Facts about Zambia Agriculture Sector

by

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Presentation to the House of Chiefs, Manchini Lodge, Siavonga
October 2, 2015
Why this Presentation?

- Highlight key facts about Zambia’s Agriculture
  - Discuss key policy levers to achieve broad based pro-poor agricultural growth in the country
- Dialogue on how the **House of Chiefs**
  - can help influence agriculture policy changes that will change the structure of agriculture in order to achieve broad based poverty reduction.
Presentation outline

- Zambia agricultural development goals
- Zambia achievements to date
- Unexploited opportunities
- Under appreciated facts about Zambia’s agriculture
- Conclusion and recommendations
Zambia Ag. Development Goal

Reduce poverty through broad-based income growth for those in the agricultural sector
To uphold Maputo declaration of allocating at least 10% of public expenditure to agriculture.

To sustain annual agricultural GDP growth of at least 6%.

To end hunger and cut poverty in half by 2025.

To accelerate agricultural growth by doubling current agricultural productivity levels by 2025.

To halve Post-Harvest Losses by the year 2025.

To triple agricultural intra-African trade by 2025.

To eliminate child under-nutrition by bringing down stunting to 10% and underweight to 5% by 2025.

Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods.

Malabo Declaration, 26-27 June 2014
Zambia’s Economic Achievements

- Zambia
  - Classified as low-middle income by World Bank
  - GDP growing at 6% per annum
  - Agricultural growth rate at 7% - above 6% CAADP Goal
  - Three consecutive maize bumper harvest years

BUT Persistently high rural poverty: ≈80%
Behind this backdrop

- Zambia is characterized by
  - Rapid population growth – 13 million
  - High poverty rates ~ 80% of rural people poor
  - High food and income inequality in urban areas
  - High malnutrition rates of children under 5 years
  - Rapid urbanization and increasing demand for food
  - Stagnant agricultural production
Poverty in Zambia

- Rural poverty rates stubbornly high
- Urban poverty declining
  - rising income
  - rising demand for a variety of ag processed commodities

Source: GRZ’s Central Statistical Office and RALS 2012
Persistently low maize yields

Sources: MAL/CSO Crop Forecast Surveys, 2006/07 - 2013/14

Can Zambia achieve this target under the current agricultural policies?

Target yield per Malabo Declaration
Average yields of key commodities compared to global average

Source: CFS datasets, various years with Global figures obtained from COMESA
Under exploited potential

- Zambia is in a unique position
  - Abundance of fertile land
  - Water
  - Generally, favorable climate for agricultural production
  - Growing population, rapid urbanization and rising incomes creating more opportunities for smallholder farmers
  - Can easily become a ‘Breadbasket’ for the region

Are Zambia’s agricultural policies amenable to these opportunities?
Data on Smallholder Farmers in Zambia

Nation Wide Random Surveys
CFS/PHS/SS 99/00 = 364 SEAs
CFS 2006/07 onward = 660 SEAs

Ag/Ecological Zones
- Zone I
- Zone IIa
- Zone IIb
- Zone III
Under Appreciated Facts About Zambia Agriculture
Under Appreciated Fact # 1

- Many smallholder households are land constrained
  - 25% have less than 0.5 ha of land
  - 58% indicate there is no unallocated land in village
Farm Size For Small & Medium-Scale Farmers, 1999/2000 and 2010/2011 Ag. seasons

Land use (cultivated + fallow land)

Source: CSO/MACO/FSRP 2001 National-Level Supplemental Rural Livelihood Survey and 2012 National-Level Rural Agricultural Livelihood Survey
Percent of smallholder that say “There is NO land available”
Why are Zambia Farmers land constrained?


Settlements concentrated on areas with infrastructure

Hence, the land constraints in a land-abundant country is not a paradox

Considerable land is covered by water, national parks, GMA

Under Appreciated Fact # 2

Nearly 30% of rural farm HHs are net buyers of maize
Under Appreciated Fact # 2

- Nearly 30% of rural farm HHs are net buyers of maize

Net Buyers Negatively affected by high maize prices

Source: RALS 2012
Under Appreciated Fact # 3

- Highly concentrated patterns of maize surplus generation
  - 2-5% of smallholder farm households account for 50% of marketed maize
  - Maize surplus generation is highly associated with area cropped and household assets
## Highly concentrated patterns of maize surplus production, Zambia

<table>
<thead>
<tr>
<th></th>
<th>20011/12</th>
<th>2012/13</th>
<th>2013/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households reporting that they will sell maize (N)</td>
<td>647,937</td>
<td>606,736</td>
<td>619,880</td>
</tr>
<tr>
<td>Proportion of farms accounting for 50% of total expected maize sales (N and %)</td>
<td>72,052 (6%)</td>
<td>64,134 (5.2%)</td>
<td>70,095 (4.8%)</td>
</tr>
<tr>
<td>Households not selling maize</td>
<td>46.5%</td>
<td>50.7%</td>
<td>53.1%</td>
</tr>
</tbody>
</table>

Source: MAL/CSO Crop Forecast Survey
Better off HHs account for majority of maize sold to FRA, 2011

These account for 78% of maize sold to FRA

<table>
<thead>
<tr>
<th>Area cultivated</th>
<th>% of maize surplus sold to FRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20 ha</td>
<td>14%</td>
</tr>
<tr>
<td>5-9.99 ha</td>
<td>23%</td>
</tr>
<tr>
<td>2-4.99 ha</td>
<td>41%</td>
</tr>
<tr>
<td>1-1.99 ha</td>
<td>17%</td>
</tr>
<tr>
<td>0-5.99 ha</td>
<td>5%</td>
</tr>
<tr>
<td>0-0.49 ha</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: RALS 2012
Government expenditure on FISP is benefiting mostly the larger and relatively already well off HHs with very little impact on yields and poverty reduction.
## Land size, poverty and FISP in Zambia

<table>
<thead>
<tr>
<th>Total area cultivated</th>
<th>Number of farms</th>
<th>% of farms</th>
<th>Poverty Rate (%)</th>
<th>% of farmers receiving FISP fertilizer</th>
<th>kg of FISP fertilizer received per farm household</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0.99 ha</td>
<td>596,334</td>
<td>39.6</td>
<td>81</td>
<td>14</td>
<td>24.1</td>
</tr>
<tr>
<td>1-1.99 ha</td>
<td>499,026</td>
<td>33.1</td>
<td>81</td>
<td>31</td>
<td>69.3</td>
</tr>
<tr>
<td>2-4.99 ha</td>
<td>354,116</td>
<td>23.5</td>
<td>66</td>
<td>45</td>
<td>139.7</td>
</tr>
<tr>
<td>5-9.99 ha</td>
<td>49,410</td>
<td>3.3</td>
<td>38</td>
<td>59</td>
<td>309.7</td>
</tr>
<tr>
<td>10-20 ha</td>
<td>6,999</td>
<td>0.5</td>
<td>15</td>
<td>53</td>
<td>345.6</td>
</tr>
<tr>
<td>Total</td>
<td>1,505,885</td>
<td>100</td>
<td>76</td>
<td>29</td>
<td>77.1</td>
</tr>
</tbody>
</table>

Source: RALS 2012
Maize productivity effects of FISP

- Mason and Tembo 2014
  - All factors constant
    - 1 kg of FISP fertilizer → 2.0-3.8 kg maize
    - 200 kg FISP packet → 401.2 to 756.6 kg
  - Uneconomical productivity response to fertilizer at commercial prices
    - Current average commercial fertilizer price ZWK 400 per 50 kg
    - FRA price ZWK 75 per 50 kg
    - Breakeven response rate (not including transactions costs) = 5.32 kg of maize per Kg of fertilizer
Under Appreciated Fact # 5

Excessive FRA participation in the maize market reduces private sector participation.
Zambia: Food Reserve Agency market participation has been increasing over time

- Buying beyond budgeted target
- Delayed payments
- Government ad hoc policies reducing private sector participation

High mealie meal prices despite bumper harvests
Zambia 2013/14 bumper harvest experience

- Government committed:
  - to buy less
  - charge commercial mills economic prices for maize from the FRA

- Resulted in increased trader activity, higher spot prices for farmers, and increased production the following season.
Under Appreciated Fact # 5

Maize import and export bans do not help to keep grain prices within reasonable bounds for consumers and producers?
When grain prices spike above import parity, consumers are being unnecessarily taxed by an inefficient market

Import ban/restriction

When grain prices fall below export parity, producers are denied income opportunities from crop sales

[Export Ban]
Zambia: Maize Market + Ad-hoc Policies

Deficit years

Bumper harvest

World Food Crises

Nominal US$ per metric ton

CIF from South Africa

Lusaka wholesale price
Export bans and trade restrictions

- Generally doesn’t stop trade from occurring but raises smuggling costs, which depress prices for farmers and raise costs for consumers.
The majority of farmers selling maize to a private trader do it in their village even in the most remote and isolated areas.

- Long distances traveled by about 10% of the smallholder population to sell maize is generally not indicative of severe market access problems.
- Reasonable degree of competition among village level grain assembly traders exists.
# Distance to nearest largest maize sale transaction to private assembly traders

<table>
<thead>
<tr>
<th>Percentile of farm household distribution</th>
<th>Distance to nearest Boma (km)</th>
<th>Distance to nearest private assembly traders (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>37</td>
<td>6.9</td>
</tr>
<tr>
<td>10&lt;sup&gt;th&lt;/sup&gt;</td>
<td>6.0</td>
<td>0.0</td>
</tr>
<tr>
<td>25&lt;sup&gt;th&lt;/sup&gt;</td>
<td>13.0</td>
<td>0.0</td>
</tr>
<tr>
<td>50&lt;sup&gt;th&lt;/sup&gt;</td>
<td>30.0</td>
<td>0.0</td>
</tr>
<tr>
<td>75&lt;sup&gt;th&lt;/sup&gt;</td>
<td>58.0</td>
<td>3.0</td>
</tr>
<tr>
<td>90&lt;sup&gt;th&lt;/sup&gt;</td>
<td>80.0</td>
<td>21.0</td>
</tr>
</tbody>
</table>

Sources: Zambia: MACO/CSO Crop Forecast Surveys 2011
Is the Distance Travelled to Assembly Traders Influenced by Volume of Maize?

**ZAMBIA**

<table>
<thead>
<tr>
<th>Bags of maize sold</th>
<th>Number of households</th>
<th>Mean (Km)</th>
<th>Percentile of farm household distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>10&lt;sup&gt;th&lt;/sup&gt;</td>
</tr>
<tr>
<td>&lt; 5 bags</td>
<td>45,370</td>
<td>2.9</td>
<td>0</td>
</tr>
<tr>
<td>5 - 25 bags</td>
<td>105,134</td>
<td>6.2</td>
<td>0</td>
</tr>
<tr>
<td>25 - 50 bags</td>
<td>20,796</td>
<td>11.4</td>
<td>0</td>
</tr>
<tr>
<td>&gt; 50 bags</td>
<td>19,839</td>
<td>14.5</td>
<td>0</td>
</tr>
<tr>
<td>All</td>
<td>191,138</td>
<td>6.9</td>
<td>0</td>
</tr>
</tbody>
</table>

Sources: Zambia: MACO/CSO Crop Forecast Surveys 2011
Is the Distance Travelled to Assembly Traders Influenced by Distance to the Nearest District Town?

<table>
<thead>
<tr>
<th>Quartile group of distance to district town</th>
<th>Mean (Km)</th>
<th>Percentile of farm household distribution</th>
<th>% of FRA Purchases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10th</td>
<td>25th</td>
<td>50th</td>
</tr>
<tr>
<td>1- Accessible</td>
<td>3.6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2- Mid accessible</td>
<td>6.8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3- Mid inaccessible</td>
<td>7.3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4- Inaccessible</td>
<td>10.8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>All</td>
<td>7.1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Sources: Zambia: MACO/CSO Crop Forecast Surveys 2011
“How many private traders come into this village to buy maize from farmers?”

Sources: Zambia: MACO/CSO Crop Forecast Surveys 2011
Market intermediation by traders bridge the geographic distances between farmers and urban markets weakening the link between geographic location and market access.

So called “Briefcase Traders” play a key role in providing a market for farmers in remote and isolated areas.
Zambia Agriculture Budget

Where is the money going?
Budgetary allocations to agriculture

- Sector Allocation up by 30%

Allocation to Agriculture (K' million) vs. % of GRZ budget (right Y-scale)
Where should the funds be invested?

- Quality expenditure of the funds is critical to achieve sustained agricultural growth
- There is need for effective investments in the key drivers of agricultural growth
  - agricultural R&D
  - extension services
  - livestock production and disease control
  - rural infrastructure i.e. feeder roads
  - Irrigation
## Ranking of Returns of Investment in Poverty Reduction: Evidence from Asia and Africa

<table>
<thead>
<tr>
<th>Investment Category</th>
<th>China</th>
<th>India</th>
<th>Thailand</th>
<th>Vietnam</th>
<th>Uganda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural R&amp;D</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Roads</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Education (Agricultural Extension Services)</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Rate of return to agricultural investments: Evidence from Asia

- Past agricultural budgets have not placed enough emphasis on broad-based public investments whose rate of return is:

<table>
<thead>
<tr>
<th>Investments</th>
<th>Rate of return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidies</td>
<td>Negative to 12%</td>
</tr>
<tr>
<td>- research &amp; extension</td>
<td>35% to 70%</td>
</tr>
<tr>
<td>- roads</td>
<td>20% to 30%</td>
</tr>
<tr>
<td>- education</td>
<td>15% to 25%</td>
</tr>
<tr>
<td>- irrigation</td>
<td>10% to 15%</td>
</tr>
</tbody>
</table>

Source: IFPRI review of rate of return studies
Why Frequent Negative Returns for Subsidies Programs?

- Subsidized inputs crowd out the private sector deliveries & discourage investments in new private input dealer networks
- Misallocation and inefficiencies – leading to unsustainable fertilizer use
- Diversion and rent seeking raises incomes of some but does little to raise crop productivity
- Late delivery of inputs does not improve productivity
Food Price Dilemma

A never ending Government struggle!!!

Farmers lobby for higher maize prices + lower fertilizer prices

Lower consumer prices, usually culminating into consumer subsidies

FRA usually above market price at harvest time

Source: pixgood.com
Political economy of public resource allocation

Government budget

- Long-term productive investments: R&D, infrastructure, education, etc.
  - High social payoffs
  - But payoffs come 5-20 years later
  - Critical for sustained poverty reduction

- Input subsidy programs
  - Marketing board price supports

- Immediate political payoffs;
  - Visible support to constituencies
  - Contribution to sustained growth / poverty reduction is unclear
2015 Zambia Agriculture Budget Allocation

- FRA and FISP taking too much
- Staff receive salaries but delayed release of operational funds

<table>
<thead>
<tr>
<th>Program</th>
<th>% of others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel Emoluments</td>
<td>62</td>
</tr>
<tr>
<td>Capital Expenditure</td>
<td>21</td>
</tr>
<tr>
<td>Grants &amp; other payments</td>
<td>13</td>
</tr>
<tr>
<td>All others</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program</th>
<th>% of PRPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>FISP</td>
<td>56</td>
</tr>
<tr>
<td>FRA</td>
<td>42</td>
</tr>
<tr>
<td>All others</td>
<td>2</td>
</tr>
<tr>
<td>Total PRP</td>
<td>100</td>
</tr>
</tbody>
</table>
Share of FISP and FRA to total Poverty Reduction Programs

Source: MAL and MoFNP actual expenditure
Smallholder horticulture is more profitable than maize

- Horticulture is a potential avenue for poverty reduction for land-constrained farmers
  - Gross margins of cabbage, tomato and onion are way much higher than that of maize: 219 times for cabbage, 179 times for tomato and 138 times for onions.
  - Smallholder horticultural market participation has much more household income impact than that of maize
  - Participation in horticultural markets appears to reduce the gender gap in rural household income.
Smallholder horticulture has much more household income impact than that of maize.
Conclusion & Recommendations

- Zambia has:
  - potential to have broad-based economic growth;
  - potential to address the stubbornly high rural poverty rates and high malnutrition;
  - potential to be the ‘breadbasket for the region’;
  - **But:** Policies should evolve and take advantage of the many agricultural opportunities arising from the rising food demand, rising urban incomes and the changing consumption patterns.
Thank You