Impact evaluation of land projects: Towards an integrated approach
Outline & main message

Opportunities from methodological innovations
- Consider a wider range of interventions (legal or institutional change)
- Focus on broader outcomes (registered transactions by gender, land cover)
- Integrate spatial relationships (geo-referenced hh surveys; location)
- Experiment with incremental changes (e.g. for fee levels)
- Establish a basis for global & local reference, competition, and transparency

Providing a basis for long-term engagement
- Identify and address risks (inclusion, sustainability) in implementation
- Respond to emerging challenges (land use planning)
- Make case for action to policy makers (losses & potential benefits)
- Better use available instruments: Legal/regulatory (DPO) & interventions (P4R)

Need to work together to institutionalize this
- New PRR to lay out opportunities & new areas more broadly
- Bank role in SDGs and DB provide a good basis
- Enormous demand to feed this into country strategies
I. Methodological innovations
Use administrative data

Credit market effects rarely observed
• Not the most immediate in rural areas
• Need large samples to get power
• May go together with corruption

India: Registry computerization roll-out
• Phase in over 1999-2005 387 offices (SROs)
• Quarterly data on all Bank credit 1995-2007
• Annual registration data by SRO

Evidence of impact in urban, not rural areas
• 10% increase in no of Bank loans
• 30% increase in no of mortgages
• Impact on firm growth not explored (yet)

Many land interventions rolled out gradually
• Publicity of registry data
• Registration fees (preferential for women)
• Access points for services
• Legal changes in some jurisdictions

Outcome variables
• Population or firm censuses
• Registry data
• Governance

Interaction of interventions
• Population or firm censuses
• Registry data
• Governance
Impacts of legal change

India’s Hindu Succession Act
- Inheritance a key way of land access globally
- But often biased against women
- Very robust identification strategy (HH FE; H-M)

Strong impacts in various dimensions
- Increased likelihood to inherit (not yet equal)
- Bargaining power (bank account)
- Daughters’ marriage
- Educational outcomes of next generation

Substantive Implications
- Access to land not only via titling
- Rights may not be exercised for many reasons
- Gender dimension still too often neglected

Methodological implications
- Scope for awareness raising
- Choice of marital property regime
Link spatial, survey & remote sensing data

Lack of public large farms data a problem
- Creates reputational risk for investors
- Speculation: Undermines ability to plan
  Support to statistics office can go long way

Put issue & policies in perspective
- 1.3 mn. ha in large farms; avg. size 200 ha
- 97% of farms (90% of area) to Ethiopians
- Only 55% of transferred land used
- 2007/8 boom fizzled out; back to early 2000s
- Yields highest for 10-20 ha in most crops
- Social impact modest at best (1 job/20 ha)

Link farm boundaries to utilization
- Free sentinel imagery to monitor crop cover
- Can provide basis for low-cost app - past
- Assess compliance with contract conditions
- Possibly also encroachment on smallholders
- Scope for admin. action

Legend
- Kebele boundary 2014
- Yield (q/ha) by quintile
  0 - 20
  21 - 40
  41 - 60
  61 - 80
  81 - 100
- Region boundary
- Buffer around Maize farm (14)
  Distance (km)
  0
  50
  100
  150
Work with private sector

Brazil’s Forest Code
- Each property to keep min. area under forest
- But there was no enforcement
- Deforestation at alarming proportions

Establishing a credible monitoring system
- Establishment of Environmental Registry
- Real time monitoring of forest threat (Landsat)
- Backed by risk-based site visit system
- Blacklist of municipalities

Use by private suppliers (beef & soy)
- Transparent monitoring
- Local governments play a key role
- Indiv. Producers/companies held accountable
- Link to public funds (credit)
- Consistent compliance monitoring
- Now used for determining rights (Terra Legal)
Do small pilots with random treatment

Urban informality a key issue in Tanzania
• 70% informal, despite Bank CIUP program
• CRO (formal tenure) unaffordable at $400-500
• Little demand for intermed ‘residential license’
• Would people/women appreciate CRO?

Experiment in 2 sub-wards
• Cad. survey in 50 randomly selected blocks
• NGO-led info campaign & payment scheme
• Voucher lottery to cut price to 20-100K TSh
• Gender-differentiated vouchers
• Baseline before (incl. who to put on CRO)

Surprising insights
• Even informal dwellers willing to pay
• Gender response to info (23%->89%; RL 5%)
• Complexity & politicization of process incredible
• Need high level policy dialogue
Highlight fiscal impacts

Own-source revenue from land underutilized
- Land rent/council rates a key local tax
- But issues leading to revenue loss:
  - Valuation outdated
  - Rolls not updated
  - Collection is deficient

Enormous potential of simple computerization
- Bank-supported LGRCIS
  - Local Gov’t Revenue Coll.&Info Syst.
  - Coverage: Image-based verification/rating
  - Collection: Automated billing
- Jump in local revenue (e.g. 5 times in Arusha)
- Now in 7 cities – want to scale up to 80

Technology offers options for scale-up
- Satellite imagery to improve coverage/updating
- Apply mass valuation techniques for currency

Also opportunities to address informality?
- Title (CRO) costs $400-500/plot
- Need for high prec. survey; difficult

How can we address this?
- Rewrite & streamline manual to lower cost
  - Use LGRIS-type index map as baseline
  - Abandon high-precision survey & beacons
  - Regularization, adjudication, display on top
  Brings cost to about $10/plot

This is currently tested in 3 towns
- Can help get vigor into land debate
- Make documentation accessible to everybody
- Could be self-sustaining even in Tanzania
Use global data to show of opportunities

Land information gaps undermine planning
- Limited coverage & paper maps only
- Infrastructure planning/construction difficult
- Basis for corruption

.. and public revenue generation
- Coverage gaps due to self-declaration
- No automated billing
- Rates often not up to date

Getting this information is easy technically
- Automated 3D image from satellite imagery
  - Building footprints & heights
  - Land use classification
  - Current rates are $300/km²
- Why is it not happening?
  - Resistance by vested interests?
  - Lack of information?

<table>
<thead>
<tr>
<th>2015 ‘Doing Business’ data</th>
<th>World</th>
<th>SSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most private plots in capital reg’ed</td>
<td>0.22</td>
<td>0.04</td>
</tr>
<tr>
<td>Most p. plots in capital mapped</td>
<td>0.46</td>
<td>0.13</td>
</tr>
<tr>
<td>Maps paper only</td>
<td>0.44</td>
<td>0.81</td>
</tr>
<tr>
<td>No. of countries</td>
<td>189</td>
<td>47</td>
</tr>
</tbody>
</table>

Provide information via local institutions
- Quantify potential tax gains without rate change
- Link to land values to show effective tax rate
- Show benefits for landowners (updated info/WTP)
- Generate peer pressure & good precedents
II. Country examples
Rwanda: National program can have impact

Gradual, evidence-based approach

- Political will & regular follow up on progress
- Extensive piloting (15K parcels 2007-10)
- Low-cost part. approach ($5-6/parcel)
- Adapting/expanding laws in line with need

Household level impacts

- Investment doubled – tripled for female heads
- Greater female ownership on average
  - Negative for those not legally married in pilot
  - Changed regulation to address this
- Land market activation

How was this possible?

Source: LAIS data

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Kigali</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parcels regularized (mn.)</td>
<td>11.42</td>
<td>0.39</td>
</tr>
<tr>
<td>Area reg’d. (1000 km²)</td>
<td>20.56</td>
<td>0.70</td>
</tr>
<tr>
<td>Share agric.</td>
<td>0.64</td>
<td>0.51</td>
</tr>
<tr>
<td>Yet unclaimed</td>
<td>0.16</td>
<td>0.12</td>
</tr>
<tr>
<td>Female (co)owner</td>
<td>0.86</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Awareness campaign =>

<= Field adjudication

Locate parcels on index map =>

<= Publicity

Processing of documents =>
Benefits go well beyond the household

Facilitates higher property tax coverage
- Now data sharing with Rwanda Revenue Auth’y
- In the past based on self-declaration
- US$ 5.9 mn/a increment just by covering Kigali’s residential plots – vs. US$ 50 mn total prog cost
- Scope for simulating alternative tax regimes

Created a basis for mortgage lending
- US$ 2.6 bn by end 2015
- Not only residential (450 mn against ag. land)
- Spatial distribution quite equal (see right)

<table>
<thead>
<tr>
<th>Mortgages, Dec. 2015</th>
<th>Total</th>
<th>Kigali</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no</td>
<td>49,694</td>
<td>19,285</td>
</tr>
<tr>
<td>Amount (US$ bn)</td>
<td>2.60</td>
<td>1.66</td>
</tr>
<tr>
<td>... res. land</td>
<td>1.40</td>
<td>1.06</td>
</tr>
<tr>
<td>... agric. land</td>
<td>0.45</td>
<td>0.12</td>
</tr>
<tr>
<td>... comm. land</td>
<td>0.76</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Source: LAIS data

Basis to attract ag biz investment
- Identify land available for investors; lower risk
- Basis for rural & urban land use planning

<table>
<thead>
<tr>
<th>Act. &amp; potential land tax, Kigali</th>
<th>Resid.</th>
<th>Comm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxable parcels (1000)</td>
<td>132.47</td>
<td>4.70</td>
</tr>
<tr>
<td>Parcels that paid in 2015</td>
<td>39.90</td>
<td>1.08</td>
</tr>
<tr>
<td>Total payment (US$ mn)</td>
<td>2.06</td>
<td>0.13</td>
</tr>
<tr>
<td>Tax debt all parcels (US$ mn)</td>
<td>7.96</td>
<td>0.85</td>
</tr>
<tr>
<td>Increment (US$ mn)</td>
<td>5.90</td>
<td>0.71</td>
</tr>
</tbody>
</table>

Source: LAIS & RRA data

Source: Based on LAIS data
Non-registration of subsequent rural transactions may yet undermine the system

Admin data: Rural informality a challenge
- Share of registered transfers varies widely
- >50% of rural transactions informal
- Subdiv. restriction & flat US$ 40 reg. fee
- Also lower gender equality

Short term: Hiring of 419 sector-level staff
- Information campaigns
- SMS-based customer feedback

Experiment with INES to assess reasons
- Data on all transactions in 100 villages
- Information campaign
- Vouchers to reduce fees (to indiv.)
- Discussing other options

Input into longer-term strategy
- Rural vs. urban fees
- Registry self-sustaining financially
- Information campaign

<table>
<thead>
<tr>
<th>Share of reg. parcels formally transferred 2014/15</th>
<th>Kigali South</th>
<th>West</th>
<th>North</th>
<th>East</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential parcels % transferred/(\text{a})</td>
<td>6.23</td>
<td>0.93</td>
<td>0.33</td>
<td>0.72</td>
</tr>
<tr>
<td>... of which sale</td>
<td>5.64</td>
<td>0.33</td>
<td>0.15</td>
<td>0.28</td>
</tr>
<tr>
<td>Sale value ($/\text{m}^2)</td>
<td>39.4</td>
<td>9.92</td>
<td>14.4</td>
<td>12.4</td>
</tr>
<tr>
<td>Agric. parcels % transferred/(\text{a})</td>
<td>1.67</td>
<td>0.10</td>
<td>0.06</td>
<td>0.10</td>
</tr>
<tr>
<td>... of which sale</td>
<td>1.54</td>
<td>0.05</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>Sale value ($/\text{m}^2)</td>
<td>6.65</td>
<td>3.70</td>
<td>3.57</td>
<td>3.91</td>
</tr>
<tr>
<td>All: Female name</td>
<td>0.78</td>
<td>0.74</td>
<td>0.78</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Source: LAIS data
... many land registries in Africa like Malawi

Information on paper, inaccessible & closely guarded

- Everybody loses
- Creates insecurity & undermines investment
- Reduces revenue (who to bill?)
- Promotes bad governance, speculation, and rent-seeking

Magnitude are large – but something can be done
Make all information digital as a first step
Taking a strategic approach in Malawi

ANALYSIS TO MAKE CASE -> SCD/DPO

1. Digitize all estate leases to quantify issue
   • >20% of Malawi’s area (but 15,000 outside)
   • 65% are agricultural; lease fee < $1/ha
   • 74% expired & 15% unclear lease term
   • Imagery: 0.5 mn ha not utilized for agric.

2. Put size of issue on the table
   • US$ 50 mn lost gov’t revenue/a (5% of total)
   • Tenure insecurity: 12% prod. loss for women
   • This alone is large enough to finance program

3. Show integrated way forward
   • Field based verification & mapping
   • Inform regulations for estate lease renewal
   • Link to piloting of systematic regularization
   • Carefully evaluate & adjust
   • Draft regulations based on pilot experience
   • Scale up
Estates: Actual location vs. registered map
Taking a strategic approach in Malawi

POLICY OPTIONS

1. Regularize/update existing estates
   • Set realistic lease rates (linked to potential)
   • Establish procedure to update record/renew leases (incl. local community benefits)
   • Could even be initiated by estate owners or their successors

2. Address conflicts/non-operating estates
   • Dispute resolution mechanisms if overlaps
   • Balance of occupancy vs. ownership rights

3. Link to documenting communal tenure
   • TA for legal drafting
   • Possibly with piloting & real-time evaluation
   • DPO to reward for passage of regulations?
III. Implications
Knowledge sharing

New PRR: Focus on land as a ...
• Place of economic activity
• Factor of production
• Source of public goods
• Private asset
• In the context of new technology
• and a results-based approach

Enormous demand from countries
• Africa regional study

Capacity building in academia & Ministries
• Making data available; farm surveys
• Use & analysis of spatial & admin. data
• IE techniques for different policy issues
• Link to national policy monitoring & dialogue

South-South exchange
• Land conference
• PhD/MSc fellowships in land economics
Data to link local realities to global picture

GLOBAL
SDGs
Ownership/access
Perceived security:
• HH surveys: Residential & agric. by gender
Legal recognition
• Administrative data (see key variables)

‘Doing Business’ with 3 new elements
• Annual data on 189 countries; motivate reform
• Transparency
  Share of state land mapped/registered & public
  Disposition via auction & publicity of key contract details
• Effectiveness
  Interoperability (courts, banks, land acquisition)
• Inclusion
  Gender disaggregated monitoring
  Recognition & documentation of group rights
• Coverage
  Yes/no question only – link to admin. reports

LOCAL
Household surveys
• Causal impact & behavioral mechanisms
• Differentiation by poverty & gender
Administrative data & censuses
• Near real-time; zero marginal cost
• High granularity to compare admin. units
• Can include SMS-based customer feedback
Remotely sensed data
• Land cover, moisture, soil carbon standard
• Forward-looking & going back in time
Local analysis & monitoring
• Link systematic evidence to strategy/policy

Key variables from admin. data
• Area registered & mapped
• Share of land registered by women
• No. of registered transactions
• Land taxes received
• Individuals/area expropriated
• No. of land disputes (priv. & public)
Ensure this is available routinely in any country with a Bank/donor land project
Feed into country strategies & move to action

Opportunities are great
- Bank with regular dialogue at highest level
- Willingness to address issues exists
- Issues are viability, sequencing and risk
- Link policy (DPL) to pilots & monitoring system
- $$ for scale up if viable & sustainable method
- One success better than 7 failures

Impact evaluation a continuous process
- Document status quo in global perspective
- Quantify benefits from action
- Identify feasible steps (using new tools)
- Link tenure to land use & markets/private sector
- Show heterogeneity

Data a key obstacle
- Mainly admin (hh improved a lot already)
- Need to develop standard approaches
- Will help to build local capacity
- Can feed into global monitoring efforts
To sum up

Not addressing land causes countries to lose out on

- Government revenue & effective service provision
- Productivity, sustainability of land use, and structural transformation
- Land use planning, infrastructure construction & attracting private investment
- Inclusion, (gender) equality, and political stability

New data and tools allow quantification of tasks & impact

- Foregone tax revenue, effective land use (density vs. sprawl)
- Productivity gaps from tenure insecurity, overlaps, or failure of recognition
- Formal & informal market activity; investment differentiated by gender & assets

This can open the door to a more dynamic type of IE

- Looking at law, policy & regulations as well as specific interventions - sequencing
- Prioritized and results-oriented; real time & experimental rather than punctual & delayed
- The Bank’s dialogue & operational muscle provides an ideal basis for advancing this
- We look forward to partnering with you to make this a reality