Fertilizer profitability in East Africa: A Spatially Explicit Policy Analysis

Zhe Guo, Jawoo Koo and Stanley Wood
International Food Policy Research Institute
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About HarvestChoice

• **Purpose:** To compile, harmonize, generate, and disseminate public goods information on the potential payoffs to smallholder farmers in sub-Saharan Africa and South Asia - from policies and strategic investments that raise the productivity and profitability of cropping systems, and that promote the commercialization of smallholder agriculture.

• **Project period:** October 2006 to December 2009

• **Budget:** US$4.7M (grant increased in 2007)

• **Management:** Jointly implemented by IFPRI (co-PI, Stanley Wood) and InSTePP, UMN (co-PI, Philip Pardey)
Methodology overview

Transport cost surface
- Road networks
- Road types
- Border locations
- Ports locations
- Land cover types
- Elevation and Slope

Fertilizer delivery cost
- Fertilizer landed price
- Bagging fee
- Border crossing fee
- Loading cost
- Regulation cost
- Storage cost
- Marketing Margins

Maize delivery cost
- “Farm” and market locations
- Market maize price
- Farm to market transport costs
- Border crossing fee
- Border crossing fee
Urea delivery cost U.S.$/Ton urea
Urea delivery cost: scenario 1
Port landed Urea price decreases 20% and 50%
Urea delivery cost: scenario 2

Road transportation cost reduces 20% and 50%
Urea delivery cost: scenario 3

Border-crossing cost reduces 20% and 50%

Baseline

Border-crossing cost reduces 20%

Border-crossing cost reduces 50%
Maize Transportation cost

- Assumptions:
  1. Farm-gate produced maize is transported to 40 target cities only
  2. Farm-gate maize transported to the city that can benefit farmers the most

3. Farm-gate maize price = Target city price – maize trans cost
Value Cost Ratio maps

40 kg N VCR

10 kg N VCR
Optimal VCR and its fertilizer application level (baseline scenarios)