Partners of the Program Against African Trypanosomosis: Research institutions' roles, activities and synergies with the progressive control pathway for African animal trypanosomosis

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Ad hoc meeting of the Program Against African Trypanosomosis on the progressive control pathway for African animal trypanosomosis

Food and Agriculture Organization of the United Nations, Rome, Italy
11–13 December 2017

ILRI's mandate

Reduce ... efficient, safe and sustainable
use of livestock —
ensuring *better lives through livestock.*

Role of ILRI in the progressive control pathway (PCP)

Research and training

- Support research on T&T control
- Drug use – northern Kenya
- Trypanotolerance
- Training supported by the BecA-ILRI hub involving east and central Africa

Data sharing

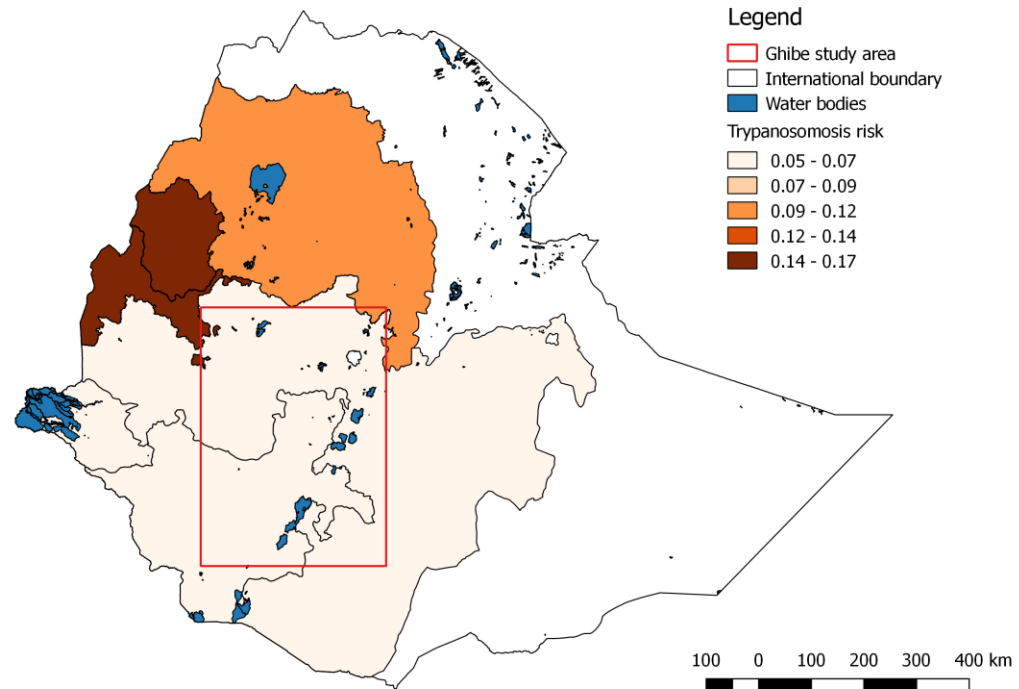Improving the Productivity and Market Access of Ethiopian farmers (IPMS)

Technical support

- Disease surveillance
- Livestock development master plans

Work aligned with PCP

- Drug use practices – Kenya
- Proposal to support the Government of Ethiopia on T&T control in Ghibe

- Key areas:
    o Land use change and ES trade-offs
    o Integrated T&T control
    o Agricultural value chains
    o People and institutions

- Justification:
    - 18% of fertile land in the country infested by tsetse

Legend
- Ghibe study area
- International boundary
- Water bodies

Trypanosomosis risk
- 0.05 - 0.07
- 0.07 - 0.09
- 0.09 - 0.12
- 0.12 - 0.14
- 0.14 - 0.17

100 0 100 200 300 400 km

Prevalence data from Duguma et al. 2015
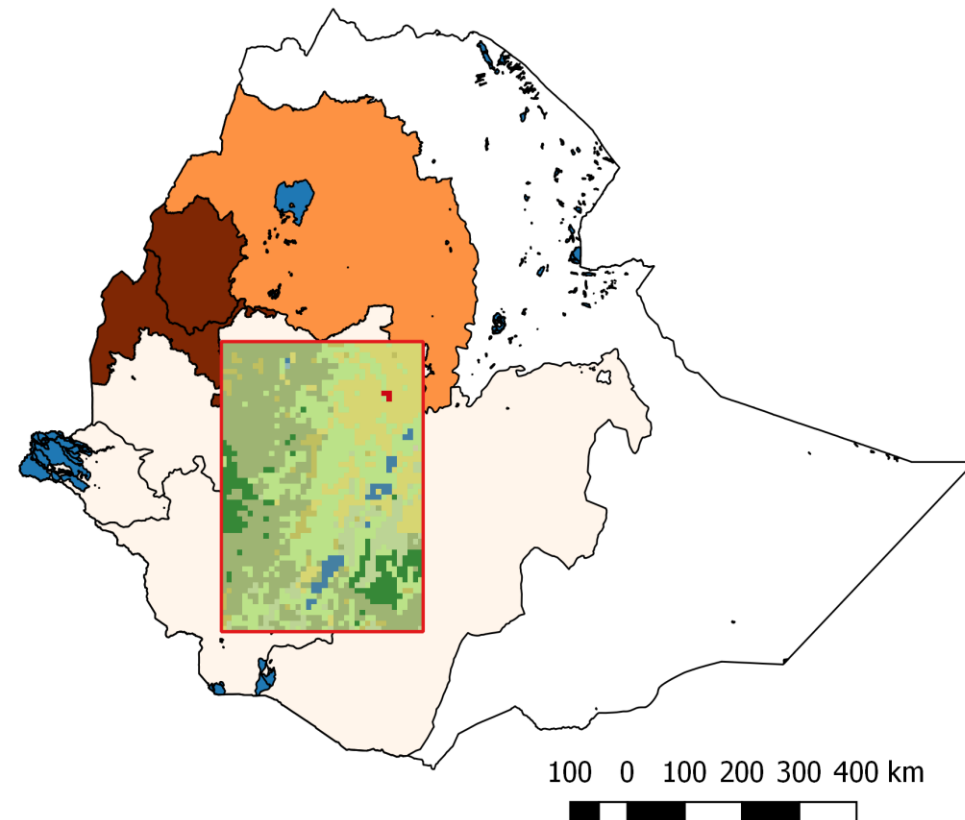
Quantifying trade-offs in ecosystem services:
o stakeholder engagement
o incentives for T&T control

Legend

Land use/land cover patterns

- Water/wet lands -- 2%
- Evergreen broadleaf forest -- 7%
- Open shrubland -- <1%
- Woody savanah -- 35%
- Savanah -- 4%
- Grassland -- 7%
- Permanent wetlands -- <1%
- Cropland -- 27%
- Urban/buildup areas -- <1%
- Cropland/natural vegetation -- 27%

Land use land cover data from MODIS

100 0 100 200 300 400 km

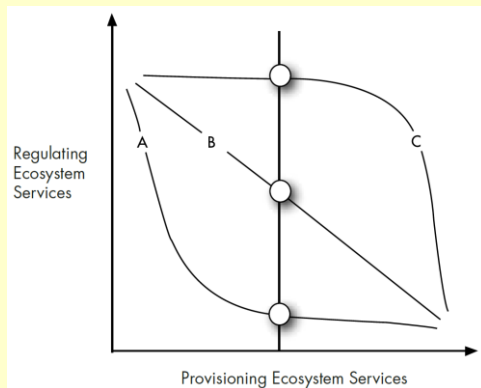# LULC changes and ecosystem services trade-offs – *integrate into T&T control plans*

ES services to increase
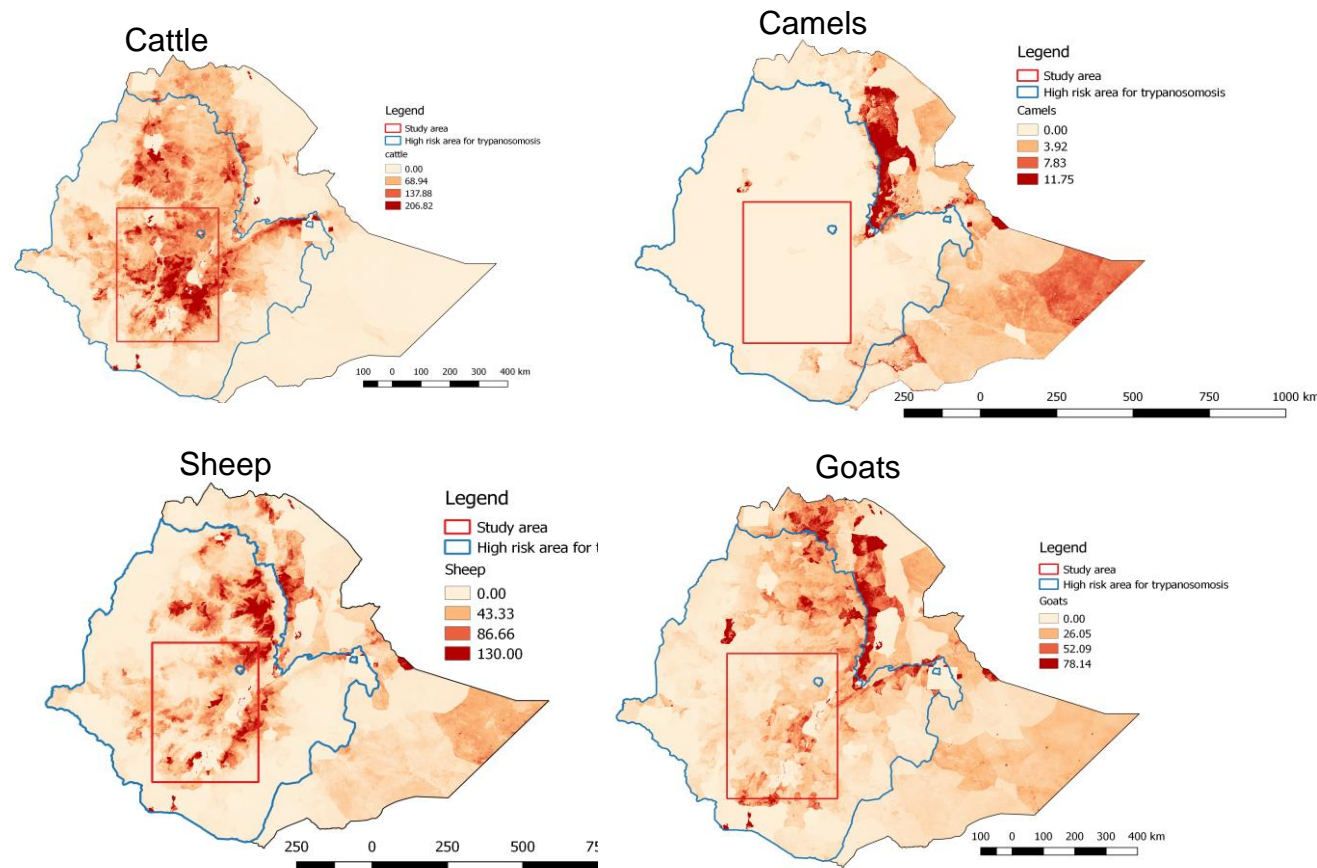- Livestock offtake, products
- Crop production

LULC/ES to decline
- Forests
- Water quality/flow

Policies

Elmqvist et al. (2011), UNDP

Cattle

Camels

Sheep

Goats

Livestock data from Robinson et al. (2014)

- Integrated control strategies – on-farm interventions supported by modelling

- Modelling can help address
  - Ways of combining the various interventions based on technical and economic parameters
  - Determining benchmarks – e.g. T&T interventions needed to realise given targets
  - Identify sites that might serve as reservoirs for the vector/disease and hence should be targeted for more intensive control

Simulating tsetse control

Tsetse population dynamics model (Hargrove et al., 2003)
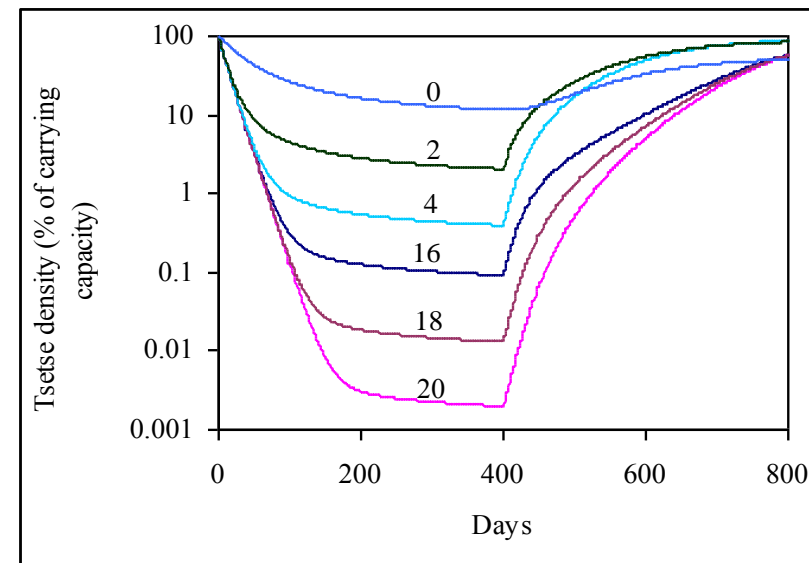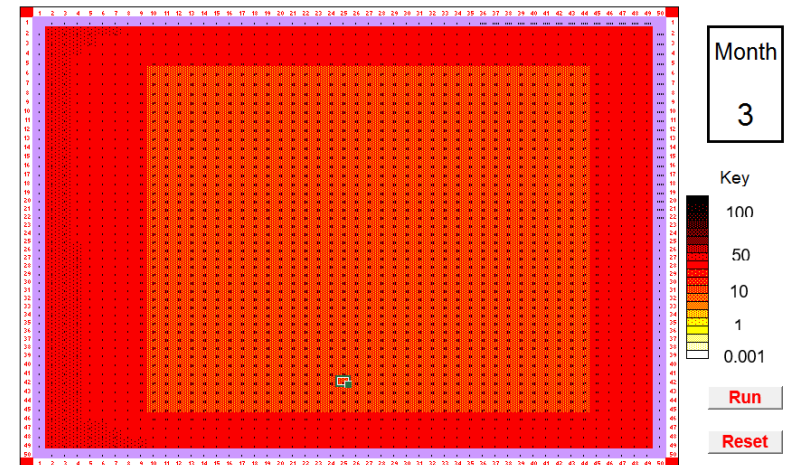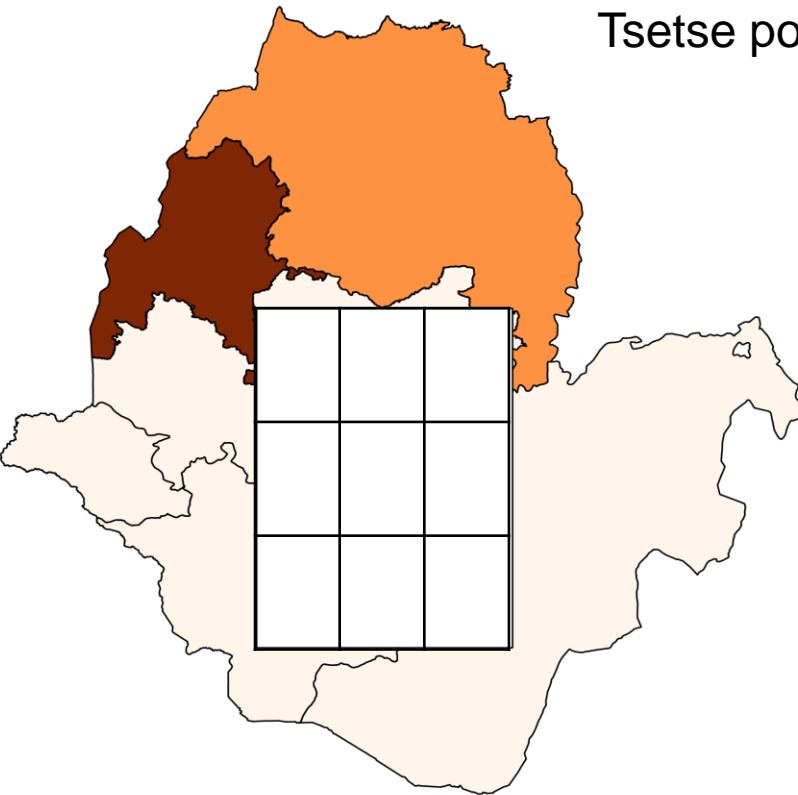
Modifications on Vale et al. tsetse control prediction tool:
- Patchy distribution of tsetse, "invasion front" dynamics need revisiting
- Spatially explicit predictions guided by LULC features
- Expand to include livestock and economics of T&T control

Towards the development of integrated T&T control strategies

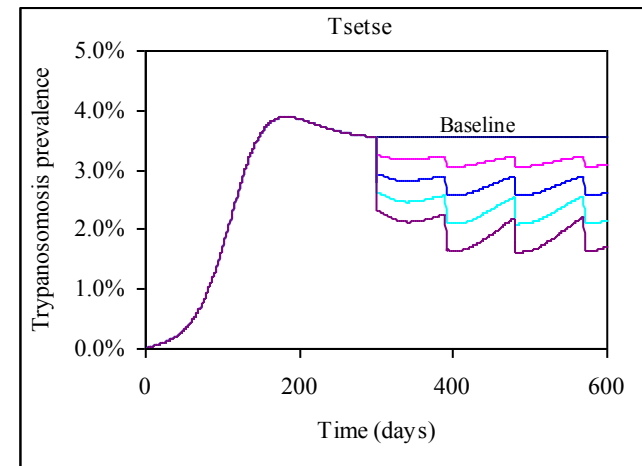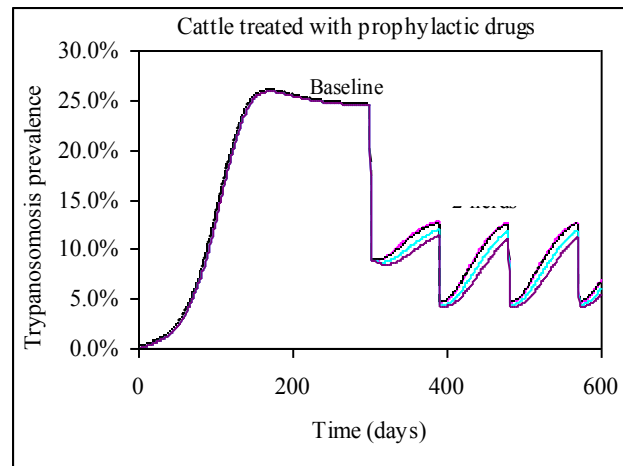Available control measures in the project site:
- Traps/targets
- Insecticides
- Trypanotolerant cattle (Sheko)
- Trypanocides
- SIT?

Integration – explore joint effects of interventions

Effects of tsetse control on tryps prevalence in cattle

Change in tsetse density

Change in equilibrium tryps prevalence
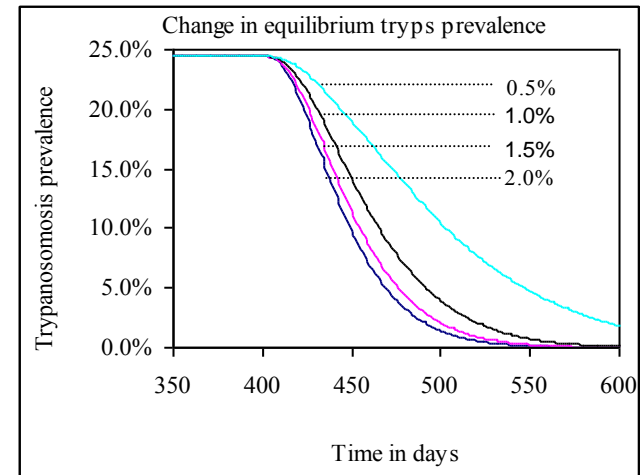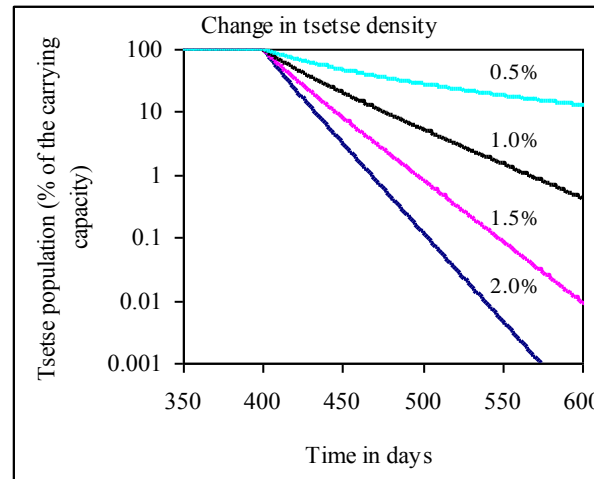
Effects of prophylactic drugs on tryps prevalence in cattle and tsetse

Cattle treated with prophylactic drugs

Tsetse

Other activities

- Use of trypanocides
- Previously led projects on drug resistance and training on the use of trypanocides
- Manuals developed and disseminated
- Deploy these resources in the current projects, including other livestock development projects in tsetse infested areas

- Gender and tryps exposure
- Livelihood practices that require the utilization of infested areas/patches

Acknowledgements

Partners involved on the tsetse/tryps research proposal – MoA, EIAR, ICIPE

FAO/PAAT