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# Economic Rationale for Fertilizer Quality Regulations

Dr. Joshua Ariga

International Workshop on  
Developing Private Sector Agro-Input Markets –  
Lessons Learned and Emerging Perspectives on  
Subsidy Programs

February 19-23, 2018  
Jinja, Uganda

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

**Consortium of 5 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)

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## About PEMEFA (Partnership for Enabling Market Environments for Fertilizer in Africa) (cont'd)

### GOAL

**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.



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



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## About PEMEFA (Partnership for Enabling Market Environments for Fertilizer in Africa) (cont'd)

**PEMEFA's initial activities (including today's presentations) 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.





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## Today's Morning Session

- Economics Quality Standards**
- Enabling Environment for Market Development**
- Legal frameworks**
- Group discussions**





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## Guiding questions for Group Work

1. Based on what you've heard, what do you think are the key policies/regulations that are hindering private sector performance in fertilizer markets in SSA? Why?
2. Other than subsidies, what do you think are other important government interventions related to the fertilizer sector? Why?
3. Based on your answers to #1 and 2,
  - a. What would you advise the government of Kenya to do at the national level? Why?
  - b. What would you advise dealing with at the regional level (e.g., COMESA, EAC)? Why?



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## Objectives and Outline of this Presentation

### Objectives:

- Highlight the economic rationale for having quality standards
- Recommend fertilizer regulations/regulatory reforms that can result in improved fertilizer quality

### Outline:


- Quality points of interest along the value chain
- The need for quality standards
- Explore the potential impact of poor fertilizer quality standards on national production
- Recommendations




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# Potential Quality “hotspots” Along the Fertilizer Value Chains




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## Flow of Fertilizer from Supplier to Farm-Gate

	<u>Conduct</u> (Coordination)	<u>Performance</u> (Profitability)
<p><b>Physical Flow of Fertilizer</b></p> <p>Procurement from overseas fertilizer manufacturers </p> <p style="text-align: center;">↓</p> <p>International shipping </p> <p style="text-align: center;">↓</p> <p>Seaport in coastal country in Africa </p> <p style="text-align: center;">↓</p> <p>Warehousing in port vicinities </p>	<p><b>Functions</b></p> <p>Procurement (by tender or negotiation) and financing</p> <p style="margin-top: 20px;">Ocean freight</p> <p style="margin-top: 20px;">Handling, bagging, inspection, customs clearance</p> <p style="margin-top: 20px;">Local transport, unloading, stacking, inventory finance</p>	<p><b>Transaction Costs</b></p> <p>FOB cost</p> <p style="margin-top: 20px;">Freight costs</p> <p style="margin-top: 20px;">Port charges</p> <p style="margin-top: 20px;">Warehousing costs</p>



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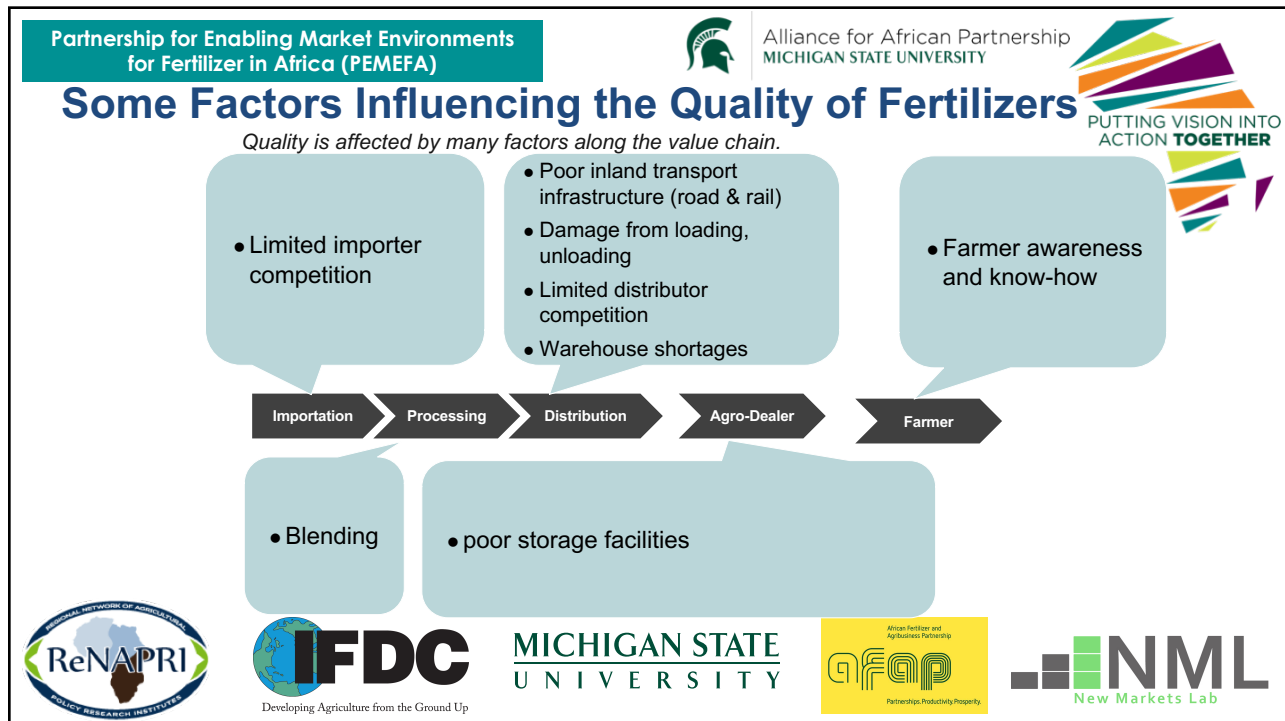
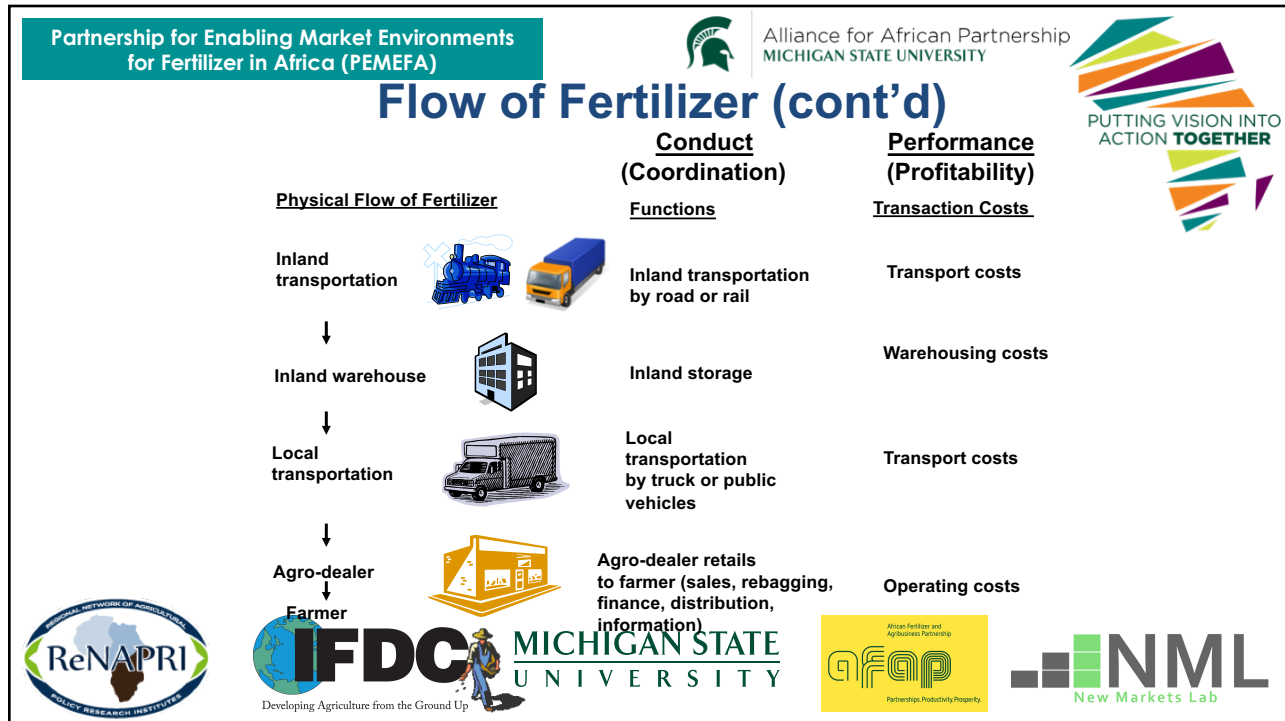
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## Human Capital

- Human capital limited in both quantity and quality:
  - Concentrated in towns or districts at a distance from the farm-gate.
  - Limited business and technical knowledge.
- Agro-dealers and stockists lack training in business management and product knowledge.
- Farmers: limited know-how on correct and safe use of fertilizers, economics of fertilizer use



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## Status of Regulatory Environment

- The majority of countries do not have a fertilizer law to guide the fertilizer market, but govern by administrative decree.
- Even where fertilizer laws exist, national regulatory systems are under-resourced and ineffective.
  - Capacity for quality control at retail is limited (usually less than 10 inspectors for the whole country).
  - In many countries, laboratory testing facilities are nonexistent or have old equipment.



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# The Need for Quality Standards

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## What do Most Standards Contain?

- State requirements for :
  - Physical.
  - Chemical composition.
  - Contaminant levels.
  - Packaging.
  - Marking of the fertilizer (e.g. ZABS).

Mavuro Fertilizer bags: NPK 10:26:00, VUNA ZAIDI NA MAVURO, TEA, NPK 10:26:00, NAKUNDO PLANTING, NPK 10:26:00, NAKUNDO PLANTING.

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## Why Have Quality Standards or National Quality Standards Agency?

- To promote **“fair” competition** (avoid “fake” or substandard products). Effect of unfair competition?
- Ensure fertilizer meets **plant nutrition needs**.
- Ensure **no harm to human health** (heavy metals are a risk).
- Ensure **no harm to the environment**.







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- **Objective of quality inspection of imports.**
- To stop / eliminate substandard commodities flooding the market.
- For fair competition with locally manufactured products.
- Ensure international standards are met.









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## What is “Fake” Fertilizer

- ✓ **Adulterated fertilizer**
  - Adding sand, earth, etc.
  - Mislabeling products.
- ✓ **Misleading labels**
  - Not in English language on bags or labels.
  - Not representing the true analysis of the nutrients.
  - No specification of form or content of micronutrients.
- ✓ **Re-bagged lower analysis fertilizer**
  - DAP as another product.
- ✓ **Poor physical quality fertilizer**
  - Lower physical quality, e.g., poor prilled urea.
  - Blends with unmatched granule/particle sizes.
- ✓ **Low weight bags**





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## NCPB Officials Sacked in Kenya





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## The “Lemon” Problem (G Akerlof)

**Market has 3 main ingredients:**


- Buyer
- Seller
- Support infrastructure / services

**Market Failure:**

Poor response to fertilizer → B does not trust S → S can only sell “fake” fertilizer → B has poor yields from not using fertilizer or using “fake” fertilizer.

Eventually, B, S, and government lose → the economy loses.

**Asymmetric Information**





Buyer (B)	Seller (S)
<ul style="list-style-type: none"> <li>• Does not have same info as seller.</li> </ul>	<ul style="list-style-type: none"> <li>• Is fully informed on quality of fertilizer.</li> </ul>

**Quality Standards (by State)**


“Seller must reveal pertinent information about product.”


If not, punishment (fines, loss of business).






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## Demonstration: Estimated National Impact of “Fake” Fertilizer on Kenya – Maize


Average Maize Yield / Acre (Bags (90 kg))	10.0	
Loss in Yields (20%); due to “fake”	2.0	
Assume average acres / Farmer	1.5	
Assume # Farmers	5.0	Million
Lost Bags of Maize	15.0	Million
Value (KES 1500/bag)	22.5	Billion
Assume only 10% of farmers receive “Fake” fertilizer	225.0	Million






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## Recommendations to Improve Quality (and reduce economic losses)







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## Recommendations (Cont'D)


### Accredited laboratories and inspectors

- Improve fertilizer laboratories, including capacity building of inspectors.

### Regional testing laboratories and data management

- Explore the technical and financial feasibility of supporting the establishment of two or three regional testing facilities for fertilizer testing, research, and data management.







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## Recommendations (Cont'D)

### Consumer awareness

- Design and implement a national awareness program that helps farmers better understand the importance of proper fertilizer use.

### Development and certification of agro-dealer networks

- Support the establishment and development of national agro-dealer networks and industry associations through capacity-building programs, which include the training and certification all retailers.



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## Recommendations (Cont'D)

- Small markets (few choices for buyer, need more competitors).
- Reform regulations to encourage more private sector investment – make it easier to register importers, less paperwork, taxes.



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## Recommendations (Cont'D)

- Have **enforceable** standards with fines/penalties.
- **Information**: Farmers well-informed of their options, including clear avenues for legal recourse
- Have **accredited labs and inspectors** (national or regional).
- Increased focus on how to **regulate blending** activities.
- Make it easier to register products



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## Recommendations (Cont'D)

- Make sure fertilizer industry is implementing standards:
  - Pre-shipment inspection (SGS, etc.).
  - Product sampling and testing at import, etc.
  - Market surveillance:
    - Spot checks on retail and distribution.
    - Increase inspections on blending plants.
  - Handling of consumer complaints.



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## Recommendations (Cont'D)

- Need to update fertilizer use recommendations.
- Soil mapping and tests crucial.
- May mean new fertilizer products being introduced.
- Therefore, regulations important to ease registration and ensure quality.



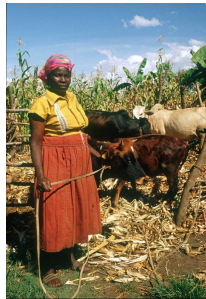
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Thank you



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31

This presentation was partially funded by a grant from the Alliance for African Partnership, a new innovative initiative at Michigan State University that seeks to develop a collaborative and cross-disciplinary platform for addressing today's global challenges.

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