Emerging Land Issues in Kenyan Agriculture and their Implications for Food Policy and Institutional Reforms

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Introduction

• Based on experiences from Asia, a smallholder-led growth strategy has been widely accepted as the pathway for agricultural transformation and mass poverty reduction in Africa.

• Since smallholders also constitute the majority of farms in Africa, a smallholder-led strategy also holds the best prospects for economic development in Africa.
Standard version of the structural transformation model (Mellor, 1976; Johnston and Kilby, 1975)

- **Farming is the primary source of employment for the majority of the population.**
- **Structural transformation process start with agricultural productivity growth.**
- **Smallholders but productive farmers with sufficient land produce a surplus.**
- **Money from the surplus production stimulates demand for goods and services.**
- **This in turn stimulates jobs in various off-farm sectors.**
- **Rural-urban migration, and gradual urbanization follows.**
- **Slow or negative rate of population growth in rural areas and land consolidation.**
- **Agriculture declines in its relative share of total GDP over time.**
Standard structural transformation model may be a poor fit for some parts of Africa

1. Rising rural population densities
   - Declining land sizes and unsustainable forms of agricultural intensification
   - Unsustainable forms agricultural intensification
   - Degraded soil-induced poverty traps

2. Rapid changes in farm structure associated with the expansion in recent years of “emergent” farmers
   - Farm structure may be changing rapidly as a result
   - One-way direction flow of employment from farm to off-farm sectors may not generally apply in Africa
Population growth rates in Kenya

Source: World Bank and United Nations, Department of Economic and Social Affairs
Population density in Kenya
Population densities in 10 topmost densely populated districts in Kenya

<table>
<thead>
<tr>
<th>Province</th>
<th>District</th>
<th>Rural population</th>
<th>Density</th>
<th>Rural area prop.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>Emuhaya</td>
<td>135,723</td>
<td>1,011</td>
<td>0.77</td>
</tr>
<tr>
<td>Western</td>
<td>Hamisi</td>
<td>148,259</td>
<td>948</td>
<td>1.00</td>
</tr>
<tr>
<td>Western</td>
<td>Vihiga</td>
<td>96,535</td>
<td>931</td>
<td>0.52</td>
</tr>
<tr>
<td>Nyanza</td>
<td>Kisii Central</td>
<td>283,117</td>
<td>844</td>
<td>0.93</td>
</tr>
<tr>
<td>Nyanza</td>
<td>Gucha</td>
<td>364,460</td>
<td>821</td>
<td>0.96</td>
</tr>
<tr>
<td>Nyanza</td>
<td>Manga</td>
<td>87,859</td>
<td>789</td>
<td>1.00</td>
</tr>
<tr>
<td>Nyanza</td>
<td>Nyamira</td>
<td>263,201</td>
<td>779</td>
<td>0.85</td>
</tr>
<tr>
<td>Central</td>
<td>Githunguri</td>
<td>128,643</td>
<td>772</td>
<td>0.96</td>
</tr>
<tr>
<td>Nyanza</td>
<td>Gucha South</td>
<td>146,307</td>
<td>760</td>
<td>0.94</td>
</tr>
</tbody>
</table>

Source: Republic of Kenya, KNBS, 2009 Population Census Data
Declining arable land per household in agriculture

Figure 1: Area cultivated per household
Kenya: Newspaper headlines -- rising land conflicts

Man hacks four family members to death over land
Land issue takes centre stage in campaigns
Poll: Voters believe leaders won't solve land issue
Jubilee promises to tackle land question
Catechist kills woman over land dispute
Two land Bills set to end historical land rows
Politicians told to keep off land issue
Kibaki finally gazettes land commission
Land grab or development opportunity?

Eleven killed in violence over land in Kenya
Kenya: MPs to Lead Squatters Back to Farms
'At least 40 killed' in deadly Kenya land clashes
Proposed Kenya-Qatar Land Deal Stirs Controversy
Why land is a campaign issue
11 killed in fresh violence over land in Kenya
Kenya's problems are rooted in the land
Qatar looks to grow food in Kenya
Unsustainable agricultural intensification

Figure 4: Net crop income per hectare cultivated

Sustainable intensification

Unsustainable intensification

persons/sq km
### Proportion of population facing unsustainable agricultural intensification in Kenya

<table>
<thead>
<tr>
<th>Population density (persons/km² of arable land)</th>
<th>% of population (excluding urban areas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 &lt; \text{den} \leq 200$</td>
<td>36%</td>
</tr>
<tr>
<td>$200 &lt; \text{den} \leq 400$</td>
<td>26%</td>
</tr>
<tr>
<td>$400 &lt; \text{den} \leq 600$</td>
<td>16%</td>
</tr>
<tr>
<td>$600 &lt; \text{den} \leq 800$</td>
<td>8%</td>
</tr>
<tr>
<td>$800 &lt; \text{den}$</td>
<td>14%</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Healthy soils are the foundation of food production

MONTPELLIER PANEL DECEMBER 2014
NO ORDINARY MATTER: CONSERVING, RESTORING AND ENHANCING AFRICA'S SOILS

2015 International Year of Soils
healthy soils for a healthy life
Factors depressing NUE of inorganic fertilizer use

- Low crop response rates to N
- Population growth
- Degraded soil poverty traps
- Deficiencies in SOM; micronutrients; acidification
- Reduced fallows/soil mining
- Land pressures/diminished land sizes
Effects of SOM & pH on agricultural intensification

<table>
<thead>
<tr>
<th>Soil Acidity Regime</th>
<th>Soil Organic Carbon Regime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (&gt; pH5.5)</td>
<td>High (&lt; pH5.5)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Maize field size (ha)</td>
<td>0.21</td>
</tr>
<tr>
<td>Kgs of maize per kg of N</td>
<td>96.64</td>
</tr>
<tr>
<td>Kgs of maize per kg of basal N</td>
<td>172.56</td>
</tr>
<tr>
<td>Kgs of maize per kg of top-dress N</td>
<td>128.10</td>
</tr>
<tr>
<td>Kgs of maize per kg of fertilizer</td>
<td>22.44</td>
</tr>
<tr>
<td>Kgs of maize per kg of basal fertilizer</td>
<td>33.18</td>
</tr>
<tr>
<td>Kgs of maize per kg of top-dress fertilizer</td>
<td>32.81</td>
</tr>
</tbody>
</table>
Policy implications

1. Raise public investment in research and development, and extension programs to enable farmers to use fertilizer more efficiently

2. Reconsider targeting guidelines to achieve more equitable development impacts

3. Greater political will for ensuring that government programs go the intended beneficiaries
   - Devolution may be a blessing or a curse
Standard structural transformation model may be a poor fit for some parts of Africa

1. Rising rural population densities
   - Declining land sizes and unsustainable forms of agricultural intensification
   - Unsustainable forms agricultural intensification
   - Degraded soil-induced poverty traps

2. Rapid changes in farm structure associated with the expansion in recent years of “emergent” farmers
   - One-way direction flow of employment from farm to off-farm sectors may not generally apply in Africa
   - Farm structure may be changing rapidly
   - Is small still “beautiful”? 
One-way directional farm to off-farm employment may not generally apply in Africa

- Rural and urban-based groups engaged primarily in non-farm employment may have incentives to own and invest in land and farming
- They have a relative advantageous position to do so after having overcome constraints related to:
  - Access to capital; management expertise; social entré; ability to navigate complex traditional and/or statutory land institutions
## Farm structure in Kenya

<table>
<thead>
<tr>
<th>Land under cultivation category</th>
<th>Number of farms '000</th>
<th>Share of farms (%)</th>
<th>Share of landholding (%)</th>
<th>Share of net crop production (%)</th>
<th>Share of net farm production (%)</th>
<th>Share of crop production sales (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ha and below</td>
<td>3,735.10</td>
<td>71.80</td>
<td>34.39</td>
<td>40.83</td>
<td>38.67</td>
<td>33.42</td>
</tr>
<tr>
<td>above 1 to 5 ha</td>
<td>1,388.34</td>
<td>26.69</td>
<td>56.36</td>
<td>52.68</td>
<td>54.44</td>
<td>53.89</td>
</tr>
<tr>
<td>above 5 to 20 ha</td>
<td>74.09</td>
<td>1.42</td>
<td>8.36</td>
<td>5.83</td>
<td>6.17</td>
<td>11.03</td>
</tr>
<tr>
<td>above 20 ha</td>
<td>4.64</td>
<td>0.09</td>
<td>0.89</td>
<td>0.66</td>
<td>0.72</td>
<td>1.66</td>
</tr>
<tr>
<td>Total</td>
<td>5,202.17</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Available national datasets are unsuitable to understand changes in farm structure

1. Never had agricultural census since independence
2. Sample proportional to population and tend to systematically under-sample large farms
3. Often exclude non-smallholder farming sectors by default or design
4. Tend not to prompt urban households about farmland they may cultivate or own away from their main urban residences
## Characteristics of medium scale farmers

### Mode of entry into medium-scale farming status

<table>
<thead>
<tr>
<th></th>
<th>Zambia</th>
<th>Kenya</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Growth from small-scale</td>
<td>Acquisition of land</td>
</tr>
<tr>
<td></td>
<td>farming</td>
<td>from non-farm employment</td>
</tr>
<tr>
<td></td>
<td>(=118)</td>
<td>(n=164)</td>
</tr>
<tr>
<td>% of cases</td>
<td>42</td>
<td>58</td>
</tr>
<tr>
<td>% men</td>
<td>92.9</td>
<td>91.4</td>
</tr>
<tr>
<td>Year of birth</td>
<td>1966</td>
<td>1960</td>
</tr>
<tr>
<td>Years of education</td>
<td>8.2</td>
<td>11.0</td>
</tr>
<tr>
<td>of head</td>
<td>32.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Have held a job</td>
<td>5.8</td>
<td>59.6</td>
</tr>
<tr>
<td>other than as a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>farmer (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formerly or currently employed by the public sector (%)</td>
<td>14.0</td>
<td>22.6</td>
</tr>
<tr>
<td>Initial landholding size when started farming (ha)</td>
<td>28.8</td>
<td>106.6</td>
</tr>
<tr>
<td>Current landholding size (ha)</td>
<td>38.2</td>
<td>74.9</td>
</tr>
<tr>
<td>% of land currently under cultivation</td>
<td>46.9</td>
<td>24.7</td>
</tr>
<tr>
<td>Decade when land was acquired</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1969 or earlier</td>
<td>3.9</td>
<td>1.1</td>
</tr>
<tr>
<td>1970-79</td>
<td>6.7</td>
<td>5.1</td>
</tr>
<tr>
<td>1980-89</td>
<td>14.8</td>
<td>7.4</td>
</tr>
<tr>
<td>1990-99</td>
<td>32.2</td>
<td>23.8</td>
</tr>
<tr>
<td>2000 or later</td>
<td>42.0</td>
<td>63.4</td>
</tr>
</tbody>
</table>
Small- vs medium- scale farms’ productivity

Figure 1: Land productivity
Net value of crop production per hectare planted

Figure 2: Labor productivity
Net value of crop production per unit of labor

Figure 3: Total factor productivity

Figure 4: Production efficiency

......Small may not be that beautiful after all...
Why is small not beautiful?

1. Limitation in the past studies - overcome them:
   - Explore the IR hypothesis over a much wider range of farm sizes
   - Measure productivity in different ways for robustness checks
   - Account for both labor and fixed costs

2. Small has become way too small - soil degradation

3. Modern technology enabling medium-scale farms to break away from past disadvantages
Small- & medium-scale production costs

Figure 5: Aggregate production costs

Figure 6: Production costs by components

Figure 7: Labor costs by components
Policy implications

1. Production efficiency, while relevant, should not be the ONLY factor in guiding agricultural and land policies
   • Which scale has the largest multiplier and employment effects?
   • Which scale has the highest marginal propensity to consume?

2. All depends on the government’s development objective:
   • Production for domestic food self sufficiency and export market?
   • Broad based growth for reduced food insecurity and poverty reduction?
Policy implications

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   • Which scale has the largest multiplier and employment effects?
   • Which scale has the highest marginal propensity to consume?

2. All depends on the government’s development objective:
   • Production for domestic food self sufficiency and export market?
   • Broad based growth for reduced food insecurity and poverty reduction?
Domestic “land grabs” may not translate into investments in farm production

• Emergent investors have limited liquidity and make investments in a phased-in manner, starting with land

• Expected returns to land market speculation may in some cases be higher than for agricultural activities

• Part of the speculative calculus depends upon future state investments – e.g. electricity, paved roads, etc.

• May be least motivated to rent out the land due to tenure insecurity
Conclusion

• As Harris and Orr (2013) ask

  • ... are most farms becoming, or have many already become, “too small” to generate meaningful production surpluses and participate in broad-based inclusive agricultural growth processes given existing on-shelf production...
Conclusion

• Land policies will determine whether millions of rural Kenyans will make a decent livelihood
  • How supportive the land allocation and agricultural policies are to smallholders

• African leaders may soon realize that political stability will depend on how the remaining land is distributed and the profitability of family farming
TO-DOLIST
NOTHING
Acknowledgements