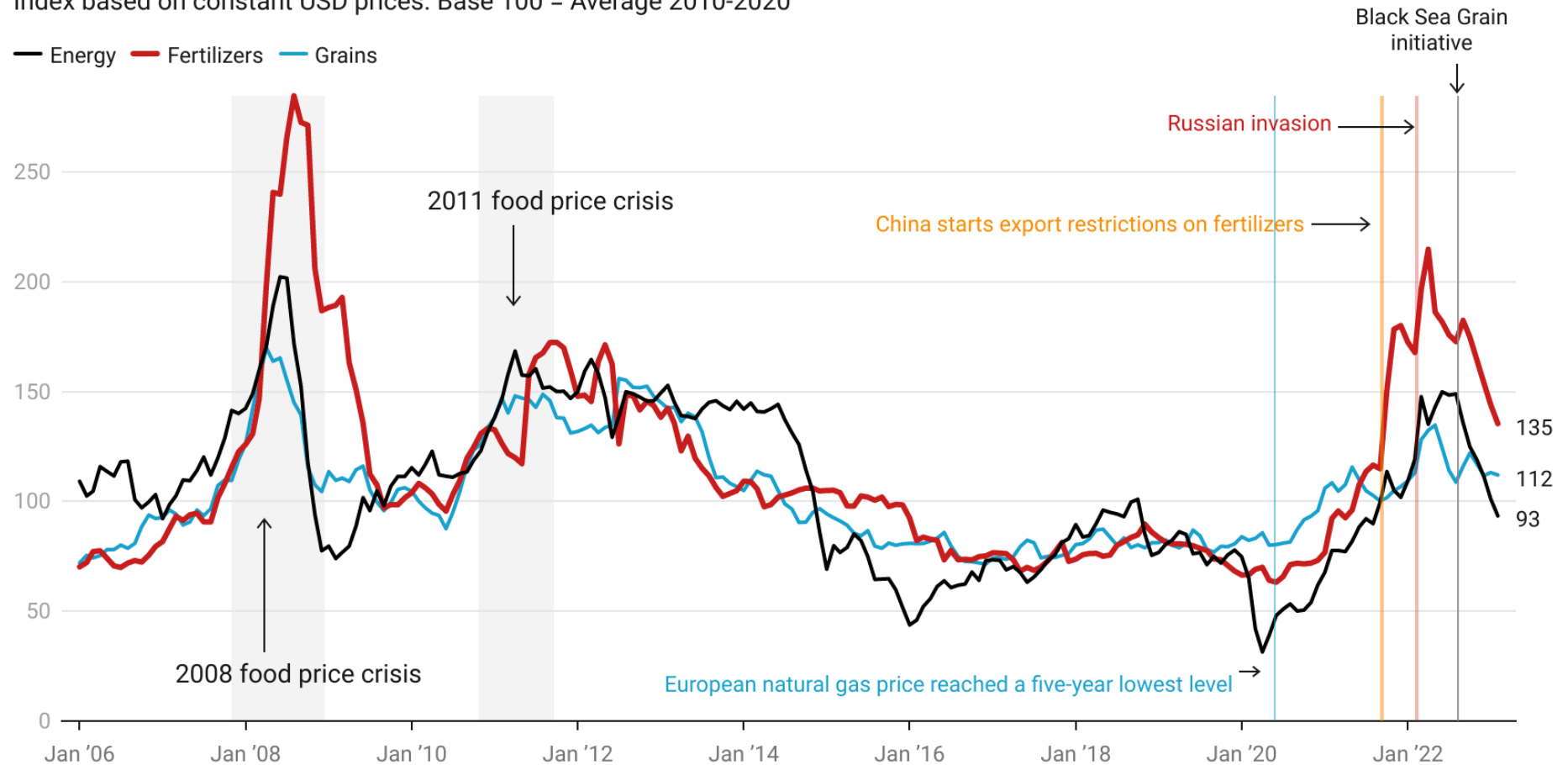




A period of high and volatile prices

Prices for grains, fertilizer and energy (updated March 2023)

Index based on constant USD prices. Base 100 = Average 2010-2020



Source: World Bank, U.S. Bureau of Labor Statistics

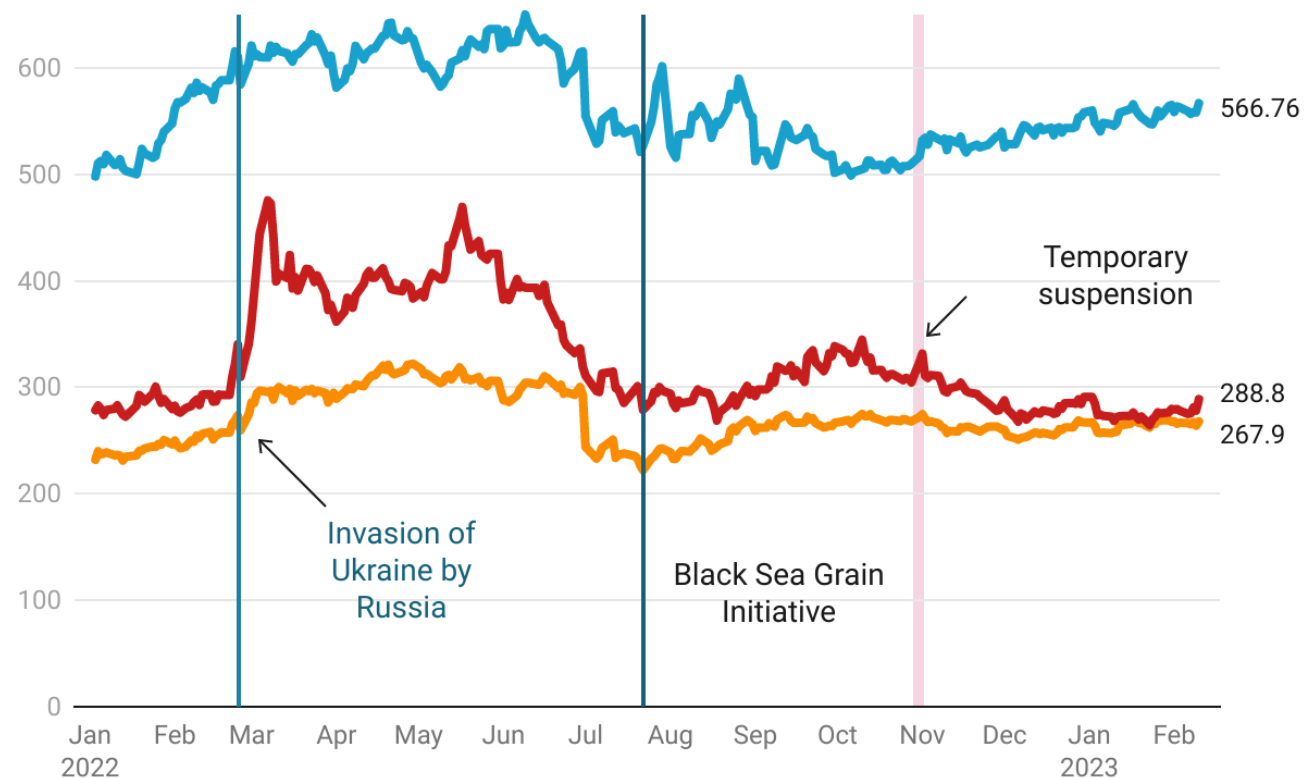


Evolution of prices for key commodities

Wheat, maize and soybean price evolution

USD per metric ton

— Wheat — Maize — Soybeans

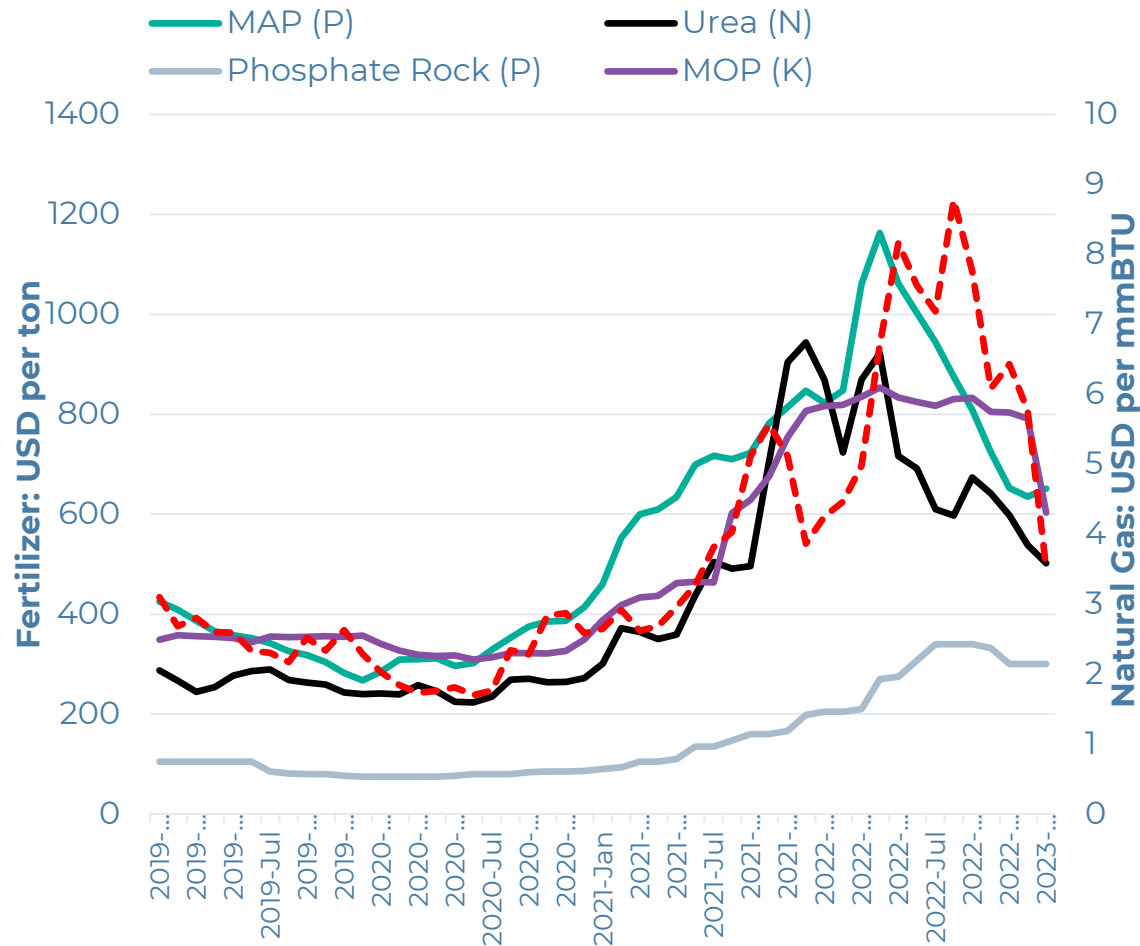


Future prices (+30 days) quoted in Chicago

Chart: David Laborde and Joseph Glauber • Source: CBOT

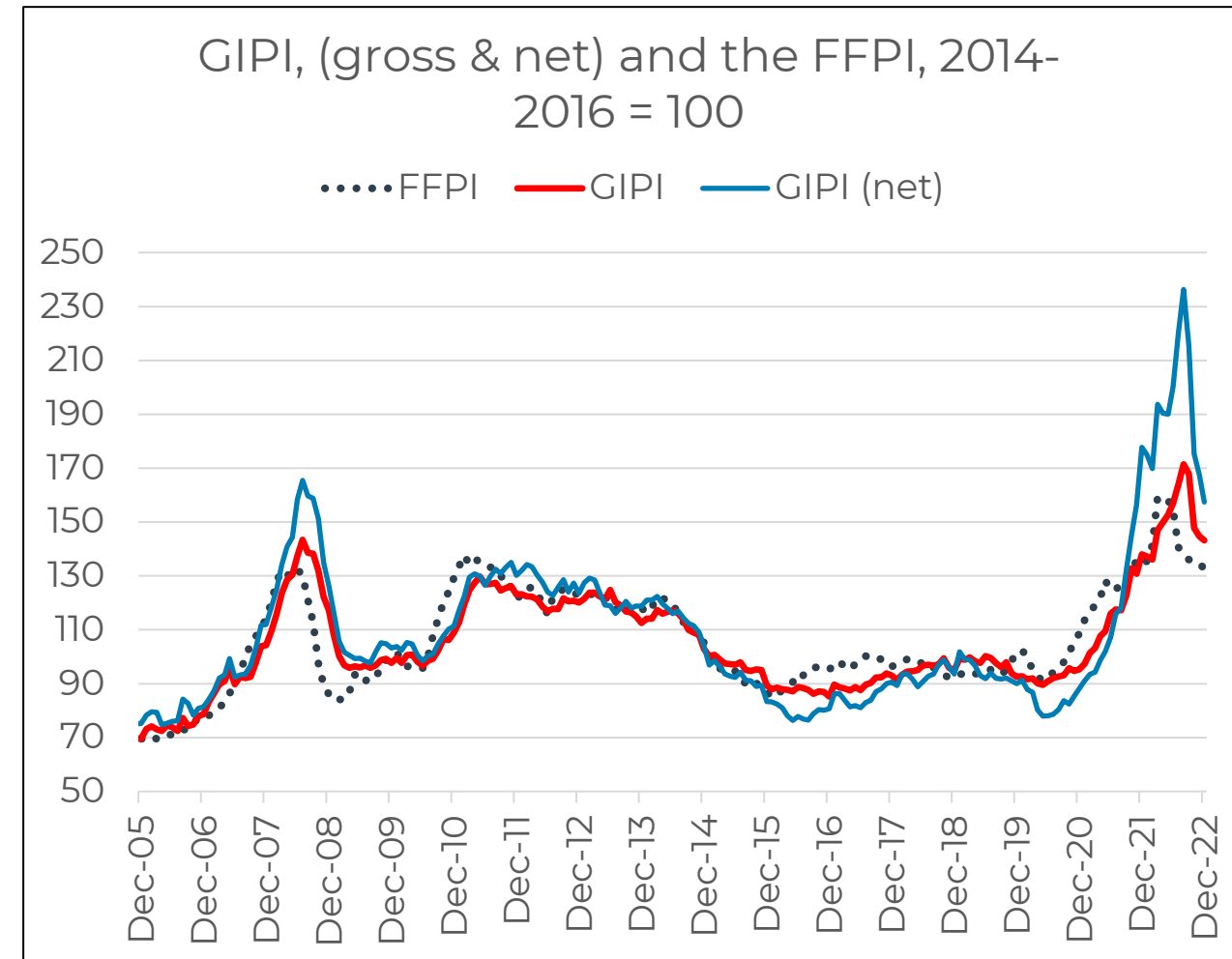
FERTILIZER AND FUEL PRICES HAVE RECEDED FROM THEIR ALL-TIME HIGHS

US Natural Gas Prices and Global Fertilizer prices



Source: Bloomberg, author's calculations

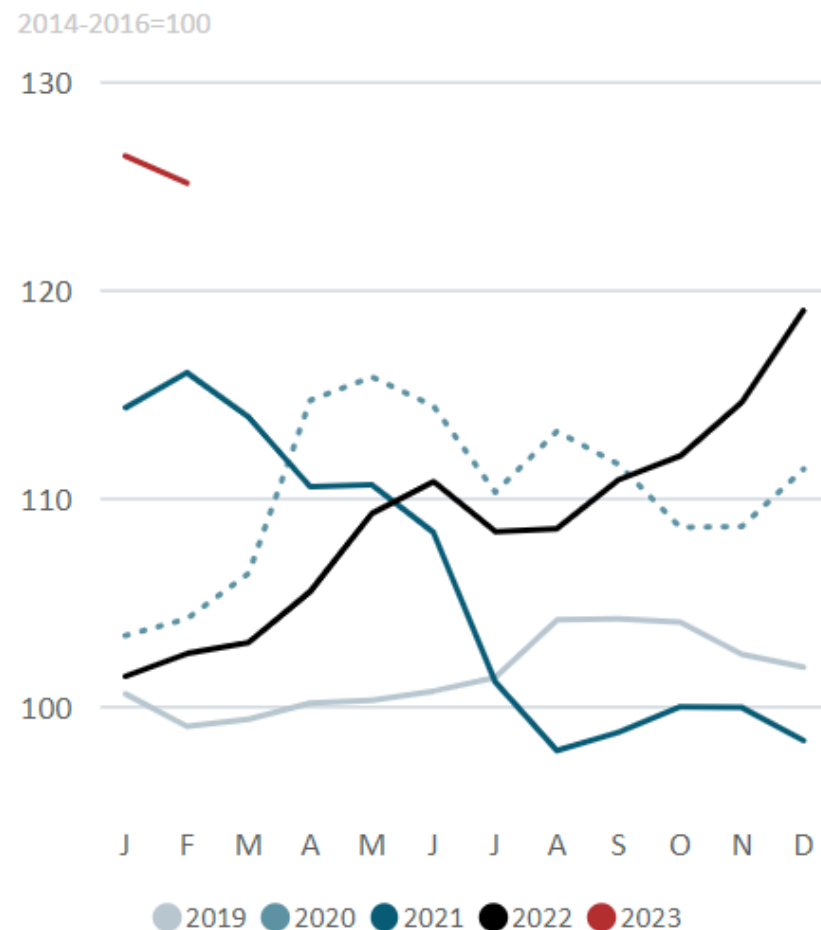
The FAO global input price index (GIPI)



Source: TDM, author's calculations



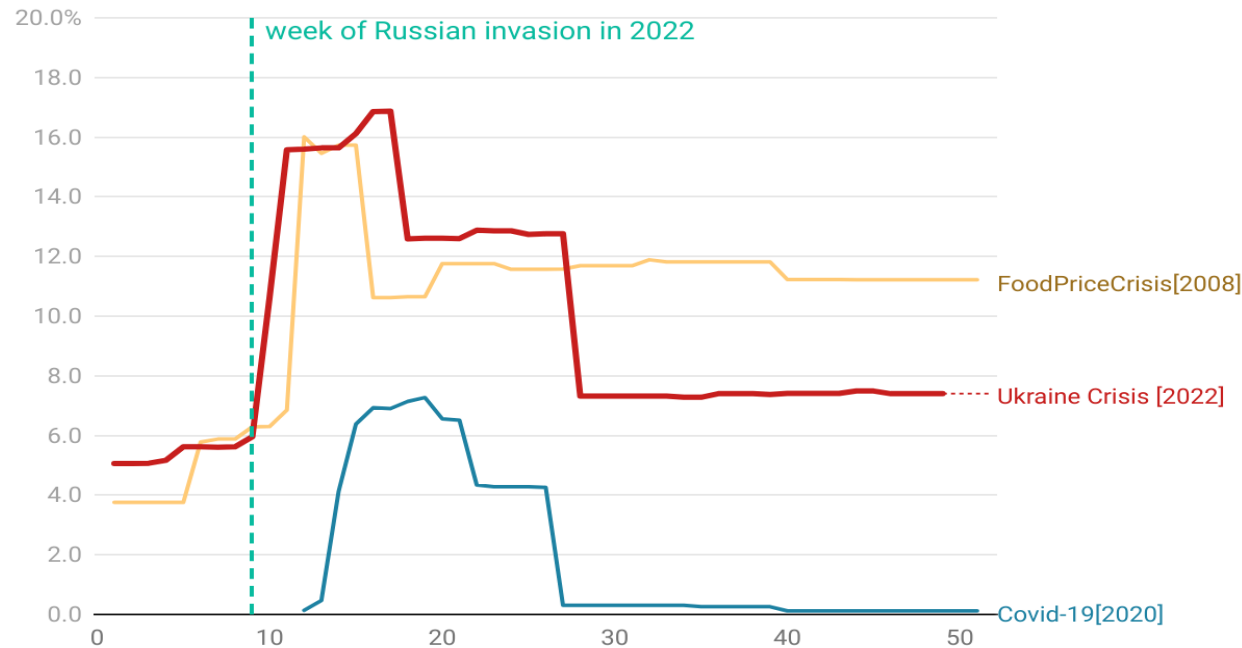
FAO ALL RICE PRICE INDEX



Export restrictions in 2022 and during previous crisis

Evolution of the share of global food and feed trade, in calories, impacted by export restrictions

Daily update. Includes food, feed and other uses of food products.

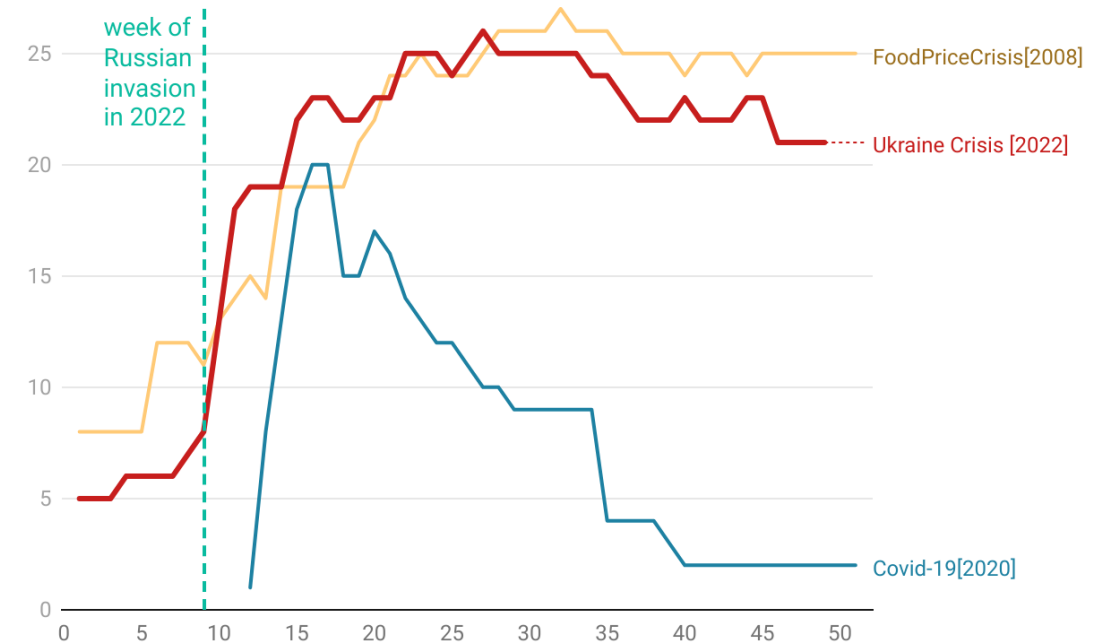


X-axis shows the week of the year. 1= first week of the year.

Chart: David Laborde • Source: IFPRI

Evolution of the number of countries with new or increased export restrictions on global food and feed trade, in calories

Daily update. Includes food, feed and other uses of food products.



X-axis shows the week of the year. 1= first week of the year.

Chart: David Laborde • Source: IFPRI



Restrictions in global trade of calories by product

Share of restricted international trade of food and feed in terms of calories. Week 1 = 1st week of January 2022

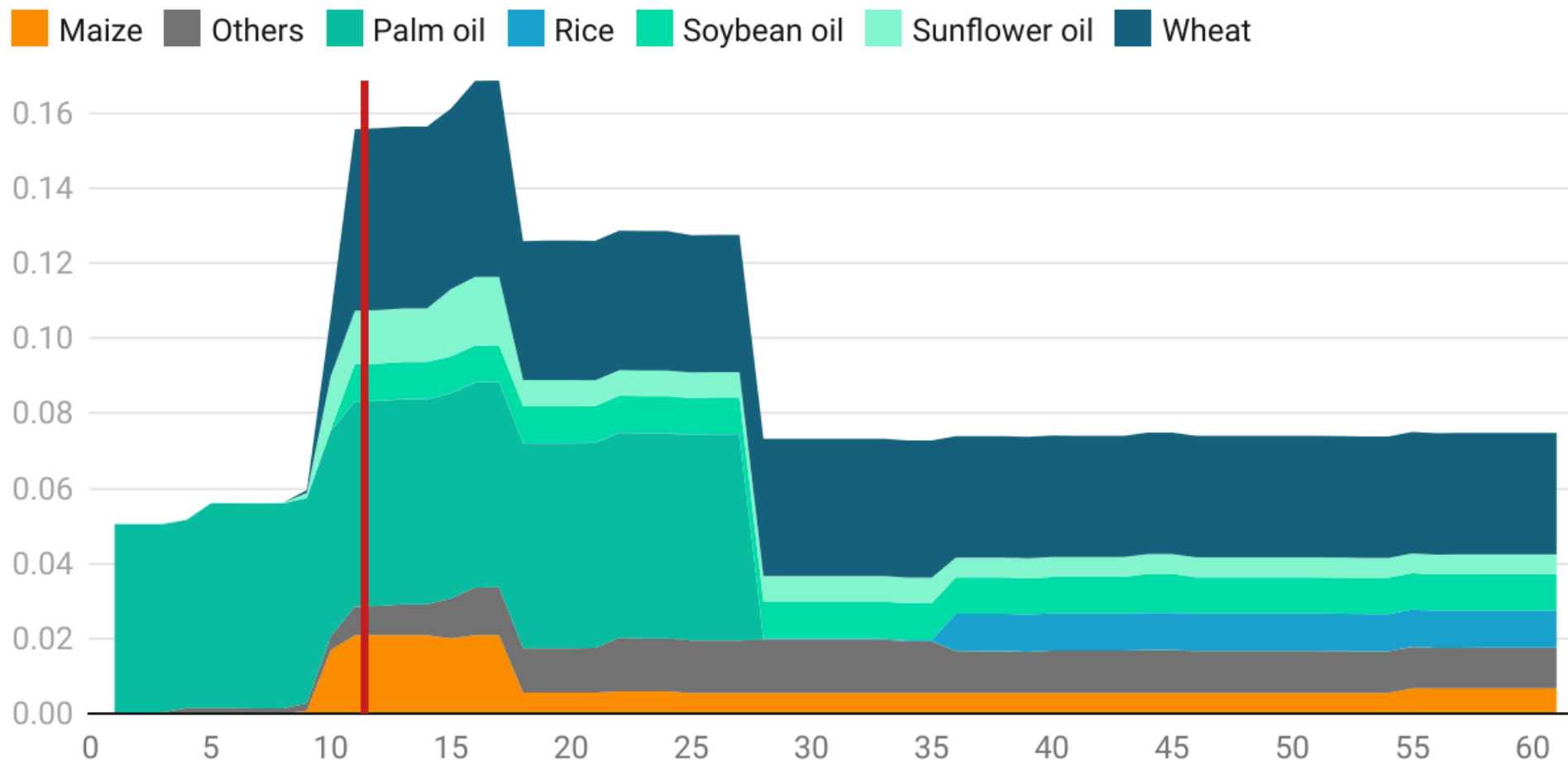
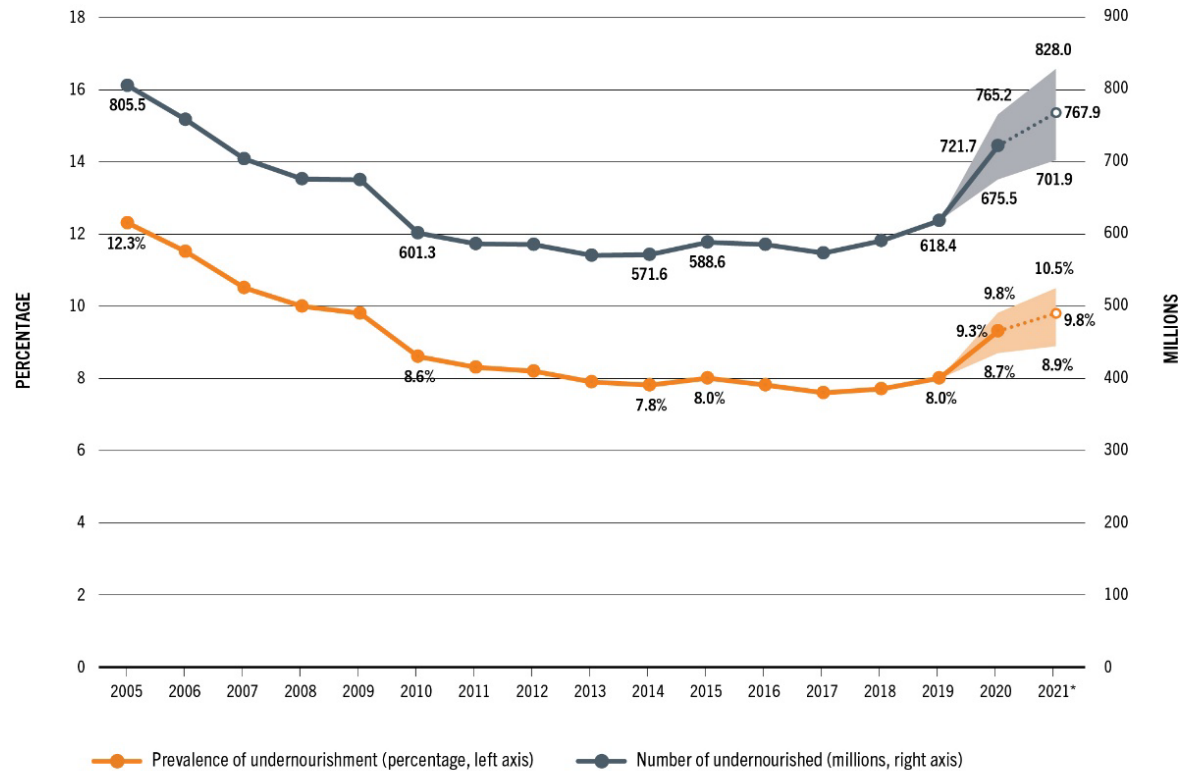


Chart: David Laborde • Source: IFPRI export restriction tracker, author's computation

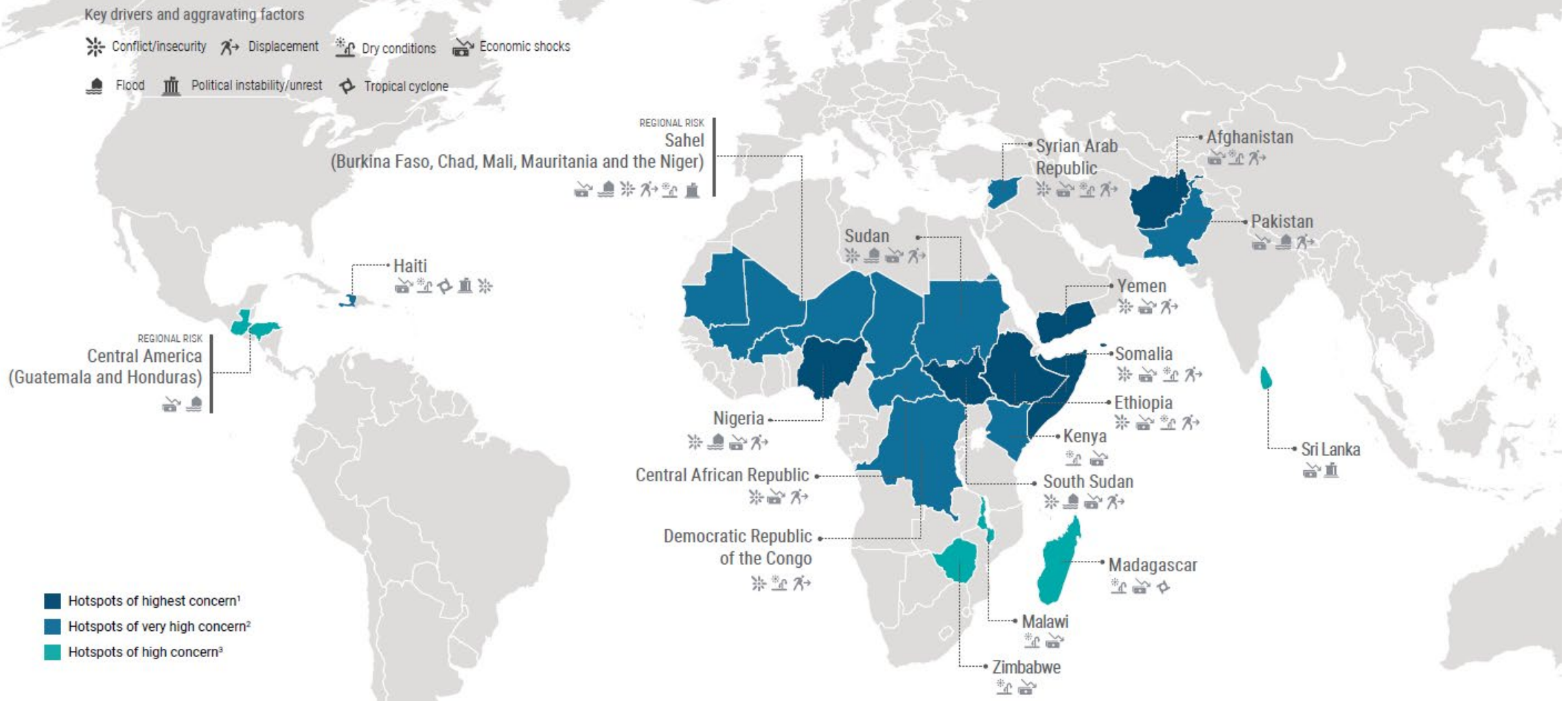
Global Food Insecurity is Rising



- Global hunger has been on the rise since 2019
- Up to 828 million people hungry in 2021
- FAO estimated that this corresponded to an additional 150 million people were hungry following the COVID-19 pandemic
- Early estimates pointed to an additional 10.7 following the outbreak of the war in Ukraine
- Updated numbers to be released in July 2023 (SOFI)

Hunger Hotspots

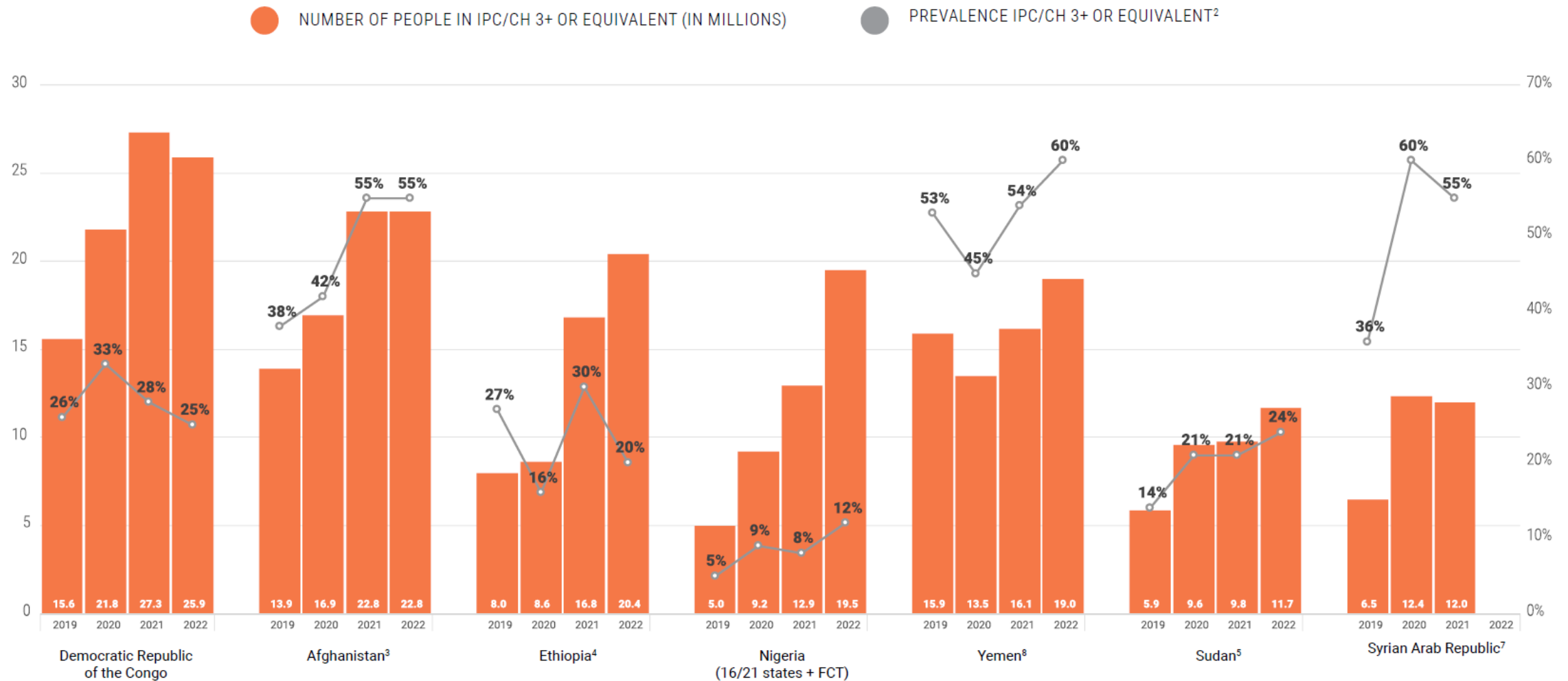
Early warning hunger hotspots October 2022 to January 2023



Hunger Hotspots

Acute food insecurity trends in the hotspots of highest and very high concern

2019–2022¹ peak numbers and prevalence





Thank you



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*Recommendations and actions
to support the implementation
of the Bottom-Up Economic Plan
in Kenya*



April 4, 2023

Dr. Michael Ndegwa

Sustainable Agrifood
Systems, International
Maize and Wheat
Improvement Center
(CIMMYT)

Climate-proofing agricultural production and the food system





Outline

- Crop and livestock insurance – and bundled products
- Diversification
- Climate Smart Agriculture
- Varietal advancement, adoption and turnover
- Post harvest loss mitigation



Crop and livestock insurance – And bundled products/services

- Different contract models:
- All peril indemnity-based contracts
 - moral hazards, adverse selection, high administrative costs
- Index based insurance – rainfall, vegetation, evapotranspiration, heat/temperature, etc
 - IBLI, RCC, Picture-based insurance, Area yield insurance
- Policy interventions
 - Bundling – credit, improved technologies and inputs
 - Require agricultural credits to be bundled with drought/floods insurance – both have been observed to complement
 - This will spread the risk and make such products palatable to insurance companies and banks
 - Subsidize – for learning and consistent exposure to encourage uptake
 - Could be a sustainable alternative to ex-post relief programs
 - Considerations for insuring investments Vs produce – to bring down the cost of insurance
 - Facilitate data collection and sharing to assist in developing more objective indices – yield data in particular
 - Avoid micro – go meso or sovereign - insuring aggregators who can Passover indemnities to farmers



Case study – Risk Contingent Credit

Outcome level 1

- Took RCC – 28%
- Took TC – 23%
- Pent up demand cause for small RCC effect

Outcome level 2

- Both RCC and TC enhanced investment ability (latent variable) by 13 points
- Entailing more use of fertilizer – 14% along the extensive margins and 110% along the intensive margins

Outcome level 3 & 4

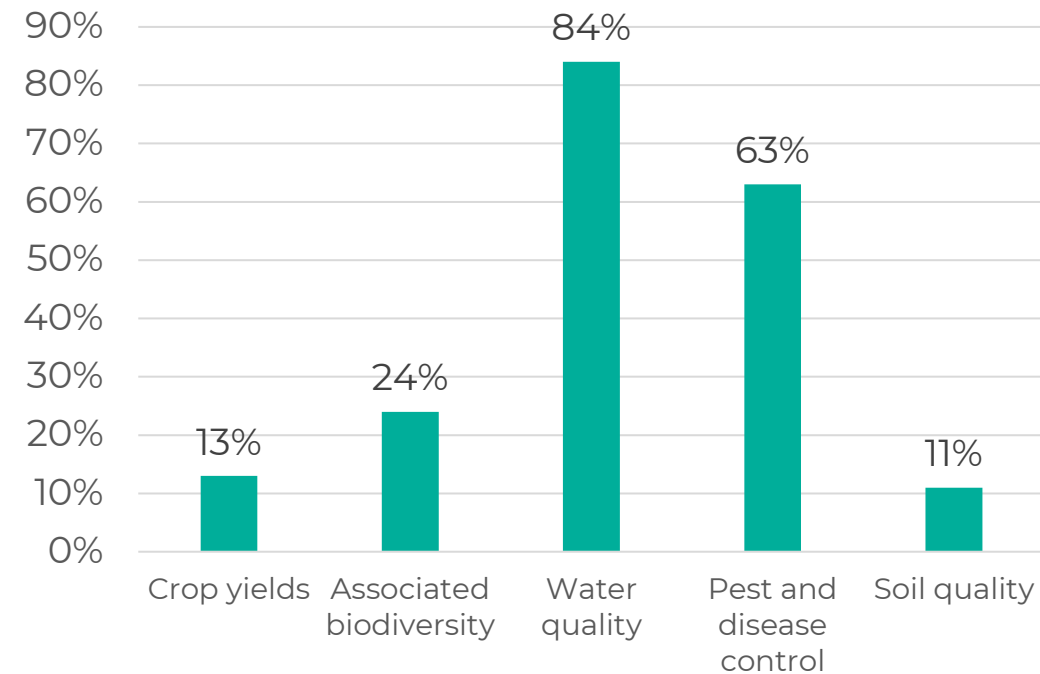
- Increased maize yields by 540 kg
- Increased farm revenues by Ksh 7200
- Reduced food insecurity
- Increased household resilience



Diversification: on-farm and in-plate complementarity

- Maize has been widely grown as the main staple in Kenya, but CC make maize growing untenable in some parts of the country, especially during the short rains season.
- Besides developing more drought tolerant varieties, we should promote more drought tolerant crops as well - crops such as sorghum, millet, cassava, etc. have been identified as potential game changers
- BUT, there is need for promotion of dishes based on such crops – this would create a demand which would incentivize production – floor blending is one way of encouraging utilization such crops
- Identify areas where diversification will yield maximum benefits and design interventions for bundled crop packages to encourage uptake of the promoted crops
- Diversification is a form of insurance and could also bring the cost of crop insurance down
- Caveat – not a silver bullet and should be considered alongside other CC mitigation strategies
- Should not crowd-out specialization – especially resource endowed farmers – Ochieng et al. (2020)

Benefits of crop diversification
– Global meta analysis





CSA – High awareness but low adoption - women

	Women Awareness (N=714)	Women conditional Adoption (N=714)	Comment
Agroforestry	78%	43%	High Awareness , Low adoption
Terraces, Bunds	66%	32%	High Awareness , Low adoption
Water Harvesting (Dams, Ditch, Water Pans)	77%	42%	High Awareness , Low adoption
Use of Irrigation	77%	20%	High Awareness , Low adoption
Zai Pits/Planting Pits/Negarims	12%	4%	Low Awareness , Low adoption
Leaving Crop Residue	88%	75%	High Awareness , High adoption
Composting	51%	25%	Low Awareness , Low adoption
Livestock manure management	81%	68%	High Awareness , High adoption
More efficient use of fertilizer	76%	53%	High Awareness , High adoption
Use of improved, high yielding varieties	88%	78%	High Awareness , High adoption
No till/Minimum tillage	38%	17%	Low Awareness , Low adoption
Improved grain storage	52%	28%	Low Awareness , Low adoption
Improved Stoves (wood or charcoal burning)	63%	35%	High Awareness , Low adoption
Improved feed management (livestock)	46%	29%	Low Awareness , Low adoption
Destocking/Restocking	34%	8%	Low Awareness , Low adoption
Cover Cropping	61%	47%	High Awareness , High adoption
Switching to drought and pest tolerant species or breeds	32%	21%	Low Awareness , Low adoption
Grazing, Pasture, or Rangeland Management	53%	38%	Low Awareness , Low adoption

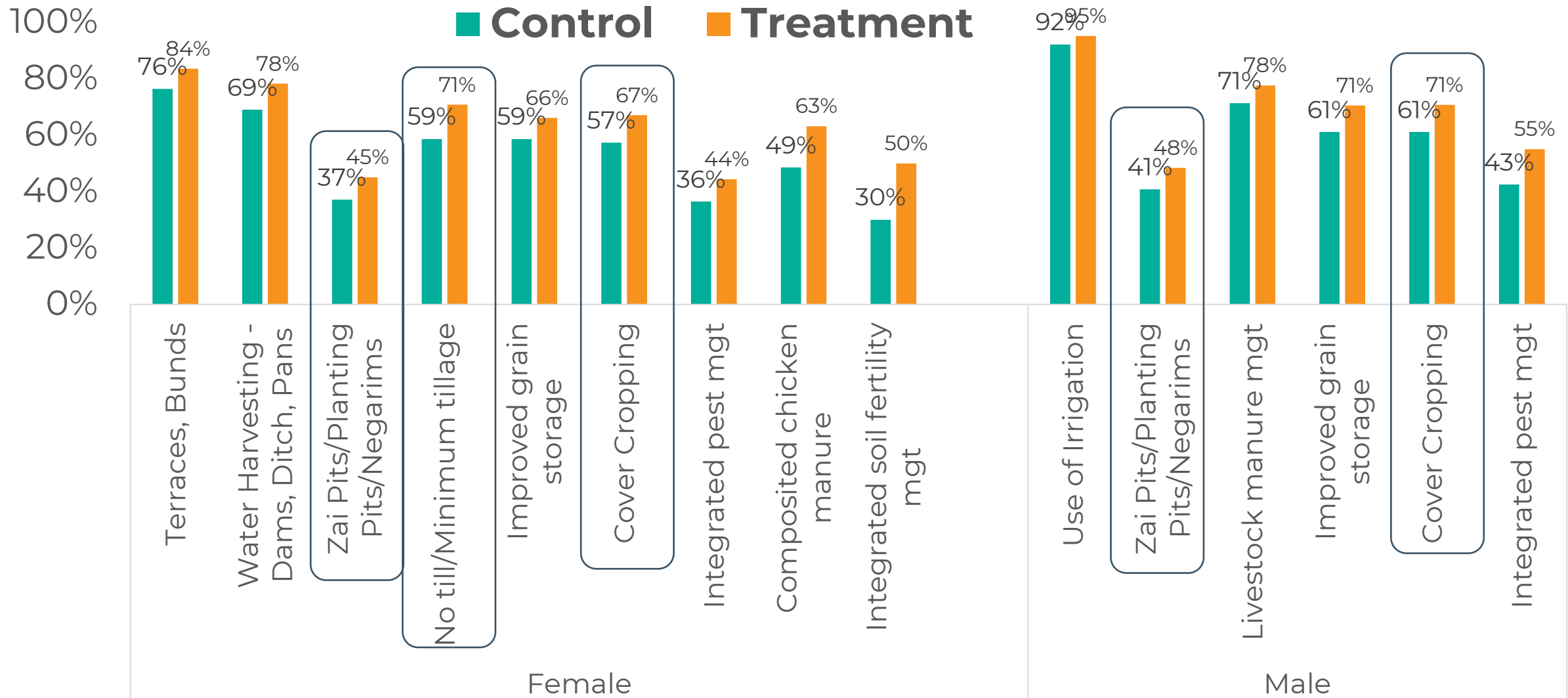


CSA – High awareness but low adoption - men

	Men Awareness (N=444)	Men conditional Adoption (N=444)	Comment
Agroforestry	86%	45%	High Awareness , Low adoption
Terraces, Bunds	72%	31%	High Awareness , Low adoption
Water Harvesting (Dams, Ditch, Water Pans)	80%	41%	High Awareness , Low adoption
Use of Irrigation	80%	22%	High Awareness , Low adoption
Leaving Crop Residue	90%	75%	High Awareness , High adoption
Composting	58%	25%	Low Awareness , Low adoption
Livestock manure management	80%	62%	High Awareness , High adoption
More efficient use of fertilizer	79%	52%	High Awareness , High adoption
Use of improved, high yielding varieties	89%	76%	High Awareness , High adoption
No till/Minimum tillage	44%	20%	Low Awareness , Low adoption
Improved grain storage	52%	28%	Low Awareness , Low adoption
Improved Stoves (wood or charcoal burning)	62%	30%	High Awareness , Low adoption
Improved feed management (livestock)	51%	31%	Low Awareness , Low adoption
Destocking/Restocking	44%	12%	Low Awareness , Low adoption
Switching to drought and pest tolerant species or breeds	39%	25%	Low Awareness , Low adoption
Grazing, Pasture, or Rangeland Management	56%	36%	Low Awareness , Low adoption
Periodic fallowing	63%	28%	Low Awareness , Low adoption
Integrated Pest Management	48%	34%	Low Awareness , Low adoption



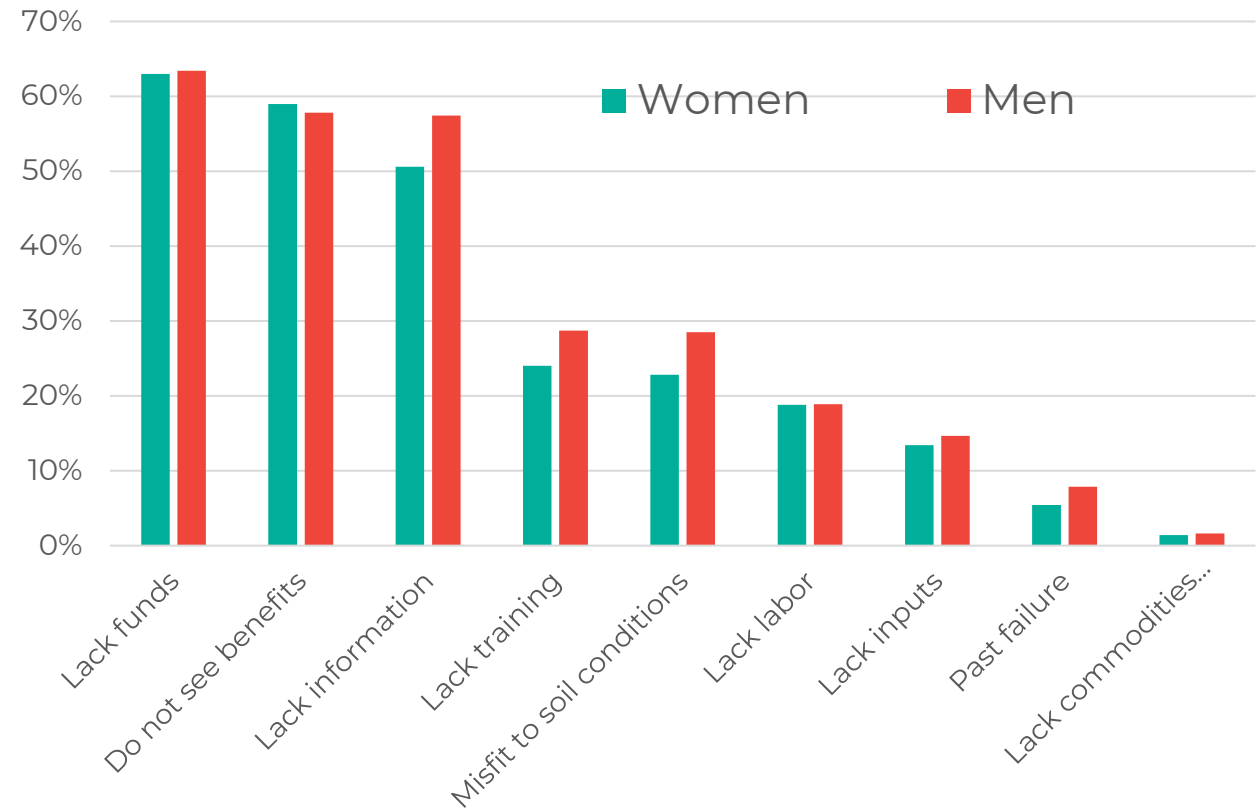
Our video-based extension also increased awareness but not adoption





Main constraints to CSA adoption

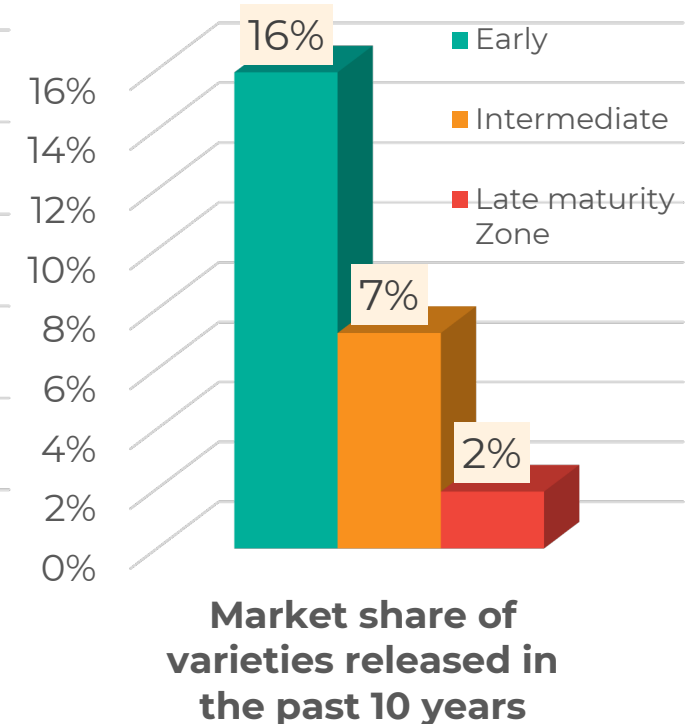
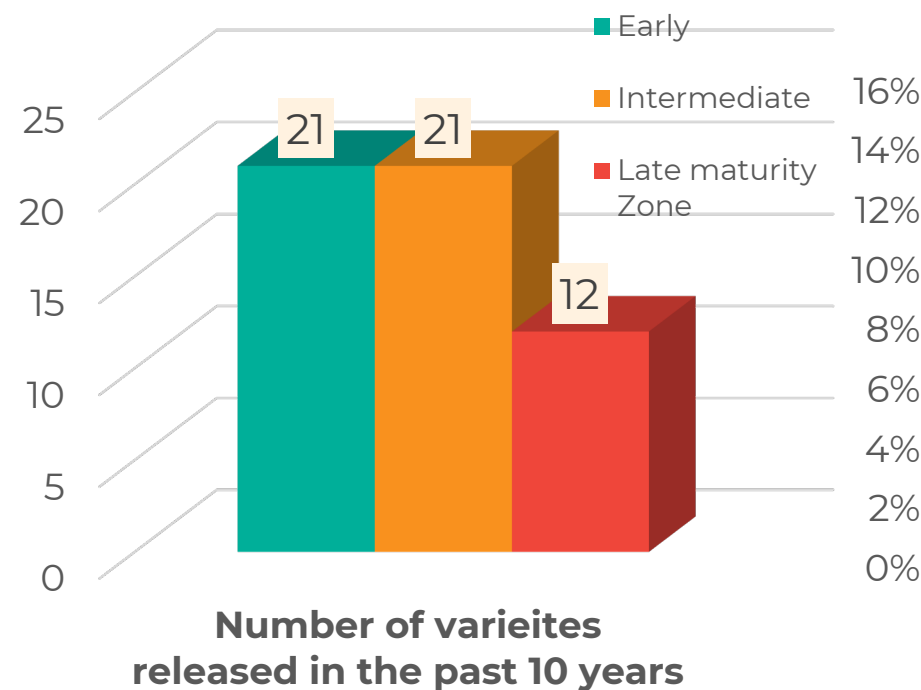
- Information is important but evidently not the only constraint to adoption of CSAs – yet most of CSA interventions focus on information and knowledge
- Information campaigns need to be linked with other interventions that mitigate other constraints
- Land tenure also matters – some tenure arrangements encourage soil mining





Varietal advancement, adoption and turnover - Maize

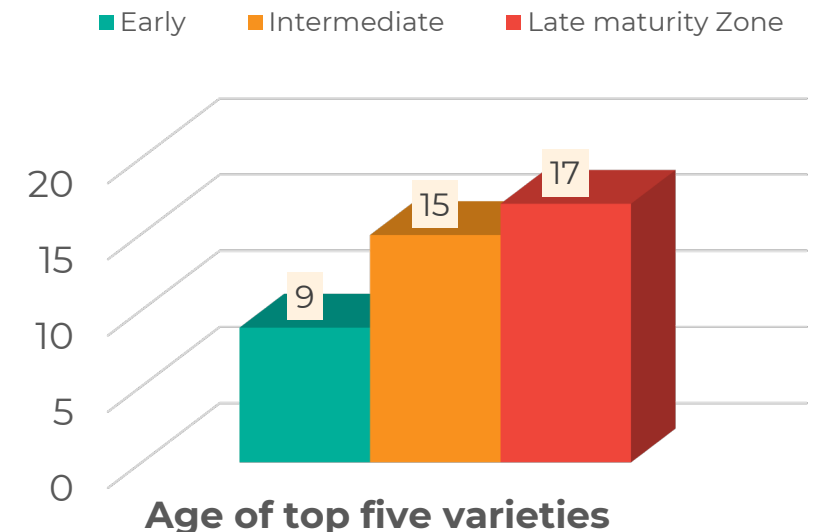
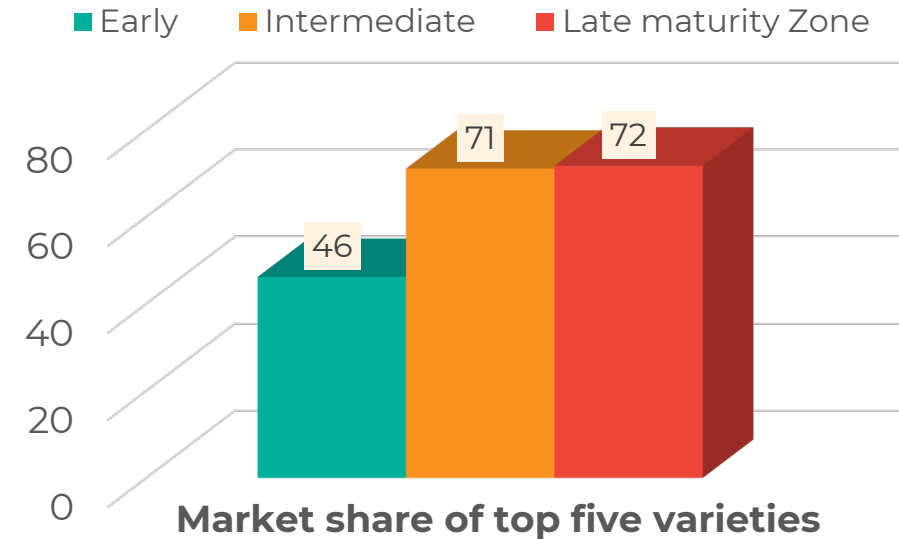
- We do not have a shortage of new varieties
- We observe high adoption of hybrids but low turnover – farmers sticking to the OLD
 - Missing on genetic gains with the NEW
 - New is bred with current production challenges in mind – including CC, pests, diseases, etc
- For some crops such as beans and wheat, adoption of improved varieties is low, but adoption promotions need to also consider newer varieties





Varietal advancement, adoption and turnover - maize

- We need policies to encourage switching to newer varieties
 - Promote continuous experimentation and local learning of new varieties
 - Facilitate continuous evaluation of varieties across mega environments to generate data and information farmers can use to choose varieties
 - Use **price promotions** (seed companies) and **subsidies** (public investment) to facilitate exposure to new varieties
 - Bundle insurance to new varieties to hedge farmers against uncertainties of the NEW
 - Minimize time period between varietal licensing by KEPHIS and commercial release by seed companies
 - Work with seed companies and other stakeholders to develop a framework for retiring old varieties

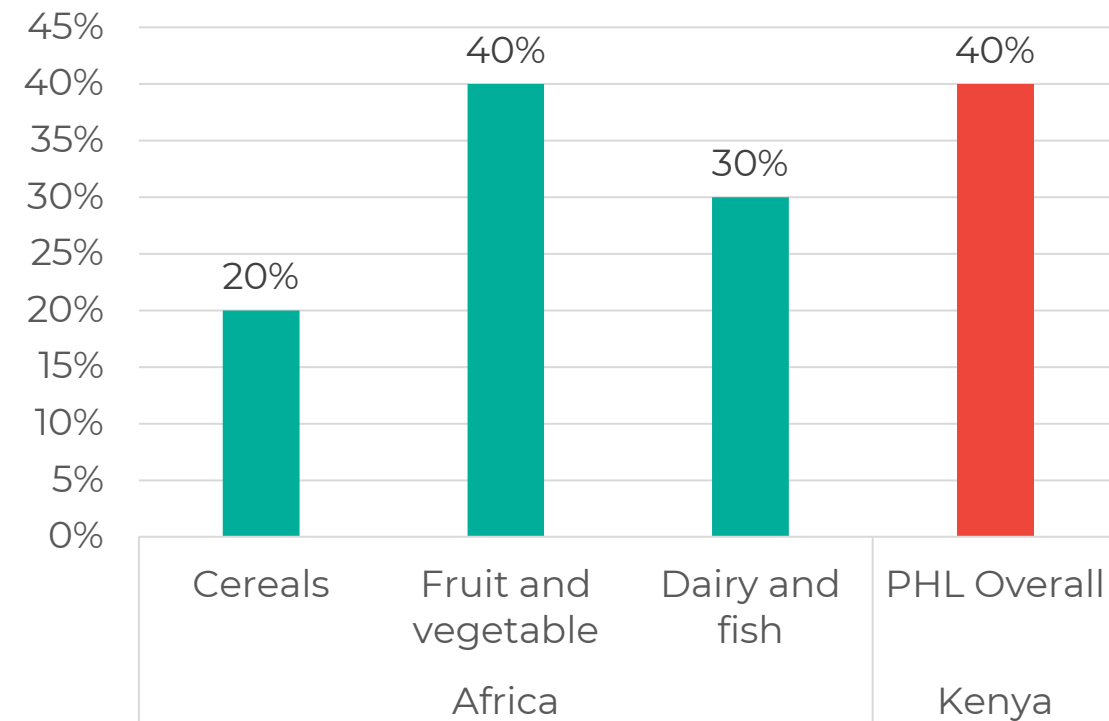




Postharvest losses mitigation

- In Kenya we lose/waste 40% of what we produce - FAO
- Most of the loss happens between harvest and point of sale, and much less consumers
- CC has also led to emergence and proliferation of new diseases, pests and toxins – eg MLN, FAW, Desert locusts, aflatoxins, etc – losses might even increase if not mitigated
- PHL have also been identified as an important contributor to GHG
- With CC and associated production costs, we need to value our produce much more and invest in policies and infrastructure that:
 - Mitigates PHL – eg hermetic technologies, Warehouse receipting, financing and insurance, etc
 - Facilitate timely delivery and transactions of agricultural commodities
- Invest in post-harvest loss mitigation in equal measures as we do in production enhancement

Post Harvest Loss and Wastage

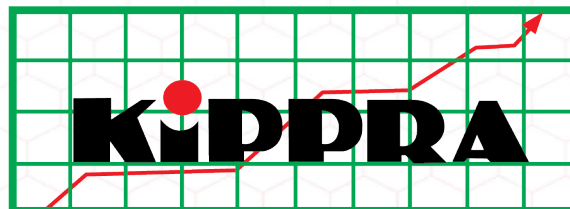




CC has led to increased conflicts

Conflicts exacerbates the effects of climate risks on crop and livestock production systems

We need to consider peace-for-food-security policies



**The KENYA INSTITUTE for PUBLIC
POLICY RESEARCH and ANALYSIS**

Thinking Policy Together

MANAGING MIGRATION AND URBANIZATION

DR. MOSES MUTHINJA

**Director, Integrated
Development**

Presented By:

Date: *Friday, April 14, 2023*

Outline

- What is Migration?
- What is Urbanization?
- Status of Migration and urbanization in Kenya
- Emerging issues on migration, urbanization and food systems
- Addressing these emerging issues

What is Migration?

- Migration refers to the movement of people from one place to another with the intention of settling in a new location, either temporarily or permanently.
- Migration trends: approximately 1.7 million people reported to have migrated 12 months prior to the 2019 census date while 9 million people were lifetime migrants in Kenya (KNBS, Economic Survey 2022 p.425)

TOP 10 MIGRATION GAINERS PER COUNTY IN KENYA IN 2019

RANK	COUNTY	NET MIGRATION (2019)
1	Nairobi City	131,869
2	Kiambu	95,908
3	Kajiado	52,857
4	Nakuru	41,649
5	Mombasa	39,875
6	UasinGishu	28,560
7	Narok	10,619
8	Lailipia	4,528
9	Machakos	3,816
10	Lamu	1,464

Source: Extract from Table 19.3, KNBS ECONOMIC SURVEY P.431-2

TOP 10 MIGRATION LOSERS PER COUNTY IN KENYA IN 2019

RANK	COUNTY	NET MIGRATION (2019)
1	Kisii	-50,041
2	Kakamega	-48,284
3	Kitui	-37,670
4	Bungoma	-36,118
5	Vihiga	-31,362
6	Makueni	-24,583
7	Busia	-22,220
8	Baringo	-16,487
9	Bomet	-14,420
10	Homa Bay	-9,667

Source: Extract from Table 19.3, KNBS ECONOMIC SURVEY P.431-2

- **What is Urbanization?**
- The process by which people move from rural areas to urban areas, resulting in the growth and expansion of cities and towns.
- A demographic and social phenomenon evidenced by an increase in the proportion of a population living in urban areas compared to rural areas.

Urbanization in Kenya

- 2022, urban population for Kenya was 29 % of total Population
- Causes of urbanization: economic, social, political and environmental factors

Emerging issues on migration, urbanization and food systems

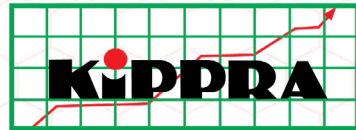
- Urban food insecurity: access to affordable and nutritious food esp by low-income urban group a challenge
- Migration and agricultural labor: The paradox of migrating away from work
- Urbanization and land use: Expansion of cities encroach on agricultural land, which can lead to food insecurity and loss of biodiversity.
- Health and nutrition-unhealthy diets such as junk foods

Addressing these emerging issues

- Multi-sectoral approach that considers the complex interactions between migration, urbanization, and food systems.
- Incentives for Urban-Rural migration (role of counties)

THANK YOU

For your Attention



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*Recommendations and actions
to support the implementation
of the Bottom-Up Economic Plan
in Kenya*



April 5, 2023

Speakers

Joseph Maina, MoALD

&

Joseph Karugia, ILRI, CGIAR

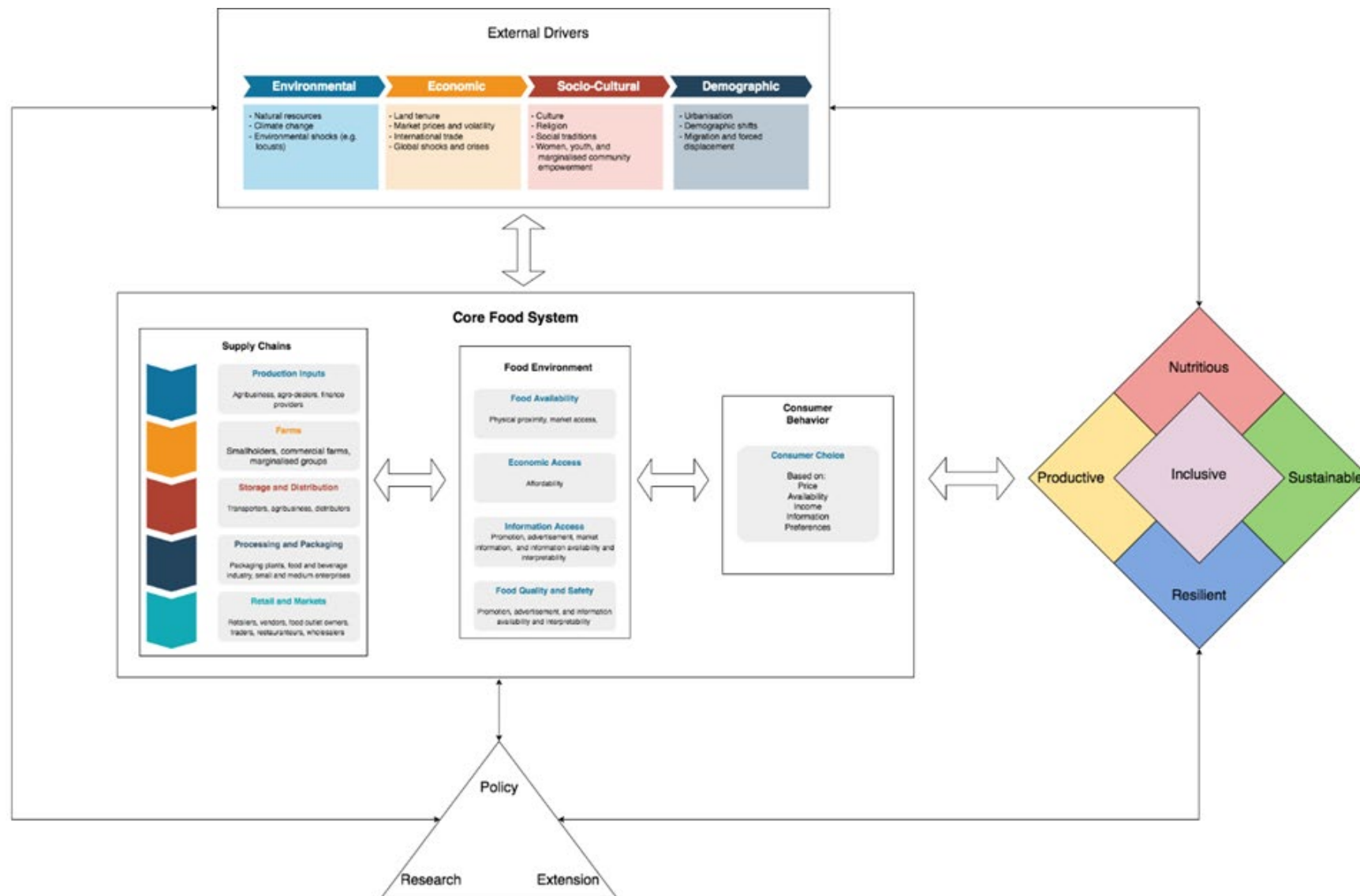
Recommendations and actions to support the implementation of the Bottom-Up Economic Plan

Summary of Day 1



Food System Framework

The background of the slide features a blurred photograph of a group of people, primarily women wearing hijabs, gathered around a table. They appear to be in a meeting or discussion. The image is overlaid with a blue-to-orange gradient, which is darker on the left and lighter on the right, creating a soft, atmospheric effect.





Cross-cutting Recommendations

- Be more selective when designing development projects and have a stronger focus on strengthening national institutions.
- Encourage a stronger focus on coherent policy design and effective implementation.
- Harnessing the power of knowledge by strengthening the science-policy interface (SPI), e.g. organize annual Food Systems Conference and regular SPI meetings.
- Improve availability and access to data and tools for more informed decision making.
- Enhance data sharing within and between counties, and between counties and national level
- Empower counties for data collection, management, and invest in innovative digital data collection and tools.



HEALTH

Invest more in nutrition education and create smart regulation for food safety without overburdening businesses

- Focus on poverty reduction measures, which will also help improving nutrition.
- Invest in early education in nutrition to promote behavioural change.
- Support public-private sector partnerships in health and nutrition.
- Enhance food safety surveillance and inspectorate services .



PRODUCTIVITY

Play a supporting role for the private sector to accelerate the transformation of input markets, food processing and service sectors, and mechanization efforts

- Revisit budget allocation in agriculture and extend focus to support private-sector driven agro-processing and food services for more value-addition and jobs in the food system.
- Foster mechanization and strengthen support to farmers' training on machine operation, maintenance/repair, which can enhance the efficiency and reduce costs of service provision.
- Property rights and law need to be reviewed to enable more land rental activity, which has been shown to improve resource allocation and productivity in other countries.
- Integrating formal and informal seed systems, promoting better resource management practices and reducing input costs are critical areas for fostering agricultural growth.



RESILIENCE

Develop policies to foster agricultural diversification and de-risking credit and insurance

- Diversification of farms, crops, farming landscapes and distribution for a more resilient, stable and healthier food system.
- Promote the diversification of diets with a higher content of domestically grown crops and livestock to reduce imports; this also improves diet quality and increases incomes of domestic producers.
- Provide an enabling environment for the private sector provision of insurance services.
- Promote bundling of agricultural credit with drought and flood insurance and climate smart technologies.



INCLUSION

Invest in capacity building for youth (particularly in agribusiness), for producers (i.e. extension systems), for women along the value chain; and setting up clear contract enforcement mechanisms that protect small farmers.

- Provide better access to credit, extension and trainings as a key factor for broadening access to food system activities.
- Create and improve structures of support for Youth in Agribusiness to tap into the knowledge of young farmers and agripreneurs.
- Support youth-engagement in the policy making process
- Invest in training on sustainable production, harvesting, and other post-harvest management techniques, and prevention of theft and illegal cartels.
- Strengthen the role of women in food systems by addressing existing challenges such as low land ownership, minimal participation in decision-making and food system governance.



SUSTAINABILITY

Invest in targeted transportation infrastructure and digital networks and create smart regulations to support off-farm service providers and also adequately protect actors (E.g. smart data regulations for the digital ecosystem).

- Climate proofing production systems through CSA practices and insurance.
- Support climate smart technologies, rainwater harvesting, soil and water conservation technologies, and improve soil health
- Use digital mechanisms to verify the quality of seeds and fertilizers, facilitate the provision of services (e.g renting of machinery) .



THANK
You