FOOD SECURITY IN SOUTH(ERN) AFRICA
- PRODUCTION, RISKS & THREATS

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South Africa
Already Defined for Us

- Food Security...
- Right to Food Security...
- Undernourishment...
- Chronic and Seasonal Hunger...
- Per Capita Calorie Intake...
Food Security in Africa...1

• Food security (horror) stories out of Africa...
  – *Almost 30% of all hungry people are in SSA*...
  – Horn of Africa: *Hunger threat widens... deepens in Horn of Africa*...
  – West Africa: *Millions face starvation in West Africa*...
  – Central Africa: *Ten million face hunger in Central Africa*...
  – Southern Africa: *Hunger in Southern Africa – Can famine be averted?*

• Are we surprised...? 
  – What is the truth on the ground...?
Food Security in Africa...2

• The question is why? The answers are many & varied...
  – Geo-political
    • War, displacement, ...
  – Geo-physical
    • ‘Poor’ resource base in land, water, etc (?)
    • Natural calamities – floods, droughts, locusts,...
  – Production
    • Sub-optimal production practices, low resilience...
  – Social capital
    • Limited ability to adapt, ...
  – Global economics
    • Land leases (international), global economic meltdown, food prices,...

• But more importantly, what can we do or can be done?
Southern Africa in Perspective
Southern Africa Region

- **Population base**
  - Almost 120 million
  - ≈1.43% growth rate
  - Predominantly *rural based*

- **GDP**
  - Approximately US$237 billion

- **Economies**
  - *Agro-based* (except South Africa & Botswana)

- **Implications**: If agriculture fails, there are food security problems
<table>
<thead>
<tr>
<th>Country</th>
<th>Population (million)</th>
<th>Population Growth Rate (%)</th>
<th>Gross Domestic Product (USD billion)</th>
<th>Agriculture Sector Contribution to GDP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>1.9</td>
<td>1.94</td>
<td>8.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Lesotho</td>
<td>2.1</td>
<td>0.12</td>
<td>1.4</td>
<td>7.1</td>
</tr>
<tr>
<td>Malawi</td>
<td>15.9</td>
<td>2.76</td>
<td>1.9</td>
<td>30.1</td>
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<tr>
<td>Mozambique</td>
<td>21.7</td>
<td>1.79</td>
<td>5.5</td>
<td>23.4</td>
</tr>
<tr>
<td>Namibia</td>
<td>2.1</td>
<td>0.95</td>
<td>5.5</td>
<td>9.6</td>
</tr>
<tr>
<td>South Africa</td>
<td>49.9</td>
<td>0.92</td>
<td>201.4</td>
<td>3</td>
</tr>
<tr>
<td>Swaziland</td>
<td>1.37</td>
<td>1.20</td>
<td>2.4</td>
<td>8.6</td>
</tr>
<tr>
<td>Zambia</td>
<td>11.9</td>
<td>1.63</td>
<td>5.4</td>
<td>16.7</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>12.0</td>
<td>1.53</td>
<td>4.7</td>
<td>18.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>118.87</strong></td>
<td><strong>1.43</strong></td>
<td><strong>236.9</strong></td>
<td><strong>-</strong></td>
</tr>
</tbody>
</table>
Agricultural Production

• **Agricultural production**
  – Predominantly *rainfed agriculture*
    • Low levels of production, e.g. 0.5 t/ha cereal yield (Rockstrom, 2003)
    • Need to boost productivity of rainfed agriculture in region
  – Dominant to rural livelihoods

• **Implications**: Rural communities generally exposed to food security problems if agriculture under performs

• **Irrigated agriculture**
  – Limited role in most countries, except South Africa
  – Huge unexploited potential e.g., Mozambique

• **Implications**: Food security problems will persist
<table>
<thead>
<tr>
<th>Country</th>
<th>Cultivated Area (1000 ha)</th>
<th>Irrigated Area (1000 ha)</th>
<th>Irrigated Area as Proportion of Cultivated Area (%)</th>
<th>Irrigated Area as Proportion of Potential Irrigable Area (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>252</td>
<td>1.44</td>
<td>0.59</td>
<td>11</td>
</tr>
<tr>
<td>Lesotho</td>
<td>359</td>
<td>2.64</td>
<td>0.87</td>
<td>21</td>
</tr>
<tr>
<td>Malawi</td>
<td>3622</td>
<td>56.39</td>
<td>1.90</td>
<td>35</td>
</tr>
<tr>
<td>Mozambique</td>
<td>4750</td>
<td>118.12</td>
<td>2.51</td>
<td>4</td>
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<tr>
<td>Namibia</td>
<td>808</td>
<td>7.57</td>
<td>0.92</td>
<td>16</td>
</tr>
<tr>
<td>South Africa</td>
<td>15450</td>
<td>1498.00</td>
<td>9.53</td>
<td>100</td>
</tr>
<tr>
<td>Swaziland</td>
<td>192</td>
<td>49.84</td>
<td>25.96</td>
<td>53</td>
</tr>
<tr>
<td>Zambia</td>
<td>2384</td>
<td>155.91</td>
<td>7.71</td>
<td>30</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>3850</td>
<td>173.51</td>
<td>5.10</td>
<td>47</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>31667</strong></td>
<td><strong>2063.42</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Water for Agriculture

• Region is **water stressed**
  – Physical water scarcity, e.g., South Africa
  – Economic water scarcity, e.g., Mozambique

• **Water abstractions for agriculture**
  – **Agriculture dominates**
  – > 60% of all freshwater resources for most countries in the region (except Botswana & Lesotho)

• **Implications**: Water stresses will impact directly on agriculture → food production → food security

• **BUT**
  – “**There is adequate water in major river basins for food production...**” (CPWF-CGIAR 2011)
Water Use in South Africa

Water Use in the RSA

- Irrigation
- Urban
- Rural
- Mining
- Power generation
- Afforestation
<table>
<thead>
<tr>
<th>Country</th>
<th>Total Renewable Water Resources (km³)</th>
<th>Total Freshwater Withdrawals (km³/yr)</th>
<th>Freshwater Withdrawals by Agriculture (km³/yr)</th>
<th>Freshwater Withdrawals by Agriculture (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>12.24</td>
<td>0.30</td>
<td>0.08</td>
<td>26.7</td>
</tr>
<tr>
<td>Lesotho</td>
<td>3.02</td>
<td>0.05</td>
<td>0.01</td>
<td>20.0</td>
</tr>
<tr>
<td>Malawi</td>
<td>17.28</td>
<td>0.97</td>
<td>0.81</td>
<td>83.5</td>
</tr>
<tr>
<td>Mozambique</td>
<td>217.1</td>
<td>0.74</td>
<td>0.55</td>
<td>74.3</td>
</tr>
<tr>
<td>Namibia</td>
<td>17.72</td>
<td>0.30</td>
<td>0.21</td>
<td>70.0</td>
</tr>
<tr>
<td>South Africa</td>
<td>50.0</td>
<td>12.5</td>
<td>7.84</td>
<td>62.7</td>
</tr>
<tr>
<td>Swaziland</td>
<td>4.51</td>
<td>1.04</td>
<td>1.01</td>
<td>97.1</td>
</tr>
<tr>
<td>Zambia</td>
<td>105.2</td>
<td>1.74</td>
<td>1.32</td>
<td>75.9</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>20.0</td>
<td>4.21</td>
<td>3.32</td>
<td>78.9</td>
</tr>
<tr>
<td>Total</td>
<td>447.1</td>
<td>21.85</td>
<td>15.15</td>
<td>-</td>
</tr>
</tbody>
</table>
Water requirements for Food Security

Water requirements for food production (km³/year)

- Increases, over 2002 water requirements, needed to eradicate poverty by 2030 and 2050 respectively.
- Increase, over 2002 water requirements, needed to meet the 2015 hunger target.
# Southern Africa – Major Agricultural Products

<table>
<thead>
<tr>
<th>Country</th>
<th>Major Agricultural Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>Cattle (meat), milk, game (meat), small grain</td>
</tr>
<tr>
<td>Lesotho</td>
<td>Potatoes, milk, game (meat), wool, maize</td>
</tr>
<tr>
<td>Malawi</td>
<td>Potatoes, tobacco, maize, cassava</td>
</tr>
<tr>
<td>Mozambique</td>
<td>Cassava, cotton, maize, tobacco, sugar cane</td>
</tr>
<tr>
<td>Namibia</td>
<td>Cattle, roots &amp; tubers, milk</td>
</tr>
<tr>
<td>South Africa</td>
<td>Meat, chicken, maize, grapes, sugar cane</td>
</tr>
<tr>
<td>Swaziland</td>
<td>Sugar cane, cattle (meat), milk</td>
</tr>
<tr>
<td>Zambia</td>
<td>Maize, cattle (meat), tobacco, cotton</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>Cattle (meat), tobacco, cotton, sugar cane</td>
</tr>
</tbody>
</table>
Food Security in Southern Africa…1

- **Food security outlook** **positive** for 2011 – 2012 (SADC-NEWUs) (Fewsnet, 2011)

May/Jun 2011

Jul/Sep 2011
But food security problems exist in the region

- Zimbabwe, Mozambique, Zambia, Namibia

- Floods, droughts, government policies, ...

- E.g. Mozambique rated 2nd country in the world most prone to natural disasters (after Haiti!)
• **Food Security Score (FSI)**
  – Southern Africa has 3 countries in the top 15 highest risk countries

• **Global Hunger Index (GHI)**
  – Moderate – South Africa
  – Serious – Botswana, Lesotho, Malawi, Namibia, Swaziland
  – **Alarming** – Mozambique, Zimbabwe & Zambia
Food Security in South Africa…1

• Food Production
  – 30 000 commercial farmers service SA food needs!

• National Picture
  – Global Hunger Index: Low to Moderate (7.3) (IFPRI, 2010)
  – Prevalence of Undernourishment: very low (<5%) (FAO, 2010)

• Regional & Provincial Picture
  – Inadequate because of localised problems
    • e.g., internal distribution, drought, floods

• Food Security
  – Part of Section 27 Constitutional rights in SA
  – Integrated Food Security Strategy (IFSS)
• **National Integrated Food Security Strategy (IFSS) (RSA, 2002)**
  – Harmonisation of food security programmes
  – Focus on household food production, nutrition & food safety, safety nets & food emergencies, ...
South Africa – Behind the Numbers

• Access to food
  – 20% of SA households have inadequate & severely inadequate access

• SA Hunger Index – Food Secure households
  – Only 14.4% in rural areas
  – Only 24.7% in urban areas

• Reasons
  – High food prices & affordability
  – Unemployment & poverty
  – Lack of economic activities
South Africa – Zero Hunger Programme

• Zero Hunger Approach Strategy
  – Reduce incidences of food insecurity

• Objectives of Zero Hunger Programme
  – Ensure access to food by poor & vulnerable groups
  – Improve food production capacity of the poor
  – Improve nutrition security of the citizens
  – Develop market channels
  – Foster partnerships in the food supply chain
Threats & Risks Exist to Food Security

- Several threats & risks exist in the region and these threaten food security
  - Climate change and global warming ✓
  - Dependence on rainfed agriculture ✓
  - Sub-optimal (agricultural) water management ✓
  - Bio-fuels/energy generation ✓
  - Pollution ✓
  - Land leases (grabbing?) ✓
  - Production practices ✓
  - Food prices ✓
  - Politics X
  - Population increases ✓
  - Others...
Climate Change & Global Warming

• Climate change scenarios in the region
  – Increase in temperatures (+6°C)
  – Decrease in rainfall (by 40%)

• Results
  – Increased incidences of climate extremes
    • Droughts & floods

• Impacts
  – Reduced food production
    • Food production will reduce by ≈50% in the next 70 years (SACAU)

• Communities in the region are least able to adapt to CC
Dependence on Rainfed Agriculture

• **Agricultural production & economic activity**
  – Very *sensitive to rainfall variability & deficits*
  – Compounded by low per capita land holdings

• **Examples**
  – Mozambique – water related shocks depress country’s GDP by >1% per year
  – Zambia – rainfall variability reduces country’s agric growth by 1% per year & will cost US$4.3 billion in 10 years in lost GDP

• **Implications**: Regional countries exposed to the vagaries of nature
Arable Land per Capita (ha)
Sub-Optimal Water Management

- **Sub-optimal water management**
  - Inefficient irrigation water management (blue water)
  - Low infield water retention & high runoff losses (green water)
  - Non-productive evaporative losses
  - Only 4% of available water is captured for crops & livestock

- "...Southern Africa has been struggling with low yields due to inadequate management of water and..."

- **Implications**: Less output per unit of scarce water resources

- Latent potential
  - Increase water (rainfed & irrigation) productivity
    - Many possible approaches available today!
Agricultural Water Management
Bio-fuels/Energy generation

• Bio-fuel production drive
  – To reduce carbon emissions

• Bio-fuels crop production vs. food crops production
  – Common food crops suited to bio-fuel production
    • Maize (staple in Southern Africa), soybeans, sugar cane

• Implications: Extensive move to bio-fuel crop production may lead to food production problems → food security issues
Water Pollution

• Water pollution
  – A growing problem
  – Affects water’s suitability for agriculture (Westcott & Ayers)

• Water pollution problems
  – Diffuse pollution from settlements, e.g. South Africa
  – Point source pollution from industries and mines, e.g. acid mine drainage (AMD) in South Africa

• Implications: Less water available for food production
Land Leases (grabbing)

• DC to LDC land leases
  - A major phenomena, >50 million ha in Africa! (Hall 2010)

• Risk
  - Dispossession of production land for the poor rural communities
  - Reduced ability to produce own food
Production Practices

• Smallholder production practices
  – Risk aversion & low investment
    • Low input levels, less mechanisation, low research base, poor access to markets, poor infrastructure, ...
  – Less productive farming & not profitable

• **Implications**: Low productivity and perpetual food (and cash) shortages
  – Poverty trap
Food Prices

• Food prices
  – Sky rocketed in mid 2008
  – Increased by 20 – 100% in the last 2 years!
  – Driven by many factors, e.g., production (supply), bio-fuels, climate change, politics
  – The poor spend more on food

• Implications: Impacted on access to food by many resource poor families

• Maize prices in Southern Africa
  – Maize staple food in the region
  – Prices have been stable since about early 2009
    • US$150 – US$300 per tonne
Population Increase

• Population and food security
  – Population growth rate (SADC, 3%) tend to outstrip food production growth rate (or per capita cereal production)
  – Southern Africa has had no Green Revolution (like Asia)

• Implications: Food shortages leading to food security uncertainties
Summary & Conclusion

• Current food security outlook
  – Positive in Southern Africa
  – South Africa continues to produce enough to export in the region

• Production base
  – Water & land resources require better management in most countries in the region

• Threats and risks to food security
  – These exist and need to continually be mitigated
References

• FAO
  – For most of the agricultural data
• Madramootoo
  – Water Management for Food Security
• Internet
  – Various sources
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