

# Pastoralism within Land Administration

## Accommodating spatiotemporal land rights in the Land Administration Domain Model (LADM)

By

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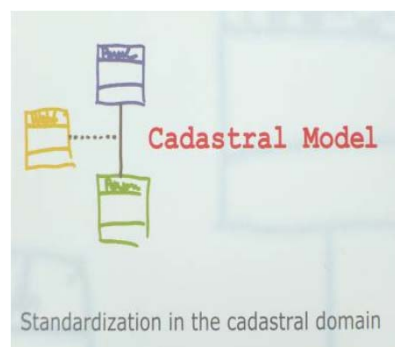
15 April 2010  
FIG 2010, Sydney, Australia



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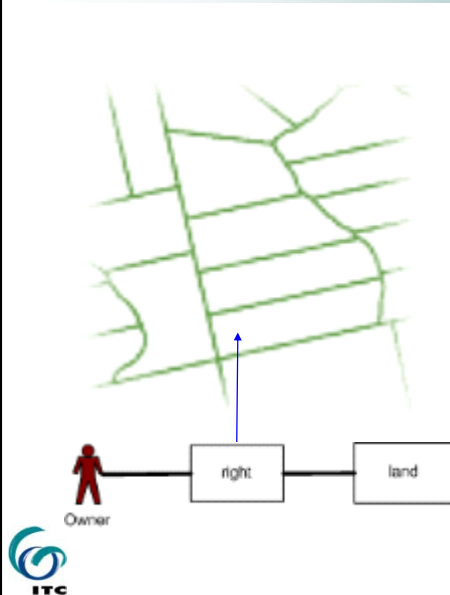
## LADM



LADM is a data model for land administration



## Time and land rights



- Land registration focuses a parties rights to land
- Temporal elements of cadastral systems are differentiated into three types:
  - database type: e.g. history of cadastral database updates
  - legal event time: e.g. history of ownership on a parcel
  - variation of the rights with time

## Variation of rights in time

- Spatial extent moves over time
- This paper assesses how the moving land rights (in the context of pastoralists livestock grazing systems) could be accommodated in the LADM



## Pastoralism



Dependent on livestock keeping for livelihood

Pastoralists found in arid and semi-arid areas

Pastoralists take livestock to pasture, not vice versa!

Land use is determined by climate



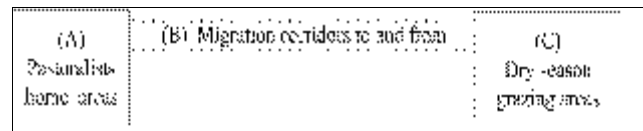
## Dry season migrations



Migrations in search of fresh pastures and water can cover hundreds of kilometers



## Access to corridors and dry season grazing areas



Historically, social systems through negotiations were used to maintain connectivity between areas

The onset of statutory rights have broken down social systems

Pastoralists are losing access to customary migration corridors and to dry season grazing areas, as titles empower individual right holders



## What does this mean?



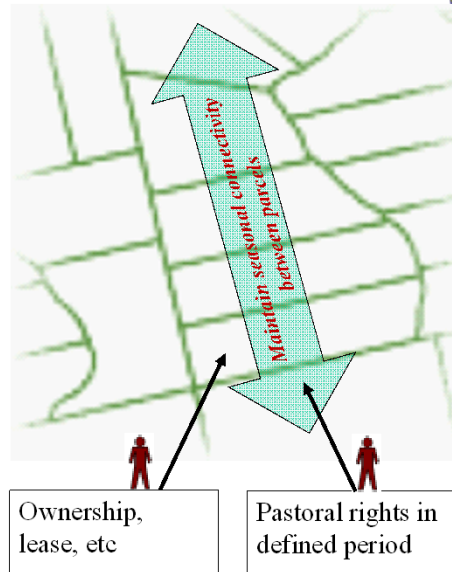
## No moving rights in LADM yet

- LADM suggests that different kinds of rights can be accommodated on a land object including grazing rights
- Besides grazing rights, pastoralists land rights also include long distance seasonal movements in space and time
- The LADM does not elaborate how to align moving rights on a land object

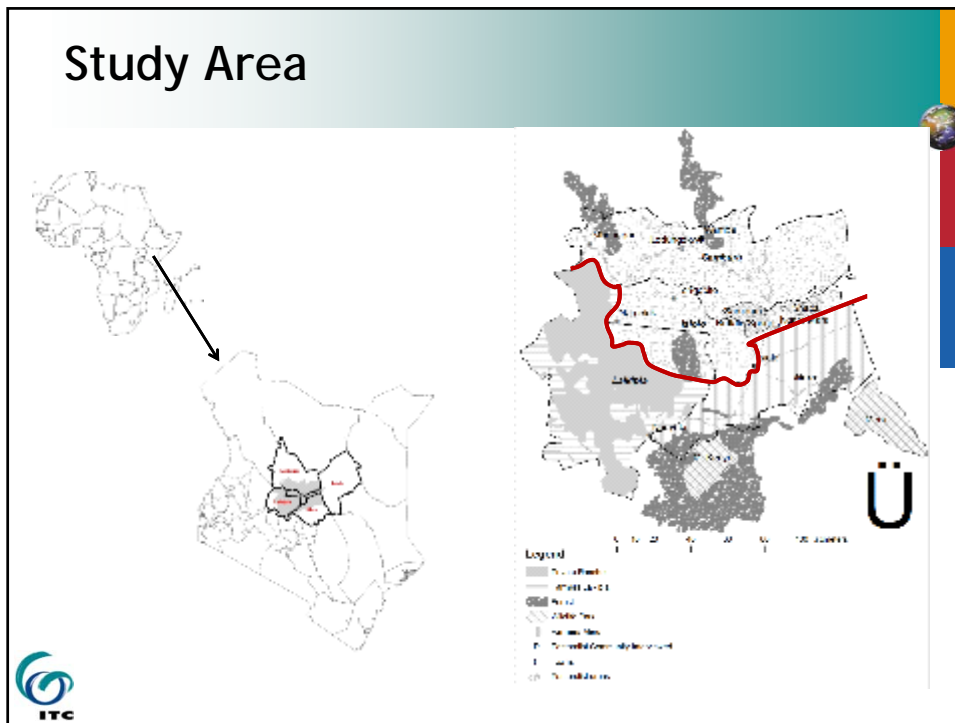


## Aligning pastoral rights in LADM

- This study assesses how rights registration could avoid blocking, but maintain connectivity between pastoralists seasonal grazing areas
- Define the **where** and the **when** pastoral rights apply on land



## Study Area





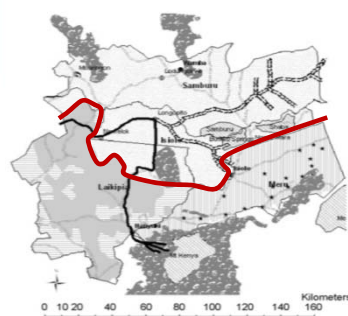
## Participatory mapping Results

Spatial extent of migration routes  
About 150km to and from dry season grazing areas

Patterns of seasonal movements

- 1) Early year dry season (January-March)
  - migration routes extend eastwards
  - Located within pastoral areas
- 2) Late year dry season (July-October)
  - migration routes extend southwards & westwards
  - Rights overlap with private tenures in the non-pastoral areas

(D) Longopito

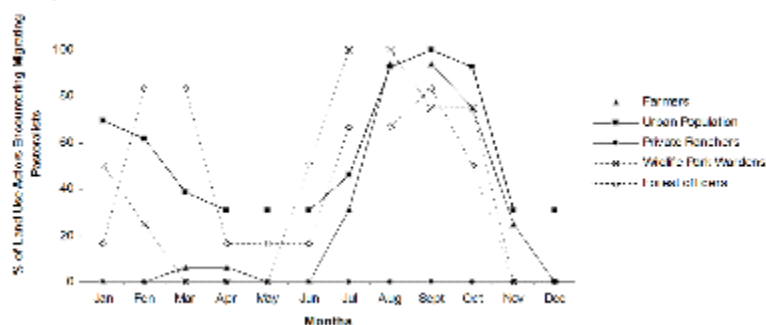


### Legend

- Early year drought migration routes
- Late year drought migration routes
- Forest
- Wildlife park
- Ranch
- Pastoralist areas
- Farming areas in Meru
- Farming areas in Laikipia
- Town
- Pastoralists communities interviewed
- ★ Farmers communities interviewed
- Road
- Administrative boundary



## Duration of seasonal rights

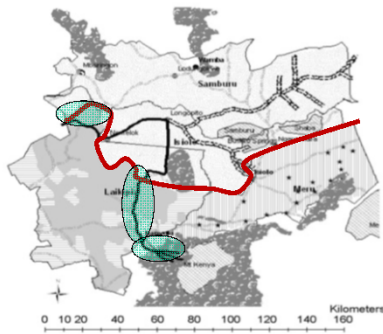


- Requirements of the system: Duration of migration & grazing rights
  1. Migration rights in early year dry season mostly occur within pastoral areas between January - March ( $\pm 3$  months)
  2. Migration rights in late year dry season overlap with private tenures between July - October ( $\pm 4$  months)



## Conclusion

(D) Longopito



Spatial extents of pastoral seasonal land rights can be determined

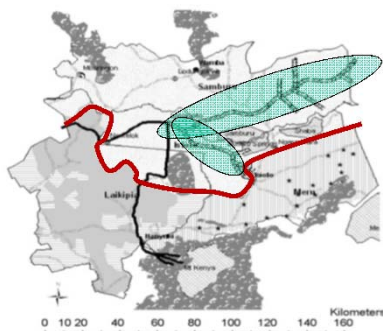
Time of migrations and duration of pastoral land rights can be determined

Time that Pastoral rights in the dry season overlap with non-pastoral LU actors can be determined

Mistake of omission of pastoralists' seasonally overlapping rights during adjudication and registration negatively impact both pastoralists and non-pastoralist land use actors through seasonally recurrent conflicts

## Recommendation

(D) Longopito



- Need for protection of existing corridors and grazing areas
- Need for restoration of rights lost as a consequence of omission during adjudication & registration, or alternatives to support seasonal migrations
- Need for land professionals to research on and recognize the existence of seasonal pastoralists rights i.e.
  - Rights to support seasonal migrations
  - Grazing rights - including the period (fuzzy times) & duration of grazing rights e.g. to private land, forests, etc.



# Thank you



## Why OOAD?

- Research Method:
  - Object Oriented Analysis and Design (OOAD) method to study the real world situation of pastoral spatial and temporal land use

OOAD methodology contains two phases:

- 1) Analysis phase: focuses on investigating the problem and requirements - Spatial extent of seasonal migration routes/corridors  
Periods of movements
- 2) design phase: emphasizes on a conceptual solution that fulfills the requirements in order to solve a problematic situation (Larman, 2001).

learning from the realworld situation can enable developers to learn about the problem domain before constructing the models (Blackwel, 2000).

Only after describing the attributes and relationships of the concepts that they can be reassembled and expressed into a conceptual model to show how the system fulfils the requirements specified by the analysis (Blackwel, 2000, Larman, 2001)

