



Poverty and ecosystem services Impacts of Tanzania's wildlife Management Areas: PIMA



Outline

- East African rangelands
 - Conservation and development
 - Tanzanian WMAs
- Evaluating social and ecological impacts
 - Research questions
 - Research design
- Social impacts
 - preliminary results
 - ...So what?...

East African rangelands

- Wildlife
 - Spectacular savanna wildlife
 - Drastic declines 1975-on
- Local people
 - 75% natural resources-based livelihoods
 - Environmental degradation debates?
 - » Maasai pastoralists
 - » Miombo farmer-hunter-fishers
 - Persistent poverty (HDI=158)
- Tourism revenues
 - > 1 billion USD /yr (Kenya/ Tanzania)
 - Top contributor to GDP
- A case for win-win CBC?



Tanzanian WMAs

Background

- Political legacy/ state control
- 35-40% land area protected
- 1998 Wildlife Policy of Tanzania community participation
- 2005 PRSP: *Mkukuta I*
- 2006-7 pilot WMAs registered

Status:

- 19 WMAs in operation
 - 148 villages
 - >450,000 people
- 38 planned in total
- Will cover 7% land area

From WWF-USAID
WMA status report 2013



WMA Objectives

WWF-USAID WMA status report 2014 p. 13

“The main objectives of the WMA process are to:

- increase the **participation** of local communities in the management of wildlife resources;
- enable local communities to derive **benefits** from wildlife resources; and
- enhance the **conservation** of wildlife resources.”



PIMA Research questions:

- **Ecological outcomes of WMAs?**
 - Changes in
 - Land cover (Remote sensing pre-inception - 2014)
 - Wildlife/Livestock n°s (Aerial censuses pre-inception - 2015)
- **Social outcomes of WMAs?**
 - Changes in
 - WMA-, Village-level institutions/ governance
 - Household livelihoods / resource use
 - Individual wellbeing

Conservation interventions: hard to evaluate because

- Experiments/replication rarely possible
- Many independent co-occurring interventions
- Complex histories
- Lack of baselines
- Lack of “controls”...
- Multiple outcomes of interest
- Some outcomes multidimensional
 - (e.g. wellbeing)

The focal interdisciplinary measure: Wellbeing

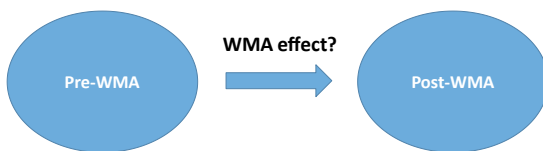
(Gough and McGregor, 2010, *Wellbeing in development*
Woodhouse et al 2015 *Phil Trans Roy Soc* 370 (1681))

- Interdisciplinary/ multidimensional
- Subjective + objective components
- Qualitative + quantitative
- Pre- / post- WMA:
 - What resources could you /can you access?
 - What could/can you do with those resources?
 - What did/does that resource use mean to you
 - » as an individual?
 - » as a member of your community?

PIMA Research design

- Causal attribution
 - WMA-related vs. coincidental but not WMA-related changes
- Mixed methods
 - Qualitative:
 - In depth case studies
 - WMA-level : archives, interviews (officials; NGO facilitators)
 - Village-level: “ “ “
 - Household/ Individual-level KI interviews/ SSIs
 - Quantitative/statistical:
 - matched controls + baseline data ->
 - Before-After, Control-Impact analysis of quantitative variables (both ecological + social)

Impact Evaluation Wildlife Management Areas



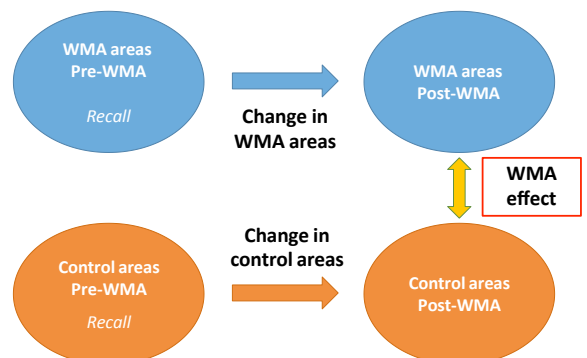
What has changed?

- Are people richer? Poorer?
- Are there more elephants?
- Are there more tourism jobs?
- Is there more conflict?

...etc.

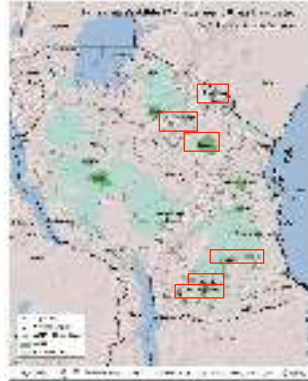
Counterfactual:
What would have happened with no WMA?

Impact Evaluation The BACI approach



Quantitative BACI/ CI –

- 6 WMAs vs non-WMA environs
- 8 villages / WMA (4 in 4 out)
- wealth ranking:
 - 13573 HH, 2007 (recall) + 2014
- Livelihoods/ wellbeing survey:
 - 40 HH heads/ village
 - » 10 leaders,
 - » 10 poor,
 - » 20 other
 - 20 women non-HH hd/village
- Baseline livelihoods data (2004)
 - 400 HH
 - 2004 survey – 2015 resurvey



Control village selection

Sampling frame:

- Enumeration areas from 2002 census

Matching on:

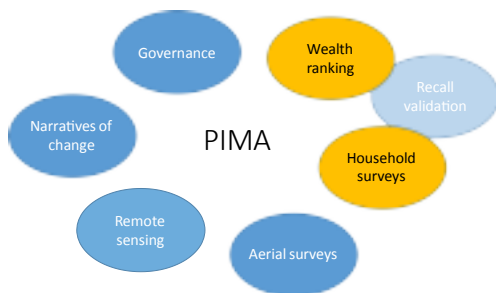
- Demographics (population density, dependency ratio)
- Market access (distance to roads; distance to towns)
- Wildlife (corridors; species presence)
- Biophysical characteristics (EVI, precipitation, elevation, land cover)

Excluding:

- Protected areas
- PFM

Data collection approaches

Mixed methods



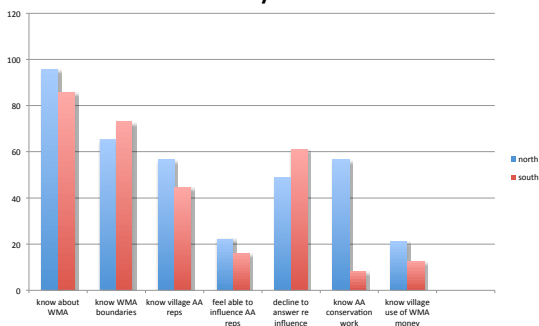
Results

- Participation
 - Understanding
 - Involvement
 - Acceptance
- Benefits
 - Community-level benefits
 - Household level
 - Wealth
 - Income
 - Resource access
 - Crop damage
 - Food security
- Conservation

Institutional/ governance impacts:

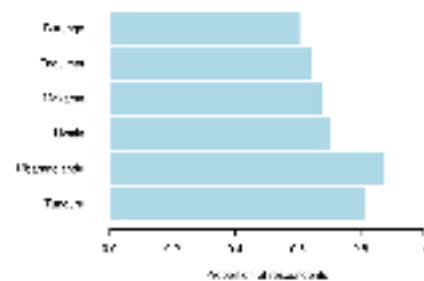
Women's participation:

“Do you...”

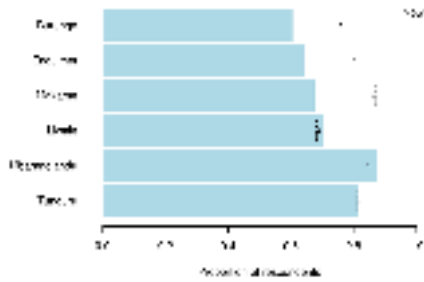


Acceptance of WMAs

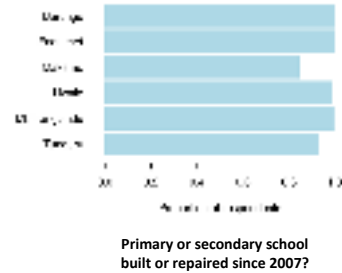
Initially...



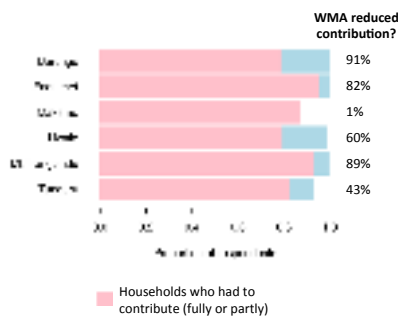
Acceptance of WMAs ...and Now



Community benefits Public development projects



Community benefits Public development projects



Wealth data and analysis

Wealth ranking dataset

- 13,573 households, 42 villages
- Participatory wealth ranking
- Recall relative to anchor events

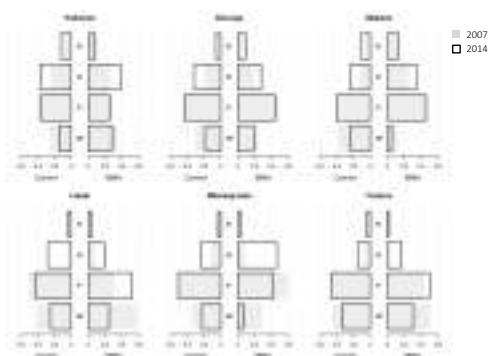
Analysis:

- Bayesian hierarchical cumulative logit
- Response = wealth category (ordered: Very poor < Poor < Normal < Rich)
- Cut-off points vary between villages
- Predictors:
 - Before/After
 - WMA/Control
 - Wealth ranking "before"
 - WMA leadership position
 - Community leadership position
 - Female-headed household



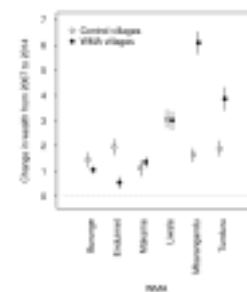
Results

Raw wealth ranking data



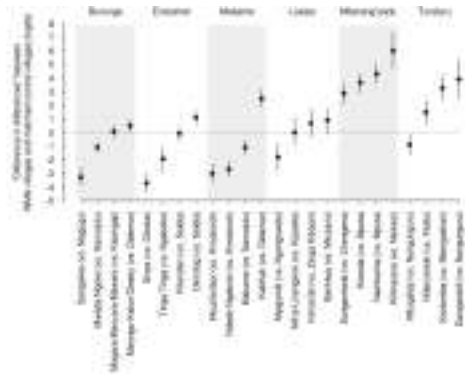
Results

Comparison between WMAs



Results

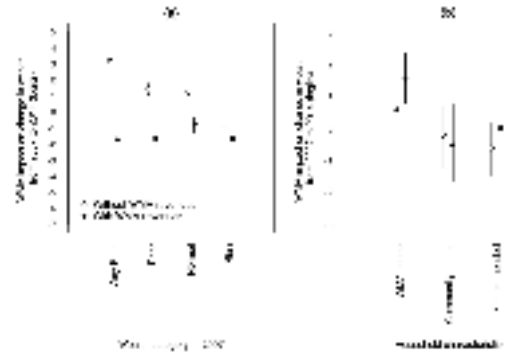
Broken down to village level



Wealth change

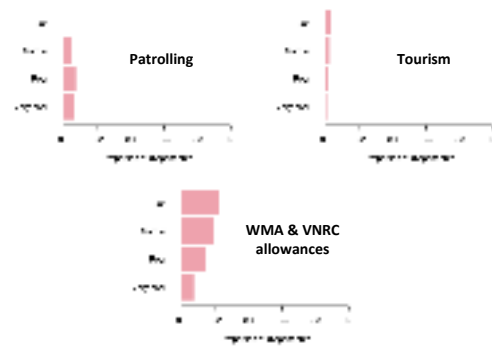
Household-level WMA effects

(hh in village WITH WMA revenues vs hh in villages WITHOUT WMA revenues)



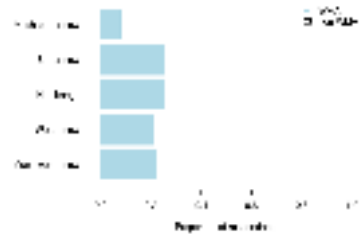
Direct household income

Frequency and distribution by wealth



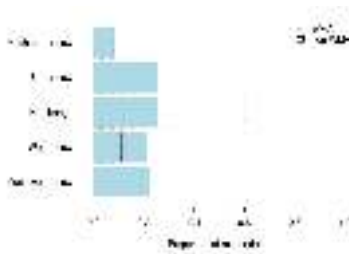
Costs: Burunge

Change in crop damage



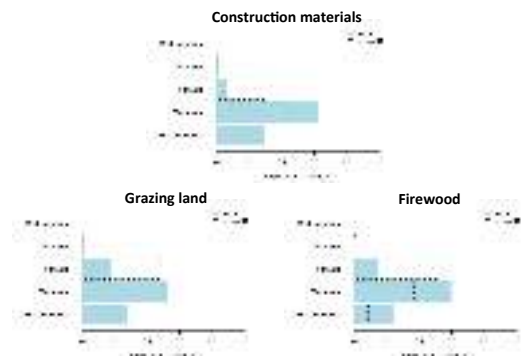
Costs: Burunge

Change in crop damage



Costs: Burunge

Change in access to natural resources



Discussion

Wealth changes?

Have WMAs helped rural wealth?

- Mixed: 2 Worse, 2 No change, 2 Better
- village-by-village variation
- Revenue vs. no-revenue WMAs

With tourism revenue

- Generally worse-off: loss of opportunities not fully compensated
- WMA leadership have benefitted
- Elite capture?
- Socio economic differentiation

Without tourism revenue

- Generally better-off
- Philanthropy?
- Is this sustainable?

Conclusion: Social impacts of WMAs?

Benefits of WMAs?

- Community-level projects
- Potentially secures local land tenure

Costs of WMAs

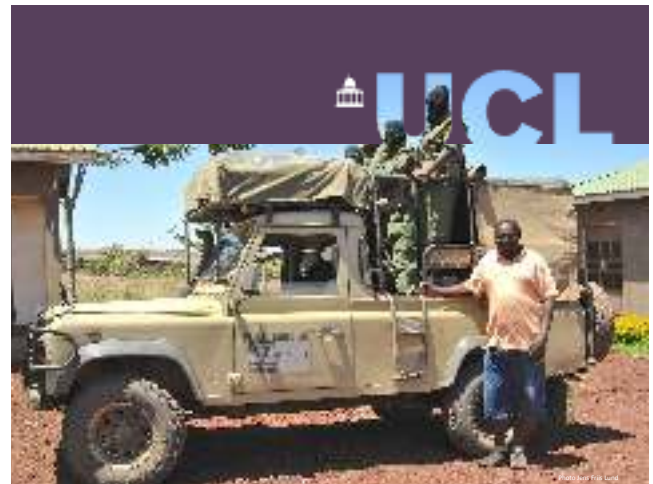
- Lack of proper participation: really CBNRM?
- Restrict access to key resources/ production opportunities
- Drive elite capture/ social differentiation
- Heighten HWC
- Despite nominal local land tenure, state retains control over
 - Access to/ use of that land - dry-season grazing?
 - wildlife ON that land
 - minerals UNDER that land

Room for improvement

- High costs >>> limited benefits
- Favours government and investors over local communities
- Favours elites over poor

Why do hh in no-revenue WMAs do better?

- WMAs with revenue
 - Earnings heavily top-sliced
 - Income to WMA goes to
 - » Enforcement
 - » Community infrastructure
 - » Elite capture
- WMAs without revenue:
 - Cross-cutting enterprises – eg. Mbarang'andu
 - Entrepreneurs have leased hunting/ viewing rights but
 - Uranium miners pay entrepreneurs to **not** use those rights
 - Philanthropy
 - Mbarang'andu gets no WMA income but
 - Uranium miners + tour operators + NGOs: 'Friends of Mbarangandu'
 - Philanthropic donations poorly accounted / open to elite capture
 - Less enforcement
 - Limited enforcement as yet
 - Limited resource use restrictions



WMA share of tourism revenues

(WMA regulations 2012)

