Land Degradation, Low Agricultural Productivity and Poverty in Sub-Saharan Africa – Overcoming the Spiral

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The Problems (1)

• Land degradation, low agricultural productivity and poverty are major problems in sub-Saharan Africa (SSA):
  – Serious degradation judged to affect 1/5th of agricultural land in SSA between 1945 and 1990
  – Soil erosion and fertility depletion are major problems
    • Estimated annual productivity losses: <1% to 9%
    • NPV of current and future losses typically 2-3% of agricultural GDP, but much higher in some countries
    • Soil fertility mining provides as much as one-third of farm income
Based on trends in declining biomass (NDVI), excluding areas where rainfall trends explain it, about 10% of the area of SSA – mostly uncultivated land – degraded between 1982 and 2003.

Source: Vlek, et al. (2008)

The Problems (2)

– Agricultural productivity is stagnant in most of SSA, which is falling farther behind other regions:
The Problems (3)

– Poverty is increasing in SSA while falling in most other developing countries:

These problems fuel concerns about a downward spiral:

This may be driven by population growth

Or by other problems

Improved technologies and institutions can help overcome the spiral

Worsened by climate change

Improvements in markets, public and private investments, and supportive policies are also critical
Overcoming the Poverty – Degradation Spiral (1)

- There are many examples of success in SSA:
  - Re-greening of the Sahel since early 1980s

![Graph showing trends in NDVI from 1982 to 2003.](image1)

Source: Herrmann, et al. (2005)

- In many areas this is due not only to improved rainfall

![Graph showing trends in residual NDVI (not explained by rainfall trends) from 1982 to 2003.](image2)

Herrmann, et al. (2005)

Overcoming the Poverty – Degradation Spiral (2)

- Reasons for re-greening in Sahel (hypotheses)
  - Response by communities/households to famines
  - Depleted livestock herds → recovery of vegetation
  - Improved land and tree tenure security
  - Development programs and policies
Overcoming the Poverty – Degradation Spiral (3)

- Other success stories in SSA:
  - “More people – less erosion” in Machakos, Kenya
  - Soil and water conservation in drylands of West Africa and Ethiopia
  - Agro-forestry in eastern and southern Africa
  - High value crops, dairy and improved land management in Central Kenya
  - Conservation agriculture in Zambia
  - Fertilizer micro-dosing in western and southern Africa
  - Targeted input subsidies in Malawi
  - Farmer-led agricultural advisory services in Uganda

Overcoming the Poverty – Degradation Spiral (4)

- Elements of success:
  - Farmers’ motivation to improve their livelihoods
  - Secure (not necessarily private or titled) resource tenure
  - Access to markets, infrastructure, and services
  - Appropriate research and technical assistance
  - Profitability of technologies in near term
Challenges and Opportunities for the Future

• Major trends affecting outlook in SSA:
  – Rising food prices → need for & higher returns to increased investment in agriculture
  – Climate change → need and opportunities for adaptation and mitigation strategies
  – Economic growth and urbanization in SSA → opportunities for higher value agriculture, but also threats (esp. in peri-urban areas)
  – Market liberalization → increased opportunities and need for private sector development, farmer organizations
  – Decentralization → potential to increase effectiveness of governance & better serve the poor, but favorable outcomes not assured

• The bottom line: There are many pathways out of the downward spiral, but achieving these requires effective policies and investment strategies, facilitating local initiative

Trends in Relative “Greenness” (NDVI), 1982-2003

Red = increasing NDVI
Blue = decreasing NDVI

Source: Vlek, et al. (2008)