

# Promoting Fertilizer Use in Africa:

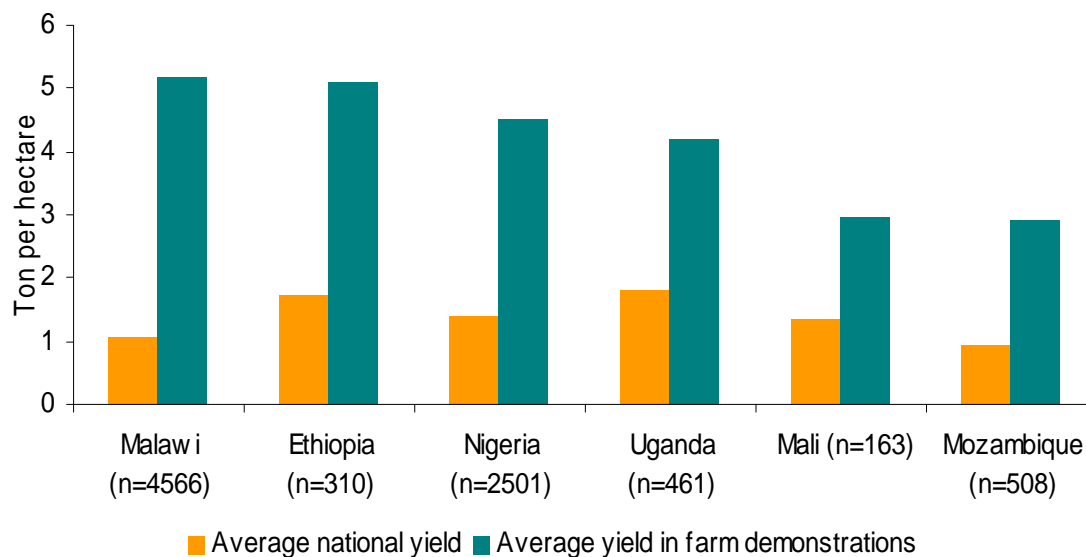
## Current Issues and Empirical Evidence from the COMESA Region



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COMESA African Agricultural Markets Programme Policy Conference  
Livingstone, Zambia, 15-16 June, 2009

### Gap between actual and potential maize yields



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

# Outline

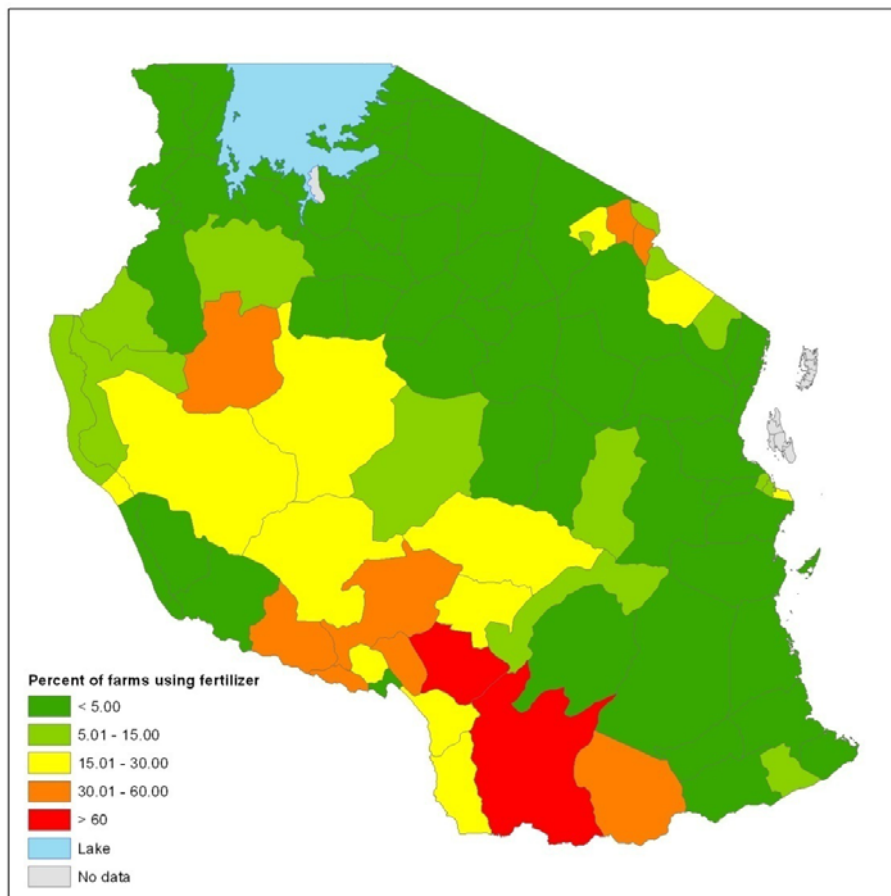
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1. Review of factors constraining sustainable fertilizer use
2. Trends in Fertilizer Use
3. Main policy challenges – how to close the gap between potential and actual yields
4. Strategies for raising fertilizer use

## I.

### Review of factors limiting fertilizer use

Why do farmers not use fertilizer?



## Factors limiting fertilizer use:

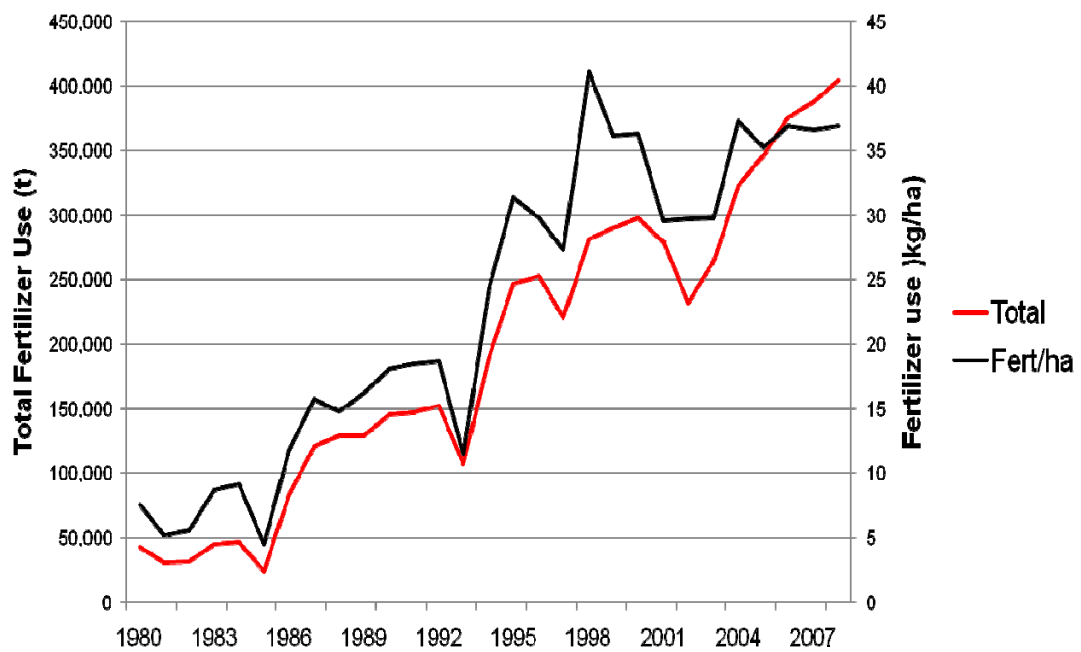
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- 1. Lack of profitability:** usually due to
  - Weak physical infrastructure
  - Downside crop price risk → risky
  - Unavailability of improved seed
  - Inefficient farm management, agronomic practices
- 2. Lack of credit:** inability to buy fertilizer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

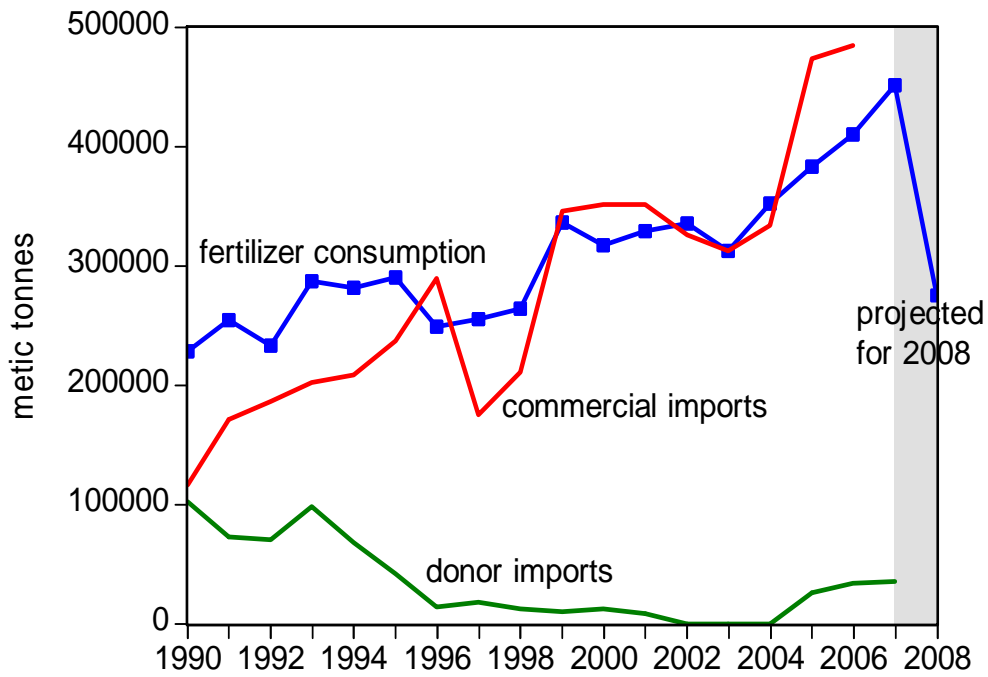
## II.

# Trends in Fertilizer use

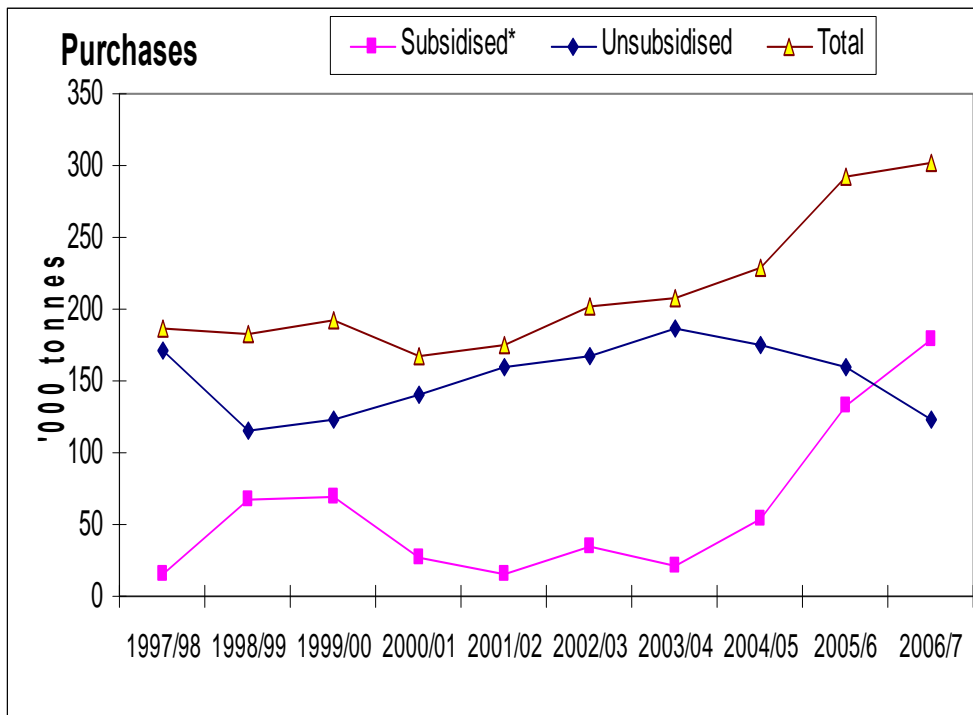
## Ethiopia



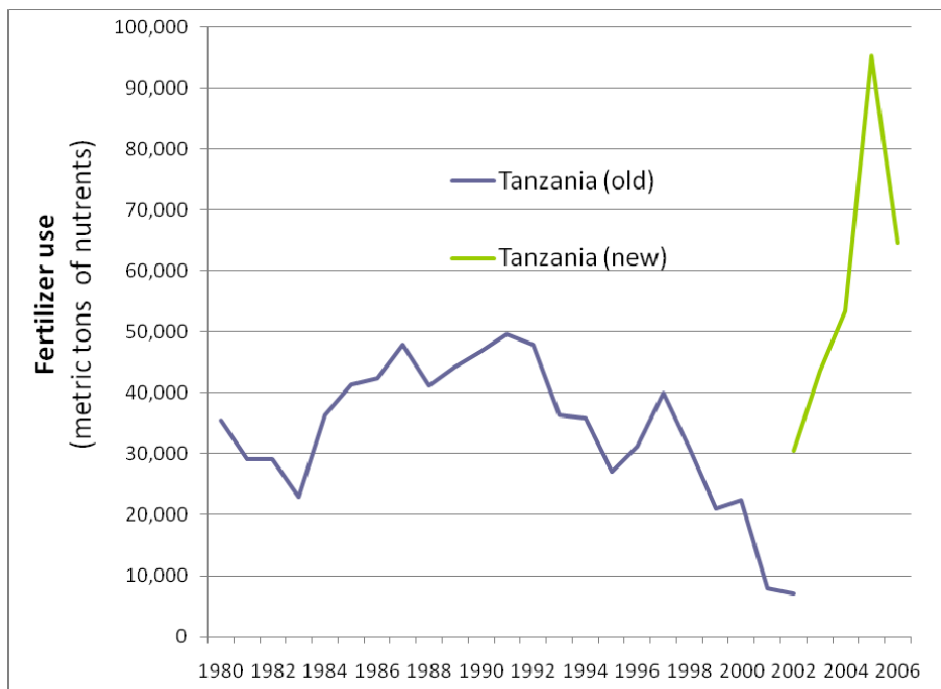
# Kenya



# Malawi

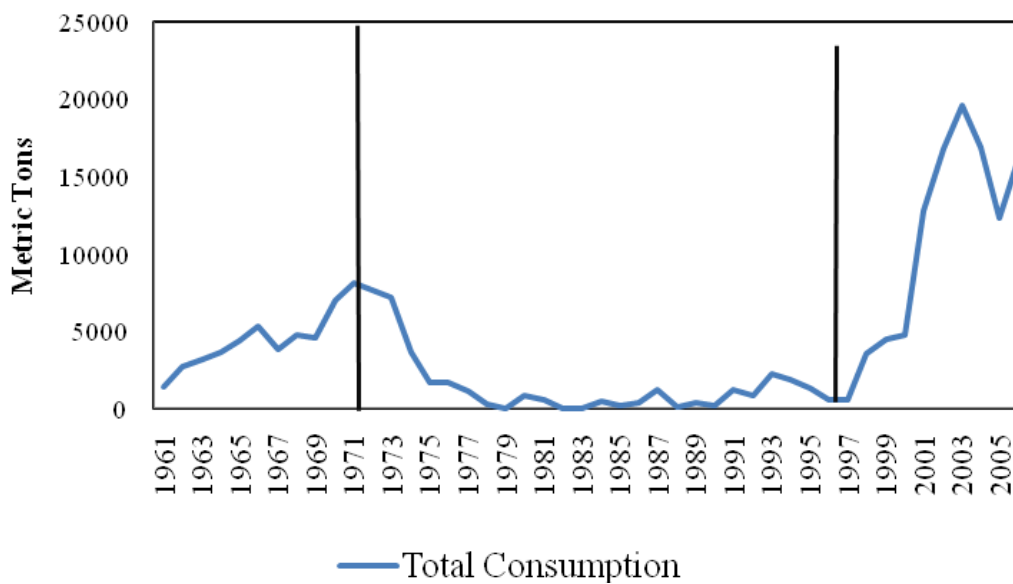


# Tanzania

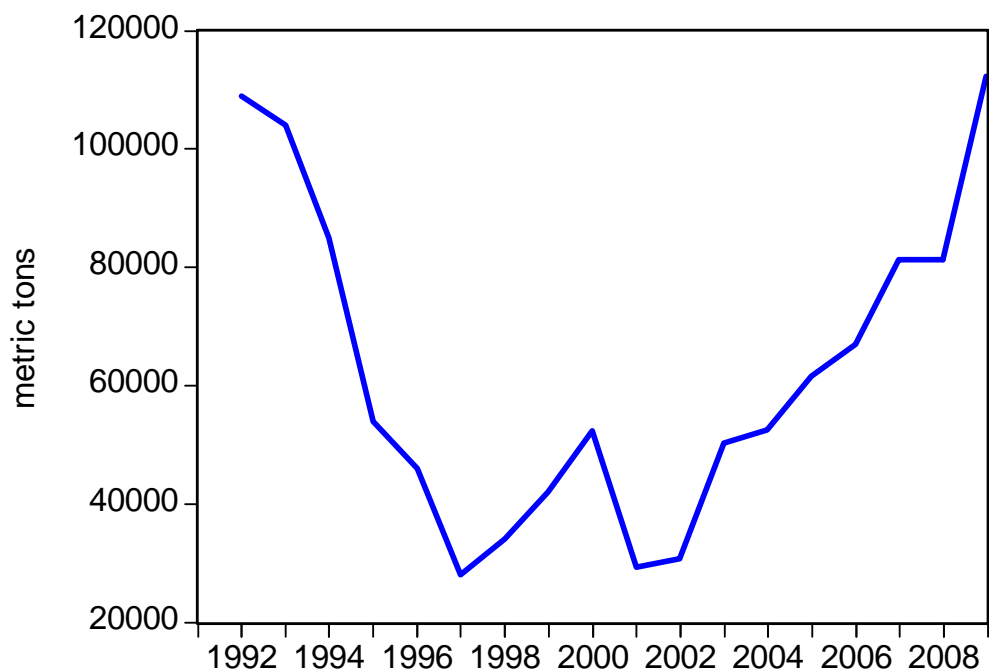


# Uganda

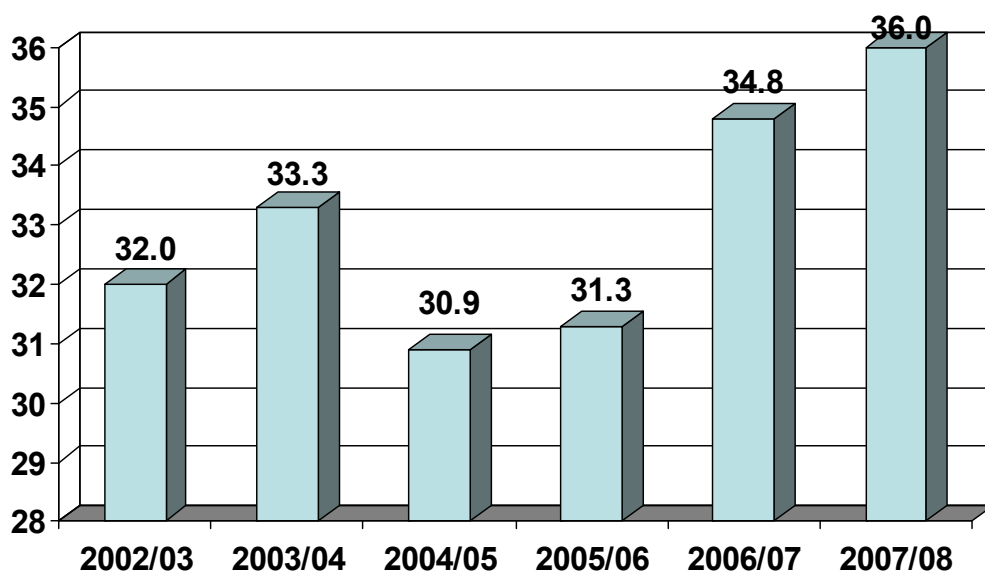
Figure 1: Trends in total consumption in Uganda, 1961-2006



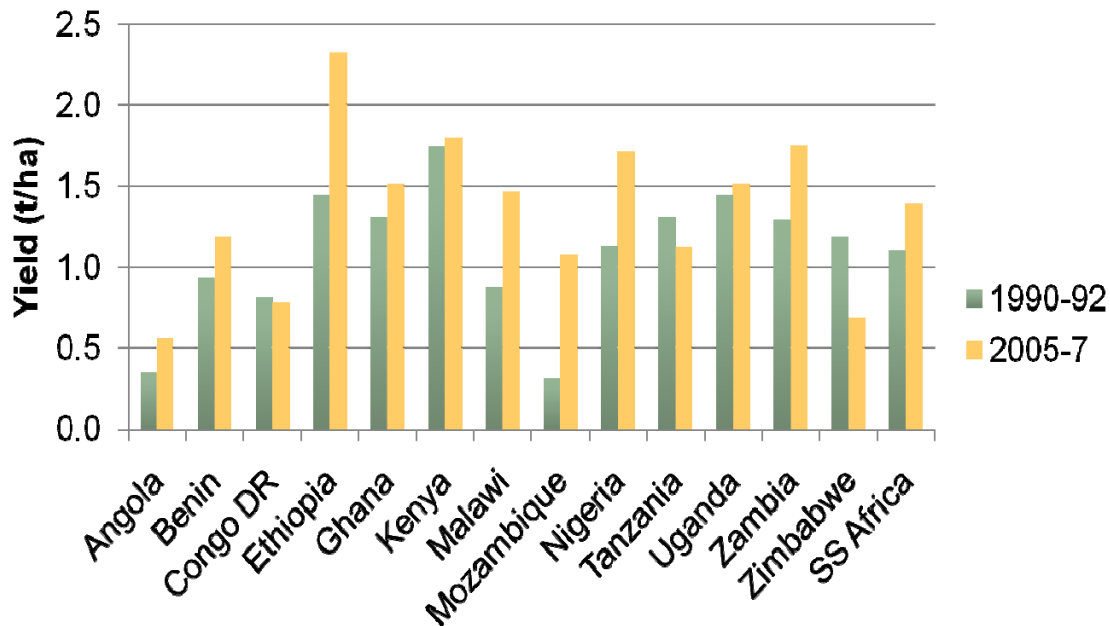
# Zambia



## Zambia: trend in % of smallholders using fertilizer nationwide



## Yet only modest improvements in maize yields



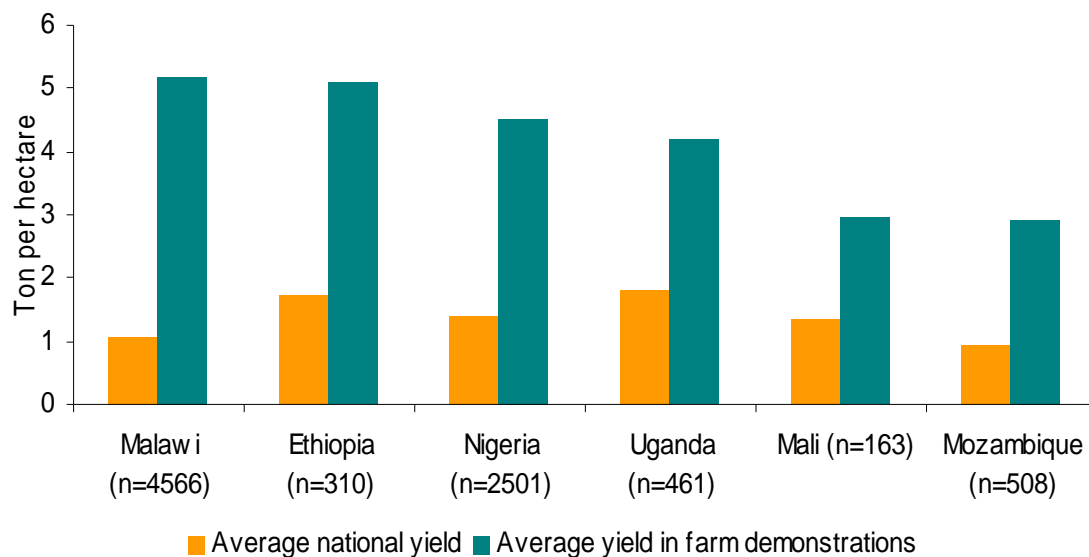
## MACO fertilizer study tour conclusions about FSP

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

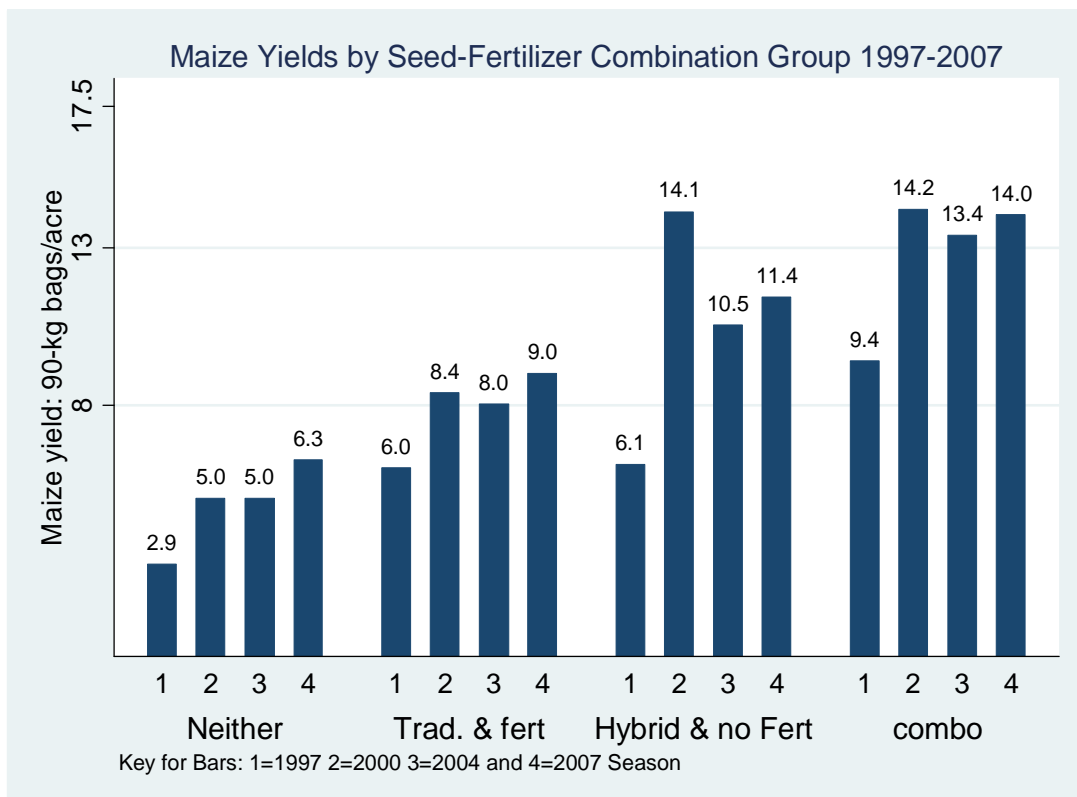
### Gap between actual and potential maize yields



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

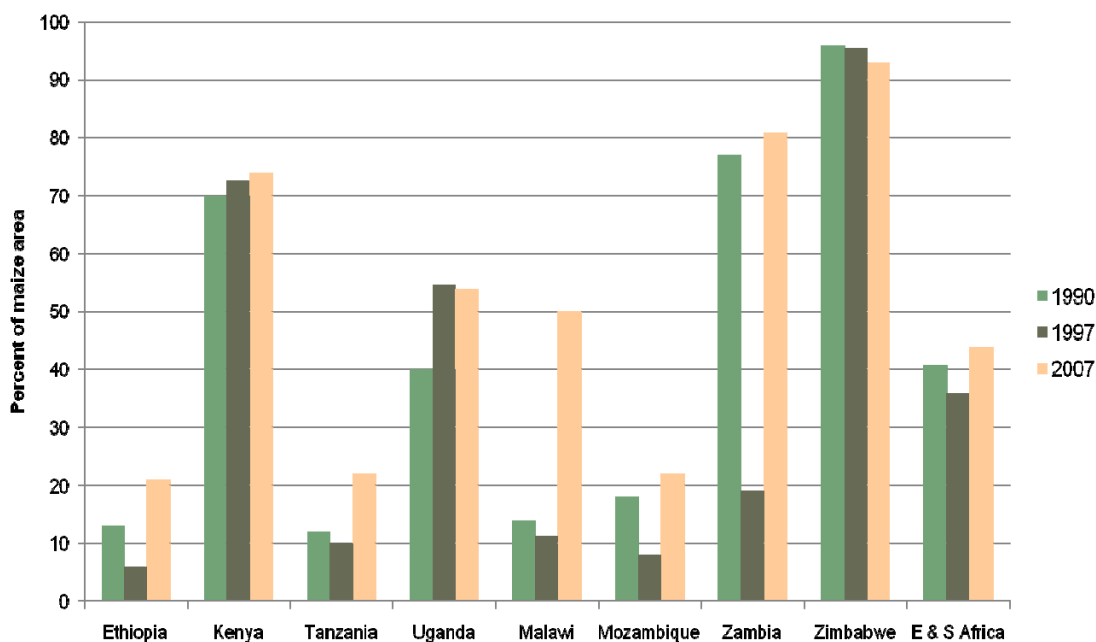
# Reasons for the gap:

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



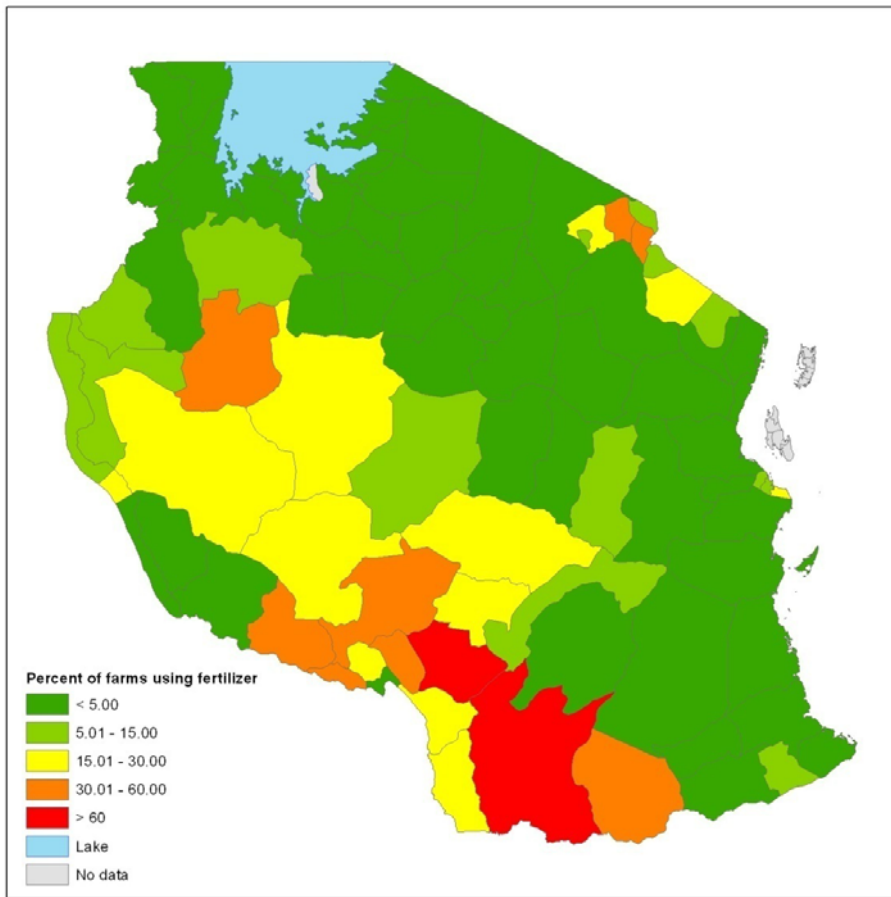
Not counting other crops grown on intercropped maize fields

## 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

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## 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

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## 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

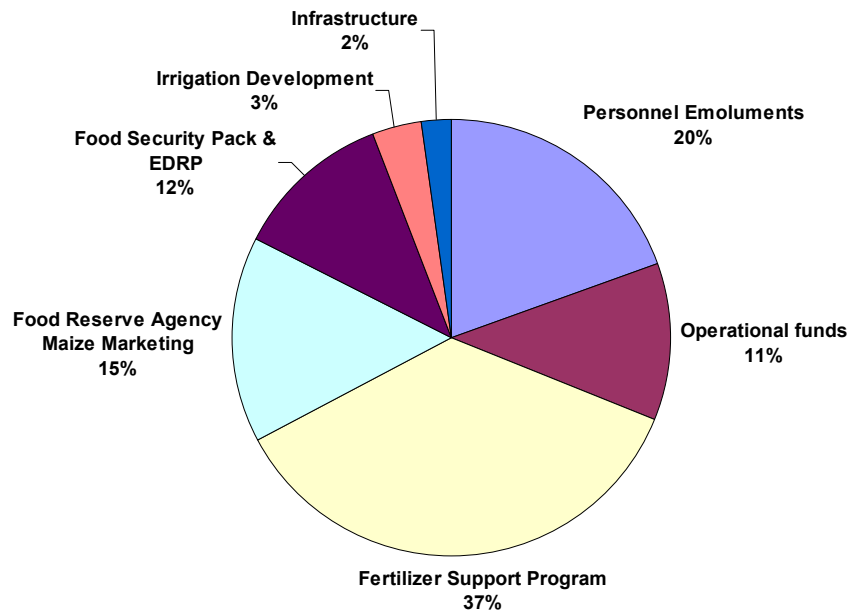
1. Public investments to raise profitability of fertilizer use:
  - **Infrastructure:** port, road, rail
  - **Crop science:** improved seed and agronomic management
  - **Extension:** know-how to improve efficiency of labor and input use
  - **Crop marketing:** reduce downside price risk
  - **Regional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



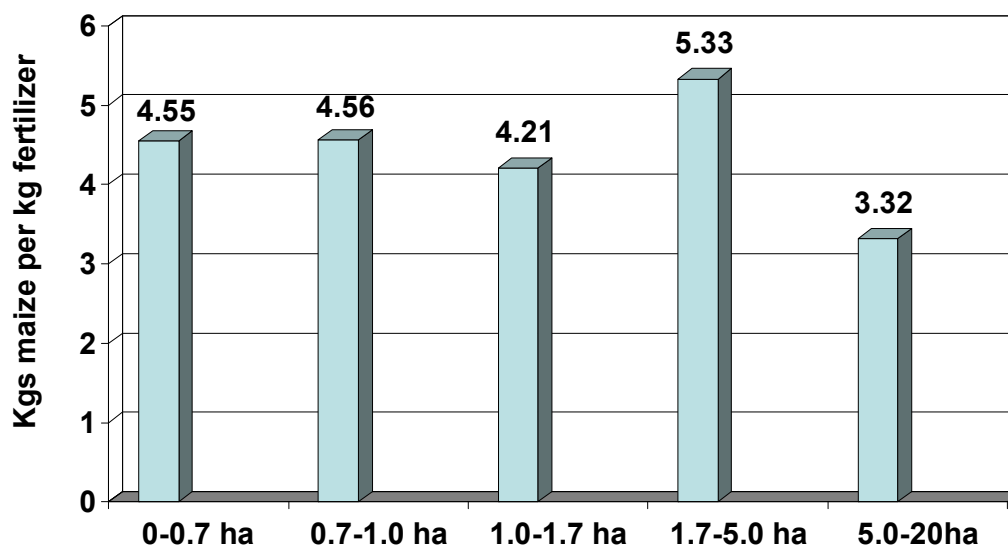
## Holistic Approach

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### 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

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<b>Fertilizer source:</b>			
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<i>Cash purchases from private retailers:</i>	774	342	1.30

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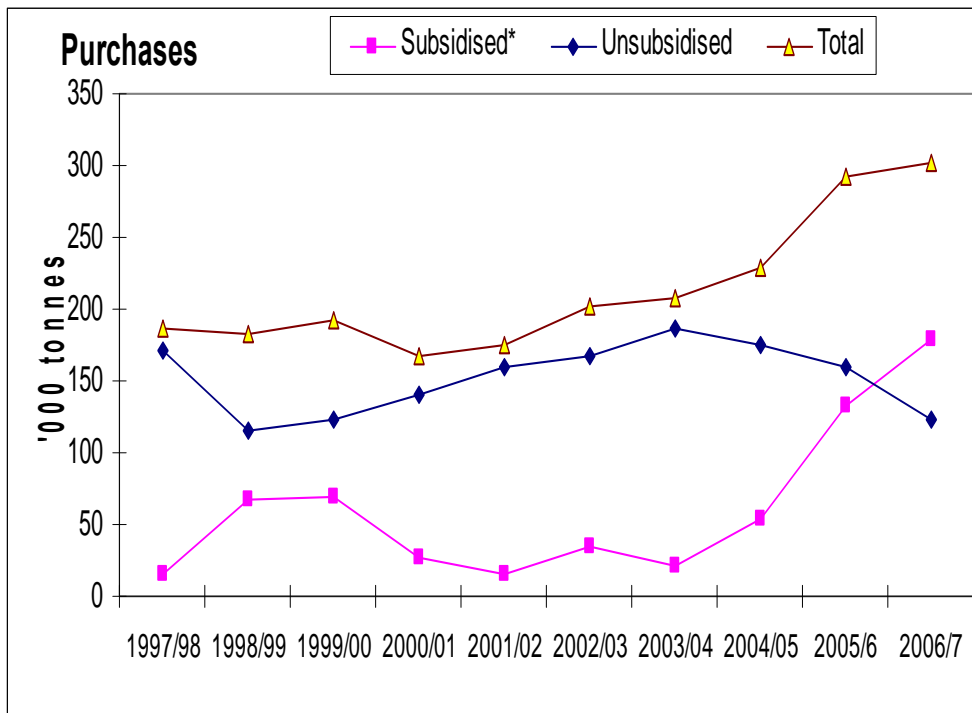
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<i>Households not acquiring fertilizer:</i>	266	173	.86
<i>Cash purchases from private retailers:</i>	774	342	1.30
<i>Government Fertilizer Support Program (50% subsidy)</i>	804	425	2.03

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

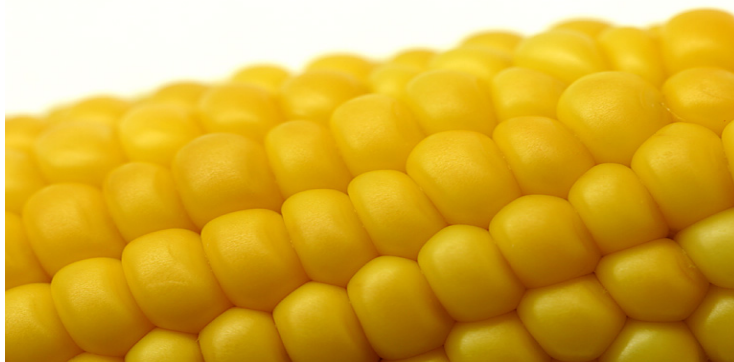


# Holistic Approach

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## 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