Crop Diversification IN ZAMBIA: Moving From Potential To Reality

Rhoda Mofya-Mukuka, PhD

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Presentation Flow

- Why agricultural diversification
- Horticulture
- Soybeans
- Groundnuts
- Rice
- Cassava
- Conclusion
- Recommendations
Why Agricultural Diversification?

- Diversify economy away from copper
- Agricultural contribution to the economy has not been growing (around 22%)
- Rural poverty levels remain high
- Research has shown that agricultural growth reduces poverty by twice the rate of growth in nonagricultural sectors
Is our budget speaking to diversification objective?

- Past policies oriented towards achieving mainly maize self-sufficiency
  - 57% of 2016 agricultural budgetary allocation to maize subsidies
  - 88% farmers grow maize
  - Area under maize 57%
Production of maize in relation with other crops (2015)

Crop production (MT)

- Soya beans
- Groundnuts
- Sunflower
- Millet
- Rice
- Sorghum
- Maize

- 0
- 500,000
- 1,000,000
- 1,500,000
- 2,000,000
- 2,500,000
- 3,000,000
Maize Production by small and medium scale farming households by Province, 2013 and 2015 seasons

Source: Crop Forecast Survey, MAL and CSO, 2012
Crop Production by Province

Source: CFS survey, 2012/13
## Crop Diversification by Province, 2004 - 2012

<table>
<thead>
<tr>
<th>Province</th>
<th>2004</th>
<th>2008</th>
<th>2012</th>
</tr>
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<tbody>
<tr>
<td>Central</td>
<td>0.44</td>
<td>0.33</td>
<td>0.38</td>
</tr>
<tr>
<td>Copperbelt</td>
<td>0.38</td>
<td>0.26</td>
<td>0.27</td>
</tr>
<tr>
<td>Eastern</td>
<td>0.46</td>
<td>0.44</td>
<td>0.45</td>
</tr>
<tr>
<td>Luapula</td>
<td>0.31</td>
<td>0.30</td>
<td>0.39</td>
</tr>
<tr>
<td>Lusaka</td>
<td>0.21</td>
<td>0.14</td>
<td>0.21</td>
</tr>
<tr>
<td>Muchinga</td>
<td>-</td>
<td>-</td>
<td>0.52</td>
</tr>
<tr>
<td>Northern</td>
<td>0.55</td>
<td>0.46</td>
<td>0.52</td>
</tr>
<tr>
<td>NorthWestern</td>
<td>0.43</td>
<td>0.30</td>
<td>0.38</td>
</tr>
<tr>
<td>Southern</td>
<td>0.30</td>
<td>0.27</td>
<td>0.30</td>
</tr>
<tr>
<td>Western</td>
<td>0.40</td>
<td>0.30</td>
<td>0.38</td>
</tr>
<tr>
<td>Zambia</td>
<td>0.42</td>
<td>0.35</td>
<td>0.40</td>
</tr>
</tbody>
</table>
Concerns on Maize Centric Policies

- Limit the potential to use agriculture as a poverty reduction tool
- Limit the scope and scale of agro-processing, intermediation/trading, and input supply
- Increase levels of household food and nutrition insecurity
- Deplete soil nutrients through soil mining
- Elevate risks, at both household and economy-wide level, associated with:
  - Climate change – droughts
  - Price volatility
  - Market risks
Incidence of stunting, underweight and wasting of children by Province. 2010

[Bar chart showing the percentage of stunting, underweight, and wasting across different provinces in Zambia for the year 2010.]
Malnutrition Rates

- **Stunting**
  - 1992: 46
  - 1996: 49
  - 2001-02: 53
  - 2007: 45
  - 2013-14: 40

- **Wasting**
  - 1992: 6
  - 1996: 5
  - 2001-02: 6
  - 2007: 5
  - 2013-14: 6

- **Underweight**
  - 1992: 21
  - 1996: 19
  - 2001-02: 23
  - 2007: 15
  - 2013-14: 15
## Malabo declaration target

<table>
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<tbody>
<tr>
<td>Percentage of underweight children (under 5 years of age)</td>
<td>25</td>
<td>23</td>
<td>15</td>
<td>15</td>
<td>12.5</td>
</tr>
<tr>
<td>Percentage of stunted children (under 5 years of age)</td>
<td>40</td>
<td>53</td>
<td>45</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>Percentage of wasted children (under 5 years of age)</td>
<td>5.1</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Measures in place to improve crop diversification

- Inclusion of other crops in the FISP pack
- FRA buying other crops apart from maize
- E-voucher system
Alternative value chains: National level

- Horticulture
- Wheat
- Soybeans
- Mixed beans
- Millet
- Groundnuts
- Sweet potatoes
- Cotton
- Rice
- Sorghum
- Tobacco
- Cassava
- Livestock
- Fisheries
- **Southern Province**
  - Horticulture
  - Groundnuts
  - Sweet potatoes
  - Soybeans
  - Cotton
  - Tobacco
  - *Livestock*
  - *Fisheries*

- **Western Province**
  - *Rice*
  - *Cassava*
  - *Cashew nuts*
  - Cotton (Around Kaoma)
  - Horticulture
  - *Livestock*
  - *Fisheries*
1. Horticulture
Opportunities in Horticulture

- Improving irrigation technologies
- Growing markets – Chain supermarkets and hotel industry (for Southern Province)
- Gross margins of most vegetables are much higher than that of maize:
  - 219 times for cabbage,
  - 179 times for tomato
  - 138 times for onions
High percent change in household income

- All sellers: 22
- Households cultivating under 1 ha: 28
- Male headed households: 15
- Female headed households: 61
- Extremely poor households: 26

- Horticulture: 157
- Maize: 167
- Horticulture: 154
- Maize: 172
- Horticulture: 162
- Maize: 157
What’s the way forward for horticulture

- Facilitate development of strategically located and appropriate horticultural wholesale markets under PPPs
Horticulture way forward cont.

- Legal and institutional framework to allow brokerage/agent
- Develop wholesale market using cost-effective design with concrete flooring
- Entry and exit points for vehicular and human traffic
  - Loading and off-loading bays, storage facilities
2. Soybeans
Status of Soybeans

- Between 2003 and 2015 soybean production in grew at an average annual rate of 22 percent
- Commercial farmers accounted for the 80% of the production 2015/16
- The soybeans sector is expected to grow by 8 percent a year over the medium term to 2020
Soybeans production trends

Source: MAL, CFS, various years
Opportunities

- Rising prices, as a result of increased domestic demand for soybeans in animal feed, cooking oil, and processed soya products
- Movement of grain traders into the smallholder soybean market
- Improve soil quality on smallholder farmers through maize/soybean crop rotations
Way Forward for Soybeans

- Increase productivity – improve extension services
  - Use of inoculum among Smallholders
  - Optimal input use to increase productivity & profitability
  - Legume-cereal rotation

- Expose locally produced edible oils to regional competition.
  - Regional competition to increase productivity and make oils cheaper for Z consumers
  - Measures in place to ensure that imported oil is regional origin

- Awareness of use and benefits of consuming soybeans products,
3. Groundnuts

Avg. groundnut production (kg/hh)

- 0 - 100
- 100 - 200
- 200 - 300
- 300 - 400
- Greater than 400
Status of Groundnuts per province
Why groundnuts for Western and Southern Provinces?

- Rich in proteins, critical nutrient for reducing impaired growth especially in children
- High Demand for groundnuts locally and regionally
- An important raw material
- A woman’s crop – source of income for women
- Nitrogen fixation in the soil, which enhances soil fertility – low input crop

More potential to improve household income, reduce poverty, improve the livelihoods and the nutrition status of the rural households
The Problem…..

- Poor yields - 0.45ton/ha against 1.5 – 4.0
- Low market participation among the producers - about 45% sell
- 20% production is traded, 80% is for home consumption.
- *High levels of aflatoxin contamination* caused by poor drying and storage methods.
- Low levels of export. Among the lowest in the region despite having favourable agro-ecological conditions for growing the crop.
- Poor storage methods
- Low value addition
Way forward for groundnuts

- Private sector investment - supply of good certified seed varieties using the out-grower model.
- Adoption of labor saving technologies
- Increase local assembling of produce
- Increase oil processing using technologies that also use groundnuts as an ingredient in poultry feed
- Increase private sector investment in aflatoxin mitigation.
4. Rice
Rice Production by Province, 2015

Source: MAL, 2015
Trends in Rice Production

- Tremendous growth in production attributed to two factors;
  - In the early 2000 to about 2010, National Milling Company and FRA bought paddy rice from the farmers
  - MAL working with JICA promoted the growing of Nerica rice which is an upland rice
- Low 2015 production attributed to low rainfall in the province
Rice Growth rate
Low production compared to other SADC countries

Source: FAOstat
5. Cassava

- Cassava an important crop especially for Western, Luapula and Northern provinces
- Grown by over 35% (513,000) of small-scale farmers
  - Cassava production has been growing and production is over 1 million mt per year
- Resilient to climate change
Northern, Luapula and Western are three highest producing provinces

Source: RALS 2012
Cassava Growing Zones in Zambia

Cassava Belt

Mixed Staples

Maize Belt
Opportunities

- **Market opportunities**
  - Export of dried chips
  - Cassava-based convenience foods
  - Large-scale industrial processing (ethanol, sweeteners, starch)
  - Fresh sales during lean season
  - Feeds (if cassava price falls < maize)
  - Composite flours (if cassava price < maize)
  - Orange cassava variety for Vitamin A
Dried & Fresh Cassava Trade Flows
Important research findings

- Proximity to good road infrastructure significantly increases the probability of smallholder farmers to participate in horticultural markets.
- Price variability significantly reduces the probability of participation in horticultural markets.
- Receiving FISP packs significantly increase the participation in maize market more than horticultural market.
- Government expenditure on maize marketing through FRA impacts negatively on diversification efforts.
Challenges

- Market for cassava not well developed
- Low yield at farm level compared to the potential yields of improved varieties
- Low use of improved varieties among farmers
- Low value addition
Way forward for the sector

- Create demand for cassava through market development
  - Human consumption (Dry and/or fresh cassava)
  - Animal feed
  - Industrial processing (Ethanol, beer brewing, and starch)
  - Explore and enhance export markets

- Enhance productivity/processing
  - Use of improved varieties
  - Use of good agricultural practices
  - Continued funding to the research programs
  - Investing in cheap but durable processing technologies that can be used at farm level
Conclusion

- The agriculture sector offers potential to contribute significantly to national GDP through producing a diversified range of products for the local and international markets.
- Current and past agricultural development policies have inclined towards promoting maize production.
- Current agricultural growth being recorded is only being experienced by a minority of the farmers.
Recommendations

- Realigning the agricultural budget to:
  - Support the extension services for these alternative production areas
  - Research and development to produce improved seeds and disease control systems
- Help both the producers and the private sector to manage risk associated with prices, markets and other environment factors
- Invest in the road, water, and electricity infrastructure to make these markets work.
Thankyou

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Opportunities For Public And Private Sector Investment

- Development and supply of improved and certified seed – in partnership with already established channels ie EPFC and COMACO
- Development/distribution of labour-saving technologies – ADP – use of modified ploughs for harvesting, shellers, farmer training and credit schemes
- Group selling (bulking) – to access large markets, monitor standards
Smallholder production of maize in relation with other crops (2010)

Source: CSO/MAL 2010
Declining % share of groundnuts in total area cultivated compared to maize and cotton
What about Food Security? What about Maize?

- There’s evidence that increasing production of high value crops cannot compromise food security.
- Income earned from high value crop sales is usually ploughed back for more production and even the production of maize for consumption and sale in case of surplus.
- Agricultural diversity promotes dietary diversity!
Groundnuts remains an important crop in Zambia:

- Alternative source of income
- Important component source of protein in the much of the rural diet
- Cultivated by almost half of the smallholders
- Second most cultivated crop after maize
- Share of total cultivated land was only 8.8 percent while maize constituted 20 percent
Budget allocation towards Maize Support
Production growth of Groundnuts in Zambia (2003=100)
The Aflatoxin problem

- Groundnuts are highly prone to aflatoxin contamination (*Chuku*)
- Aflatoxin effects: liver cancer (Hepato-Cellular Carcinoma (HCC)), physical and mental development—e.g. stunting in Children
- Limits farmer’s access to international markets
- EU requirements max 10ppb (for processing) and 4 ppb for direct consumption.
- South Africa – requires max 5ppb
- EP survey (Icrisat)– 4 to 100ppb. Nyimba upto 4,980ppb
Mitigating Aflatoxin

- Aflatoxin mitigation –
  - Extension services on harvesting, shelling and storage
  - Establishing goundnuts standards,
  - Aflatoxin testing equipment
  - Peanut butter and oil processing
Soybeans markets

- 89 percent of the soybeans produced in the country is consumed by the animal feed industry.
- The remainder is for human consumption, and consumed as soy chunks and soy products such as Yummy Soy.
- By 2011, Zambia imported an average of 11,200 MT of soy oil and 25,000 MT of soya-oil cake and became a net importer of soybeans/products.
- 70 percent of Zambia’s national edible oils requirement is still met through imports (Chisanga and Sitko, 2013).
- Rice deficit statistics
- Areas where rice is imported
- Convert gardens (google)
- Evoucher
- Give nutrition statistics
- Productivity
- Cashew nuts
Soybeans growth rate 2002-2015

Source of data: MAL, CFS 2002-2014