

Promoting Fertilizer Use in Africa:

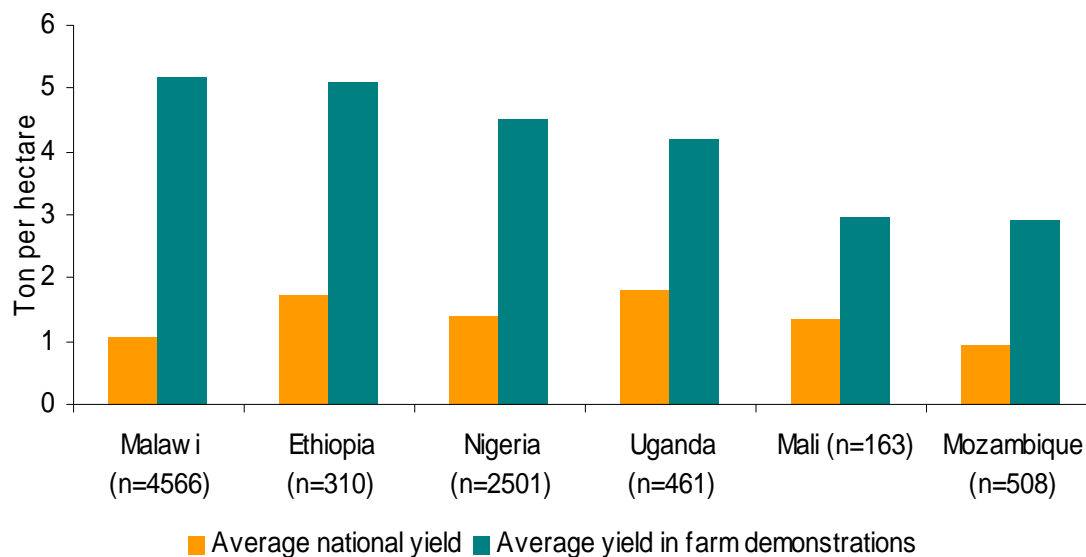
Current Issues and Empirical Evidence from the COMESA Region



T. Jayne, S. Rashid, N. Minot, S. Kasule

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Gap between actual and potential maize yields



Actuals from survey data; potential for SG-2000 on-farm demonstrations

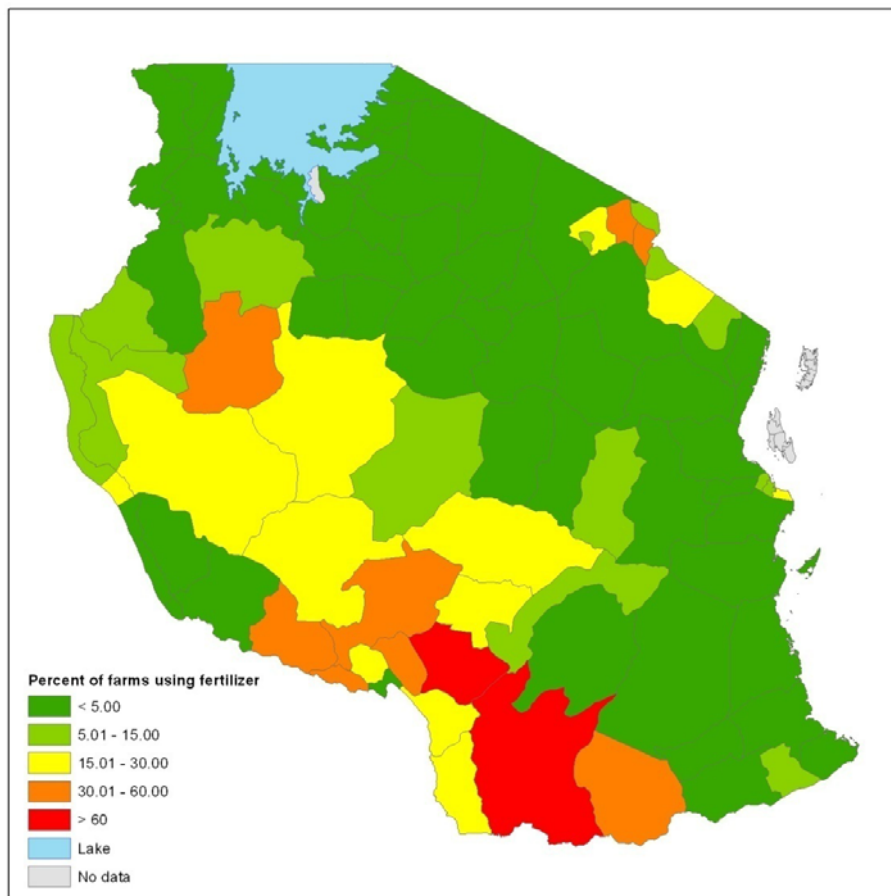
Outline

1. Review of factors constraining sustainable fertilizer use
2. Trends in Fertilizer Use
3. Main policy challenges – how to close the gap between potential and actual yields
4. Strategies for raising fertilizer use

I.

Review of factors limiting fertilizer use

Why do farmers not use fertilizer?



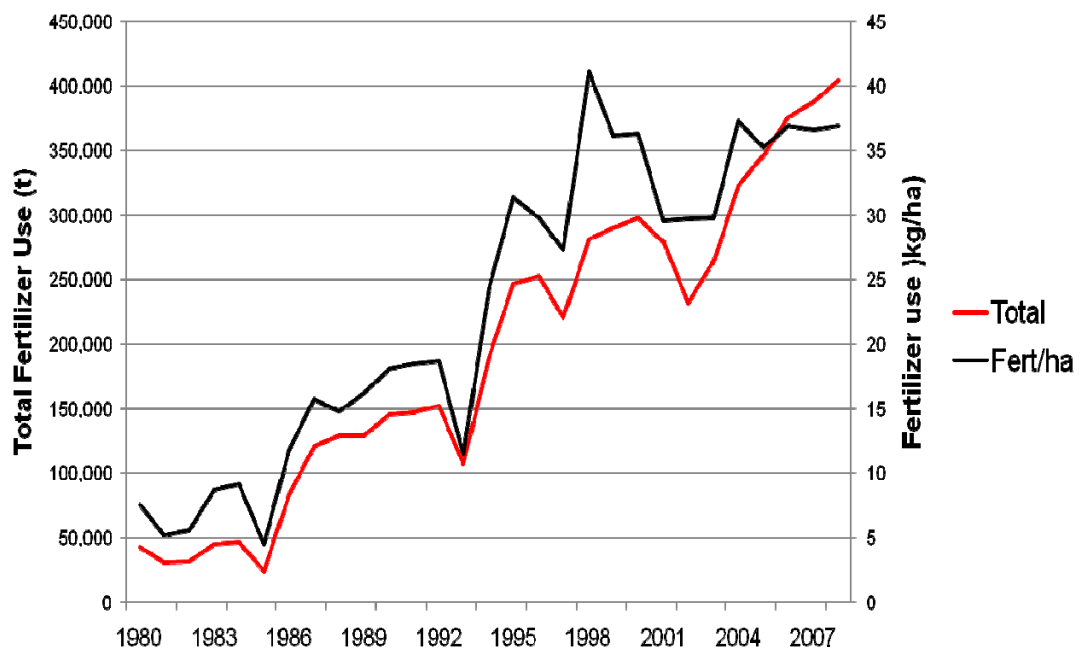
Factors limiting fertilizer use:

- 1. Lack of profitability:** usually due to
 - Weak physical infrastructure
 - Downside crop price risk → risky
 - Unavailability of improved seed
 - Inefficient farm management, agronomic practices
- 2. Lack of credit:** inability to buy fertilizer
- 3. Market failure:** Fertilizer may be profitable and there is effective demand, but retailers are not making fertilizer available

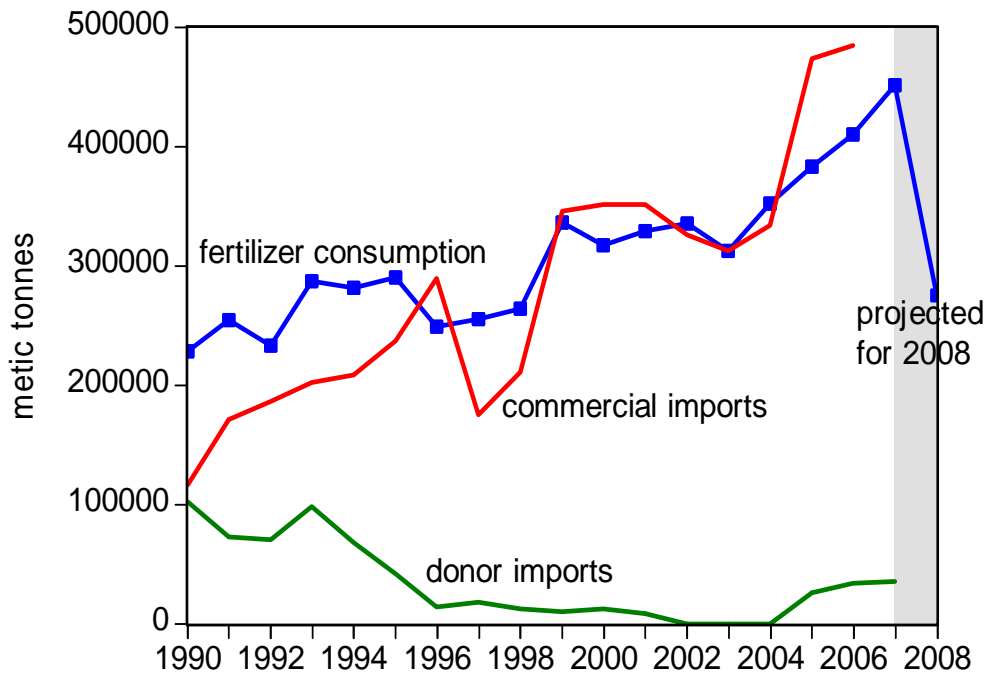
II.

Trends in Fertilizer use

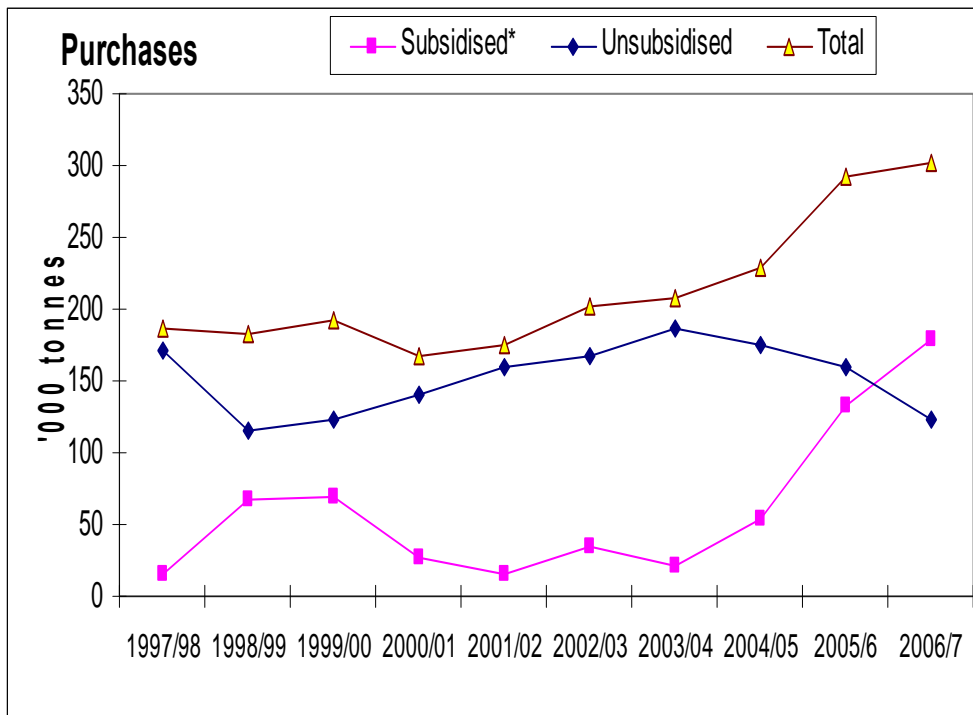
Ethiopia



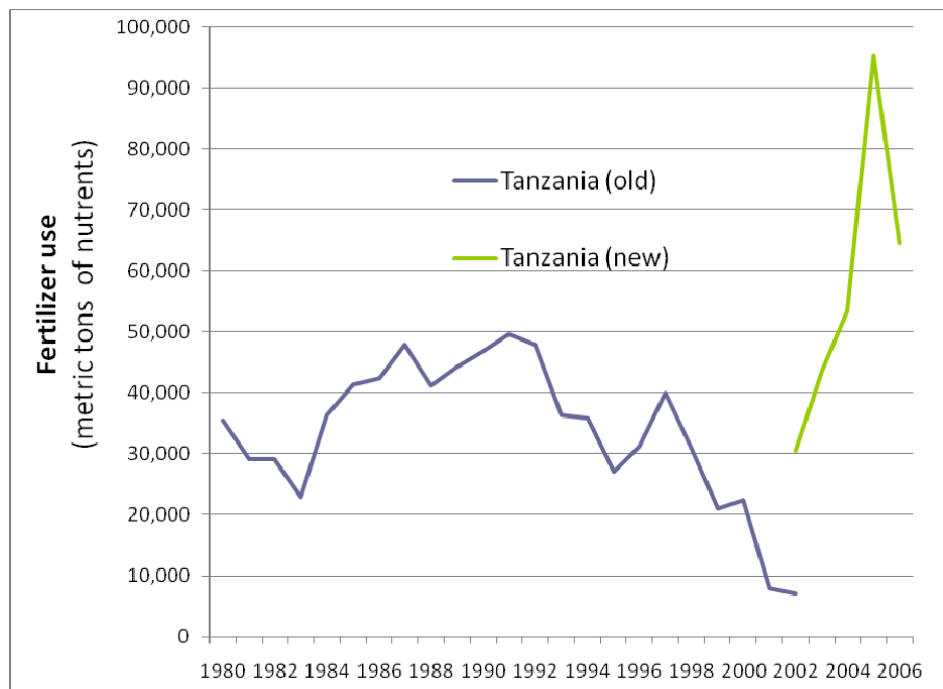
Kenya



Malawi

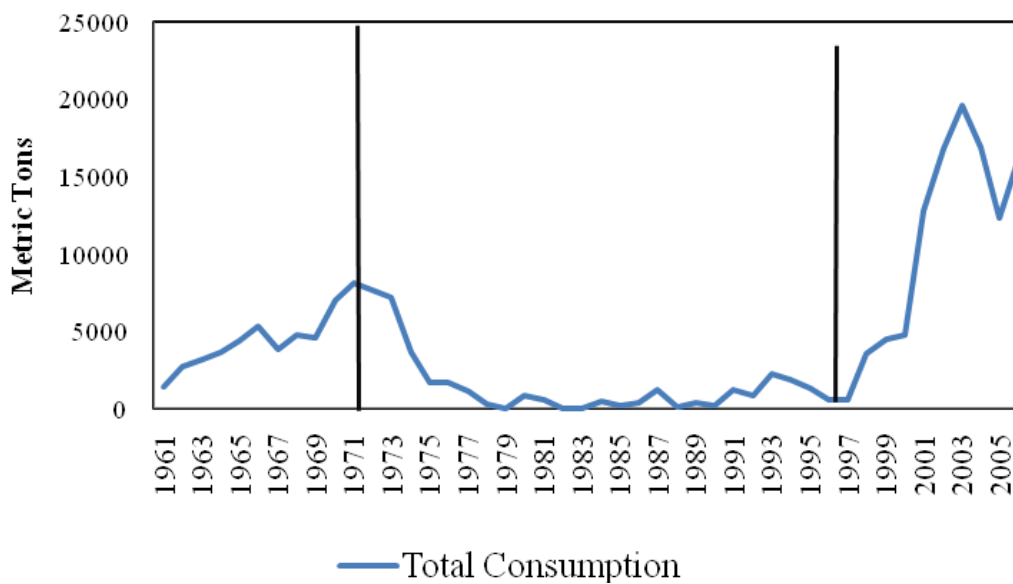


Tanzania

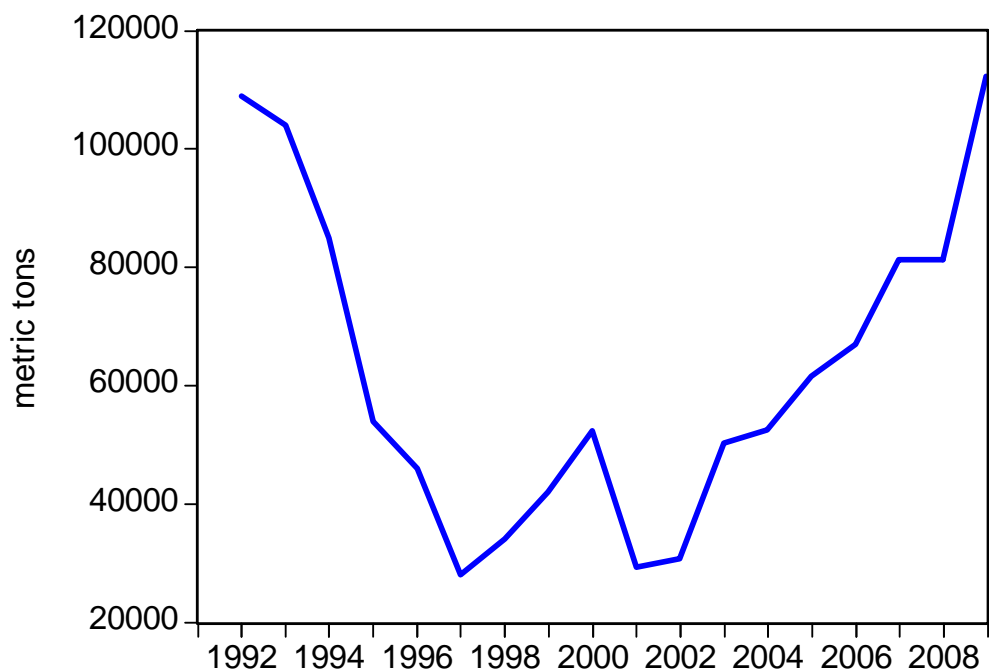


Uganda

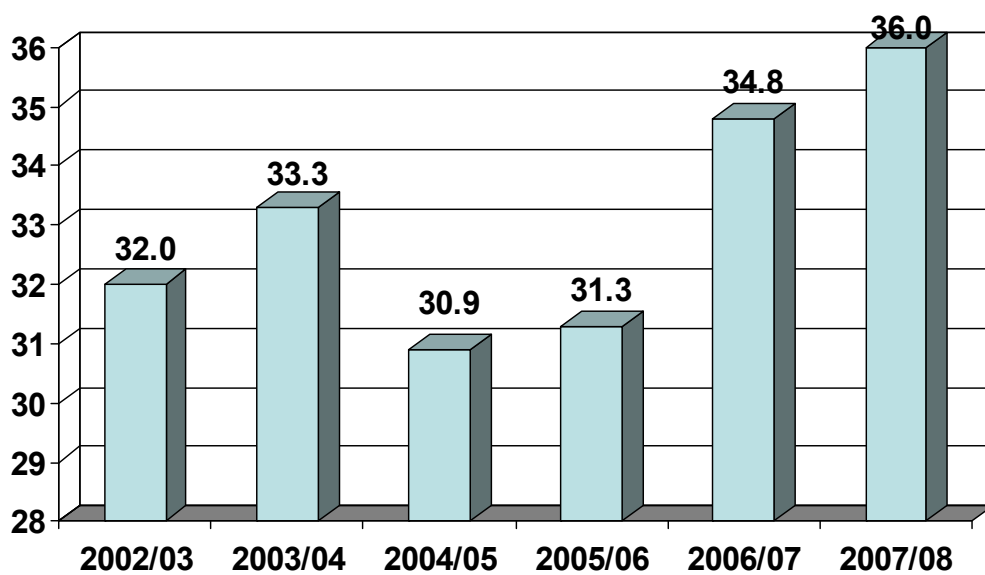
Figure 1: Trends in total consumption in Uganda, 1961-2006



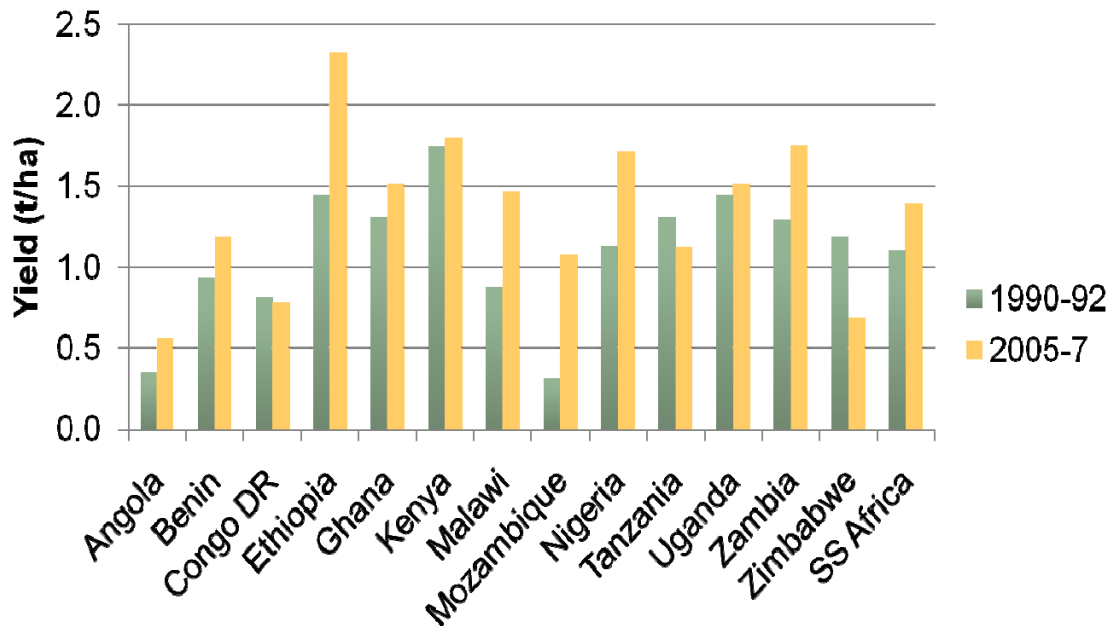
Zambia



Zambia: trend in % of smallholders using fertilizer nationwide



Yet only modest improvements in maize yields



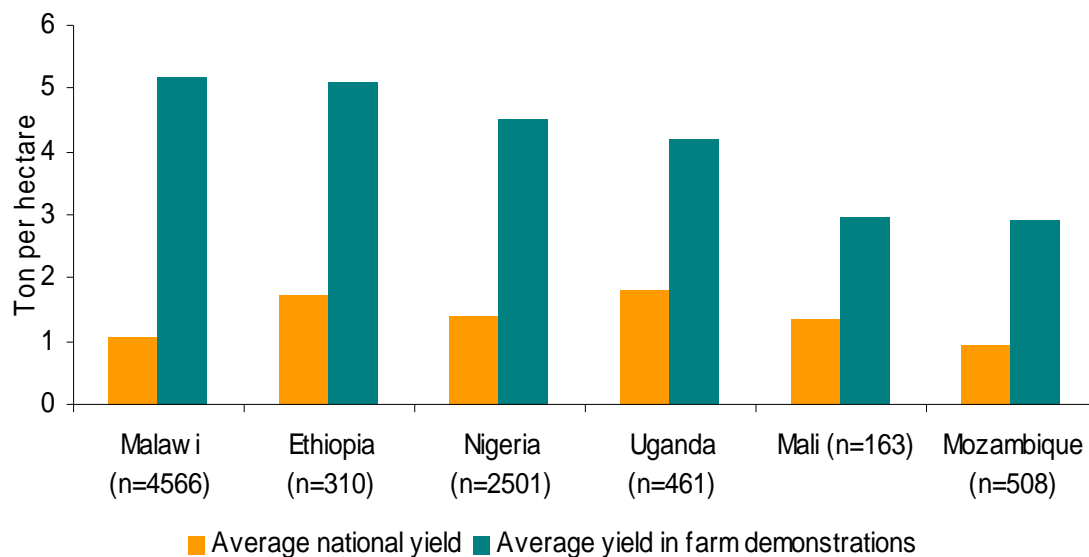
MACO fertilizer study tour conclusions about FSP

1. Little overall progress in improving productivity on maize, the principal crop targeted in FSP;
2. Poor targeting of farmers/beneficiaries to achieve food security objectives;
3. Delays in input distribution beyond recommended application dates which significantly reduces the effectiveness of both seed and fertilizer use;
4. Poor fertilizer use efficiency due to poor agronomic management practices;
5. Negative FSP impact on achieving a broader private sector participation in input distribution;
6. Long-term concerns about the FSP sustainability.

III.

Major Policy Challenges of Promoting Fertilizer Use

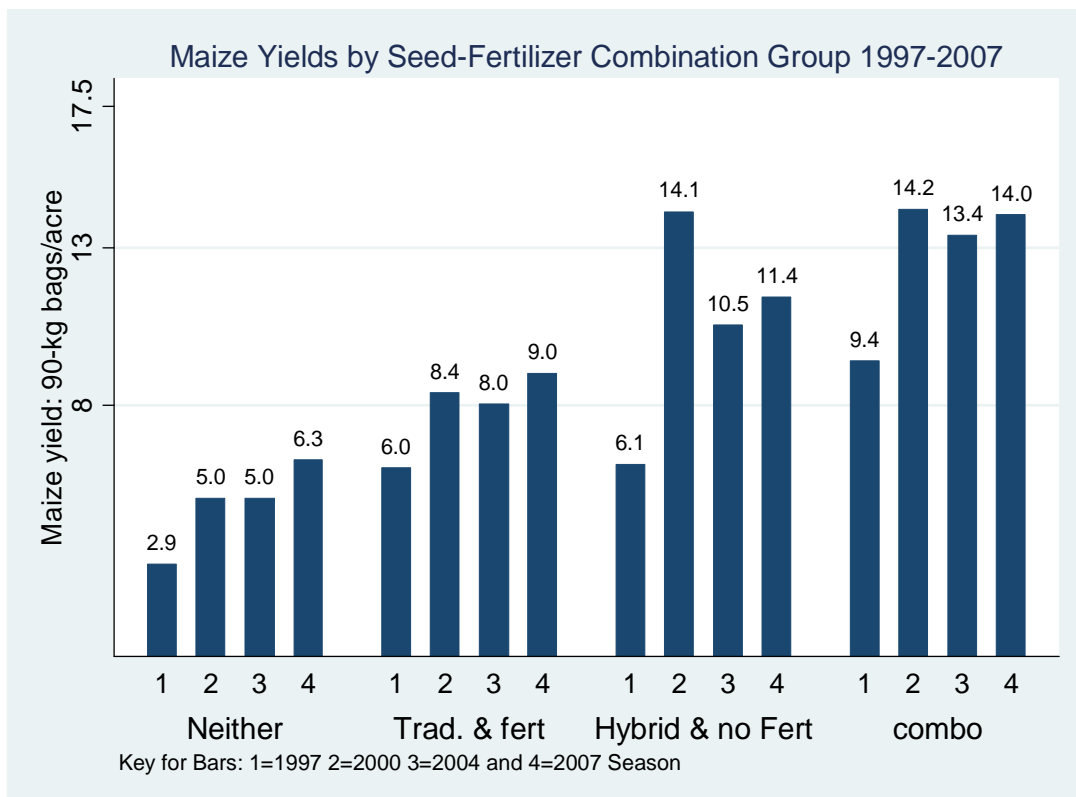
Gap between actual and potential maize yields



Actuals from survey data; potential for SG-2000 on-farm demonstrations

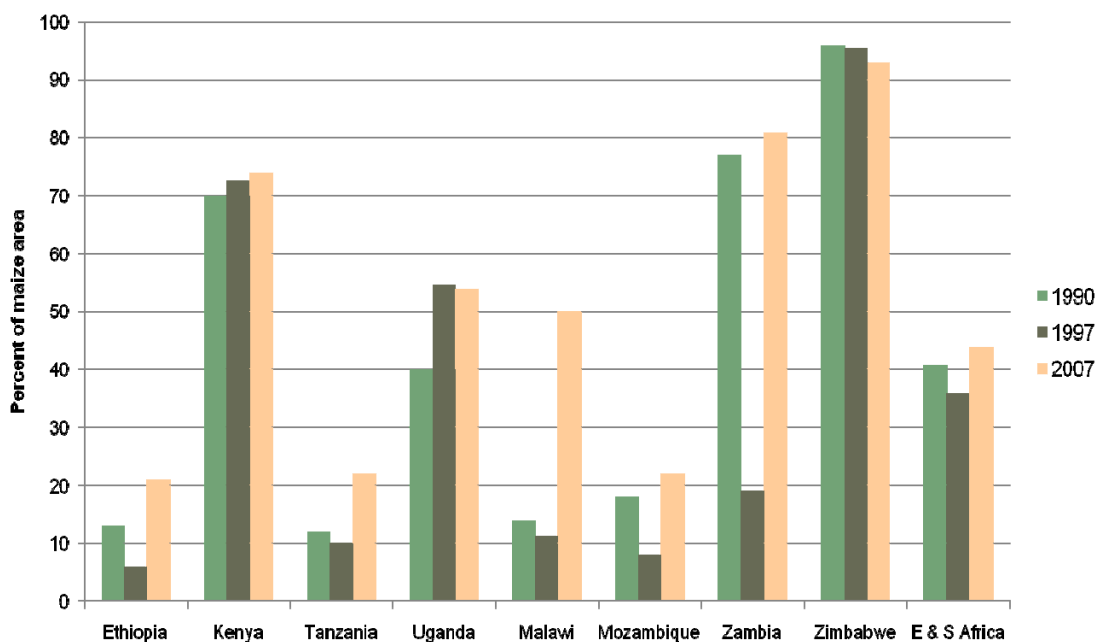
Reasons for the gap:

1. Many farmers need credit but cannot obtain it
2. Grain prices crash in good season
3. Unavailability of improved seed cultivars



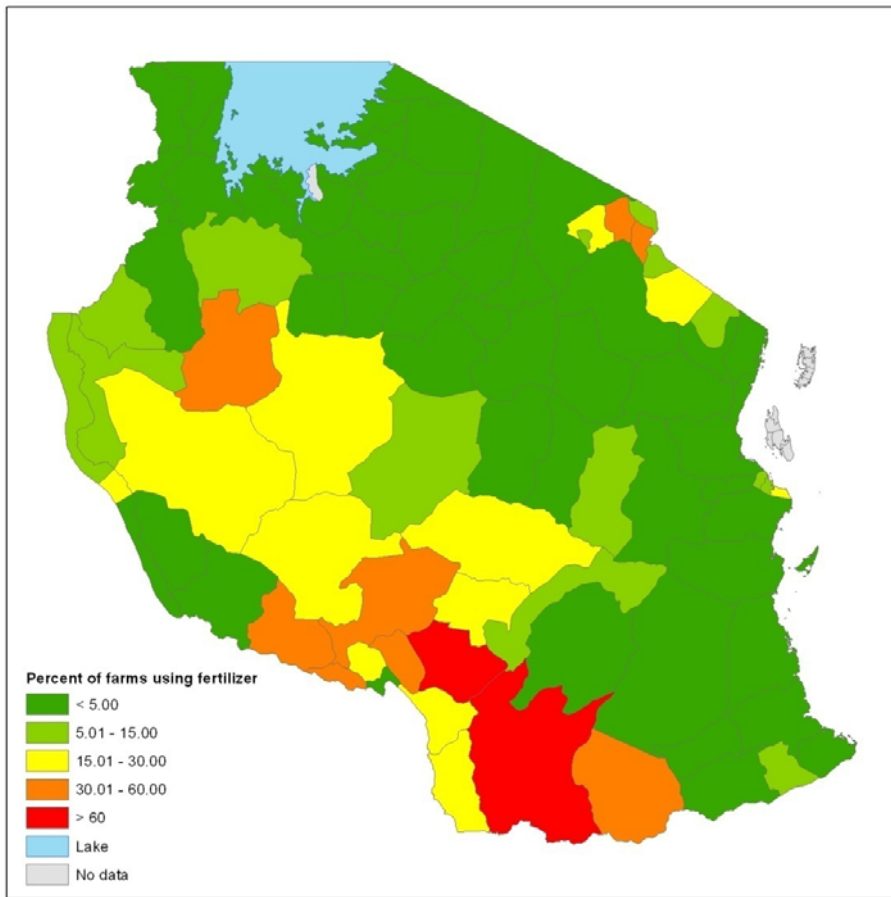
Not counting other crops grown on intercropped maize fields

Adoption of improved seed varieties



Reasons for the gap (cont'd):

1. Many farmers need credit but cannot obtain it
2. Grain prices crash in good season
3. Unavailability of improved seed cultivars
4. Sub-optimal farmer management and know-how
5. Limited effective demand for fertilizer in semi-arid areas with weak infrastructure



IV.

Strategies for Promoting Fertilizer Use

How to close the gap between productivity-maximizing yields and existing yields?

1. Profitability
2. Access to credit
3. How to ensure private sector response

Profitability of using fertilizer

$$\frac{\text{Farm-gate Maize Price}}{\text{Farm-gate Fertilizer Price}} * \frac{\Delta\text{kg maize}}{\Delta\text{kg fert}}$$

Holistic Approach

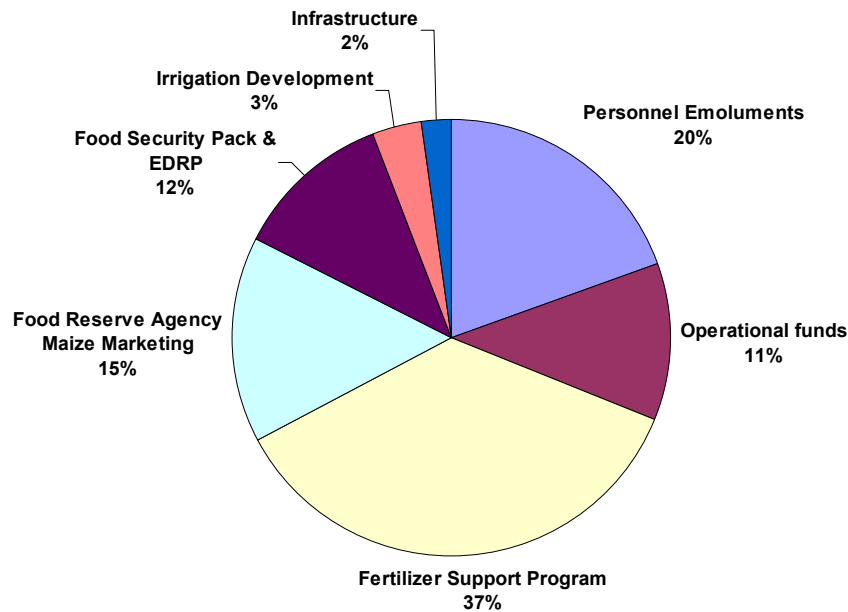
1. Public investments to raise profitability of fertilizer use:
 - **Infrastructure:** port, road, rail
 - **Crop science:** improved seed and agronomic management
 - **Extension:** know-how to improve efficiency of labor and input use
 - **Crop marketing:** reduce downside price risk
 - **Regional trade:** export bans reduce farm prices, depress incentives to adopt fertilizer

IFPRI review of rate of return studies:

	Returns
Input subsidies	< 0 to 12%
Public Investments in	
- research & extension	35% to 70%
- roads	20% to 30%
- education	15% to 25%
- communications	10% to 15%
- irrigation	10% to 15%

If we believe these findings, they have major implications

Budget allocation to Agricultural Sector in Zambia: ZMK465 million in 2005

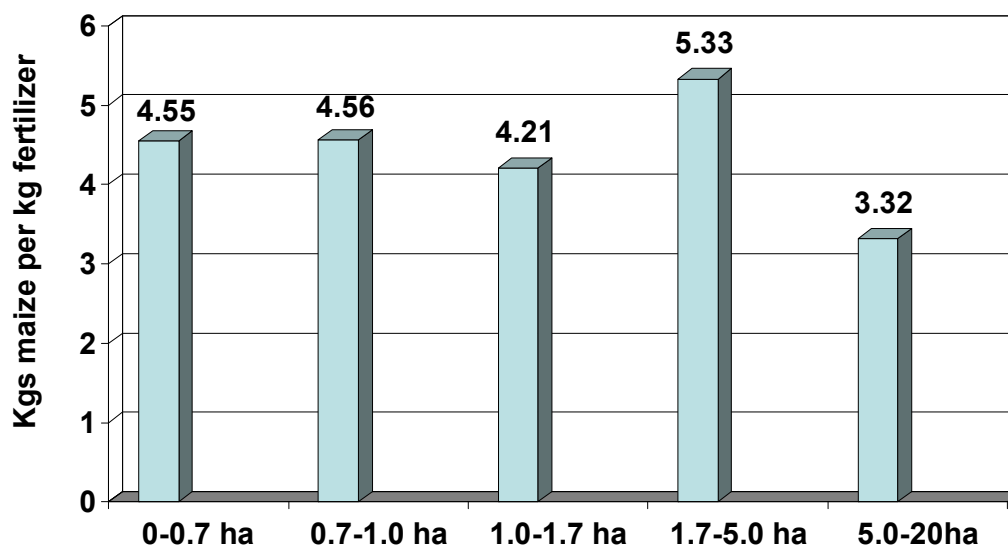


Holistic Approach

2. Address credit issues:

- Implement targeted subsidy programs in which credit or fertilizer is targeted to the poor, who lack ability to purchase inputs
- But can the poor really use fertilizer as productively as bigger farmers?

Maize-fertilizer response rates in Zambia by farm size



Source: Crop Forecast Surveys, CSO

Zambia	Total Income	Assets	Landholding size
Fertilizer source:	'000 kwacha per capita		hectares
<i>Households not acquiring fertilizer:</i>	266	173	.86

Source: Govereh et al, 2006

Zambia	Total Income	Assets	Landholding size
	'000 kwacha per capita		hectares
Fertilizer source:			
<i>Households not acquiring fertilizer:</i>	266	173	.86
<i>Cash purchases from private retailers:</i>	774	342	1.30

Source: Govereh et al, 2006

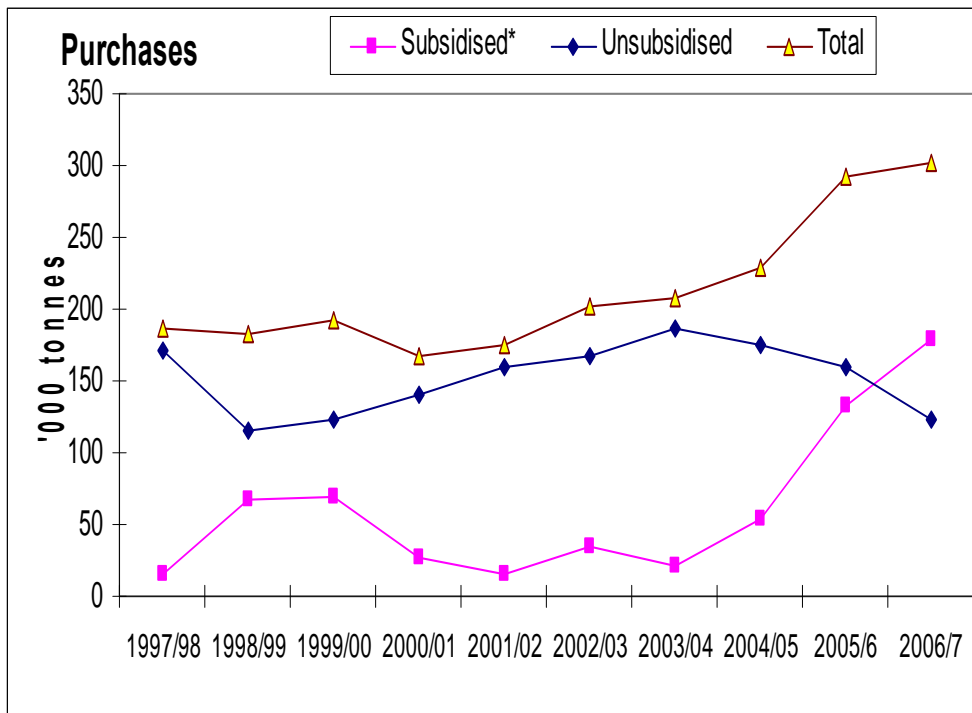
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<i>Households not acquiring fertilizer:</i>	266	173	.86
<i>Cash purchases from private retailers:</i>	774	342	1.30
<i>Government Fertilizer Support Program (50% subsidy)</i>	804	425	2.03

Source: Govereh et al, 2006

Holistic Approach

3. Address marketing issues:
 - Target the poor who lack ability to purchase in order to minimize crowding out of private sector

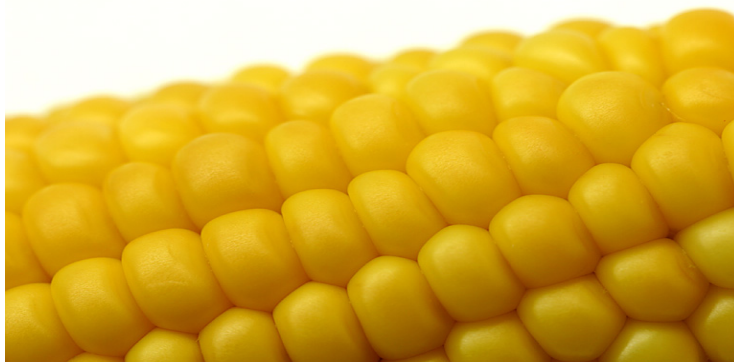
Malawi



Holistic Approach

Summary:

1. Increase agricultural expenditures on:
 1. **Infrastructure**
 2. **Crop science:** hybrid seed research, agronomic trials
 3. **Extension services:** to help farmers use fertilizer more efficiently
 4. **Promote regional trade:** to stabilize crop prices
2. Modify input subsidy programs so that they address the credit constraints of the poor
 - **Target the poor who lack ability to purchase in order to minimize crowding out of private sector**



Thank you

<http://www.aec.msu.edu/fs2/>

Year	FSP Data on Program Accomplishments		Crop Forecast Survey/SS – Main Source of Fertilizer Identified as FSP		CFS/SS Main Source –of Fertilizer Identified as Private/Commercial Purchase	
	# Small-holders	Metric Tons Fertilizer	# Small-holders	Metric Tons Fertilizer	# Small-holders	Metric Tons Fertilizer
02/03 SS	120,000	48,000	102,450	28,956	207,080	50,476
03/04 SS	150,000	60,000	101,139	33,034	171,274	41,507
06/07 SS	210,000	84,000	164,229	61,248	303,697	95,169
07/08 SS	125,000	50,000	140,612	43,596	286,514	89,951
07/08 CFS	125,000	50,000	85,666	22,218	337,122	77,471
08/09 CFS	200,000	80,000	192,897	55,114	247,546	57,124