



Agricultural Policy and Regulation in Sub-Saharan Africa: Lessons for Increasing Investment

Joshua Ariga, Katrin Kuhlmann, and Nicole Mason
on behalf of the PEMEFA team

Eye on Africa Seminar

Thursday, April 5, 2018

Room 201 International Center, Michigan State University, East Lansing, MI



MICHIGAN STATE
UNIVERSITY





About PEMEFA (Partnership for Enabling Market Environments for Fertilizer in Africa)

Consortium of five partner organizations:

1. African Fertilizer and Agribusiness Partnership (AFAP)
2. International Fertilizer Development Center (IFDC)
3. Michigan State University (MSU)
4. New Markets Lab (NML)
5. Regional Network of Agricultural Policy Research Institutes (ReNAPRI)





About PEMEFA (cont'd)

GOAL

To transform African agriculture and livelihoods by improving smallholder farmers' access to and use of fertilizers by establishing comprehensive, relevant, and robust national and regional fertilizer policies and regulatory frameworks that facilitate increased private sector investment and participation in fertilizer value chains.





About PEMEFA (cont'd)

OBJECTIVES

1. **Generate evidence** to mobilize support for policy and regulatory reforms that will encourage private sector-led fertilizer markets and improve smallholder farmers' access to and profitable use of fertilizers.
2. **Build the capacity** of stakeholders along fertilizer value chains to establish a conducive enabling environment for private sector-led fertilizer markets.
3. **Drive ongoing efforts** to reform policy, legal, and regulatory regimes for fertilizer through outreach and engagement.





About PEMEFA (cont'd)

PEMEFA's initial activities (including today's seminar) are supported by a planning grant from the Alliance for African Partnership (AAP).

The AAP is a new, innovative initiative at Michigan State University that seeks to develop a collaborative and cross-disciplinary platform for addressing today's global challenges.



Capabilities at Headquarters

- International, multi-disciplinary staff and unique facilities suited for conducting a broad range of research activities.
- HQ in Muscle Shoals houses:
 - Research laboratories.
 - Greenhouses.
 - Growth chambers.
 - Bench-scale and pilot-plant units.
 - Training facilities.
 - Technical library.



Areas of Expertise





Today's seminar

Ag policy and regulation in SSA: Lessons for increasing investment

- Examples from fertilizer value chains in SSA

Outline

1. Background – fertilizer use and fertilizer value chains in SSA [J. Ariga]
2. Policy reforms & fertilizer market development – Kenya example [J. Ariga]
3. Fertilizer legal and regulatory frameworks in SSA [K. Kuhlmann]
4. Fertilizer subsidy programs & private sector investment in SSA [N. Mason]
5. Concluding remarks [N. Mason]
6. Q&A





Fertilizer use & fertilizer value chains in SSA

Joshua Ariga (IFDC)





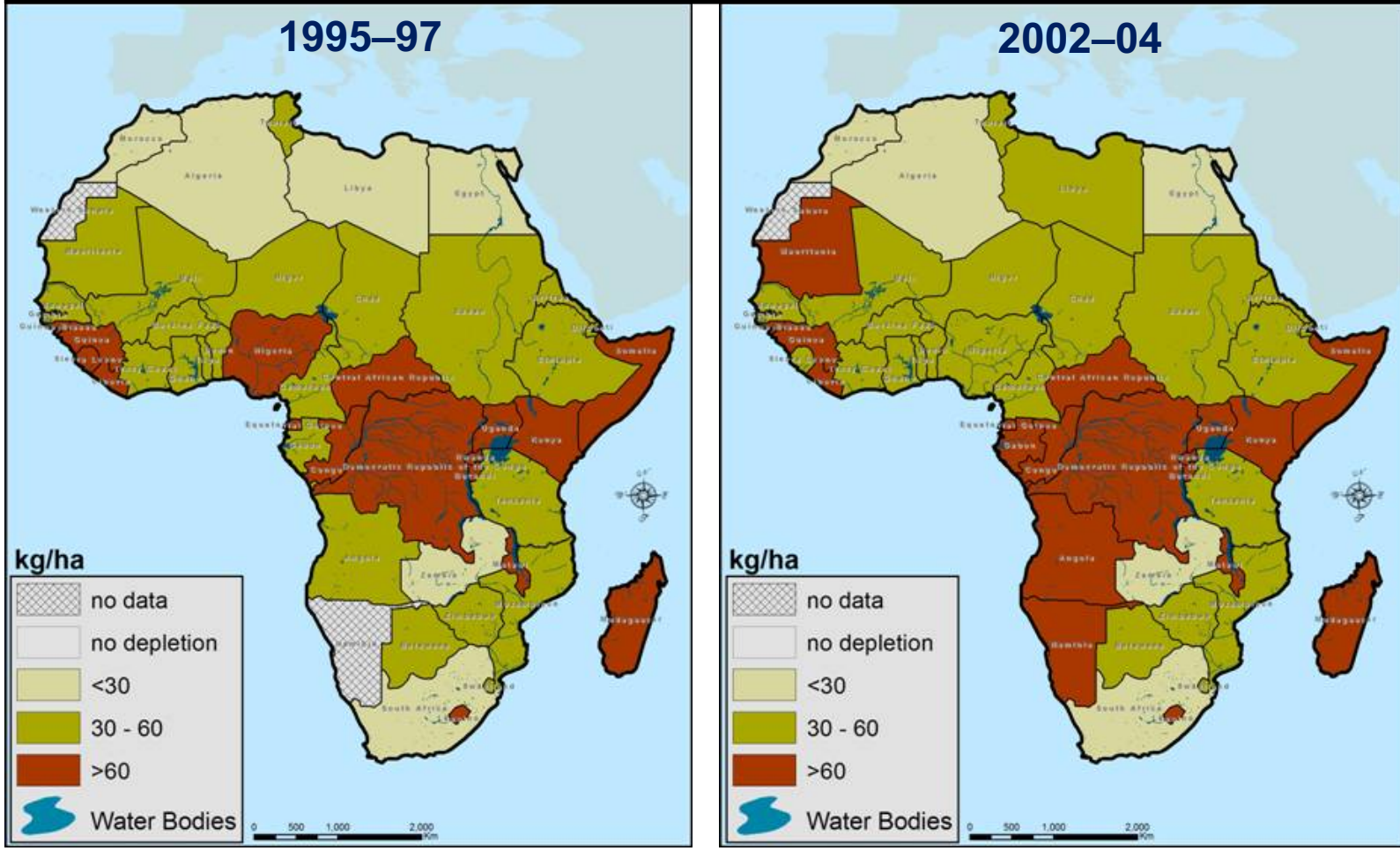
Importance of Agriculture in Africa

- **Agriculture** is a **key economic sector** in Africa: 15% of the GDP (5% to >50%) and 55% of total employment (WB, 2016: FAO, 2015; ILO, 2017)
- **Smallholder farmers** constitute 80% of all farms in Africa (AGRA, 2014), and they are mainly **women** (FAO, 2015)
- Globally, **fertilizer is a key ingredient** for increasing agricultural production:
 - Norman Borlaug: “If the high-yielding [seed] varieties are the catalysts that have ignited the green revolution, then **chemical fertilizer** is the fuel that has powered its forward thrust.”
 - Evidence suggests that **no region worldwide has been able to achieve food security without significantly increasing the use of fertilizer** (Africa Fertilizer Summit, 2006).





Nutrient Mining in Agricultural Lands of Africa



Source: Henao, J., and C. Baanante. 2006. Agricultural Production and Soil Nutrient Mining in Africa: Implications for Resource Conservation and Policy Development. IFDC Report.
Note: No recent updates of these maps





Improvement in Crop Yield through Integrated Soil Fertility Management (ISFM) in West Africa

| | Farmer's Practice | After 4 Years of ISFM |
|----------------|----------------------|-----------------------|
| | Cereal yield (kg/ha) | |
| Maize | 750 | 2,750 |
| Sorghum | 1,000 | 1,800 |
| Cotton | 1,150 | 2,000 |
| Irrigated rice | 3,000 | 5,500 |

Source: Henk Berman, IFDC Rwanda Field Office
Note: No profitability analysis conducted



Field With ISFM Practice

Field Without ISFM Practice

Source: Henk Berman, IFDC Rwanda Field Office





Africa: Other Fertilizer Facts

- SSA accounts for >10% of the world's population but < 3% of global fertilizer consumption
 - Fertilizer demand in SSA: **3.7 million metric tons nutrients, or 2% of world demand** (2017)
 - Top 4 (South Africa, Ethiopia, Kenya, and Nigeria) account for 50% of total fertilizer consumption in SSA
- SSA imports >90% of its fertilizer requirements

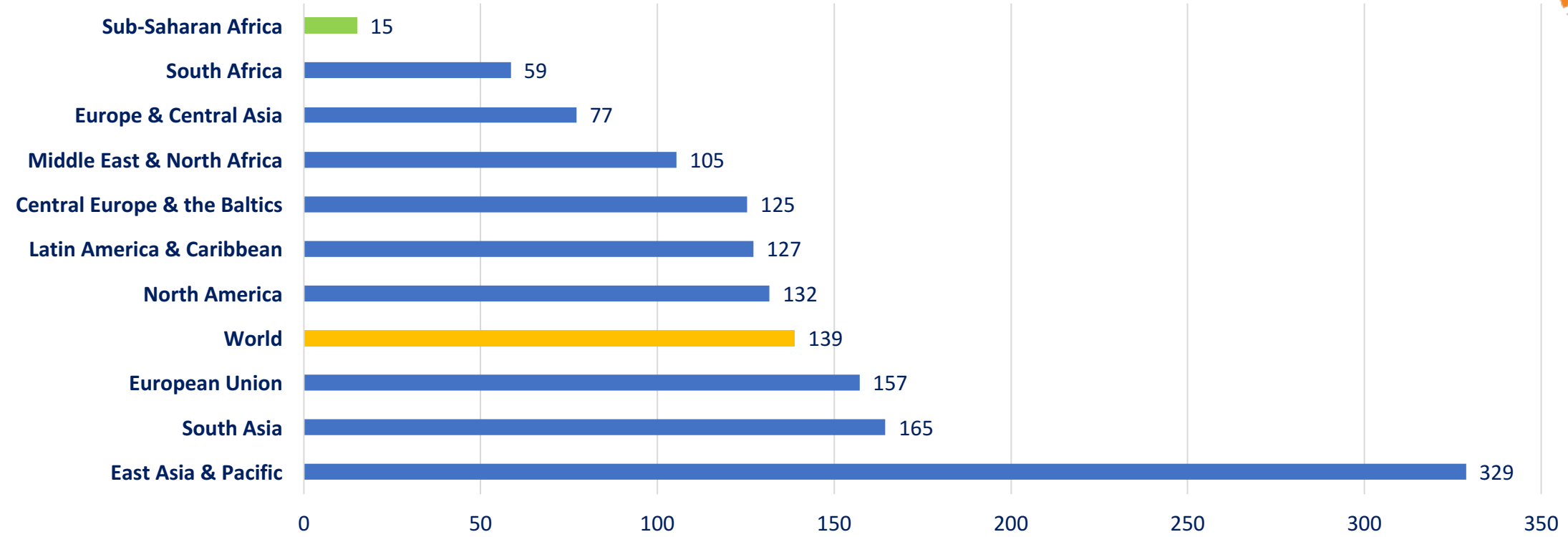
Source: IFA and FAO





Fertilizer use: SSA vs. other regions - 2015

(kg nutrients/ha arable land)

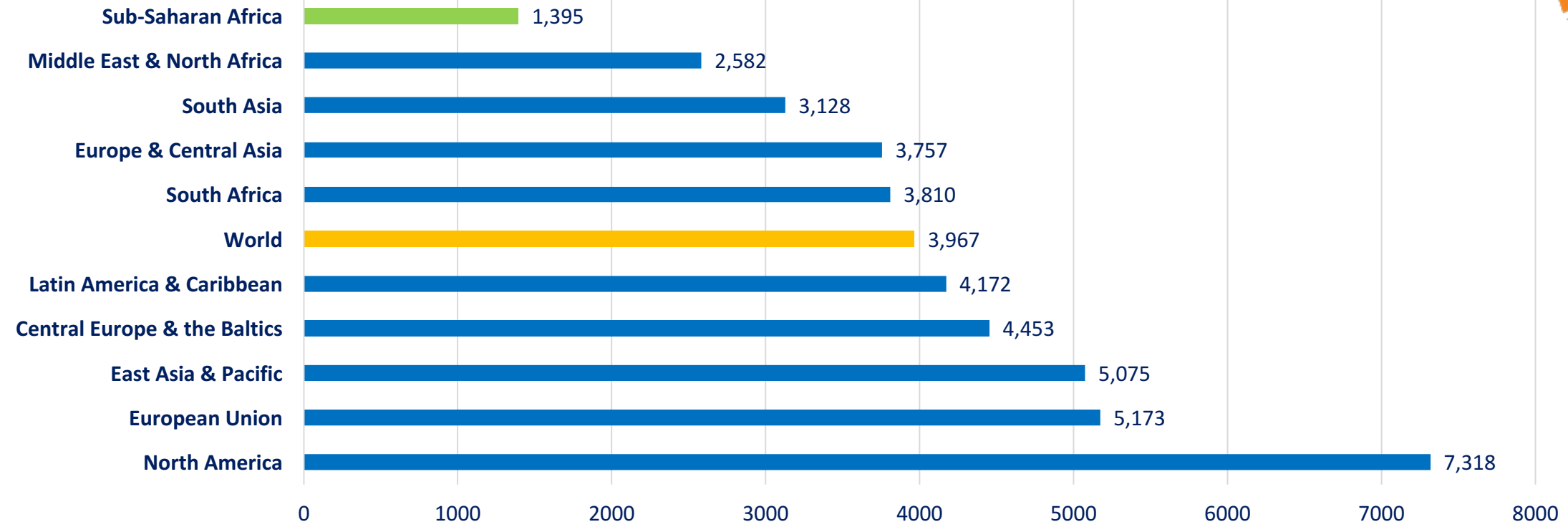


Source: FAOSTAT via the World Bank <https://data.worldbank.org/indicator/ag.con.fert.zs>





Cereal yields: SSA vs. other regions - 2016 (kg/ha)

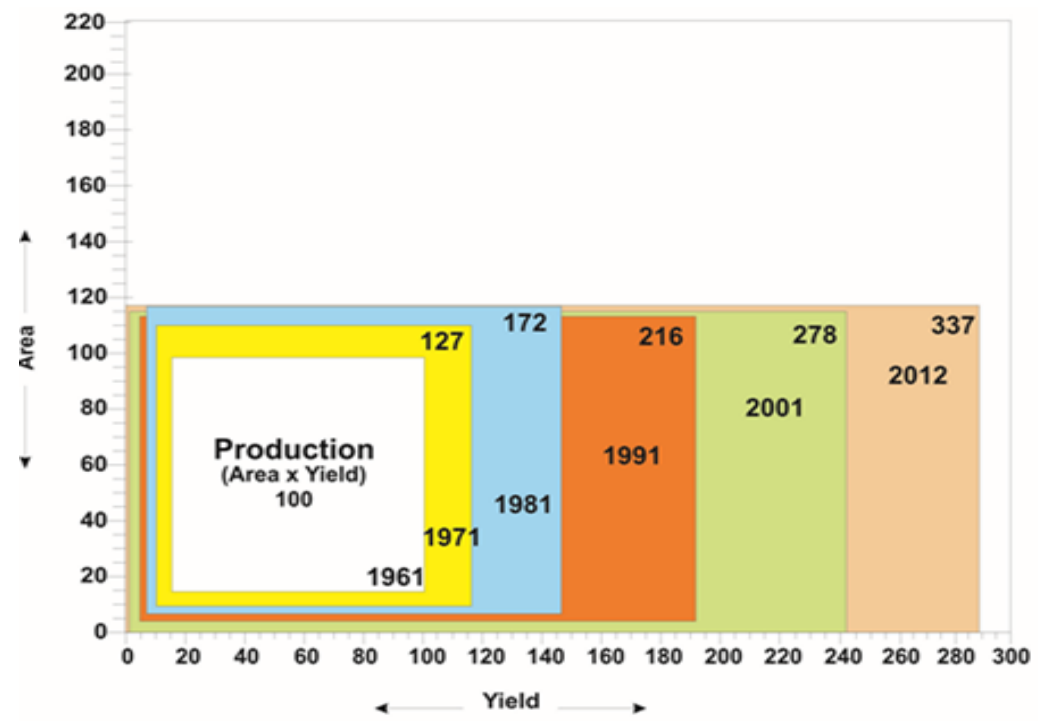


Source: FAOSTAT via the World Bank <https://data.worldbank.org/indicator/AG.YLD.CREL.KG>



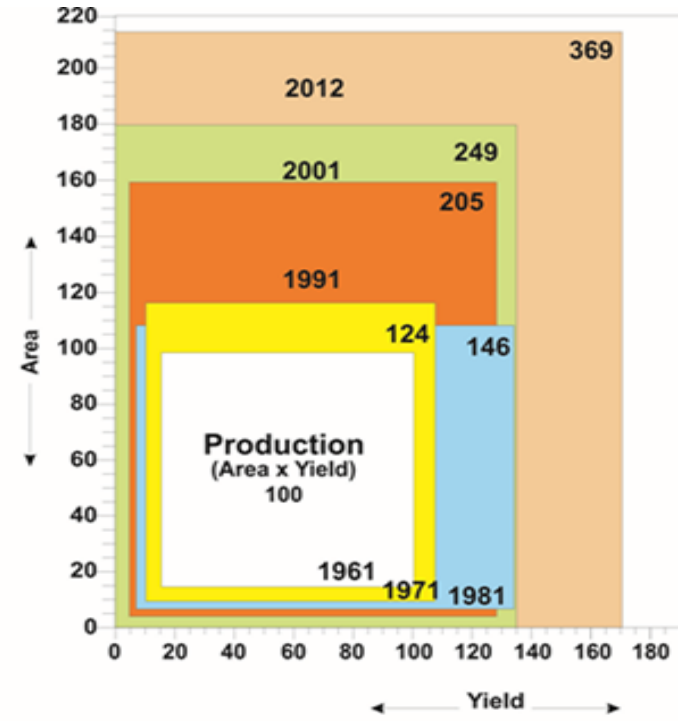


SSA has chiefly relied on area expansion to achieve gains in production



Source: Derived from FAO data

Cereal Production in South Asia, 1961-2012



Source: Derived from FAO data.

Cereal Production in Sub-Saharan Africa, 1961-2012





Flow of Fertilizer from Supplier to Farm-Gate

Physical Flow of Fertilizer

Procurement from overseas fertilizer manufacturers



International shipping



Seaport in coastal country in Africa



Warehousing in port vicinities



Conduct (Coordination)

Functions

Procurement (by tender or negotiation) and financing

Ocean freight

Handling, bagging, inspection, customs clearance

Local transport, unloading, stacking, inventory finance

Performance (Profitability)

Transaction Costs

FOB cost

Freight costs

Port charges

Warehousing costs





Flow of Fertilizer (cont'd)

Physical Flow of Fertilizer

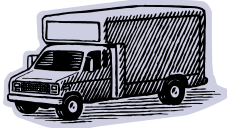
Inland transportation



Inland warehouse



Local transportation



Agro-dealer



Farmer



Conduct
(Coordination)

Functions

Inland transportation
by road or rail

Inland storage

Local
transportation
by truck or public
vehicles

Agro-dealer retails
to farmer (sales,
rebagging, finance,
distribution, information)

Performance
(Profitability)

Transaction Costs

Transport costs

Warehousing costs

Transport costs

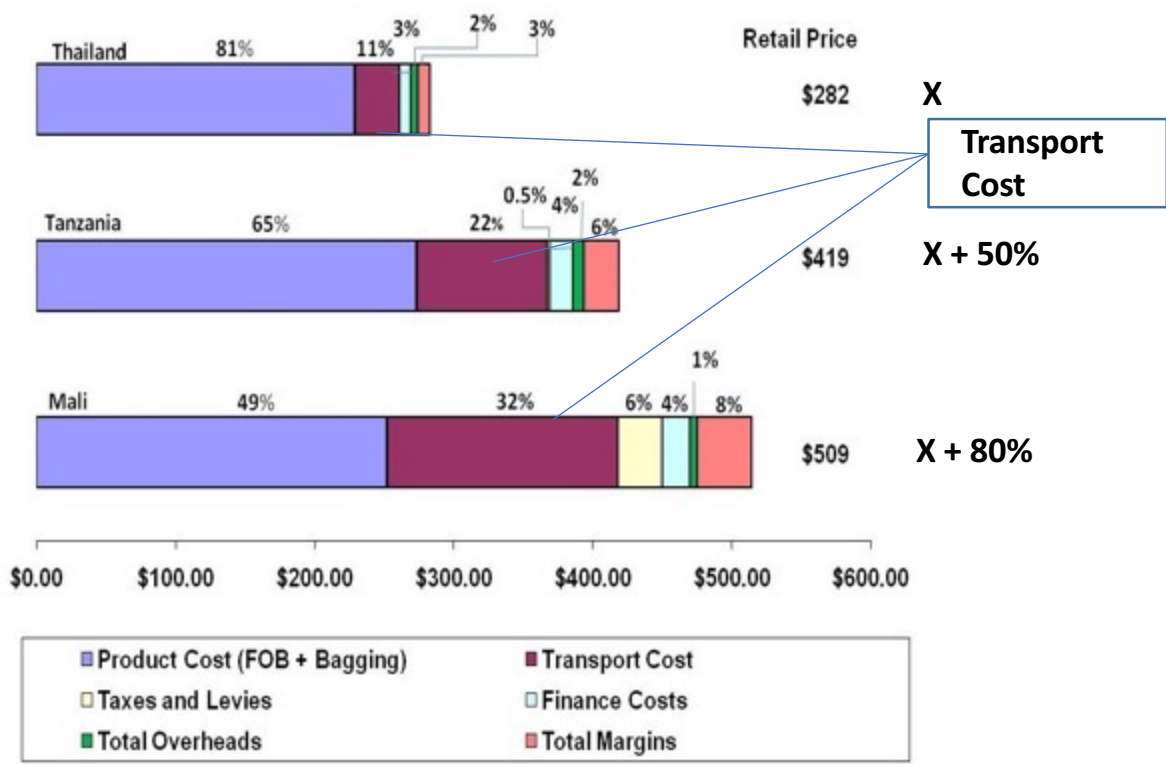
Operating costs



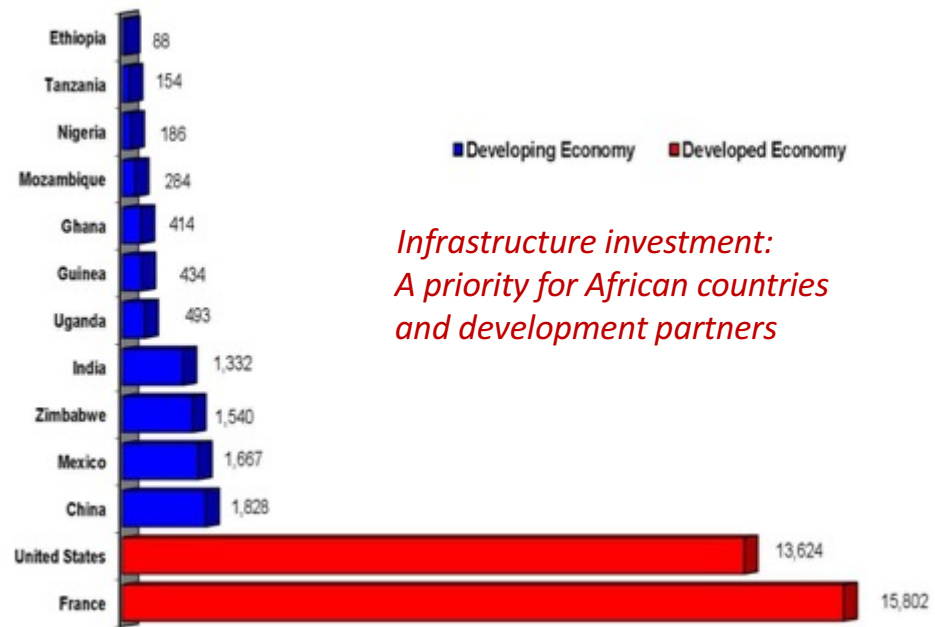


Farm-Gate Fertilizer Price and Road Density

Fertilizer Price Formation



Km of Paved Roads/Million Capita



Infrastructure investment: A priority for African countries and development partners

Source: Chemonics and IFDC (2007)





Policy reforms & fertilizer market development: The Kenyan experience

Joshua Ariga (IFDC)





Summary of Kenya policies since 1960

- 1960-2000:
- **National Food Policy Strategy**
- Mostly geared toward self-sufficiency in cereals, biased toward farmers compared to consumers
- Sessional Papers: 1981, 1994 (reactive)





Kenya Policy Timeline

| Time | Reforms | Comments |
|--|--|---|
| 1960-1980: Immediate post-independence | Government is Solution: <ul style="list-style-type: none"> • Market and price control • State agencies to implement controls and market | <ul style="list-style-type: none"> • Poor management of state agencies, co-ops, KFA, AFC • Rent-seeking |
| 1980-1990: Incipient liberalization | Government under Pressure: <ul style="list-style-type: none"> • SAPs urging state divestiture • Removal of price controls and trade restrictions • Private trade encouraged • Piecemeal liberalization: private sector not able to fill the gap | <ul style="list-style-type: none"> • Pressure from donors • Famous Washington consensus |





Kenya Policy Timeline (cont'd)

| Time | Policy | Comments |
|---|--|---|
| 1990-2000: Rapid liberalization | Government Allows Private Entry: <ul style="list-style-type: none"> • Liberalization of maize market, fertilizer trade, exchange rates, private sector participation • Multiparty democracy (1992) | <ul style="list-style-type: none"> • State intervention in markets (buying and selling) |
| 2000-2006: Participatory approach | Private + Reactive State Intervention: <ul style="list-style-type: none"> • Integrated rural development: roads, extension, poverty, food security issues • External partners: encouraged consultation between state, private sector, and civil society. • Civil society network grows | <ul style="list-style-type: none"> • Concerted donor pressure • Moral strength to local civil societies |





Synergies in Promoting Increased Fertilizer Use and Yield: Public Policy and Private Response

Public investments:

1. Rural feeder roads.
2. New maize varieties: Kenya Agricultural Research Institute and private seed firms.

Policy reforms – fertilizer marketing:

1. Price de-controls.
2. Full legalization of private fertilizer trade.
3. Import quotas eliminated. No subsidies (1990-2007).

Policy reforms – maize marketing:

1. Price de-controls eliminated in 1993.
2. Barriers to trade eliminated by 1995.
3. NCPB buying centers reduced.

Private sector responses:

1. Expansion in private fertilizer wholesaling and retailing.
2. Reduction in fertilizer marketing costs observed between Mombasa port and farm-gate.
3. Reduction in distance from farms to point of maize sale by private trader.
4. Increase over time in maize/fertilizer price ratios.

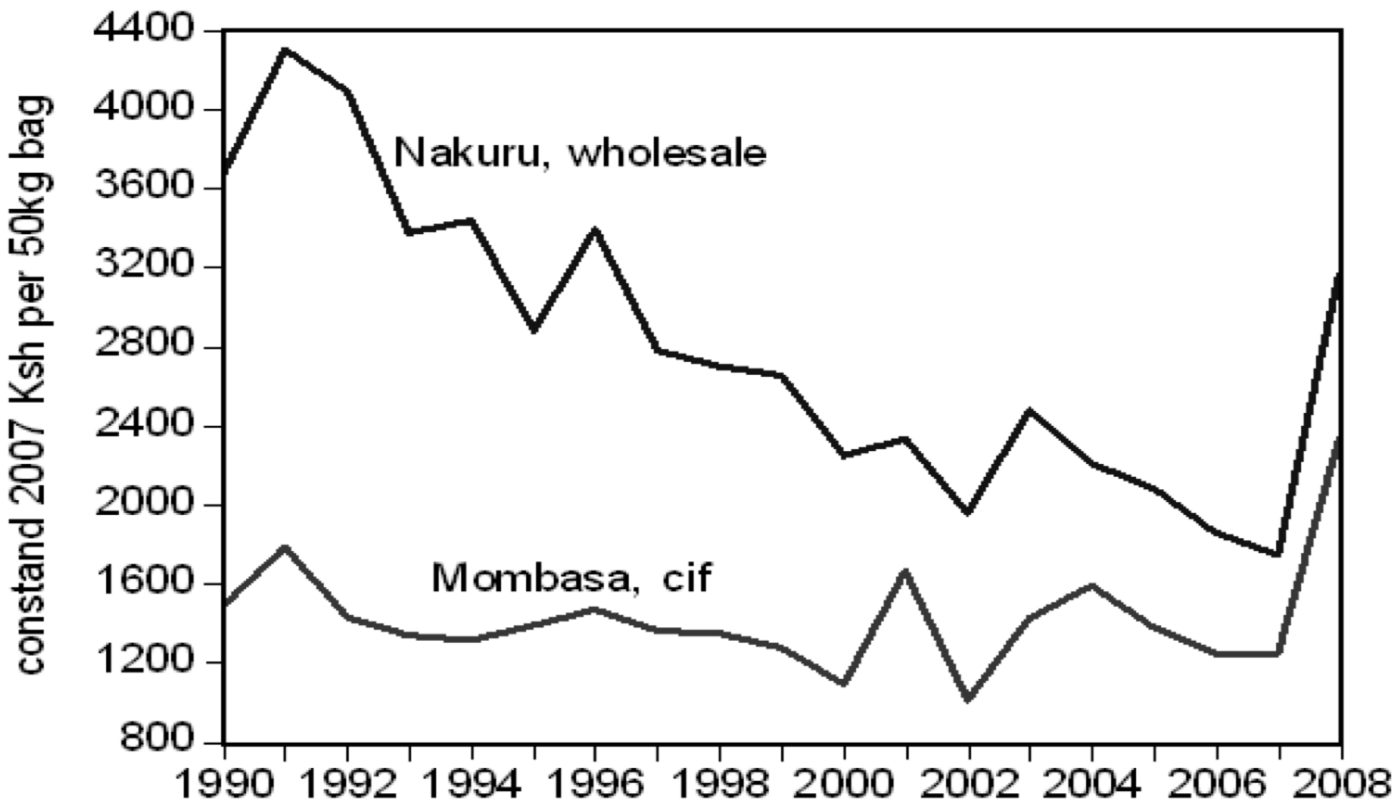
Smallholder farmer responses:

1. Rise in the percentage of farmers using fertilizer and hybrid maize seed.
2. Increase in maize yield and maize production.
3. Increase in percentage of farmers selling maize.





Price of Diammonium Phosphate (DAP) in Mombasa and Nakuru



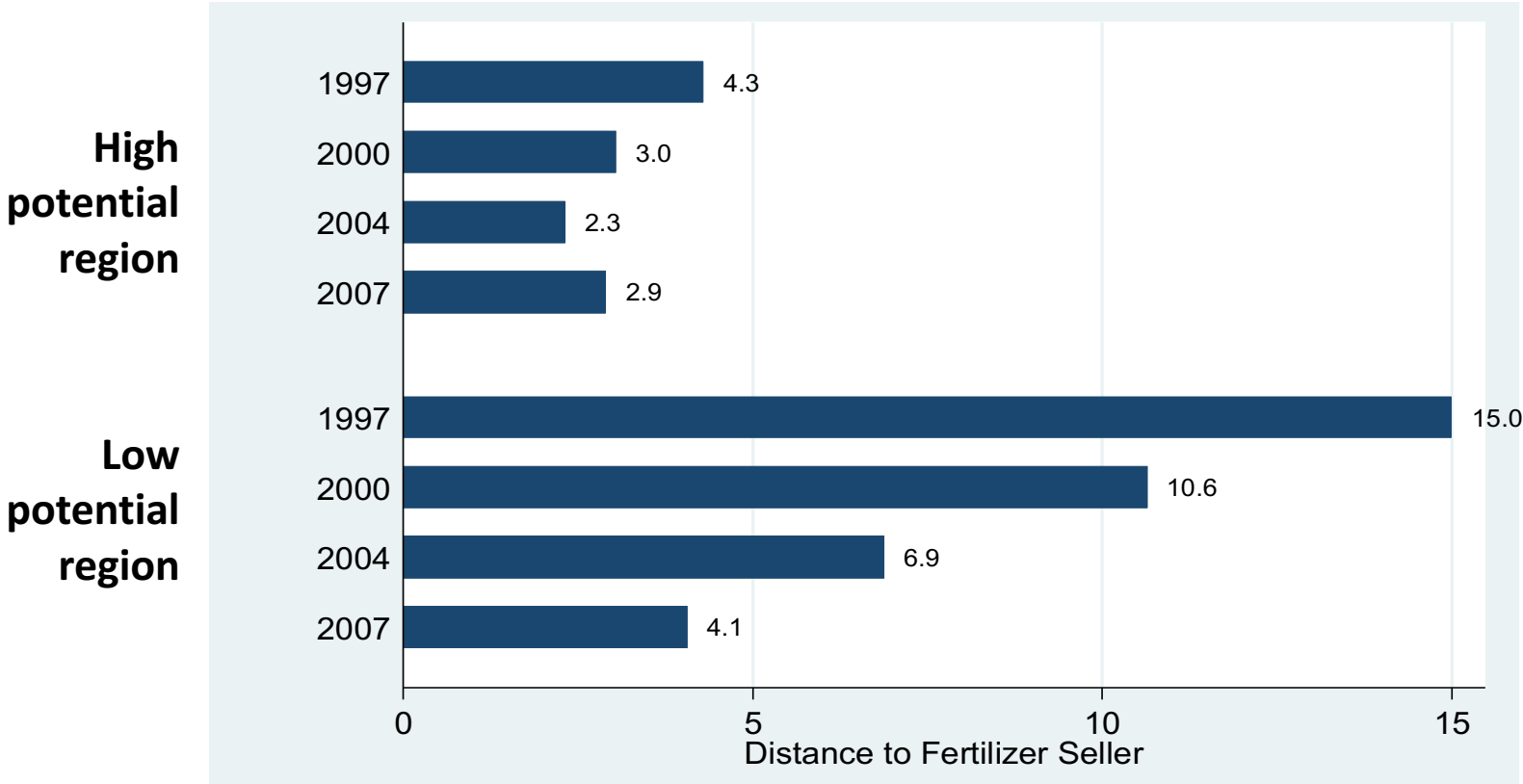
400 miles: 8hrs @ 50mph
Paved road

Source: Ariga and Jayne (2009) & Ministry of Agriculture, Kenya





Distance from Farm to Fertilizer Seller (km)

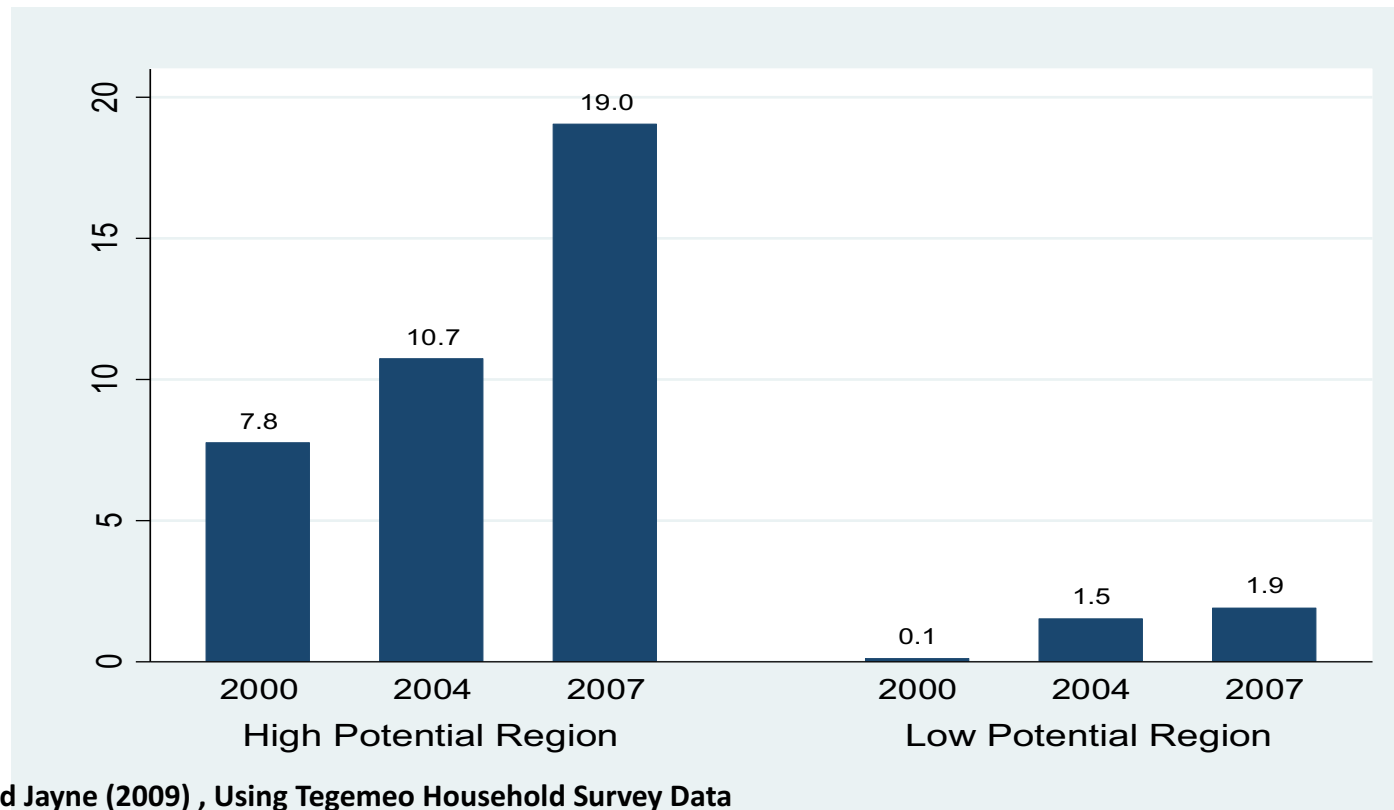


Source: Ariga and Jayne (2009) , Using Tegemeo Household Survey Data





Difference in Mean Household Fertilizer Application Rates from 1997 Level

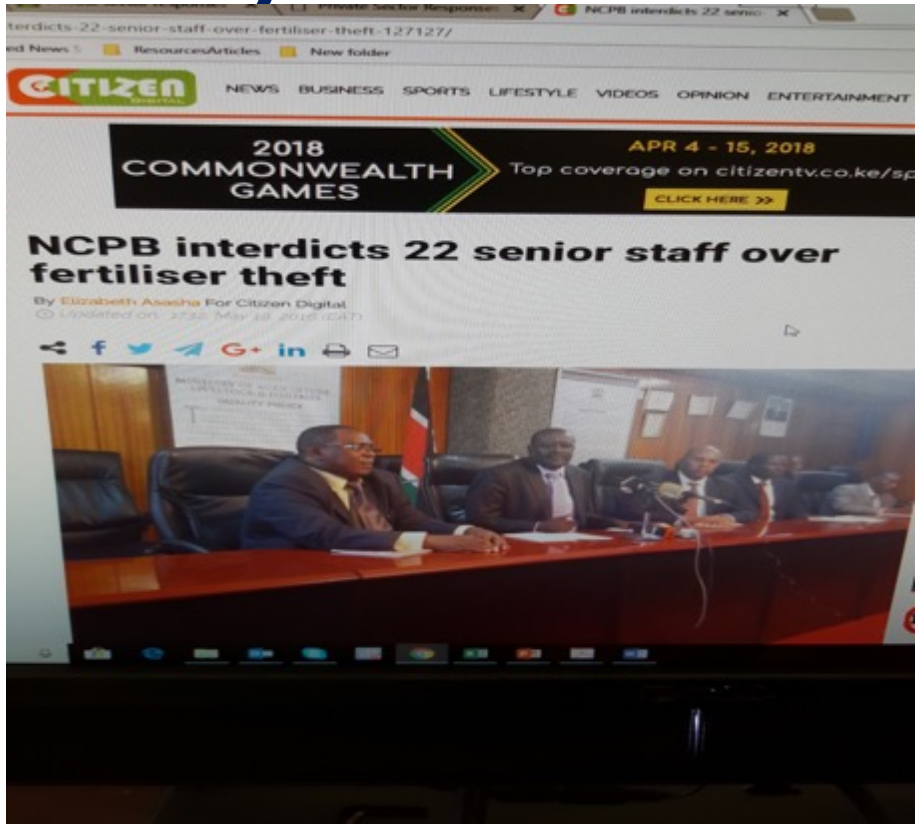


Source: Ariga and Jayne (2009) , Using Tegemeo Household Survey Data





NCPB Officials Sacked in Kenya



<https://citizentv.co.ke/news/ncpb-interdicts-22-senior-staff-over-fertiliser-theft-127127/> [Citizen Newspaper]
<https://www.nation.co.ke/news/Cartels-reap-big-from-State-s-fertiliser-plan/1056-4319444-kmfe79z/index.html> {Nation Newspaper}





Challenges and Lessons in Policy Process

- Policy process can take a long time (need patience)
- Political nature of the process (be very careful)
- Harmonize views from interest groups
- Get the right publicity
- Make message simple (“help the poor”)
- Include the less-advantaged in the process





Fertilizer legal & regulatory frameworks: Existing statuses, lessons, and ways forward

Katrin Kuhlmann (NML)





What is an Enabling Environment?

The **enabling environment** consists of the **policies, laws, and regulations** including the institutional infrastructure that guide the conduct of stakeholders (e.g., farmers, traders, etc.) in pursuit of their goals. An effective enabling environment is one that creates the **conditions for private sector participation and investment in value chains**, thereby increasing competition, putting downward pressure on prices, improving the quality of available goods and services in the market, and improving access.





Gaps in the Enabling Environment

| | |
|------------------------------|--|
| <p>Information</p> | <ul style="list-style-type: none"> • Enterprise level (many enterprises lack legal resources) • Legal Sector (market rules span jurisdictions and legal systems; agricultural law not a focus) • Public Sector (not always aware of market needs) |
| <p>Implementation</p> | <ul style="list-style-type: none"> • Significant differences exist between laws on the books and laws in practice at national and regional levels |
| <p>Rule of law</p> | <ul style="list-style-type: none"> • Best practices and models should draw from developing countries' experiences; customized and incremental approach not common |
| <p>Scale</p> | <ul style="list-style-type: none"> • Issues addressed on case-by-case basis without impacting system as a whole |





About the New Markets Lab

- Non-profit law and development center focused on the intersection between law, economic development, entrepreneurship, and social impact
- Programs with a diverse set of partners around the world designed to leverage legal systems in sectors with growth potential (agriculture – including fertilizer and seed, services, technology) that are heavily regulated
- Set of interventions and tools to improve rules on paper and their implementation in practice
- Build market capacity through hands-on training for lawyers from around the world





Examples of NML's Work

- **Methodology on the impact** of regulatory implementation
- Highlight priorities, tradeoffs, and regulatory sequencing
- Set of programs focused on sectors critical to development and heavily regulated
 - Agriculture (standards, seeds, fertilizer)
 - Services (ICT, financial, and transport)
 - Technology (IP)
 - E-Commerce
 - Emerging Industries
- Legal capacity building
- **Legal Guides** and **Regulatory Systems Maps** to simplify law and regulation on paper and in practice
- Seed Regulation Example
 - Tanzania SAGCOT example: AGRA/USAID





Regulatory Objectives

- Understanding and interpreting current regulatory frameworks
 - Common challenges, regulatory tradeoffs (e.g.: market development v. consumer protection) and gaps in implementation
- Linking regulation with advocacy at national and regional levels
- Identifying priorities for drafting and revising fertilizer regulatory frameworks (national and regional levels)





The Enabling Environment & Fertilizer

- National fertilizer frameworks often span a range of instruments, including:
 - Fertilizer subsidies [Nicky will talk more about this]
 - Macroeconomic policies (interest rates, foreign exchange controls, exchange rate distortions, inflation, currency devaluation, etc.)
 - Trade measures (tariffs, taxes, import and export (including bans), border charges, and other non-tariff trade measures)
 - Regulatory requirements for registration of new products and companies
 - Fertilizer distribution policies
 - Regulations related to quality control of fertilizer products





Some Definitions

- **Fertilizer Law:** Laws (or acts) are frequently established through a parliamentary process and create a framework for governing the market.
- **Fertilizer Regulation:** Regulations are developed to implement laws, usually through administration action.
- **Fertilizer Policy:** Policy creates goals and objectives that laws and regulations should aim to accomplish in order to guide stakeholders and government officials. (Not legally binding.)

The enabling environment for fertilizer refers to policies and regulations and supporting institutions that encourage the timely availability of a wide-range of quality affordable fertilizers that cater to farmers' crop and soil nutrient needs.





Good Regulatory Practices

- Because of the range of instruments, fertilizer regulations are often incredibly complex
- **Well Functioning National Policy, Legal, and Regulatory Framework to Encourage Fertilizer Market Development**
 - Typically framework consists of several interconnected instruments: Fertilizer Policy, Law/Act, and Regulations
 - Countries have a mix of measures
 - Even when exist may be out of date with market developments (for example, few address unique nature of bio-fertilizers and blends)





| Country | Current Instruments | Instruments Under Development |
|-------------------|--|---|
| Ethiopia | Fertilizer Manufacturing and Trade Proclamation No. 137/1998; Growth and Transformation Plan (GTP II); Agricultural Policy and Investment Framework (2010-2020); Commercial Registration and Business Licensing Proclamation No.686/2010; MoANR Directive to Establish Criteria for Competence Certificate | Draft Fertilizer Proclamation; Draft Proclamation to Establish the National Fertilizer Industry Agency (NFIA) |
| Malawi | Fertilizers, Farm Feeds, and Remedies Act (FFRA) 1973, as amended 1996; National Fertilizer Strategy (NFS), 2012; Malawi Growth and Development Strategy (MGDS); Agricultural Sector Wide Approach (ASWAp), 2010 | Fertilizer Act and Regulations (under development since 2003; modified 2007); Fertilizer Policy |
| Mozambique | Strategic Plan of Agricultural Sector Development (PEDSA) (2010—2020); Fertilizer Strategy, 2012; Fertilizer Regulation, 2013 | Fertilizer Act |
| Tanzania | Fertilizer Act, 2009 (amended 2014); Fertilizer Regulations 2011 (amended 2017), Fertilizer (Bulk Procurement) Regulations, 2017; National Agricultural Policy (NAP), 2013; National Fertilizer Strategy (NFS), 2013 | N/A |





Good Regulatory Practices (Cont'd)

- **Independent Regulatory Authority** established through Regulations under the necessary legal authority, skilled staff and well-equipped laboratories
- Autonomous body to facilitate stable and predictable regulatory environment and facilitate development of and alignment with regional measures
 - **Example:** The Tanzania Fertilizer Regulatory Authority (TFRA)





Good Regulatory Practices (Cont'd)

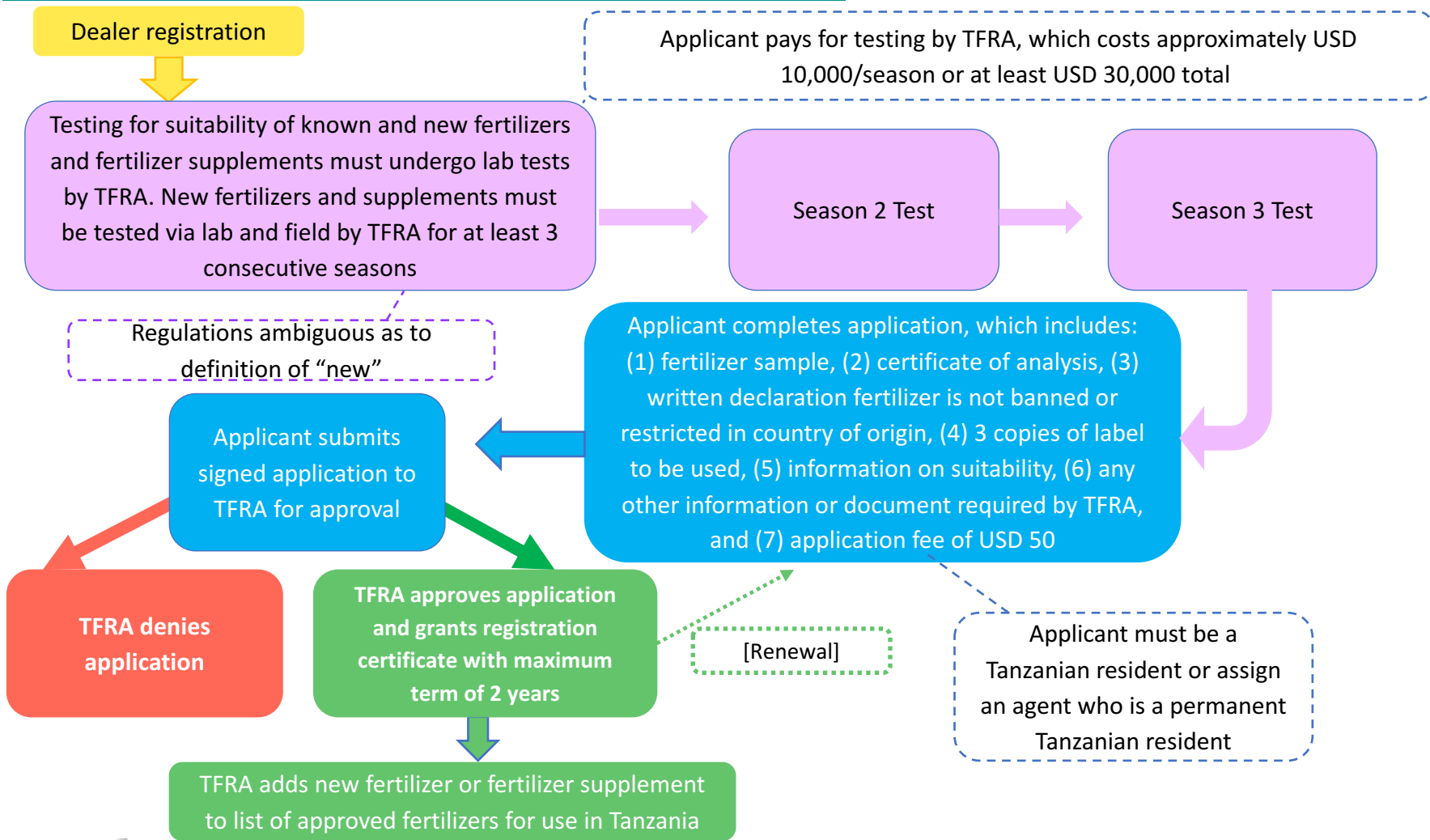
- **Streamlined and Simplified Registration Process to Register Fertilizer:**
 - Reduce the number of seasons of testing and fees
 - **Example:** Tanzania amended regulations in 2017 (shift from 3 seasons to 1)
 - Remove the registration requirements for new blends
 - Shift to ex post system over time rather than ex ante (focuses on enforcement rather than market entry)
 - Ex post measures are a good regulatory practice but require sufficient capacity to implement
 - Phase-out approved list approach for fertilizers and adopt a truth-in-labeling approach
 - **Example:** Zambia and South Africa maintain a list of nutrients as opposed to a list of fertilizer grades



Partnership for Enabling Market Environments for Fertilizer in Africa (PEMEFA)



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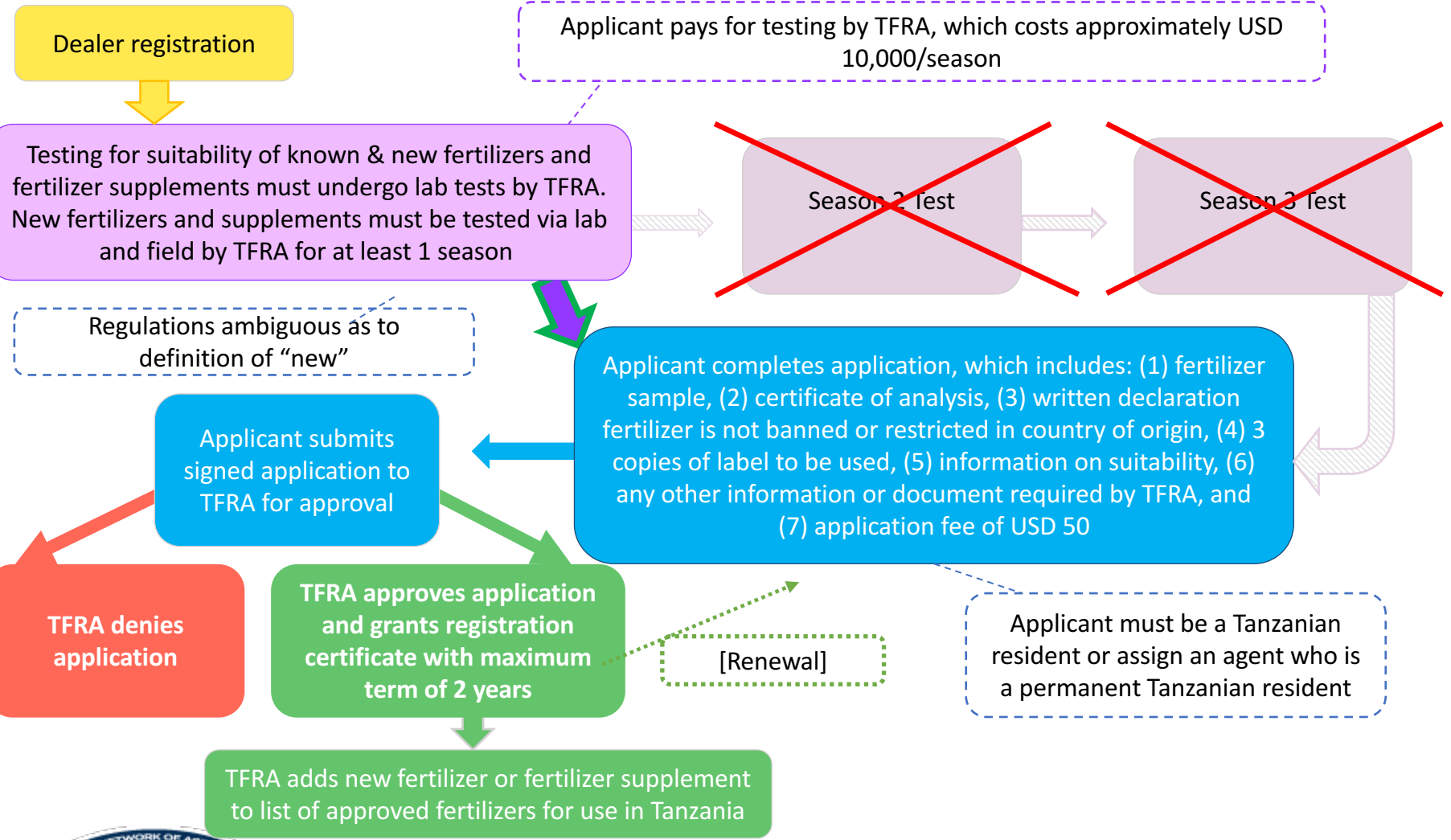
Prior Regulatory Process for Fertilizer Registration in Tanzania



Partnership for Enabling Market Environments for Fertilizer in Africa (PEMEFA)



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Amended Regulatory Process for Fertilizer Registration in Tanzania





Good Regulatory Practices (Cont'd)

- **Enhanced Implementation of Existing Legal Mechanisms**
 - Expand capacity and training (including focus on laboratories, skilled staff, equipment, traceability mechanism) and enforcement (with deterrent penalties for violations)
- **Strengthened Public-Private Dialogue Platforms to Improve Regulatory Frameworks and Their Implementation**
 - **Examples:** Mozambican Association for Dialogue and Promotion of Fertilizer Use (AMOFERT); Tanzania Fertilizer Society
 - The AMOFERT Platform is well-recognized, and participated in drafting a new Fertilizer Act that is under review by the Mozambican government





Good Regulatory Practices (Cont'd)

- **Awareness Building of Legal and Regulatory Systems**
 - Address challenges through:
 - Improved dissemination of information (Legal Guides)
 - Assistance for preparing or interpreting legal documents like contracts
 - Providing transactional legal services to individuals working with the agricultural sector
 - Provide tailored legal training for farmers, including rights and obligations
 - Design training program for lawyers to improve overall regulatory environment and delivery of agricultural legal services to stakeholders





Regional Harmonization

- **Harmonized Standards and trade procedures at Regional Level** facilitate easy movement of blends within the region; harmonize laboratory capacities
- Abuja Declaration Calls for Regional Harmonization
 - AU Member States and Regional Economic Communities (RECs) should take appropriate measures to **reduce the cost of fertilizer procurement** at national and regional levels and **develop capacity for quality control**
 - Focus on ensuring duty and tax-free movement across regions
- Continental Free Trade Area (CFTA) and Tripartite Free Trade Area (TFTA)
 - CFTA launched this March
 - TFTA includes three RECs: the East African Community (EAC), the Southern African Development Community (SADC), and the Common Market for Eastern and Southern Africa (COMESA)





Regional Harmonization (Cont'd)

- COMESA Developing Harmonized Frameworks
- EAC Harmonized Regulatory Instruments and Procedures for Fertilizer Market Under Development
- SADC Regional Agricultural Policy (RAP)
 - Policy not specific to fertilizer
 - No separate framework for fertilizer exists
- Economic Community of West African States (ECOWAS) Regulation Relating to Fertilizer Quality Control in the ECOWAS Region





Example: ECOWAS Fertilizer Regulations

- Streamlined Product Registration (ECOWAS – Product Registration Not Required; Truth-in-Labeling)
- Institutional Cooperation
- Free Movement of Fertilizer (including blends; way to meet market needs)
- Standard Quality Definitions and Labeling Requirements
 - IFDC contributed to work on sampling and testing
- Harmonized Inspection and Analysis
- Common Licenses for Fertilizer Producers and Traders
- Shared Laboratory Resources





ECOWAS Fertilizer Regulations (Cont'd)

- Requires domestication (differences between civil law and common law countries)
- IFDC WAFP project is assisting individual ECOWAS countries with domestication process
 - Develop quality controls in country distribution system (identify and evaluate lab and human resources)
 - Establish agency to enforce ECOWAS regulatory framework, including quality control and national committees to support these efforts
 - Draft modalities for issuance of import and distribution licenses; fix registration fees for importers and distributors
 - Set up penalties for infringement of regional and national regulations





Principles for Harmonizing Fertilizer Regulatory Frameworks

- Implementation at National Level is Critical
- Approaches May Vary Among Members of Regional Bloc
- Consider Sequencing of Regulatory Interventions
- Promote “Low Hanging Fruit” Reforms
- Establish Common Methodology and Indicators to Measure Progress
- Tailor Capacity Building to Needs of Individual Member Countries
- Listen to Private Sector and Civil Society Voices





Short-Term Regional Harmonization Interventions

- **Establishment of National Entities Responsible for Fertilizer Regulation**
 - Help facilitate stable and predictable regulatory environment at the country level and significantly contribute to a more efficient regional fertilizer market
- **Clarity on Product and Business Registration and Licensing Rules**
 - Inconsistent application of registration and licensing rules impedes harmonization efforts
- **Tariff and Customs Duties**
 - Countries could agree to exempt fertilizer from customs duties and other taxes, and harmonize VAT for fertilizer, including for fertilizer-related services
- **List of Approved Fertilizers**
 - Regionalize list of approved fertilizers to facilitate trade, with the long-term aim of transitioning to an ex post approach like truth-in-labeling





Short-Term Regional Harmonization Interventions (Cont'd)

- **Packaging and Labeling**
 - Establish uniform rules for packaging and labeling, such as a minimum set of information to be clearly labeled on fertilizer containers
- **Harmonized Regional Quality Control (Including Inspection)**
 - Establish a regional quality control system that extends all along the fertilizer value chain
- **Fertilizer Standards**
 - Adopt uniform standards for fertilizer, including blends, based on international standards
- **Raising Awareness of Fertilizer Laws and Regulations**
 - At national and regional levels, including by making sure proposed changes are shared and vetted with public and all rules are published





Long-Term Regional Harmonization Interventions

- **Shift to a Truth-in-Labeling Approach**
 - ECOWAS system is an example of ex post regulation and a Truth-in-Labeling approach
- **Free Movement of Fertilizer Cross-Border, Including Transport**
 - Remove or reduce border taxes, roadblocks, and escort systems; introduce one-stop border processes; and improve trade corridors
- **Regional Inspection, Analysis, Sampling, and Tolerance**
 - Inspection, analysis, and testing procedures could follow international standards and regional rules for inspection could be established





Long-Term Regional Harmonization Interventions (Cont'd)

- **Oversight and Administration**
 - Establish regional institutional mechanism with clear mandate
- **Right to Appeal and Confidentiality**
 - Harmonize grounds for appeal and ensure clear right to confidentiality for sensitive business information to avoid unfair competition





Fertilizer subsidy programs and private sector investment in fertilizer value chains: Evidence from SSA

Nicole Mason (MSU)





Fertilizer subsidy programs in SSA

- *What is a fertilizer subsidy program (FSP)?*
- Popular policy tool for decades
- Up through 1970s/1980s: typically **universal** subsidies and distributed at **gov't depots or by state-owned enterprises**
- Abolished in 1980s/1990s due to **high costs** and **inefficiencies**
- Resurgence in popularity since the early 2000s
- *Some* attempts to make FSPs **“smarter”/more private sector-friendly**
 - **Targeted** subsidies instead of universal
 - **Greater involvement of private sector** fertilizer importers and retailers



Still popular today. Heavy gov't expenditure, major press coverage, mixed results.

Ending Famine, Simply by Ignoring the Experts

By CELIA W. DUGGER DEC. 2, 2007

The New York Times



The secret of Malawi's success: heavy subsidies for fertilizer, farmers say. The World Bank had pressed for their elimination. Evelyn Hockstein for The New York Times

Jul 1st 2017 | LUSAKA



The Economist

Alamy



How have FSPs affected private investment in fertilizer value chains?

- If FSPs generate a **sustained ↑ in demand** for fertilizer at commercial (unsubsidized) prices, **could ↑ incentives for private investment**
- **Empirical evidence?**
 - **Most studies** (8 of 10) suggest **FSPs ↓ commercial demand (“crowding out”)**
 - EX) Zambia, Malawi, Kenya, Nigeria (main gov’t program in 2000s)
 - But **2 cases of FSPs ↑ commercial demand (“crowding in”)**
 - EX) Tanzania, Nigeria (pilot program in Kano State 2009-2011)





What explains crowding out?

- Significant share of FSP fertilizer targeted to farm HHs that **would have purchased fertilizer at market prices even without the subsidy**
- These tend to be:
 - HHs with **more land** or other **assets**
 - **Male-headed** HHs
- With one exception, all FSPs with crowding out only **minimally involved the private sector**

Sources: See crowding in/out references





What explains crowding in?

- Both Tanzania (National Agricultural Input Voucher Scheme – NAIVS) & Nigeria (Kano State Voucher Program – KVSP):
 - Utilized **vouchers redeemable at private sector** retailers' shops
- Tanzania/NAIVS:
 - Did good job of **targeting HHs that hadn't used fertilizer** on maize or rice in the last 5 years (75% of beneficiaries)
- Nigeria/KVSP:
 - Subsidy for 3 X 50-kg bags. **Not enough to meet full demand** → farmers purchase the rest at market price at agrodealer?
 - Input suppliers required to be **physically present** in local gov't areas
 - Pilot program **closely monitored** by IFDC

Sources:
Mather & Minde (2016),
Liverpool-Tasie (2014)





Implications for FSP design

- It may be possible to **reduce crowding out by targeting**:
 - HHs that **cannot afford or have not used fertilizer** at the market price
 - HHs with **less land or other assets**
 - **Female-headed** HHs
- Crowding-in appears to be most likely when:
 - The FSP **uses vouchers redeemable at private retailers' shops**
 - **Incentives are provided to retailers** to locate closer to farmers
 - Subsidized fertilizer **quantities are less than full amount needed** by farmers





Supply-side effects of FSPs

- **Far less rigorous empirical evidence** than demand-side effects
- Mostly **anecdotal** evidence and **descriptive** studies
- Exception: Study on how the **Malawi Farm Input Subsidy Program** (FISP) affects private sector fertilizer sales (Kaiyatsa et al. 2017)





How did allowing select large-scale distributors and affiliated retailers in select districts (9 of 28) to accept FISP fertilizer vouchers in 2015/16 affect fertilizer sales?

- **No effect** on commercial sales of large-scale distributors/retailers in pilot districts (participants & non-participants)
- **↑ Subsidized** fertilizer sales of participating firms by 299 MT/retailer
- **↓ Commercial** fertilizer sales of independent agro-dealers in pilot districts (excluded from program) by 28 MT/agro-dealer

→ Overall: 1 MT of sub. fert. sold → 0.14 MT ↓ in commercial fert. sales

Source: Kaiyatsa et al. (2017)



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4 insights from descriptive studies on FSPs and private sector involvement

- FSPs that have the private sector (and not state-owned enterprises) handle importation/procurement, distribution, and retailing of fertilizer for FSPs have the potential to crowd-in private sector investment in fertilizer value chains*

EX) **Tanzania/NAIVS** → sustained, predictable ↑ in fertilizer demand
→ Importers/distributors invest in new storage/distribution warehouses
→ Agro-dealers shift from renting to purchasing shops
→ More agro-dealers in operation and more delivery of inputs to villages (Mather et al. 2016)

EX) Similar emerging evidence for **Zambia with switch to e-voucher**
(Kuteya et al. 2016; Machina et al. 2017)





4 insights from descriptive studies on FSPs and private sector involvement

2. *Involving the private sector in the handling of fertilizer for FSPs can reduce program costs*

Profit motive of private firms often leads to greater efficiency, less waste, and reduced bureaucracy relative to more government-centric programs

(SOAS et al. 2008; Chirwa & Dorward 2013; Kuteya et al. 2016; Kuteya & Chapoto 2017)





4 insights from descriptive studies on FSPs and private sector involvement

3. *Trust between gov't and private sector actors is paramount for sustained involvement of the private sector in FSPs, and to the development of private sector fertilizer markets more broadly.*

Trust is easily eroded and difficult to rebuild.

EX) Delayed payments (Ghana, Malawi, Tanzania, Zambia) and last minute decisions to exclude private sector retailers (Malawi in 2008)

(SOAS et al. 2008; Kelly et al. 2010; Chirwa & Dorward 2013; Mather 2016; Musonda 2008)

EX) Opaque tendering processes for FSP fertilizer, and allegations of corruption and politically-motivated awarding of tenders (Zambia, Nigeria)

(Wanzala-Mlobela et al. 2013; Resnick & Mason 2016)





4 insights from descriptive studies on FSPs and private sector involvement

- 4. It is important to involve representatives from all parts of the fertilizer value chain in discussions to set marketing margins for FSPs.*

EX) This was done in Tanzania/NAIVS but not in Ghana, where only government and importers were involved. As a result, in Ghana, several distributors and retailers decided not to participate in the FSP (Mather 2016).





Concluding remarks

- Our PEMEFA team has been scouring the literature for **empirical evidence on what works/doesn't re: enabling environments** for private sector investment in fertilizer value chains
- Most literature is on **subsidy programs** (but gaps on **supply-side effects**)
- There are some **generally accepted broad principles on best practices for fertilizer policies, laws, and regulations, but very little empirical evidence** that moving toward these best practices actually improves smallholder farmers' access to affordable, good quality fertilizers
- **Next phase** of our project will aim to **fill some of these knowledge gaps**
- ***We are seeking more collaborators, so if this interests you, please let us know!***





Thank you! Questions?

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PEMEFA team

- Joshua Ariga (IFDC, jariga@ifdc.org)
- Katrin Kuhlmann (NML, kkuhlmann@newmarketslab.org)
- Nicole Mason (MSU, masonn@msu.edu)
- Maria Wanzala-Mlobela (AFAP, mwanzala@afap-partnership.org)
- Charles Jumbe (ReNAPRI, charlesjumbe@bunda.luanar.mw)
- Megan Glaub (NML, mglaub@newmarketslab.org)
- Killian Banda (AFAP, kbanda@afap-partnership.org)

Please stick around for the reception after the seminar to continue interacting with speakers and each other!

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References – crowding in/out

Kenya:

Mather, D., & Jayne, T. S. (2018). Fertilizer subsidies and the role of targeting in crowding out: Evidence from Kenya. *Food Security*, DOI: <https://doi.org/10.1007/s12571-018-0773-8>

Jayne, T. S., Mather, D., Mason, N. M., Ricker-Gilbert, J., & Crawford, E. (2015). Rejoinder to the comment by Andrew Dorward and Ephraim Chirwa on T. S. Jayne, D. Mather, N. Mason, and J. Ricker-Gilbert. 2013. How do fertilizer subsidy programs affect total fertilizer use in sub-Saharan Africa? Crowding out, diversion and benefit/cost assessments. *Agricultural Economics*, 44(6), 687-703. *Agricultural Economics*, 46(6), 745-755.

Malawi:

Ricker-Gilbert, J., Jayne, T. S., & Chirwa, E. (2011). Subsidies and crowding out: A double-hurdle model of fertilizer demand in Malawi. *American Journal of Agricultural Economics*, 93(1), 26-42.

Jayne et al. (2015) – see above for reference

Ricker-Gilbert, J., & Jayne, T. S. (2017). Estimating the enduring effects of fertiliser subsidies on commercial fertiliser demand and maize production: Panel data evidence from Malawi. *Journal of Agricultural Economics*, 68(1), 70-97.

Nigeria:

Takeshima, H., & Nkonya, E. (2014). Government fertilizer subsidy and commercial sector fertilizer demand: Evidence from the Federal Market Stabilization Program (FMSP) in Nigeria. *Food Policy*, 47(August), 1-12.

Liverpool-Tasie, L. S. O. (2014). Fertilizer subsidies and private market participation: The case of Kano State, Nigeria. *Agricultural Economics*, 45(6), 663-678.

Tanzania:

Mather, D., & Minde, I. (2016). *Fertilizer subsidies and how targeting conditions crowding in/out: An assessment of smallholder fertilizer demand in Tanzania*. (GISAIA/Tanzania Working Paper No. 5). East Lansing, MI: Michigan State University.

Zambia:

Xu, Z., Burke, W. J., Jayne, T. S., & Govereh, J. (2009). Do input subsidy programs 'crowd in' or 'crowd out' commercial market development? Modeling fertilizer use decisions in a two-channel marketing system. *Agricultural Economics*, 40(1), 79-94.

Mason, N. M., & Jayne, T. S. (2013). Fertiliser subsidies and smallholder commercial fertiliser purchases: Crowding out, leakage, and policy Implications for Zambia. *Journal of Agricultural Economics*, 64(3), 558-582.

Jayne et al. (2015) – see above for reference (same data as Mason & Jayne (2013))





References – supply-side effects

- Chirwa, E. W., & Dorward, A. R. (2013). *The role of the private sector in the Farm Input Subsidy Programme in Malawi* (Working Paper No. 64). Brighton, UK: Future Agricultures Consortium.
- Kaiyatsa, S., Jumbe, C., & Ricker-Gilbert, J. (2017). *Supply-side crowding-out and crowding-in effects of Malawi's Farm Input Subsidy Program on private-sector input marketing: A quasi-experimental field study*. Mimeo.
- Kelly, V., Boughton, D., & Lenski, N. (2010). *Malawi Agricultural Inputs Subsidy: Evaluation of the 2007/08 and 2008/09 program – input supply sector analysis*. East Lansing, MI: Michigan State University.
- Kuteya, A., & Chapoto, A. (2017). *E-voucher performance and recommendations for nationwide rollout during the 2017/18 farming season* (Policy Brief No. 89). Lusaka, Zambia: Indaba Agricultural Policy Research Institute.
- Kuteya, A., Lukama, C., Chapoto, A., & Malata, V. (2016). *Lessons learnt from the implementation of the e-voucher pilot* (Policy Brief No. 81). Lusaka, Zambia: Indaba Agricultural Policy Research Institute.
- Machina, H., Sambo, J., & Nzila, M. (2017). *Has the electronic voucher system created employment? The case of five districts of Zambia* (Working Paper No. 128). Lusaka, Zambia: Indaba Agricultural Policy Research Institute.
- Mather, D. (2016). *Lessons learned from private sector-friendly input subsidy programs in Tanzania and Ghana* (GISAIA/Tanzania Working Paper No. 6). East Lansing, MI: Michigan State University.
- Mather, D., Waized, B., Ndyetabula, D., Temu, A., Minde, I., & Nyange, D. (2016). *The effects of NAIVS on private sector fertilizer and seed supply chains in Tanzania*. (GISAIA/Tanzania Working Paper No. 3). East Lansing, MI: Michigan State University.
- Musonda, C. (2008, January 13). Fertilizer crisis leaves small-scale farmers foodless. *The Times of Zambia*.
- Resnick, D., & Mason, N. M. (2016). *What drives input subsidy policy reform? The case of Zambia, 2002-2016* (Research Paper No. 28). East Lansing, MI: Feed the Future Innovation Lab for Food Security Policy.
- School of Oriental and African Studies (SOAS), Wadonda Consult, Michigan State University, and Overseas Development Institute. (2008). *Evaluation of the 2006/07 Agricultural Input Subsidy Programme, Malawi – Final Report*. London, UK: SOAS.
- Wanzala-Mlobela, M., Fuentes, P., & Mkumbwa, S. (2013). *Practices and policy options for the improved design and implementation of fertilizer subsidy programs in sub-Saharan Africa*. (NEPAD Agency Policy Study). Muscle Shoals, AL: International Fertilizer Development Center.

