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# Voucher Schemes for Enhanced Fertilizer Use: Lessons Learned and Policy Implications

January 25, 2012

Ian Gregory, IFDC  
David Rohrbach, World Bank

# **Voucher Schemes for Enhanced Fertilizer Use: Lessons Learned and Policy Implications**

Agriculture Sector Council Seminar  
January 25, 2012

Presented by  
Ian Gregory  
IFDC

# Historical Perspective

- Traditional fertilizer subsidies were an integral policy tool of the “Green Revolution” applied universally
  - Overcoming market failures
  - Creating demand pull
  - Greatest impact applied to staple grain production
- Pitfalls increased over time due to:
  - Excessive fiscal costs and risks
  - Late delivery
  - Rent-seeking and political economy and patronage
  - Rationing
  - Lack of equity and efficiency
  - Displacement of the private sector
- And subsidized fertilizer went out of fashion in the 1980s

# Rethinking Fertilizer and Other Input Subsidies

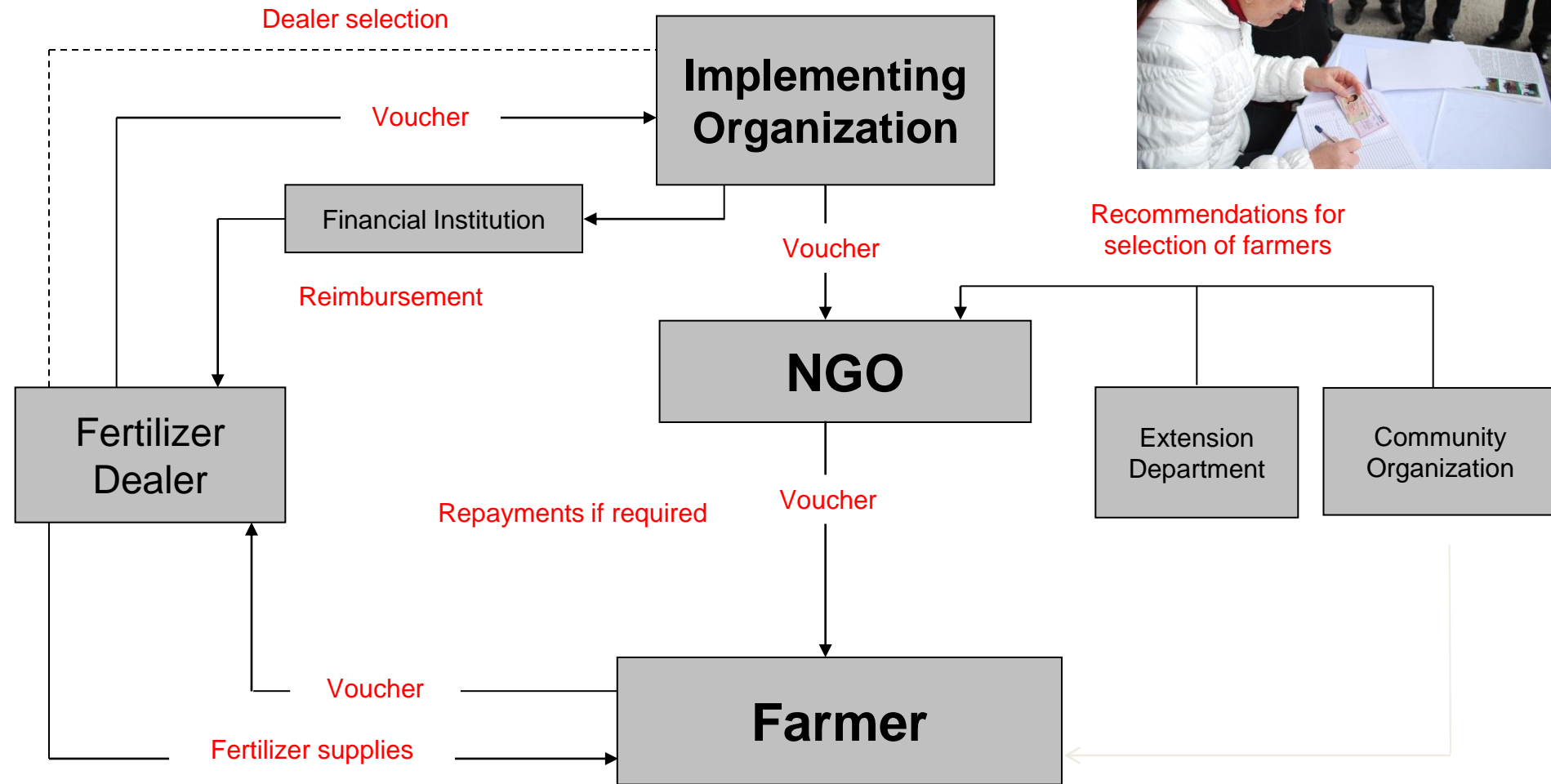
- Fertilizer vouchers first used by IFDC in Afghanistan for 200,000 targeted farmers in 2002 and 2003
- Used again in Malawi in 2003 and 2004 to demonstrate an alternative to the Targeted Inputs Program (TIP)
- Pilot programs were introduced in Nigeria in 2004
- By 2006, voucher programs were termed as “smart subsidies” and promoted by the World Bank
- In 2008, several SSA countries introduced voucher programs in response to the spike in both fertilizer and grain prices
- By 2010, questions were being asked: “How Smart?”

# Essential Requirements of Efficient Voucher Programs

1. Clear objectives
2. Farmer-targeted
3. Private sector development
4. Holistic development package
5. A minimum life of 3 years
6. A maximum life of 5 years
7. A phased exit plan reducing support



# Generalized Schematic of a Voucher System





# Examples of Vouchers

**UREA FERTILISER VOUCHER** Nr 25242

Afghanistan Interim Administration and USAID  
IFDC - Emergency Supply of Fertiliser for April / May 2002





لنفا پوه پتغوس کيلوي پلاستيکي خپله پوریا سره چې په کيليت لري دکوبون په مقابل کيلي ورکړي. دسري نړيوال مرکز IFDC د مربوطه موسسې له لاري د دي خلطې، خوځکه چه له پلورنکي سره فراز داد شوي دي، په ورکړي.

لنفا پک بوجي پنجاه کيلوي پلاستيکي مخصوص که گنجابنده شده و روان سياند. در مقابل تمويش اين کوبون توزيع نمايند، مرکز انکشافی بين المللي کودکيمياوي از طريق موسسه مربوطه، طوريکه در فراز داد تريح شده، به مغازه دار تاديه خواهد نمود.

United States Agency For International Development  
International Fertiliser Development Center (IFDC)  
Muscle Shoals Alabama U.S.A.

Afghanistan

Number

Dona la mimi Doina la mudri wake

Prison la wondwona zimomira (Prison Dealer) Moko achibha mudwoko

Ndalandile thombo la 50Kg Urea Ndalandile thombo la 10Kg Mberi

Umbosi wa Dealer Umbosi wa Mimi Umbosi wa Dealer Umbosi wa Mimi

Malungu: Chonde M'pasiwisi mwa chibwacha thombo lumbosi  
La 50Kg Urea kumamwa thombo lumbosi la 10Kg chibwacha chumamwa  
Moko la moko kumamwa pa November 1<sup>st</sup> 2004.

Chingwa chidukhala chepanda achibha kumamwa pa 31/01/05

Malawi

**کوپون**

که چې دا کوپون د شورا د مایه او د یوگر لخوا اهداء (ننه) شو نو په یوې خلطې (۵۰) کيلوي پلاستيکي اغلي سرې به پکې شي. د دي سرې نيه (به ورکړې، قيمت، په کفلاز) به د حاصلاتو د اخستلو په پوه مياشت پس دکلي شورا ته ورکول کيږي خو دکلي دکواري پرمختيا يې شورا همېل پروژې په مع بولي شي. د دي کوپون لرونکي له به پوه (۵۰) کيلوي خلطه پورې د صلاحيت لرونکي پلورنکي لخوا ورکول کيږي. ښير حکومتی موسسات به د پلورنکو لست لرتيږي پلورنکي بايد چه د خپل صلاحيت نيه په خپل دوکان کې نصب کړي خو خلک وکړاي شي چه صلاحيت داره پلورنکي وپيژني. دا کوپون د (۲۰۰۲) کال د مای د مياشتې تر آخري پوري د اعتبار وړ دي.

اين کوپون زمانیکه توسط نماينده شورا و دهقان مربوطه اهداء ويا نشايي شوي داراي اعتبار يک خرطه کود پورې پلاستيکي (۵۰) کيلوي يا کيليت اغلي را دارا ميباند. پورل قيمت پورې مطابق قيمت روز به کفلاز پاکستاني بعد از گذشت يک ماه از رفع حاصل به شورای انکشاف زراعتي فرې پرېداخته ميشود تا در جهت انکشاف زراعت از آن استفاده به عمل آيد. کوپون دست داشته در مقابل پک بوجي پورې توسط مغازه دار مربوطه يا صلاحيت تمويش خواهد شد. موسسات غير دولتي لست مغازه داران را ترتيب مي نمايند و مغازه دار مکلف است تا نشان صلاحيت توزيع کود را در دکاکن خویش نصب نمايند. اين کوپون الی اخير بروج می May سال ۲۰۰۲ قابل اعتبار می باشد.

نماينده شورا      دهقان سهم      نماينده موسسه  
تاريخ / /

**КЫРГЫЗСКИЙ ПРОЕКТ СНАБЖЕНИЯ И РАЗВИТИЯ АГРОБИЗНЕСА (KAED)**

**ВАУЧЕР** 3-41 0001

на получение семян сахарной свеклы

Чуйская область, Аламудунский район

Данный ваучер дает разовое право

Ф.И.О. \_\_\_\_\_

паспорт № \_\_\_\_\_ выдан \_\_\_\_\_ от « \_\_\_\_\_ »

получить 260,8 кг семян сахарной свеклы для весеннего сева 2011 г.

Получатель \_\_\_\_\_ Дилер \_\_\_\_\_

Подпись \_\_\_\_\_ Подпись \_\_\_\_\_

Выдача производится Владелец ваучера на основании паспорта не позднее 31/05/2011 г. на безвозмездной основе

Kyrgyzstan

# Three Voucher Program Comparisons

- **SPLIFA** in Malawi 2003-2004 **POVERTY REDUCTION**
  - Implemented by IFDC and NGO Consortium
  - Funded by DFID and World Bank
- **AISP** in Malawi 2005-present **FOOD SECURITY**
  - Implemented by Government of Malawi
  - Funded by Government of Malawi via donors
- **FSP** in Ghana 2008-present **FERTILIZER SUBSIDY**
  - Implemented and funded by Government of Ghana



## Malawi, Sustaining Productive Livelihoods through Inputs for Assets (SPLIFA) Funded by DFID and World Bank/Implemented by IFDC and NGO Consortium

No. of Beneficiaries/Period	40,000 and 60,000/2003 and 2004 (originally for 3 years)
Objective	Multiple: Inputs for assets; family food security; private sector development
Targeting	Smallholders with 2-3 months “hungry period”
Package	1 x 50 kg urea + 1 x 10 kg hybrid maize seed
Farmer Contribution	2 months work on supervised road construction
Procurement	Private sector and implementer
Distribution	200 private sector dealers with 10% fee
Pricing	Market
Voucher	Single voucher for input package + technical brochure + demonstrations
Program Cost	\$2.1 million/year
% of Budget	0.1%
% of Agriculture Budget	8.4%
Holistic Development	Partial
Exit Strategy	Yes

# SPLIFA Results and Evaluation

## Results

- Reduced hungry period by 1-3 months
- Maize production per farm increased from 200-300kg to 450kg+
- Drought impacted second year results
- Family assets were increased slightly
- 2-year participants benefited more than 1-year participants
- Inputs were preferred to cash or food
- Inter-cropping was reduced

## Evaluation

- Food security status provides a good targeting modality
- Inputs package was under-funded – had no basal fertilizer
- Technical package to farmers needs to be fully integrated
- Programs need to be fully funded for a minimum of 3 years
- Benefit-Cost Ratios (BCR) should be calculated

# Malawi, Agricultural Inputs Support Program (AISP)

## Funded by Donors/Implemented by Government of Malawi

No. of Beneficiaries/Period	2.6 > 1.6 Million/2005 onwards
Objective	Family and national food security
Targeting	Set by MOAF, priority to vulnerable households
Package	1 x 50 kg basal, 1 x 50 kg TD, 1 x 5 kg maize or 1 x 2 kg legume
Farmer Contribution	Average 14%
Procurement	Private sector by tender
Distribution	Public sector ADMARC/SFRF; small (14%) by private sector
Pricing	Market
Voucher	Voucher for each input type
Program Cost	\$285 million/year (2008/09)
% of Budget	16.2%
% of Agriculture Budget	114%
Holistic Development	No
Exit Strategy	No

# AISP Results and Evaluation

- Maize production increased by 1.1 million mt from yield increases
- Poor targeting of vulnerable poor
- Private sector all but crowded out
- Unsustainable cost
- No exit strategy
- No holistic approach to market development
- No development of output markets

Measure	Ghana Fertilizer Support Program (FSP)
No. of Beneficiaries/Period	1 Million/2008-2010 followed by Waybill system 2010 on
Objective	Overcome threat of reduced fertilizer use for food production
Targeting	Originally targeted to products; now open to all farmers Commercial farmers have to obtain authorization
Package	1 x 50 kg basal, 1 x 25 kg TD
Farmer Contribution	50%; after 2010 60%
Procurement	Private sector
Distribution	Private sector (limited in first year)
Pricing	Negotiated delivered prices to districts
Voucher	Voucher for each input type
Program Cost	\$14-26 million/year
% of Budget	0.6%
% of Agriculture Budget	16%
Holistic Development	No
Exit Strategy	Originally for 1 year then extended

# Ghana, Fertilizer Support Program (FSP)

- Straight fertilizer subsidy program
- Limited targeting after initial year
- Dominated by private sector interests
- Complicated, inconvenient voucher redemption
- Late payments to importers
- Changed to a Waybill program in 2009/10
- Maize production increased by 38%, yields by 17%



# Voucher Programs Implemented

- Afghanistan (EFP)\* 2002-2003
  - Malawi (TIP) 2000-2004
  - Malawi (SPLIFA)\* 2003-2004
  - Malawi (AISP) 2005-present
  - Ghana (FSP) 2008-present
  - Nigeria (2004)\* onward
  - Rwanda (CIP)\* 2008-present
  - Tanzania 2009-2011
  - Kyrgyzstan (KAED)\* 2011
  - Tajikistan (ProApt)\* 2010-
- \* IFDC-implemented programs



DFID/WB



# Lessons Learned With Vouchers

## DO THEY WORK?

### 1. For poverty reduction?

**Yes**, if targeted to vulnerable, potentially viable farmers and maintained for 3-5 years

### 2. For improving food security?

**Yes**, but at a huge cost and with leakage, crowding out, etc. and mainly crop-specific

Based on mixed evidence from 1980s, not sustainable

### 3. As a short-term fix for price spikes?

**Maybe**, but distort markets, and at-source subsidy is a lower cost alternative

# Conclusions

1. They are not a panacea for every situation.
2. They are not a replacement for holistic market development.
3. Target the vulnerable but viable small farmers, these are the potentially productive poor.
4. Targeting may be easy to design but difficult to implement.
5. Be market-friendly and do not distort markets.
6. Link beneficiaries to savings programs.
7. Exit strategies are still difficult to implement.
8. Contain administrative costs.

# How to Implement

1. Analyze the farm situation, value chains, institutional capacity and fertilizer responses
2. Select objectives and targeting modality
3. Estimate time frame to achieve objectives
4. Design market-friendly interventions
5. Incorporate intensive training into program
6. Monitor and evaluate impact on all stakeholders
7. Incorporate into holistic market development



Thank you.  
Questions, I am sure?

# Opportunities and Risks of Fertilizer Voucher Programs

**Experiences from eastern and southern Africa**

USAID Agricultural Sector Council Daybreak Seminar

David Rohrbach  
Senior Agricultural Economist  
World Bank  
January 2012



- Models vary widely
- But there are some common lessons
- Next steps

# Zimbabwe (ZAIP) e.g. 2010/11

Aim: Revitalization of smallholder maize production and input trade after drought and period of hyperinflation

Target group: 133,000 farmers

Level of subsidy: 100% on 50 kg per household

Method: Contracted fertilizer supplier to sell to targeted households through rural retail shops in exchange for voucher

Cost: \$7 million

Incremental Production: +/- 30,000 t

# Malawi (AISP): 2005/6-present

Aim: Increase maize production and food security

Target group: 1.6-2.0 million farmers

Level of subsidy: +/- 90% on 100 kg per household

Method: Government purchase of fertilizer and exchange for vouchers through parastatal depots

Cost: +/- \$120 million (roughly 75% of MoA budget)

Incremental production: +/- 700,000 to 1,000,000 t

# Tanzania (NAIVS): 2008/09 to present

Aim: Increase in maize and rice production, increase fertilizer adoption, agrodealer development

Target group: 2 million farmers

Level of subsidy: 50% on 100 kg per household

Method: Farmers exchange vouchers for fertilizer on regulated market

Cost: \$75 million (roughly 23% of MoA budget)

Incremental Production: +/- 500,000 t

# Need Clarity of Performance Objective

## Food Security

1. Aggregate national maize production
2. Proportion of smallholders producing enough to meet their food requirements

## Market Development

1. Number of commercial shops selling fertilizer
2. Quantity of commercial purchases (*by new adopters*)
3. Decline in costs of fertilizer at farm gate

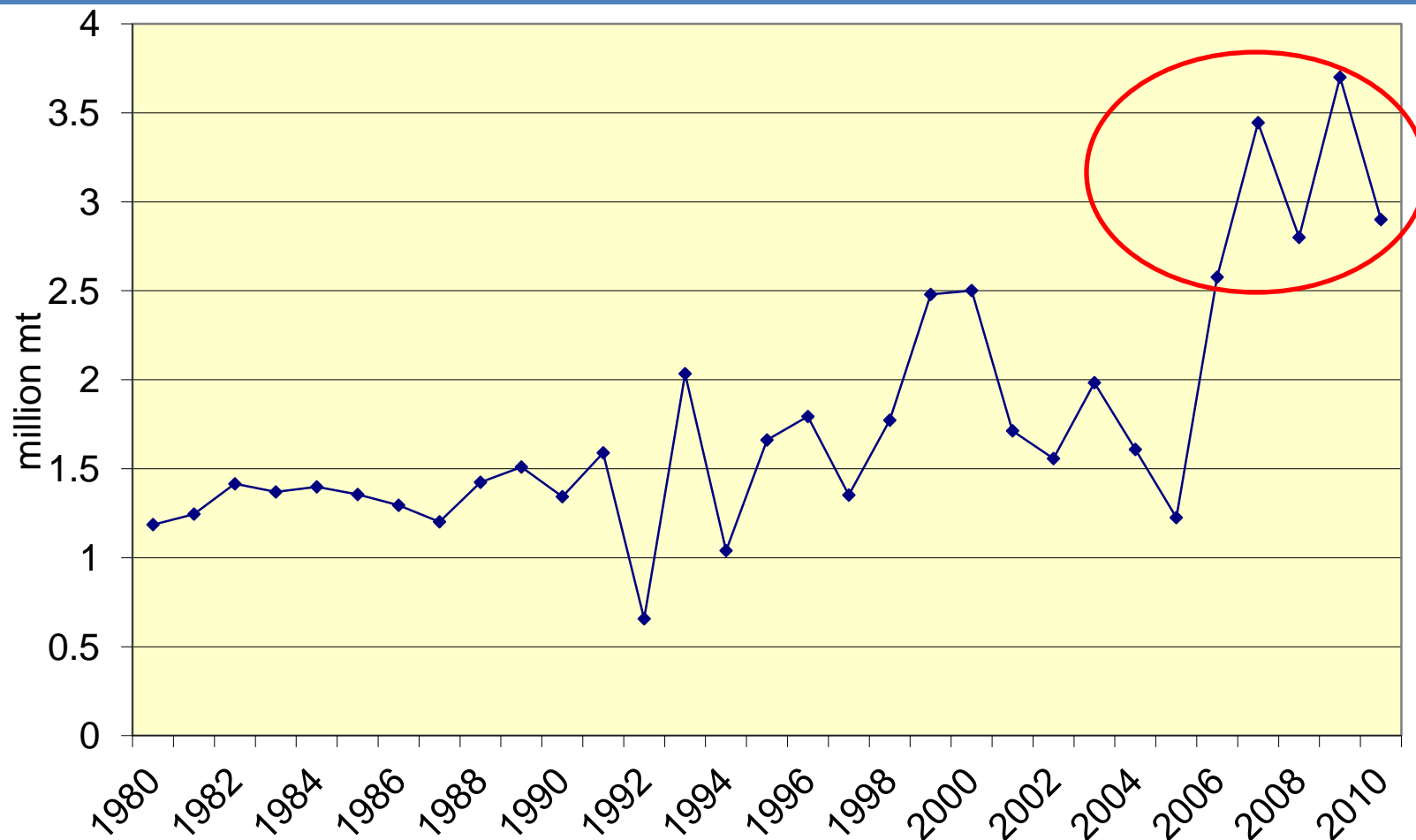
## Sustainable Use

1. Fertilizer use efficiency (e.g. kg grain per kg N)

# Whose Food Security?



# The Malawi Green Revolution



# Malawi Subsidy Payoff is in Food Security of Poorest Households

- Value of added grain production to household producing a surplus: US\$0.15/kg

versus

- Value of added grain production to household facing production deficit: US\$.30/kg

# Primary benefit derived from avoiding food imports in Malawi

**Export Parity: +/- \$180**

**Import Parity: +/- \$280**

Maize price US\$/MT		Scenario		
		Low	Medium	High
270	BCR	0.722	0.865	0.997
	NPV	-80.55	-40.81	-1.07
280	BCR	0.749	0.897	1.033
	NPV	-72.65	-31.16	10.33
290	BCR	0.776	0.929	1.069
	NPV	-64.76	-21.51	21.73
300	BCR	0.804	0.961	1.105
	NPV	-56.86	-11.86	33.13

Adapted from Dorward, Chirwa, Slater presentation

2010

25 January 2012 – Ag Sector Council Daybreak Seminar

# Targeting Plans versus Practice

Planned	Practiced
<p><u>Village Voucher Committee</u> identifies:</p> <ul style="list-style-type: none"><li>• Full time farmer</li><li>• Less than 1 ha land in maize</li><li>• Willing and able to co-finance inputs</li><li>• Willing to follow extension advice</li><li>• Diligent farmer</li><li>• Priority to female headed households</li><li>• Priority to farmers who are new adopters</li><li>• Each recipient receives 3 consecutive years</li></ul>	<p><u>Village leadership</u> identifies:</p> <ul style="list-style-type: none"><li>• Diligent farmers</li><li>• Capable of paying top-up</li><li>• Rotate across recipients</li></ul>

**Key issues: minimize displacement of commercial purchases;  
local ownership is important for effective implementation**

# Choice of Voucher Method Depends on Status of Fertilizer Supply Chain (and Politics)

Key concern: how to minimize risk of lacking fertilizer for voucher exchange

- Malawi: government purchases and distributes all fertilizer
- Zimbabwe: contract particular supplier who is paid when vouchers are redeemed
- Tanzania: district registration of agro-dealers designated to service particular villages

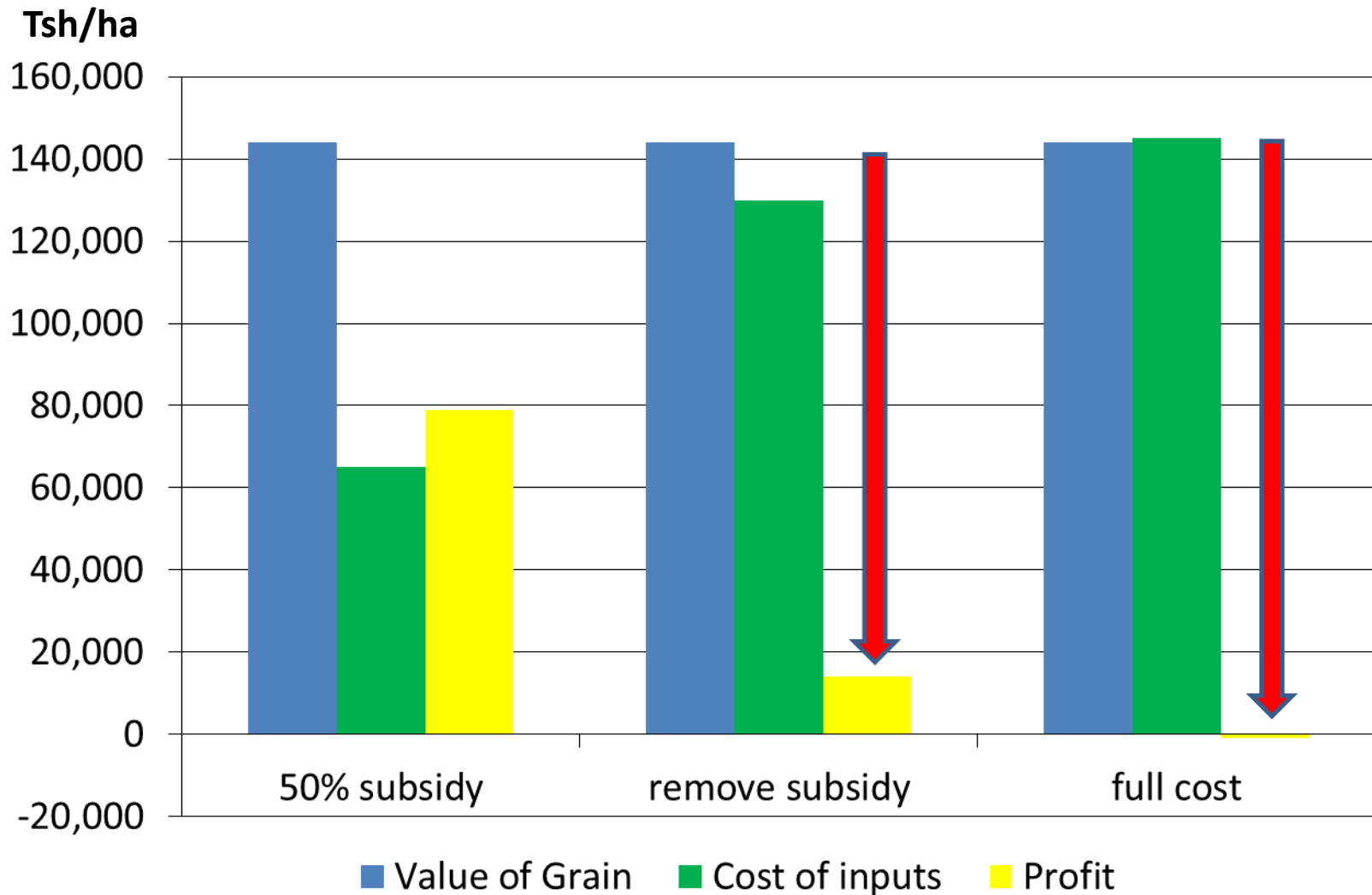
# Add-ins to build fertilizer supply chains?

- Specialized training for agro-dealers
- Contract requires agrodealer to carry in extra fertilizer for sale
- Contract may require fertilizer company to establish credit line with decentralized agrodealers

But a high probability remains that when voucher program ends, supply to farmgate ends



# Change in profit when the subsidy is removed



# What Level of Investment Will Farmers Make?

	Quantity	Cost	Net Return	Rank
<b>Control</b>	<b>0 fertilizer</b>	<b>0</b>	<b>Tsh 378,521</b>	<b>5</b>
Farmer Practice	1 bag DAP 1 Bag Urea	Tsh 108,000	Tsh 702,583	4
Standard recommendation	1 bag TSP 2 bags CAN 1 bag urea	Tsh 178,000	Tsh 878,890	2
Option 1	1.5 bags basal 1.5 bags top dress	Tsh 144,000	Tsh 705,191	3
Option 2	2 bags basal 2 bags top dress	Tsh 192,000	Tsh 929,995	1

**BUT currently, most farmers are struggling to find Tsh 80,000 (US\$52) for the subsidy top-up**

Adapted from 2008/9 & 2009/10 trial results

25 January 2012 – Ag

Sector Council Daybreak

Seminar

# Sustained success depends on complementary Investments

## Improve fertilizer use efficiency

- Better targeting of fertilizer to soil/crop demands
  - E.g. what nutrients are most limiting to crop performance
- Combine inorganic with organic
- Improve weed control and water management
  - E.g. basin planting; conservation agriculture
- Link with quality seed of preferred varieties

# Complementary Investments?

## Reduce farmgate price of fertilizer

- Business training for agrodealers
- Partial credit guarantees
- Facilitate group purchases by farmers
- Contract farming/supply chain development

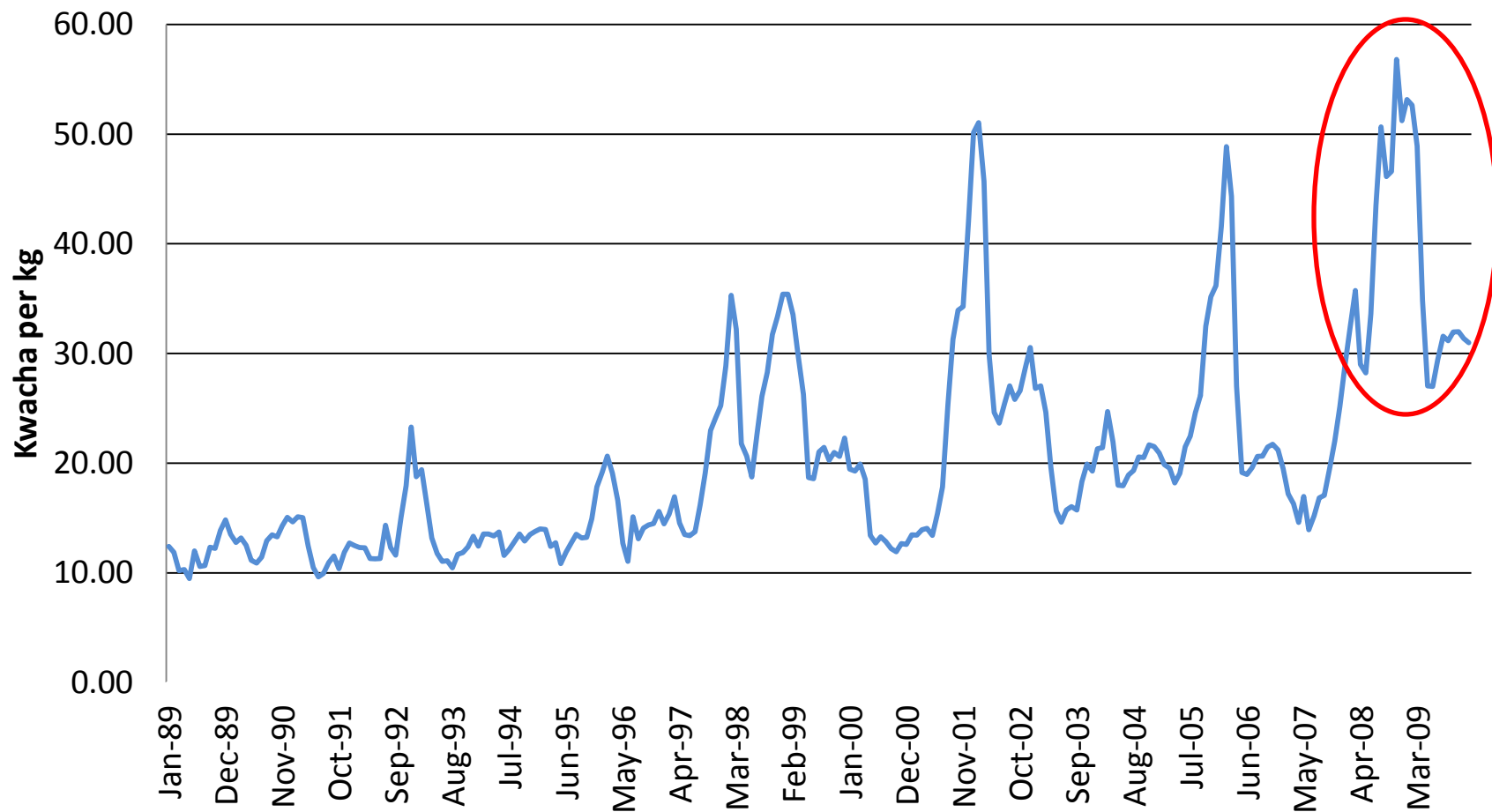
# Exit/Graduation Strategies

- De facto:
  - Rolling one year “emergency” commitment
  - “When farmers can afford fertilizer on their own” or the budget runs out
  - Three years ?
- Alternatives that need broader testing...
  - Reduce subsidy gradually over time
  - Encourage savings/commitment savings
  - Facilitate input supply during period of crop sales
  - Promote contract farming linked with input supply

# Significant Risks

- Vouchers (or fertilizer) distributed late
- Vouchers redeemed by agents distributing
- Counterfeiting vouchers (or fertilizer)
- Vouchers redeemed for cash
- Price inflation: greater demand than fertilizer supply (top-up or subsidy grows)
- Number of target recipients grows faster than population
- Over-reporting of production

# Despite the green revolution, retail maize prices were too high?



# Future Directions

- Improving fertilizer use efficiency
- Alternative strategies for strengthening competitive input markets
- Testing alternative exit strategies
- Smart vouchers/ICT based systems
- Third party monitoring for improved management





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