Rwanda National Workshop on Natural Capital Accounting

Land Accounts: Progress, Key Findings, Next Steps

February 2017

Why Land Accounts?

- Land the basis for agriculture: 34% of GDP; 90% of jobs; 80% of rural population

- Land availability already a constraint to agricultural growth

- Rapid urbanization plans requires available land

- Trade-offs between different forms of land use calls upon enforcement of tenure security

- High population density forces land to be a scarce commodity

- Accounts help track land value trends & assess trade-offs

LAND ACCOUNTS: Process and Data Sources

- Land use data from LAIS (RNRA)

- Land cover data from RCMRD and RNRA

- Land value data from LAIS (RNRA)

- Economic & Population Statistics from NISR

- Information on land issues & challenges: EDPRS2, REMA, MINAGRI

- Technical analysis & data inputs through Technical Working Group

- Guidance from National Steering Committee

- Draft Land Accounts Doc shared with TWG, NSC, NISR

LAND ACCOUNTS: Overview Results 2014 - 2015

Overall Land Use, National Level - Opening Stock - 2014; Closing Stock - 2015
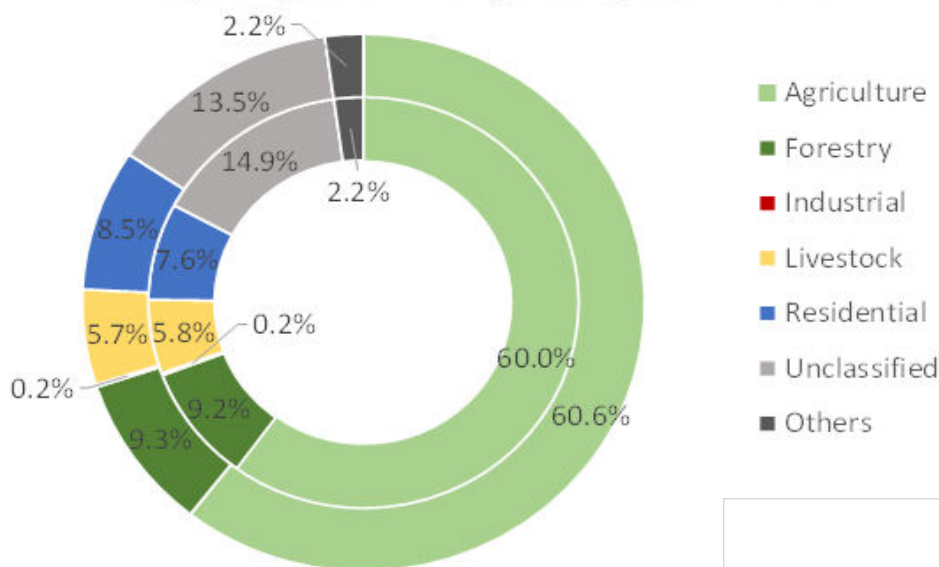
- About 70 % of land is in agriculture & forestry uses.
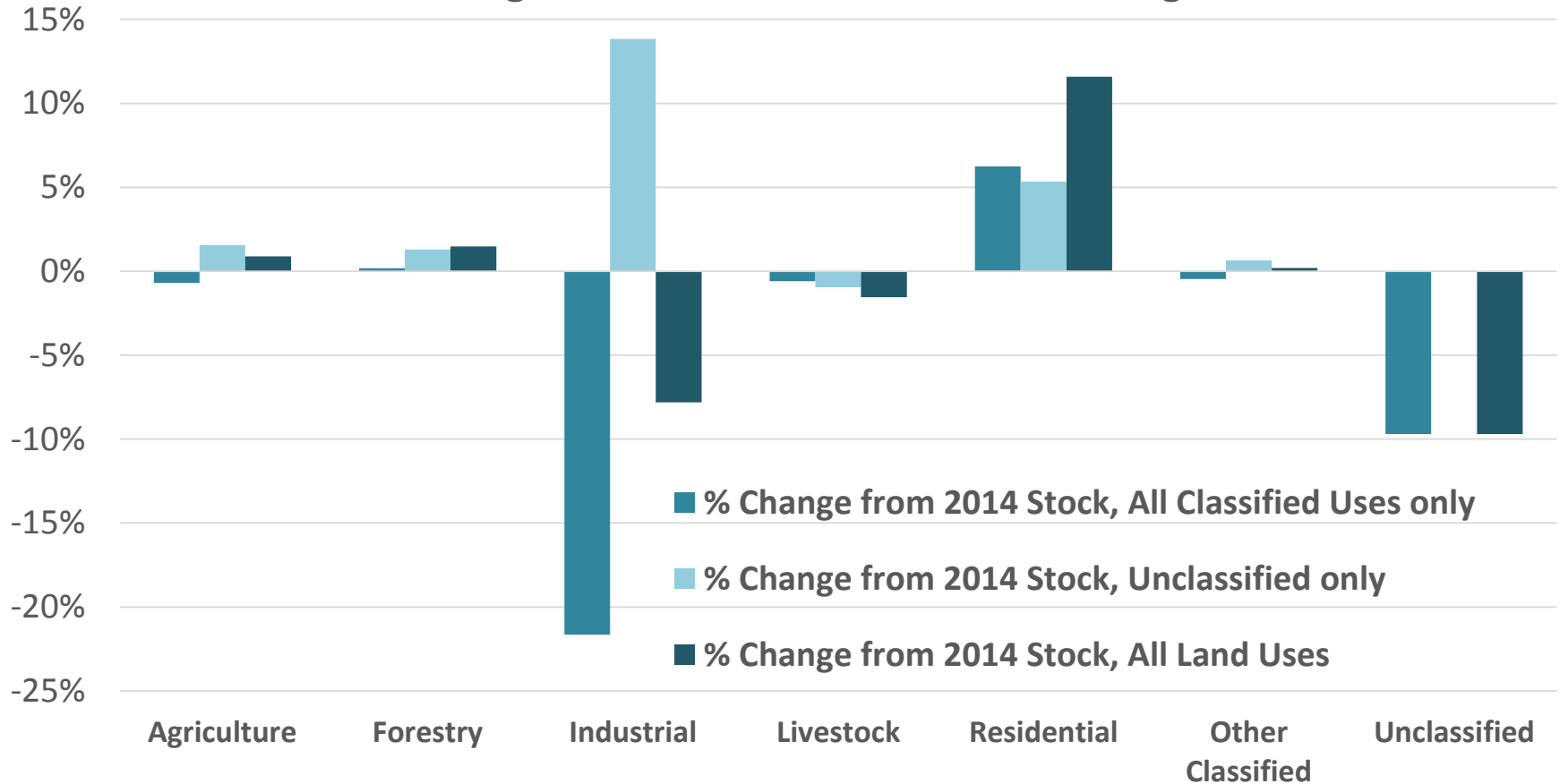- Residential & industrial represent relatively small shares

- Agricultural dominates in all provinces.
- Eastern: highest agric and livestock land uses.
- Southern & Western: more land allocated to forestry.
- Eastern: more land allocated to livestock.

Overall Land Use - Closing Stock 2015 - Provincial Comparison (in Hectares)
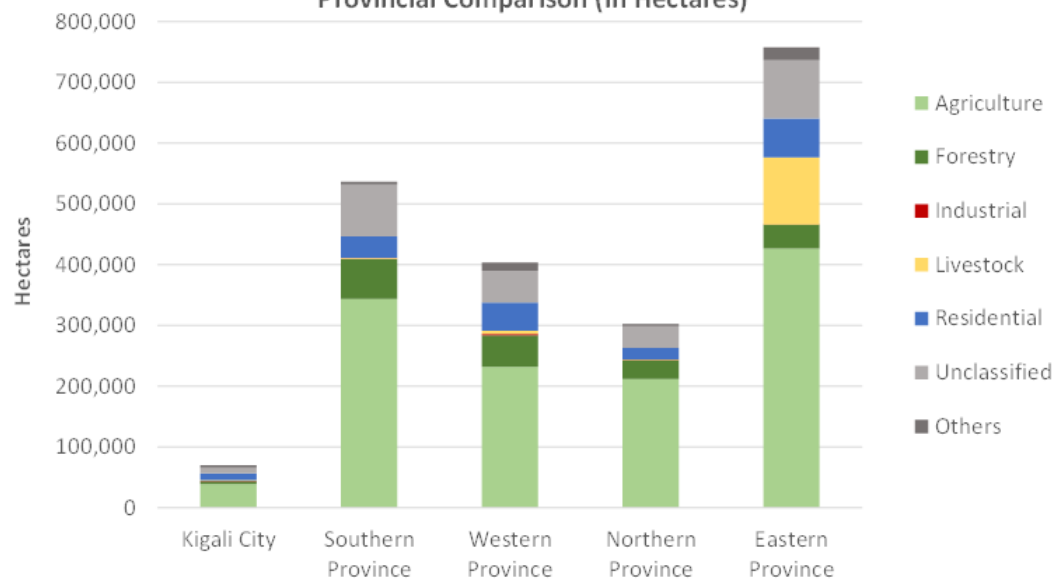
LAND ACCOUNTS: Land Use Change by Sector

Rwanda - Change in Land Use 2014 - 2015 - % Change from 2014

Legend:
- ■ % Change from 2014 Stock, All Classified Uses only
- ■ % Change from 2014 Stock, Unclassified only
- ■ % Change from 2014 Stock, All Land Uses

Categories: Agriculture, Forestry, Industrial, Livestock, Residential, Other Classified, Unclassified

- Most recorded "changes" not physical shifts but administrative moves from an unclassified state into a classified condition
- Most rapid changes in residential & industrial – but starting from very small base

LAND ACCOUNTS: Land Use Change by Province

Net Changes in Land Use 2014-2015 -
National and Provincial (in Hectares)
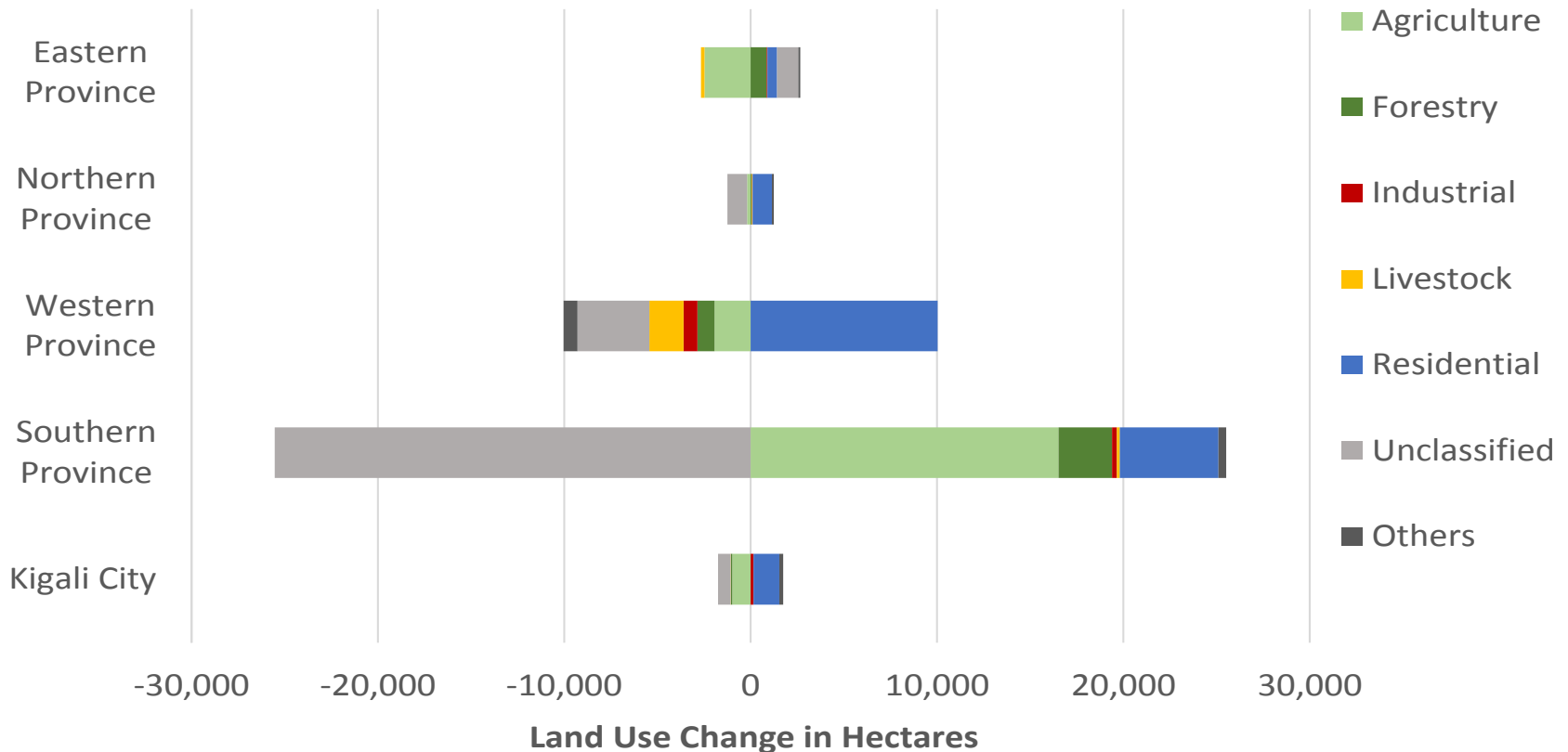
- Most changes moved land from unclassified to classified status
- Most land use changes recorded in LAIS occurred in Southern Province
- There were important shifts from Unclassified (and some other uses) into residential, particularly in Western province

LAND ACCOUNTS: Land Use Change, District Level

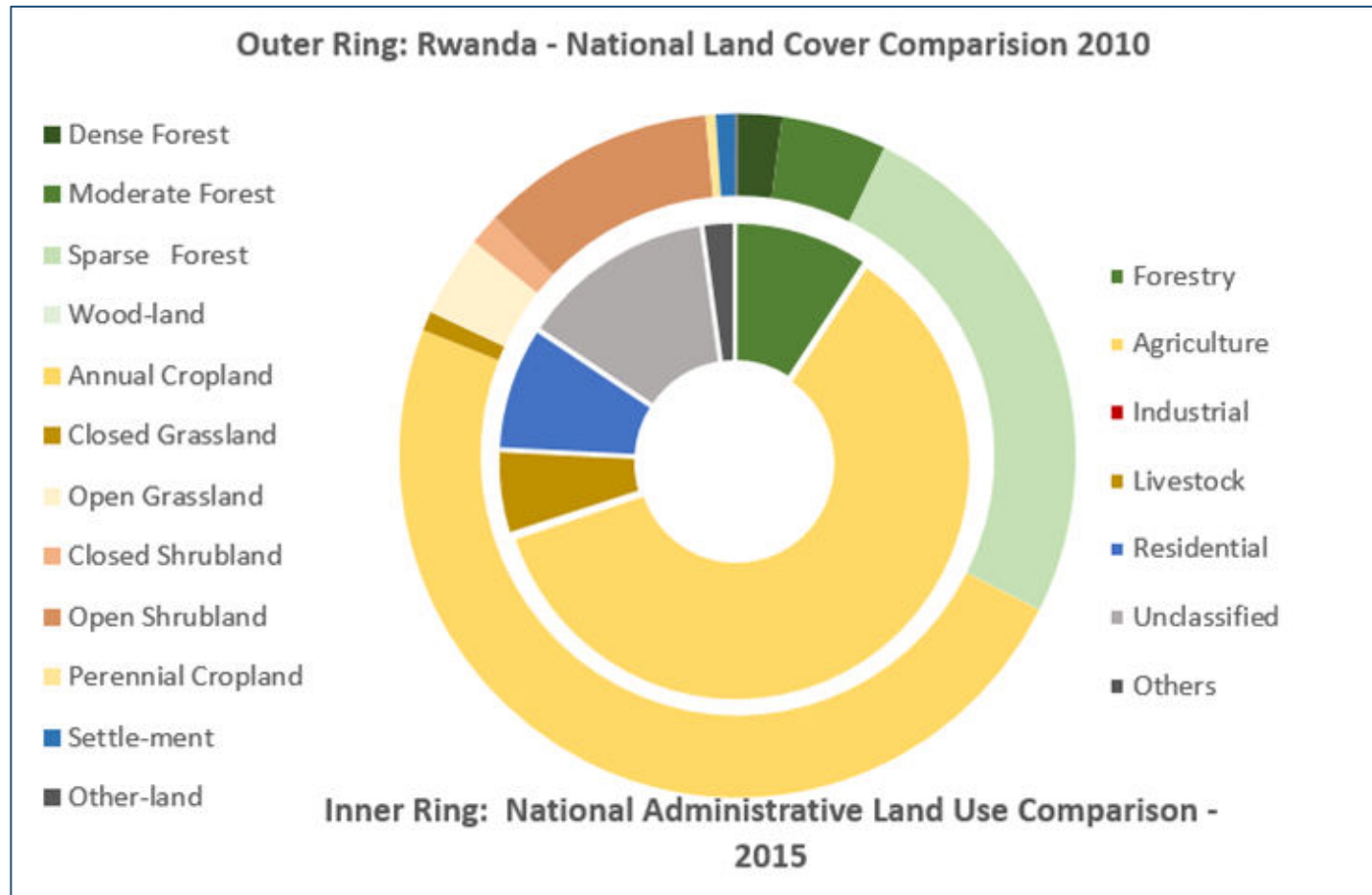Land Use Changes in Kigali City from 2014 to 2015
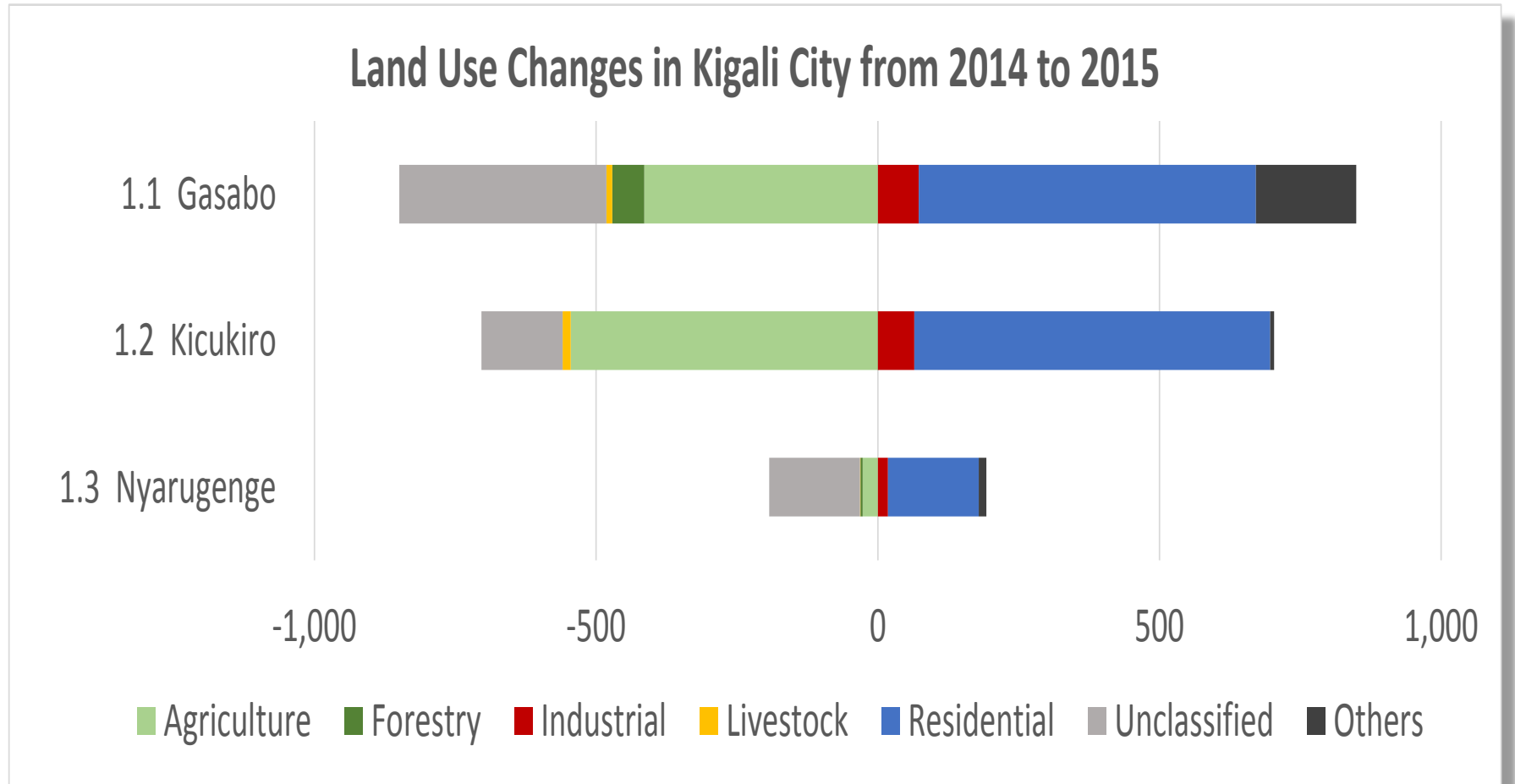
- Main changes: from agric & forestry into urban and industrial land uses
- Most of changes in Gasabo District ; Few changes in Nyarugenge District.
- Gasabo & Kicukiro: some reclassifications from unclassified into known land uses.

LAND ACCOUNTS: Change in Average Parcel Size

RWANDA - AVERAGE PARCEL SIZE BY PROVINCE
- Based on LAIS 2014 and 2015
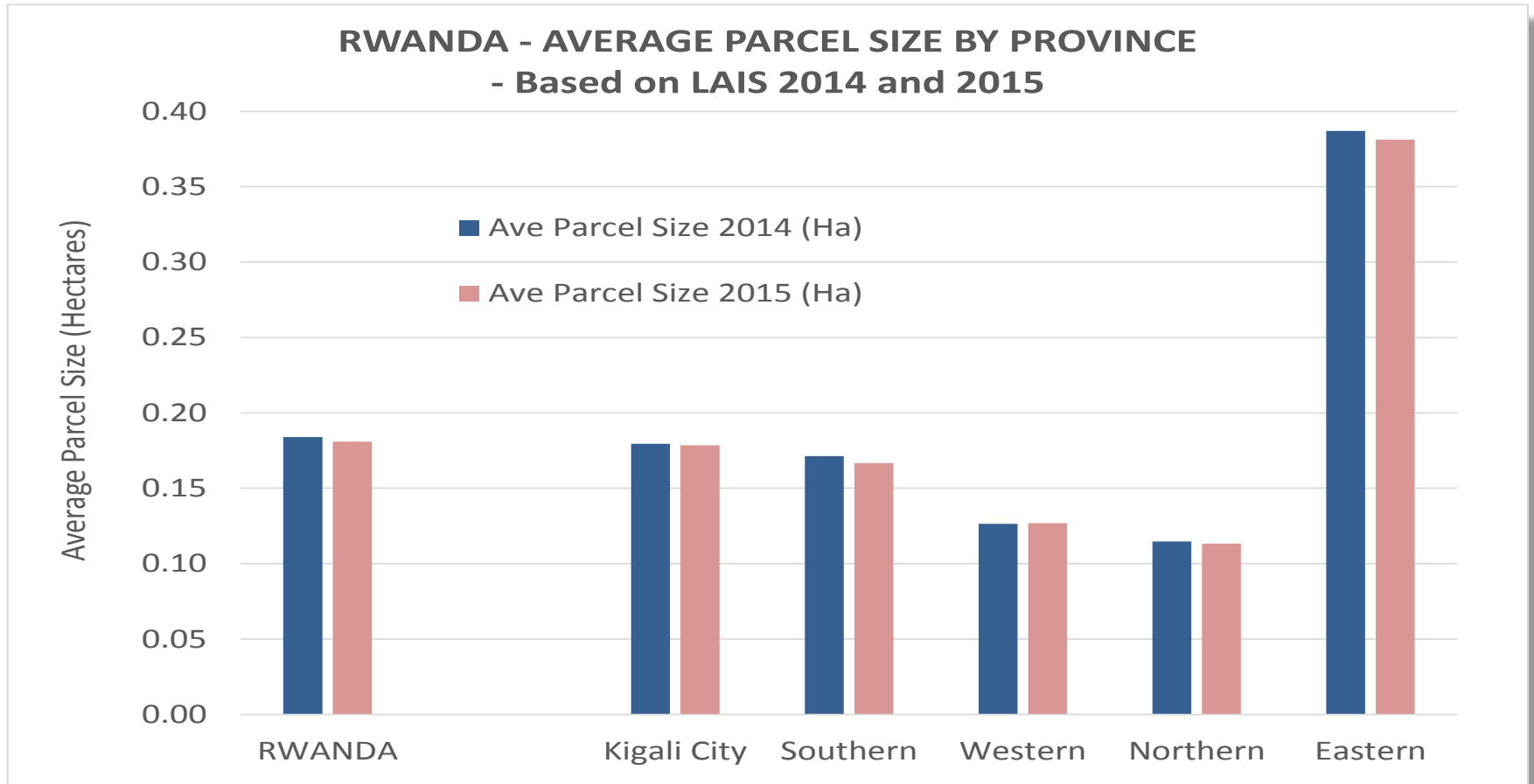
- Nationally, average parcel size showed slight decline in most places
- But, only 18 of 30 districts showed this decline in average parcel size
- Note, these are early results, the 2 year period is short for considering "trends"
- Issue deserves more investigation with more years of data, or district case studies

LAND ACCOUNTS – 'Land Cover' vs 'Land Use'; 2010 & 2015

Outer Ring: Rwanda - National Land Cover Comparision 2010

Legend (land cover):
- Dense Forest
- Moderate Forest
- Sparse Forest
- Wood-land
- Annual Cropland
- Closed Grassland
- Open Grassland
- Closed Shrubland
- Open Shrubland
- Perennial Cropland
- Settle-ment
- Other-land

Legend (land use):
- Forestry
- Agriculture
- Industrial
- Livestock
- Residential
- Unclassified
- Others

Inner Ring: National Administrative Land Use Comparison - 2015

- **Land cover =** based on biophysical properties, from remote sensing

- **Land use =** admin data in LAIS based on location, ownership, value, etc

- Need more harmonization of categories and definitions

- Note different time scale from land use data; results for 2015 in progress

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LAND ACCOUNTS – Land Cover for 1990, 2000, 2010

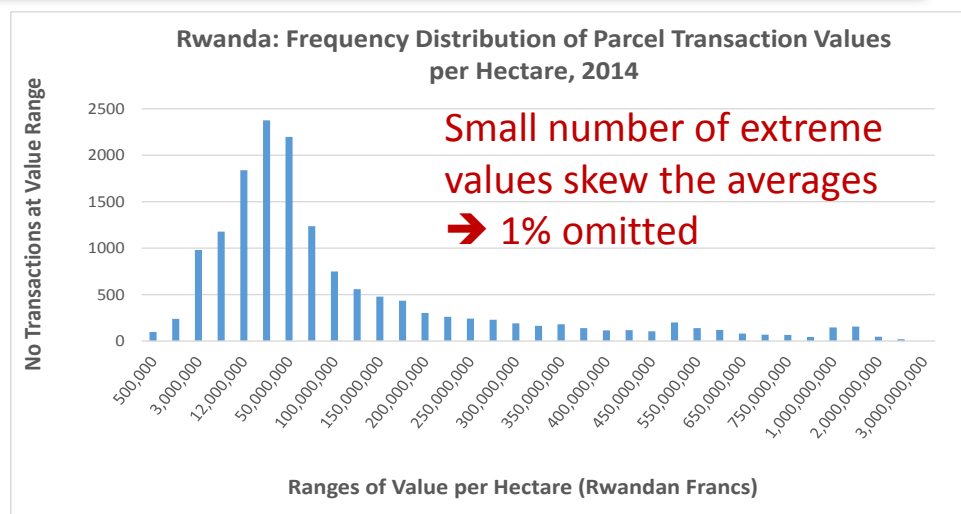## Rwanda - National Land Cover Comparision 1990 - 2000 - 2010
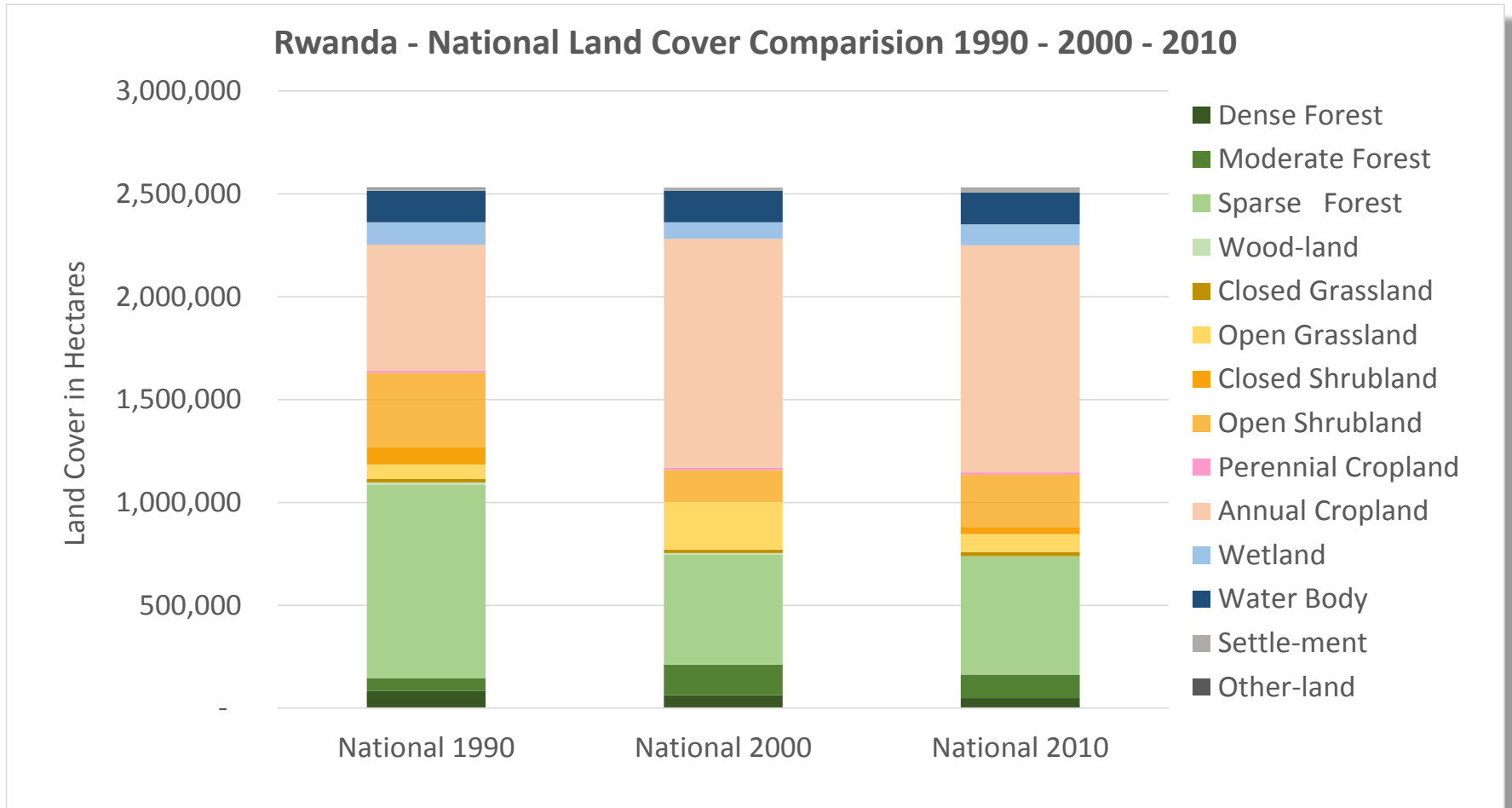
- Decline of woodland and an increase in cropland
- Area of dense forest declined by half over the 20 year period
- Area of sparse forest decreased
- Area of settlements doubled

LAND ACCOUNTS – Transaction Values - 2014

| LOCATION	No of Parcels Transacted	% of Total	Total Area of Transactions (Ha)	% of Total	Total Value of Transactions (M RwF)	% of Total	Province Average Transaction Size (Ha)	Province Ave Value/Ha (M RwF)
RWANDA 2014 - Summary of Parcel Transaction Data from LAIS								
KIGALI CITY	6,964	45%	677	17%	87,962	62%	0.10	130
SOUTHERN	2,200	14%	446	11%	6,508	5%	0.20	15
WESTERN	1,549	10%	259	6%	8,047	6%	0.17	31
NORTHERN	1,857	12%	216	5%	4,361	3%	0.12	20
EASTERN	2,950	19%	2,421	60%	34,948	25%	0.82	14
RWANDA	**15,520**		**4,020**		**141,825**		**0.26**	**35**

- Initial step toward monetary land accounts

- Transaction values from LAIS 2014

- Need to look further at data quality and consistency, then analyze 2015

- LAIS does not distinguish built up parcels from undeveloped land.

Rwanda: Frequency Distribution of Parcel Transaction Values per Hectare, 2014

No Transactions at Value Range

Ranges of Value per Hectare (Rwandan Francs)

Small number of extreme values skew the averages
➔ 1% omitted

High variability, highly skewed distribution

Max value/ha ~250 times greater than average

Min value less than 1/10 % of average

# LAND ACCOUNTS – Transaction Values By Province & District

Rwanda - Area Transacted and Average Transaction Value 2014
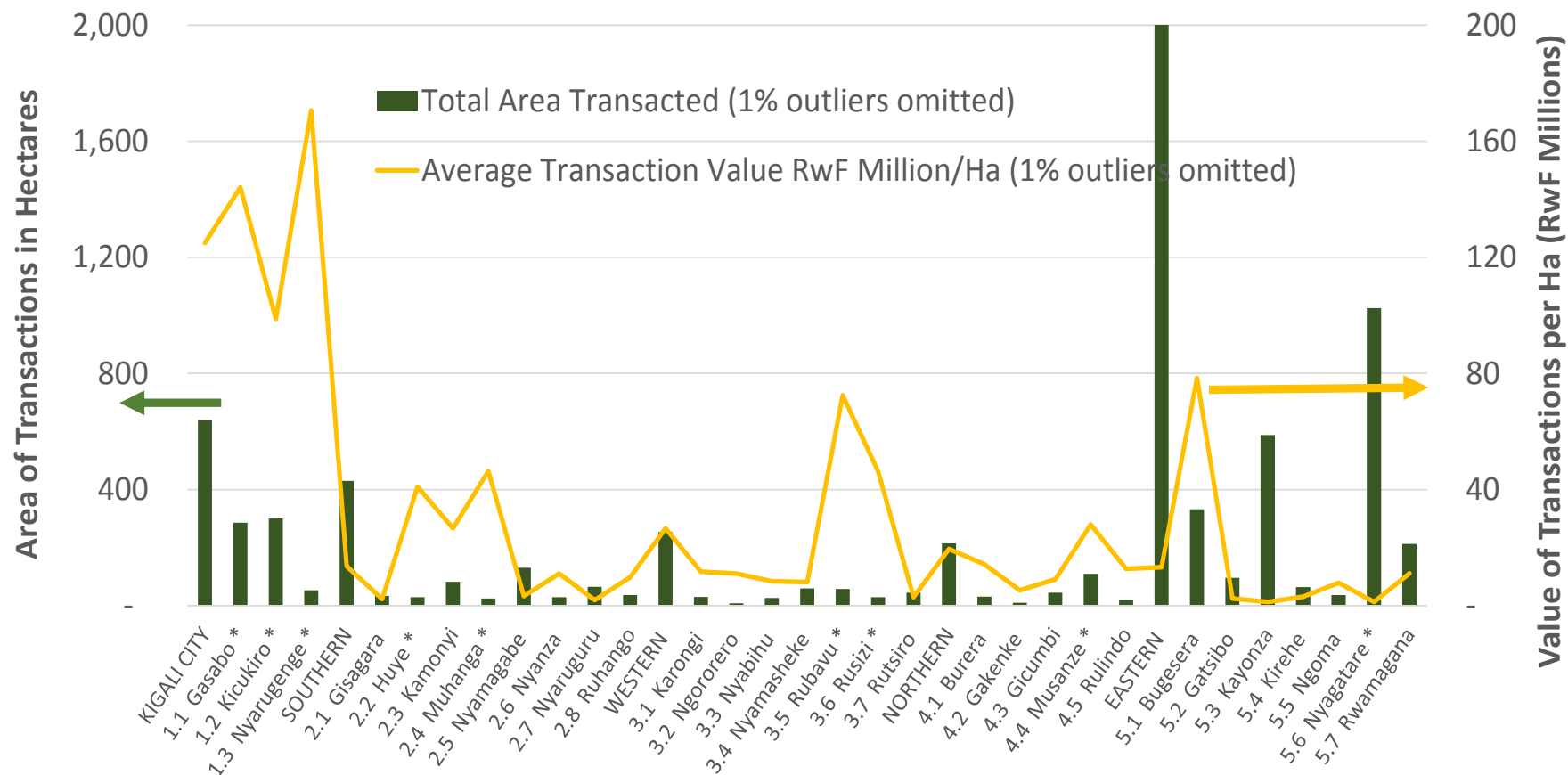
- Kigali City – average values five times higher than national average
- Urban districts (*) *generally* higher values and transactions than rural
- Eastern Province – lowest average transaction values, but most land transacted

LAND ACCOUNTS – Transaction Values By Land Use

Rwanda - Summary of Area and Value of Parcel Transactions in 2014, by LAIS Land Use
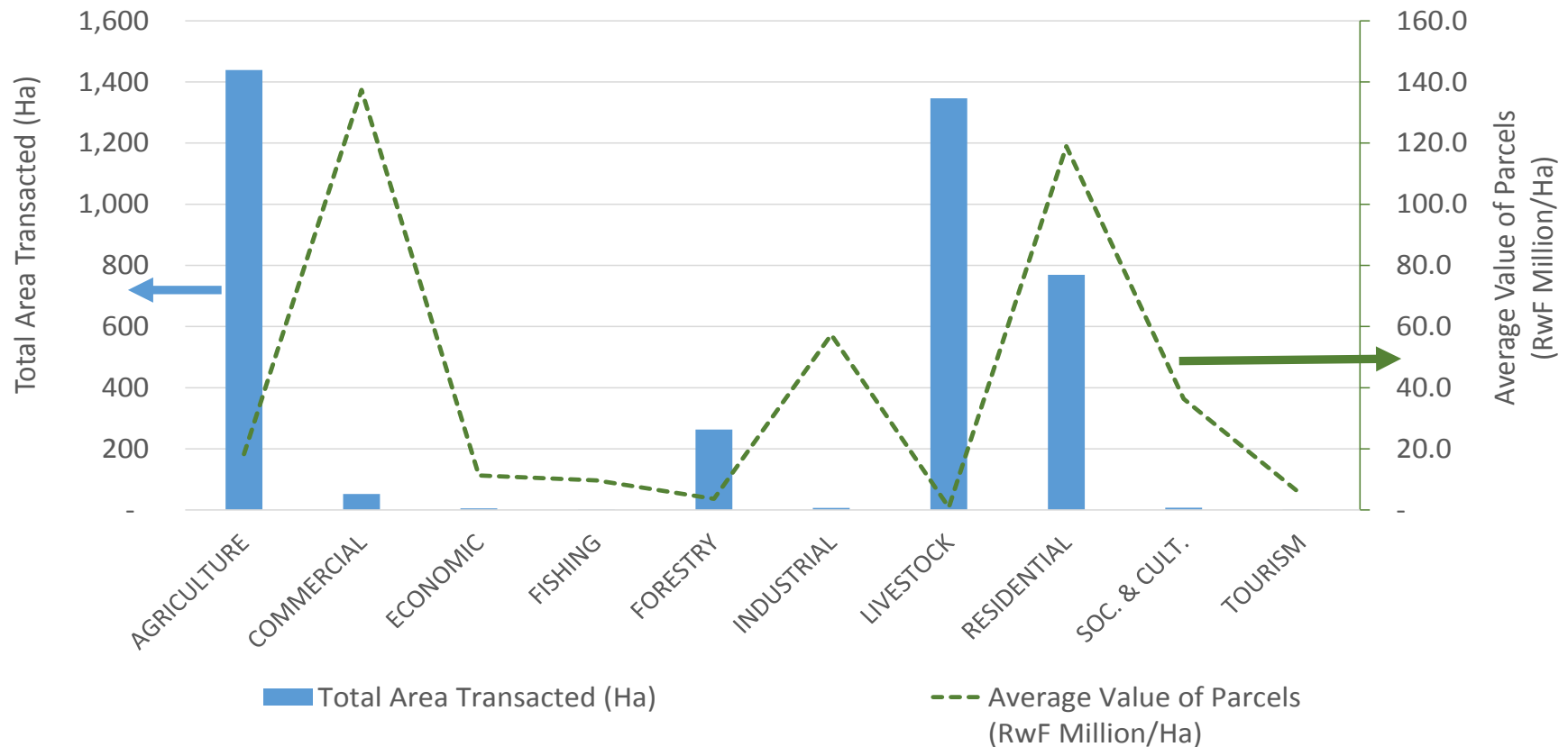
- Agriculture & Livestock Uses – Highest area transacted; but low value per ha
- Residential – Moderate area transacted, among the highest prices
- Commercial & Industrial – High values, but very few transactions

LAND ACCOUNTS: Policy & Planning Issues

- **Inform Land Use Planning & Climate Resilience Planning**
    - Analyze land uses at finer scale; link with GIS & mapping
    - Compare LUDMP for consistency, direction of change
    - Analyze rural development patterns and process.
- **Land Valuation**. Check quality and consistency; compare to other sources for use in determining fair prices.
- **Land parcel size.** Monitor changes through 2016 and 2017. Possible need for in depth analysis or case studies
- **Integrated analysis & modeling across all 3 sectors**
    - Assess impacts of LU changes on water supply, ag production
    - WCS and SNAPP team have begun with Ecosystem Accounts

LAND ACCOUNTS: Other Issues and Implications

Coordination and Institutional Issues

- Linking data systems across ministries.

- Integration and efficiency of data compilation.

- Institutional mandate and focal point for NCA.

Other Technical Recommendations

- Efficiency & streamlining of data quality & collection

- Improvements to build capacity & upgrade technology

- Dialogue with GoR on translating technical recommendations into budgeted actions

LAND ACCOUNTS: Next Steps

- Complete Land Account Version 1 document, based on feedback from National Workshop

- Follow NISR publication guidelines and data archiving requirements (dialogue initiated)

- Present Rwanda Land Accounts (paper) at 2017 WB Conference on Land & Poverty, March 2017

- Advance outreach with analysts & universities for further research

- Plan for Version 2 in 2018 with 2016/17 data added

Rwanda Natural Capital Accounting

Thank you!