Decentralization Reforms & Property Rights: Potentials and Puzzles for Forest Sustainability and Livelihoods

Indiana University,
International Food Policy Research Institute (IFPRI), Center for International Forestry Research (CIFOR), and University of Colorado

August 31, 2009

Project Basics

- Target countries and in-country partner organizations:
  - Bolivia
    - Center for the Study of Economic and Social Reality
  - Kenya
    - Kenya Forestry Research Institute
  - Mexico
    - Universidad Nacional Autónoma de Mexico
  - Uganda
    - Uganda Forestry Resources and Institutions Center

Project Partners

- Indiana University (Elinor Ostrom & Jacqui Bauer)
- International Food Policy Research Institute (Ruth Meinzen-Dick & Esther Mwangi)
- Center for International Forestry Research (Bruce Campbell & Marty Luckert)
- U. of Colorado (Krister Andersson)

Problem Statement

- National level decentralization and property rights reform policies are strongly recommended by many policy analysts but they often fail
- Why?
- Blueprint policies – rather than policies that are well crafted to particular social-ecological (SES) systems
- Fall short of the goals of sustainable natural resource management (NRM) and improving local livelihoods

Key Hypotheses

- Successful decentralization reforms more likely when:
  - *actors at multiple levels* support them
  - the reforms reconcile a *wide array of forest users and interests*
  - *downward accountability* is strengthened
- Institutional arrangements that involve *multiple actors at multiple levels* will fare better than those that operate within a single level
- Institutional arrangements that exhibit a high degree of *fit and congruence* will have greater success at managing forests sustainably

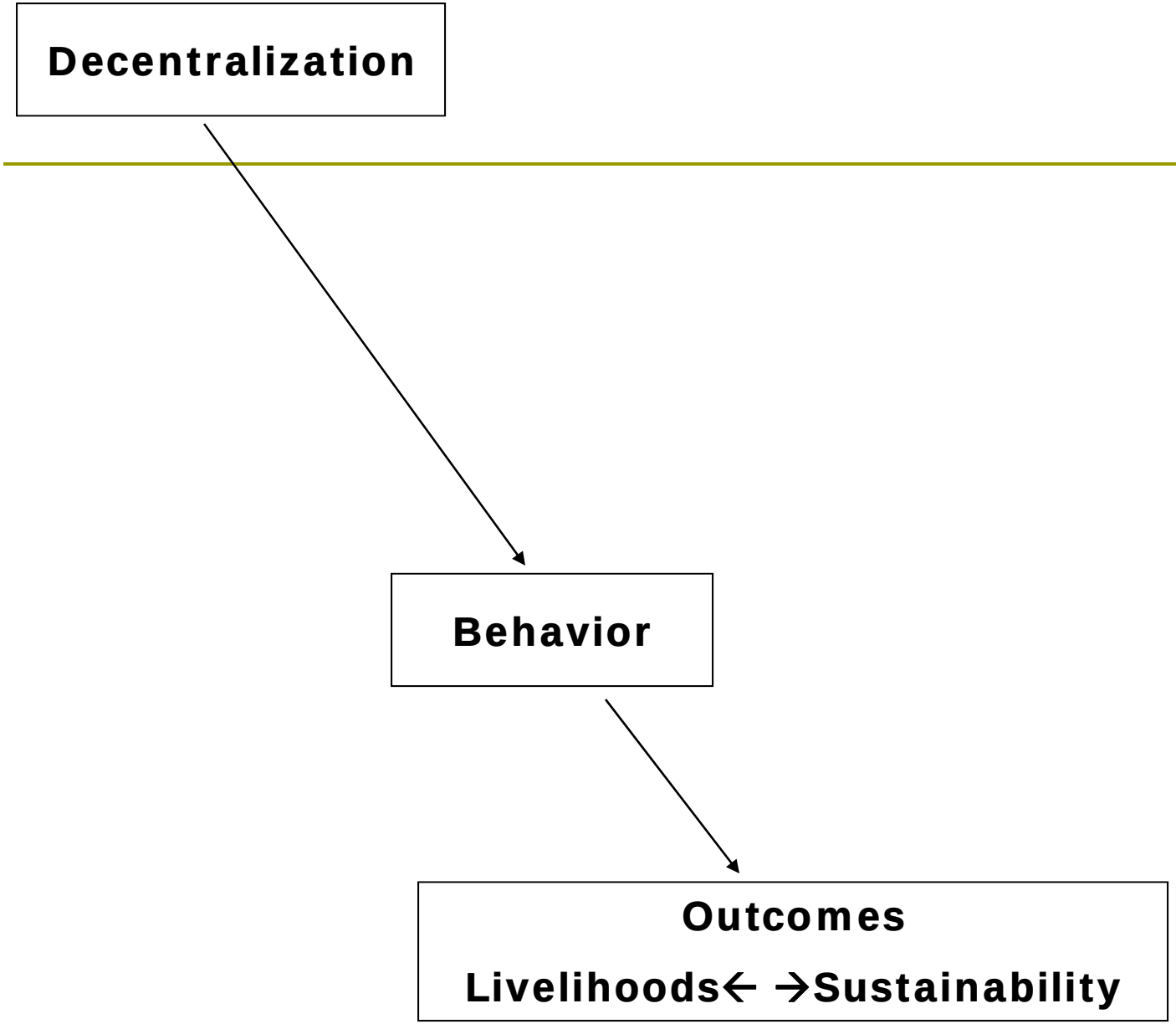
How Do We Understand Decentralization???

- Frequently thought of as a simple one-step process but careful research shows it to be
  - context-sensitive
  - multiple level process
  - with feedbacks

Decentralization

Outcomes

Livelihoods← →Sustainability


Decentralization
Behavior
Outcomes
Livelihoods← →Sustainability

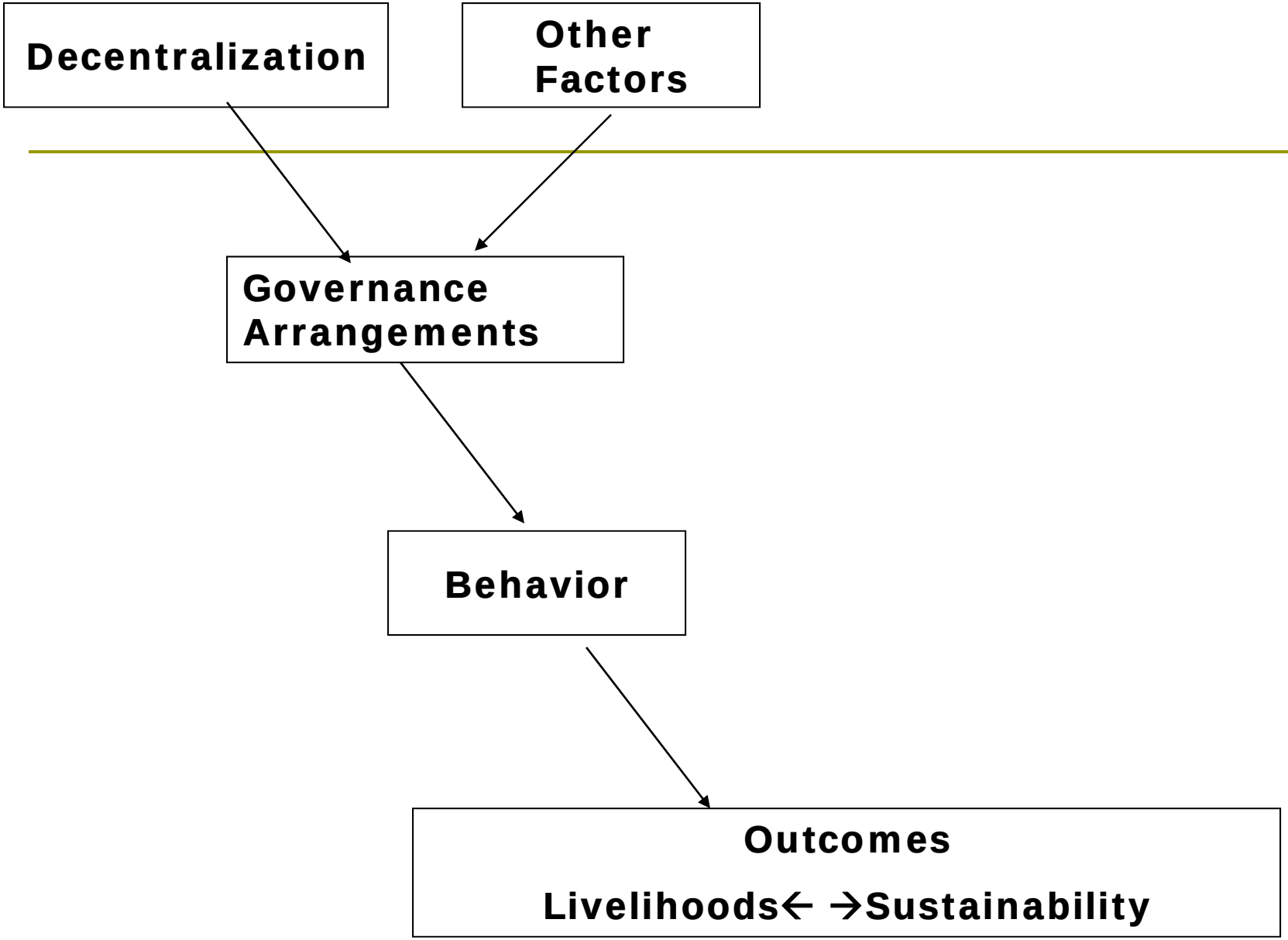
Decentralization

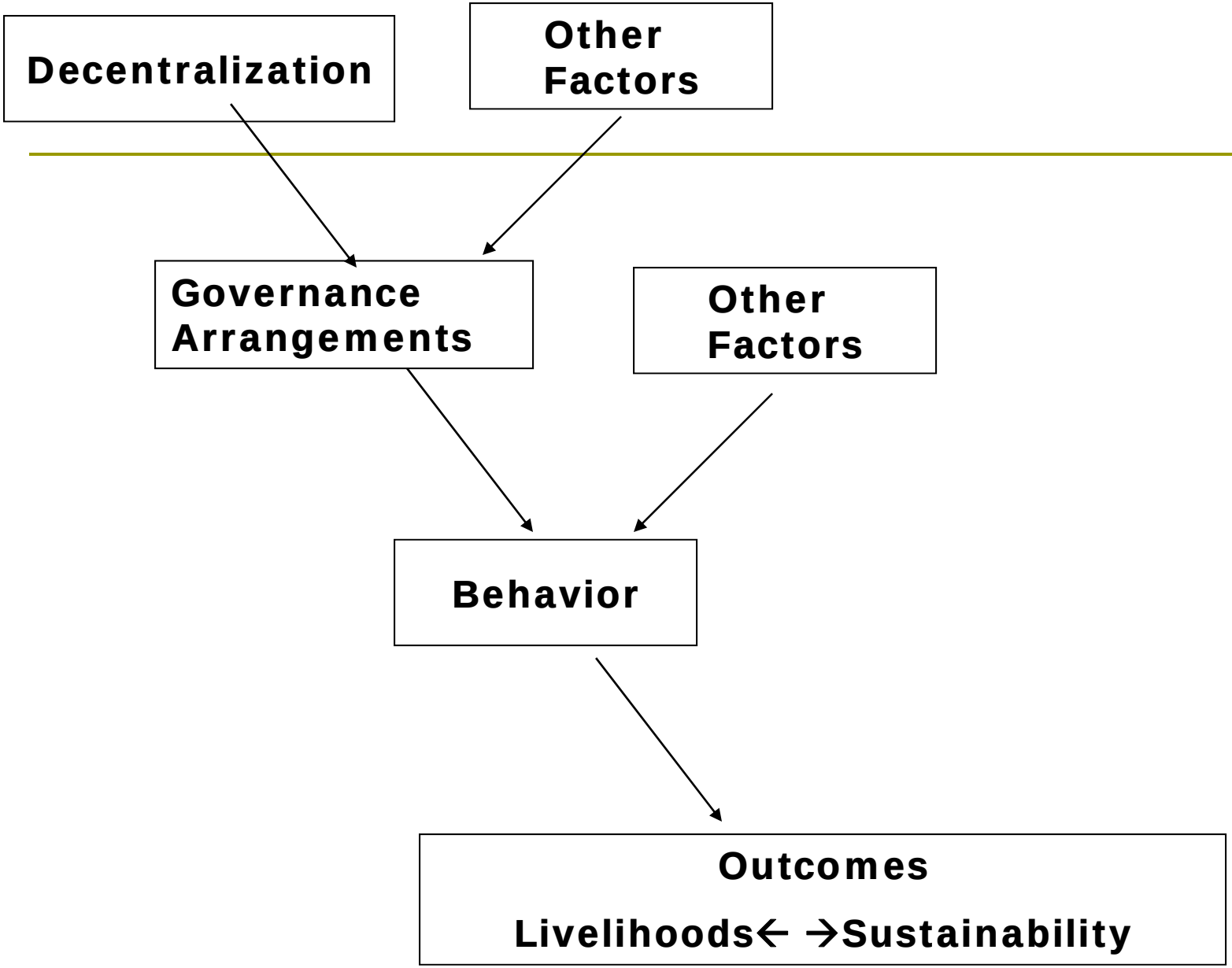
Governance Arrangements

Behavior

Outcomes

Livelihoods← →Sustainability


Decentralization
Other Factors
Governance Arrangements
Behavior
Outcomes
Livelihoods← →Sustainability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Other Factors
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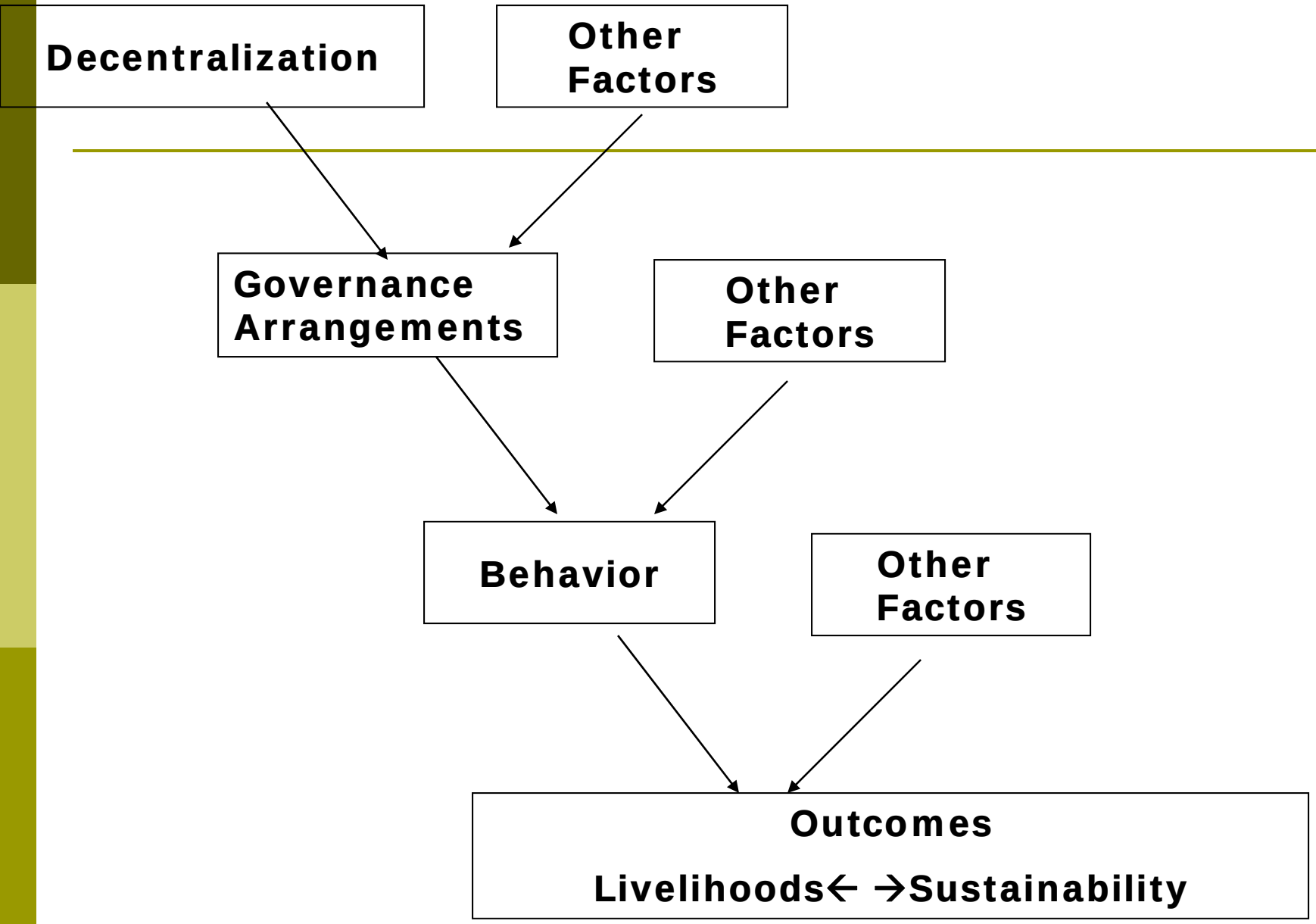
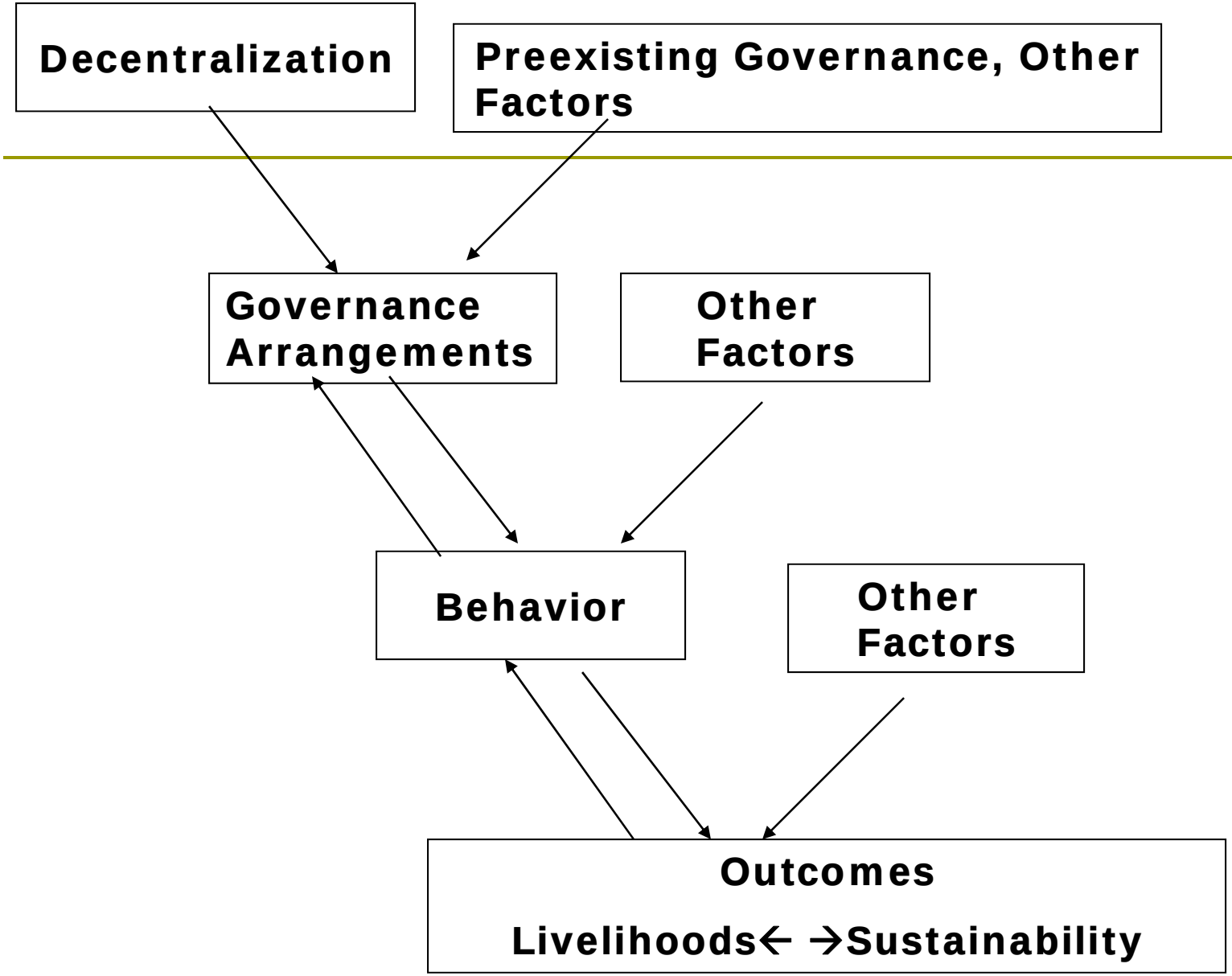

Decentralization
Other Factors
Governance Arrangements
Other Factors
Behavior
Other Factors
Outcomes
Livelihoods← →Sustainability


Decentralization
Preexisting Governance, Other Factors
Governance Arrangements
Other Factors
Behavior
Other Factors
Outcomes
Livelihoods← →Sustainability

Research Methodology

- Build on the work of the International Forestry Resources and Institutions (IFRI) Program
- IFRI basics
  - Created in 1992
  - Network of collaborating research centers in a dozen countries
  - Bolivia, Kenya, Mexico, Uganda already established IFRI centers
  - They have longitudinal data in 50+ communities

Objectives	Initial Accomplishments
Develop capacity within resource user groups	All 4 countries trained users in 30 sites to be proactive in the governance of their forest— **to take advantage of reforms**
Develop capacity within forestry sector organizations	**CRC networks strengthened**. Established national advisory councils to discuss research findings & policy implications
Develop effective monitoring techniques at community levels	Users learned to identify and collect indicator data for **forest governance monitoring**. Have access to data.

Publications Underway

Type of Publications	Quantity
Journal articles published	2
Papers ready for submission	5
PhD Dissertations (completed)	5
Initial drafts of policy research papers	4
Multi-authored book	1

Unpacking Decentralization Policies is a Complex Task

- Decentralization in the 4 countries differed substantially
- Lets do a quick review of these broad policies and their meaning for forest communities

Bolivia

- 1996 – Reforms decentralized forest governance → municipal governments
- Small holders have legal right to acquire formal rights, but the process for acquisition is an ordeal.
- By 2005, 10% of Bolivia's managed forests under control of rural smallholder & indigenous communities
- Andersson (2004, 2006) found that municipalities linked to smaller villages & NGOs AND to larger government agencies perform better
- Recent SANREM policy analyses show:
  - the degree of self-organization affects stability of forest resources
  - frequent contacts with municipalities increase the probability of self organization

Mexico

- More than 1/3 total land area covered by forests – 8,000 communities live near forests
- Since 1910 agrarian communities have formal common-property rights
- Ejidos created in 1917 – property rights expanded in 1990's
- 60-80% of Mexican forested area is community *owned*
- National & state governments do have policies related to commercial sale from communal lands
- System that has evolved – can best be thought of as co-management even though communities have formal rights

Uganda

- Some National Forest Reserves were in long-term stable conditions before decentralization (and recentralization) policies adopted.
- Ugandan IFRI center studies show a steady deterioration over time since 1999 Forest Section Umbrella Programme (a multi-donor program)
- In 1997 other decentralization programs attempted to “downsize” the public service
- In 2003 abolished centralized Forest Department

Over-Time Data re Ugandan Forests

- Shows considerable reduction in forest extent in most former Forest Department forest areas
- Comparison of forest mensuration data also show steady decline of forest conditions in these forests
- In contrast, condition of Kapkwai Forest has *improved* greatly due to new rules established by Uganda Wildlife Authority
  - Communities access park on specified days of week
  - Collaborative resource management committee helps make harvest rules and monitors them

Kenya

- Colonial and post-colonial governments stressed dominance of Forest Department control over forests in Kenya
- Broad decentralization program started in 1983, but policy making large remained centralized. Several restructuring of Wildlife and Forest departments
- New Forest Act of 2005 created Kenya Forest Service which is “expected” to devolve power to private section and to local forest groups

Initial Data Analysis on User Group Activities Before and After Recent Decentralization Efforts

Distributions of Sample User Groups by Country Before and After Decentralization

Country	Year of Decentralization	Pre Decentralization	Post Decentralization	Total
Bolivia	1997	42	11	53
Kenya	2005	57	14	71
Mexico	2003	21	19	40
Uganda	2003	102	42	144
Total		**222**	**86**	**308**

Source: Coleman, Fleischman, and Bauer 2009.

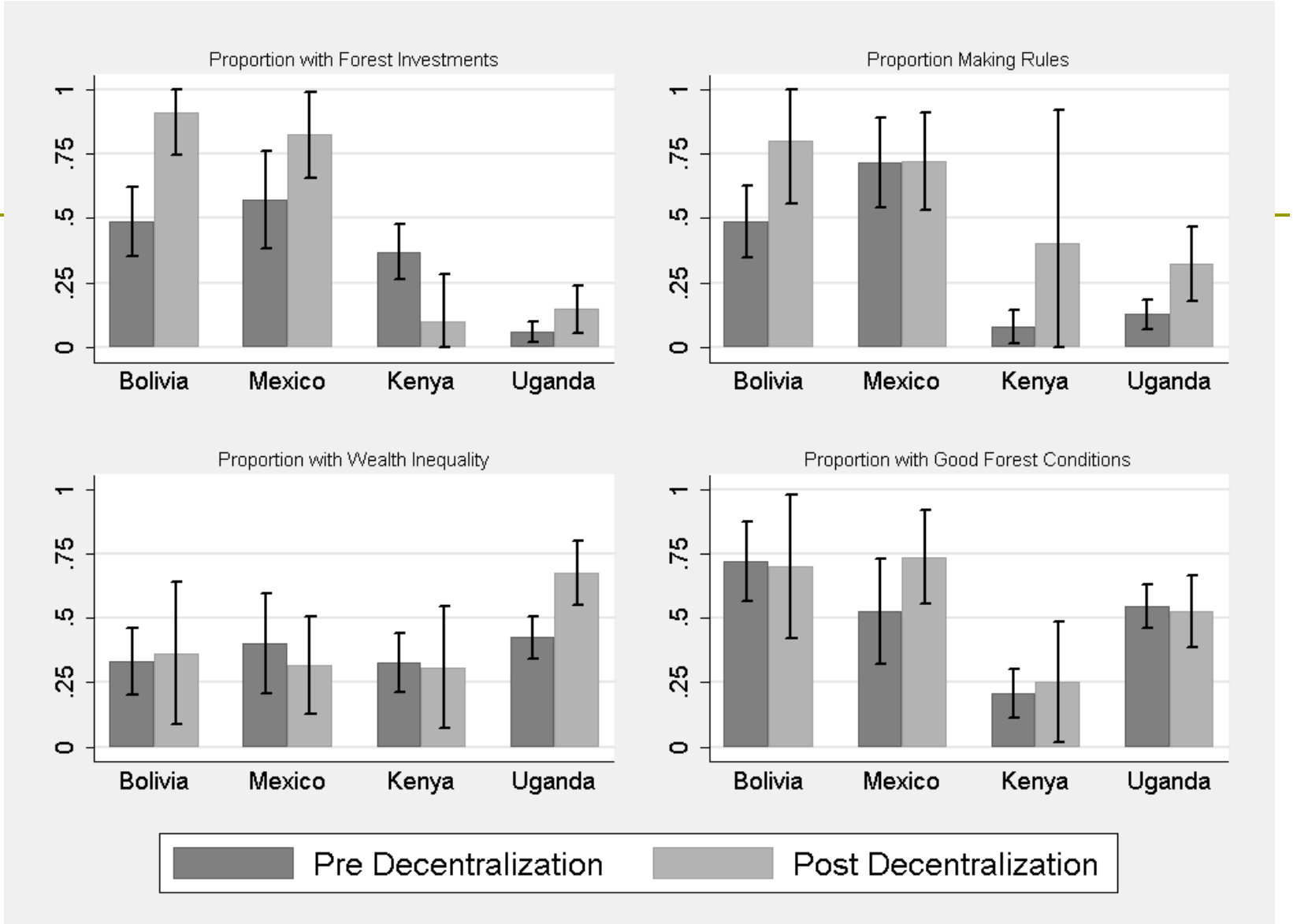
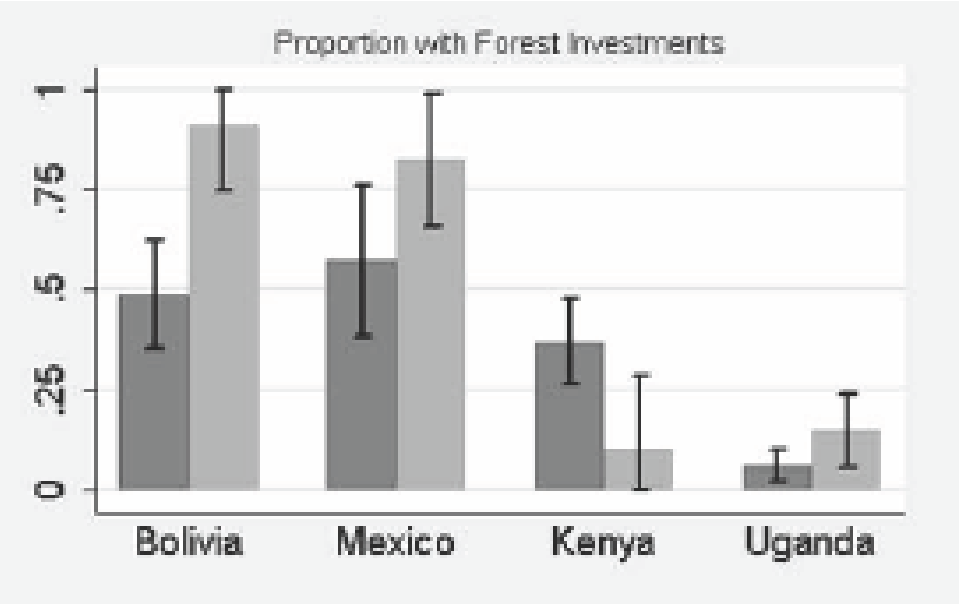


Figure 1. Distribution of Dependent Variables Before and After Decentralization by Country
Mean levels of user group behavior both before and after decentralization and 90% normal confidence intervals for those means. Source: Coleman, Fleischman, and Bauer 2009.

User Group Activities

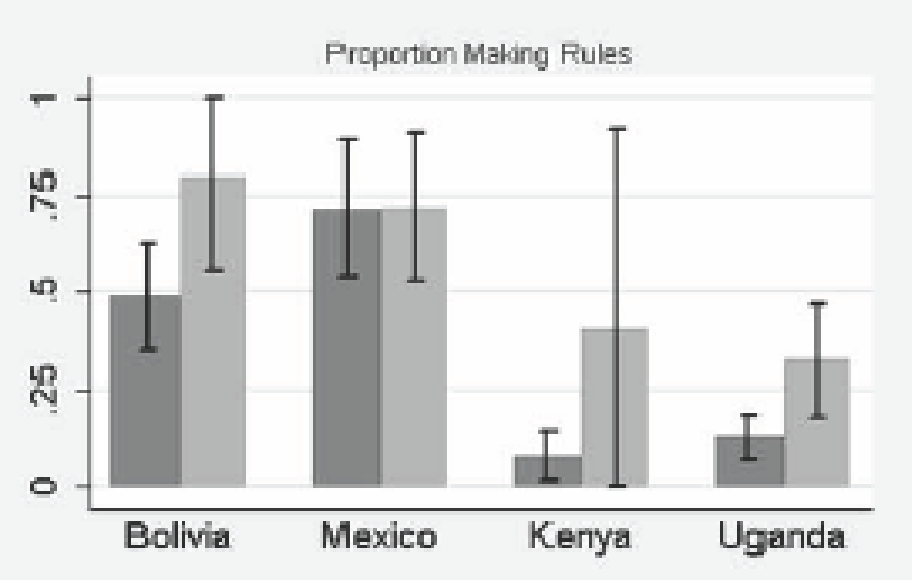
- We measure four types of activities at a User Group Level and compare before and after decentralization
  - Forest investment activities
  - Local rule making
  - Evaluation of Forest conditions
  - Wealth inequality

Forest Investment Activities



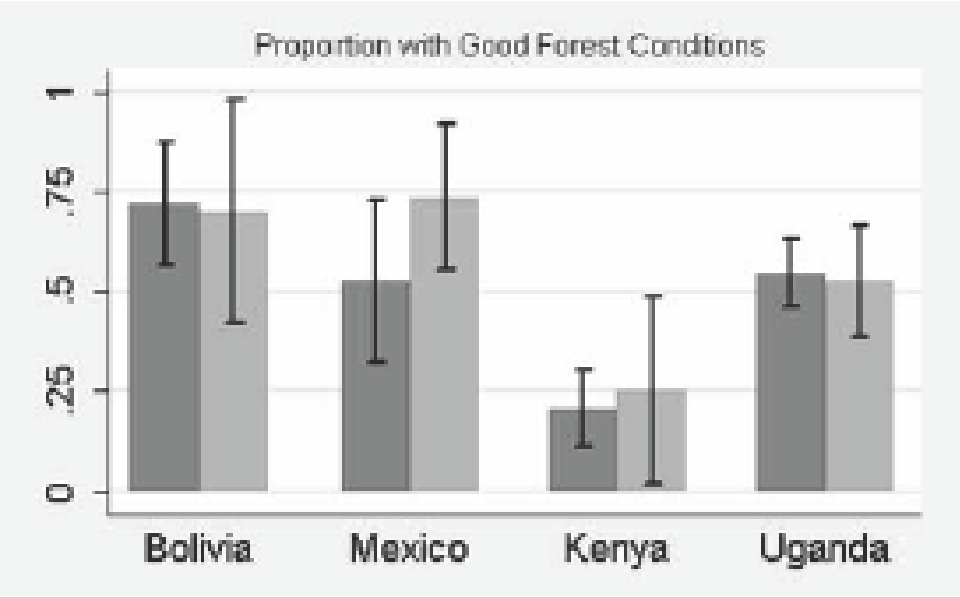
- Do forest users plant seeds, trees or bushes in the forest they regularly use?
  - In Bolivia and Mexico, one could expect investments to increase after decentralization
  - In Kenya and Uganda, on the other hand, users face more uncertainty

Local Rule Making



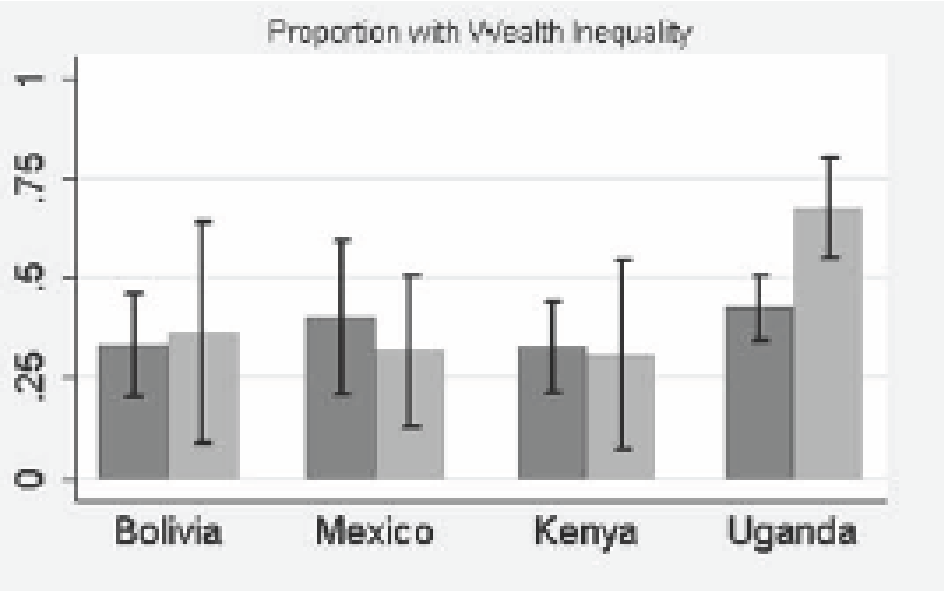
- In Mexico, local groups have long been active in organizing themselves. No change expected
- In Bolivia, indigenous harvesting rights newly recognized
- In Kenya and Uganda – likely response to scarcity

User Group Evaluation of Forest Conditions



- Stable conditions in all four countries
- Short time frame– forests often change slowly
- Perception may differ from direct measurement

Wealth Inequality



- Mexico and Kenya with decreased wealth inequality (NS)
- Bolivia with increased inequality (NS)
- Uganda with significant increase.
- Why? The wealthy may deal better with high policy uncertainty

Findings Suggest

- Decentralization more positive where users
  - had prior opportunities to organize (MEX)
  - have formal property rights (BOL +MEX)
  - are far away from the center (BOL)
- In Uganda (decentralized – recentralized - decentralized) it is hard to establish long-term expectations and users make few investments
- In very recent decentralization effort – Kenya – too soon for clear findings

Future for our SANREM research

- Our research seeks to inform policy
- Unique data and research on the role of local governance of forests for
  - Rural livelihoods
  - Forest stability
- Potential to inform other policies, e.g. REDD impact
- Concern: we do not see a role for our program in the new call for SANREM projects
  - What opportunities to further develop this?

Thank you

Studies Across Many Forest Sites

- Consistently find that better forest conditions occur when users monitor each other's activities (Gibson, et al., 2005; Hayes, 2006: Coleman, 2009; Coleman and Steed, 2009).
- When users are able to perceive a long-term interest, they take a much more serious approach to local forest conditions.
- Decentralization in "principle" may produce very strong local improvements, IFF strong local governance arrangements exist
- Simply decentralizing in the nation's capital, however, generates a diversity of results

Slides With More Detailed Information

- Dayton-Johnson, Jeff and Pranab Bardhan. 2002. "Inequality andConservation on the Local Commons: A Theoretical Exercise." Economic Journal 112: 577-602.

Comparing Local Government Mandates and Attributes

Attributes	Bolivia	Mexico
Property Rights Regime	Government ownership, conditional usufruct rights to communities	Community ownership but with conditional management and alienation rights.
Targeted Actors	Municipal governments and indigenous territories	State governments, municipal governments
Length of term	4 years	3 years
Possibility of re-election?	Yes	No
Authority to create municipal regulations for resource use	Limited to zoning	Yes, since 2002, but must conform with state and federal rules
Authority to raise taxes and service fees for natural resources	No	Yes
Governance responsibilities in natural resource governance	Yes	Yes
Financial transfers for natural resource governance responsibilities	Yes	Yes

Source: Krister Andersson's elaboration based on national governments' legal documents as well as Nickson (1995) and Zaz Friz Burga (2001).

Forested Land under Different Categories of Ownership/Management, Percent

Forest Type	Pre 2003 Reform		Post 2003 Reform		
	Forest Department	Uganda Wildlife Authority	District Forest Service	National Forest Authority	Uganda Wildlife Authority
	(Central and Local forest reserves; private and customary land)	(National Parks and Game Reserves)	(Private and customary forest land; Local Forest Reserves)[A]	(Central Forest Reserves)	(National Parks and Game Reserves)
Tropical high forest	71.1	28.9	38.0	33.1	28.9
Woodland	88.3	11.6	78.0	10.3	11.6
Plantation	93.7	6.1	33.1	60.6	6.1
Total	*85.1*	*14.8*	*70.2*	*14.9*	*14.8*

A. Local Forest Reserves account for less than 1% of the total forest area of Uganda. Source: Adapted from MWLE (2001), data from National Biomass Survey, 1999.

Wealth Inequality In User Groups

- Does decentralization lead to increased inequality of wealth?
- We were interested in assessing whether a difference because of the work of Dayton-Johnson and Bardhan (2002)
- They find a U-shaped relationship between inequality and cooperation in CPRs and argue this might help explain why the studies reach different results.

Empirical Study of Before-After Impacts on User Groups

- Conducted extensive multivariate statistical analysis controlling for many factors including scarcity of forested land, whether the users do monitor each others' use, and the proportion of subsistence users
- The distribution of these four measures before and after decentralization:

Partners

- Indiana University (lead)
- CIFOR
- IFPRI
- U. of Colorado
- CERES (Bolivia)
- KEFRI (Kenya)
- UNAM (Mexico)
- UFRIC (Uganda)

Esther Mwangi, Ruth Meinzen-Dick, Yan Sun

Abwoli Banana, Rosario Leon, Leticia Merino, Paul Ongugo

27th May, 2008

The question

- Assessing whether variation of the proportion of women to men in forest user groups influences behavior/forest management practices

Sustainability factors

- Property rights and incentives
  - Users reap benefits of good management, bear costs of mismanagement
- Bundles of rights
  - Access rights: the right to enter an area and enjoy some benefits without affecting someone else's use of it eg hike
  - Withdrawal: the rights to obtain products from a resource eg timber

Property rights (2)

- Management: the right to regulate internal use patterns, and transform the resource by making improvements (levels and timing of harvesting)
- Exclusion: the right to determine who will have an access right and how that right may be transferred.

Governance

- Rules, monitoring and sanctions
  - (Gibson, Ostrom and Williams, 1995; Gombya-Ssembajjwe and Banana, 2000—across different tenure regimes) for the harvesting or appropriation of the resources
- Limits free riding
- Builds trust and enhances compliance

Governance (2)

- Maintenance, e.g., determining the type and level of regular maintenance/improvement that will sustain the resource over time.
- Conflict resolution: If individuals are going to follow rules over a long period of time, there must be some mechanism for discussing what constitutes an infraction.
- Other factors: Political, markets, biophysical, markets,

Gender

- Women, decision making, enhanced forest condition
  - Intimate knowledge
  - Responsible for feeding the family
  - Collaboration, solidarity and conflict resolution all increase
- Exclusion

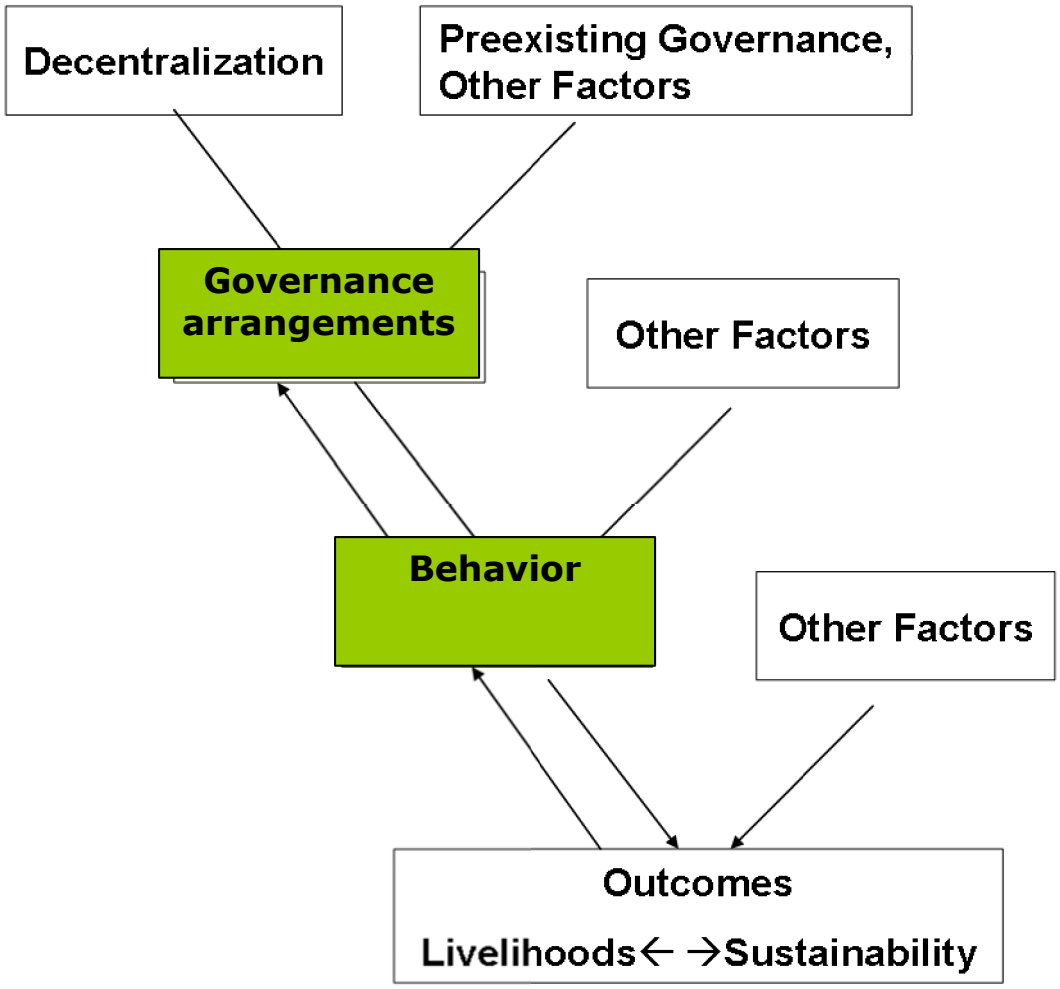


Figure 1: Conceptual Framework for Identifying Impacts of Decentralization

Methods

- IFRI method
- Community-level rules
- Socio-economic
- Demographic
  - Human incentives
  - Behavior
  - Forest ecology

Method (2)

User group

- group of people who harvest from, use, and maintain a forest and who share the same rights and duties to products from a forest; may or may not be formally organized

Forest

- An IFRI forest is an area of at least .5 ha containing woody vegetation exploited by at least three households and governed by the same legal structure.

Method (3)

- Rule making: Whether some individuals in this user group responsible for making rules about the forest? Yes/No. (FORM G-F2).
- Monitoring/sanctioning: Yearound or seasonally FORM U- B4.
- Leadership: Whether any individual in this group acted as a leader (entrepreneur)—investing time, energy, and perhaps money—intrying to work out coordinated strategies within the group concerning maintenance, investment in upgrading the forest(s), or harvesting forest products? Yes/No. FORM U-E2.
- Management/regeneration activities: Whether individuals have undertaken any of at least once a year : plant seedlings, trees, bushes, built fences and clear undergrowth (FORM G-E1)
- Other improvement activities: Whether during the past year individuals have undertaken any of the following: attempted to remove encroachments, create a nursery, remove leaf, seek help from external authorities to improve vegetation or reduce harvesting level for medicinal plants. Yes/No. (FORM G-E2)

- Technology: Whether during the past year, individuals invested in technologies that improve the productivity of this forest: adopting improved bee-keeping techniques, planting seedlings that alter species mix or other technologies. Yes/No. (FORM G-E3).
- Conflict: Whether during the last two years, individuals faced any issues that have engendered conflict within the user group: Yes/No. FORM U-E2.

The data

Country	Sites	Forests	Years	revisits
Uganda	22	24	1993-2002	10
Kenya	12	12	1997-2003	3
Bolivia	18	24	1994-2001	
Mexico	4	7	1997-2000	
	56	67		

Forests

Country	Min. (ha)	Max (ha)	Mean (ha)	Std. Dev.
Uganda	40	9073	1950	2632
Kenya	20.8	14895	4209	5011
Bolivia	46	44900	8756	11600
Mexico	155.8	1500	515	516
Average of Four Countries	20.8	44900	3848	6576

Legal status

Country	National Govt.	Local Govt.	Settlement(s) or Village(s)	Other Multiple Types of Ownership	Private Individual(s) or Family
Uganda	87%	0%	0%	0%	13%
Kenya	100%	0%	0%	0%	0%
Bolivia	30%	12%	31%	27%	0%
Mexico	0%	43%	14%	43%	0%
Average of Four Countries	69%	8%	7%	11%	5%

User Rights for Forest Products (% of user-groups)

Product	If Harvested or Obtained		If Not Harvested or Obtained	
	Has right to harvest this product	**Does not have right to harvest this product**	**Has right to harvest this product**	**Does not have right to harvest this product**
Trees	**59%**	33%	0%	8%
Bushes	**45%**	28%	18%	9%
Grasses	**53%**	27%	9%	11%
On ground leaves	**27%**	18%	41%	14%
Climbing leaves	**28%**	20%	38%	14%
Water	**86%**	1%	10%	3%
Wildlife	**30%**	34%	6%	30%

About user groups

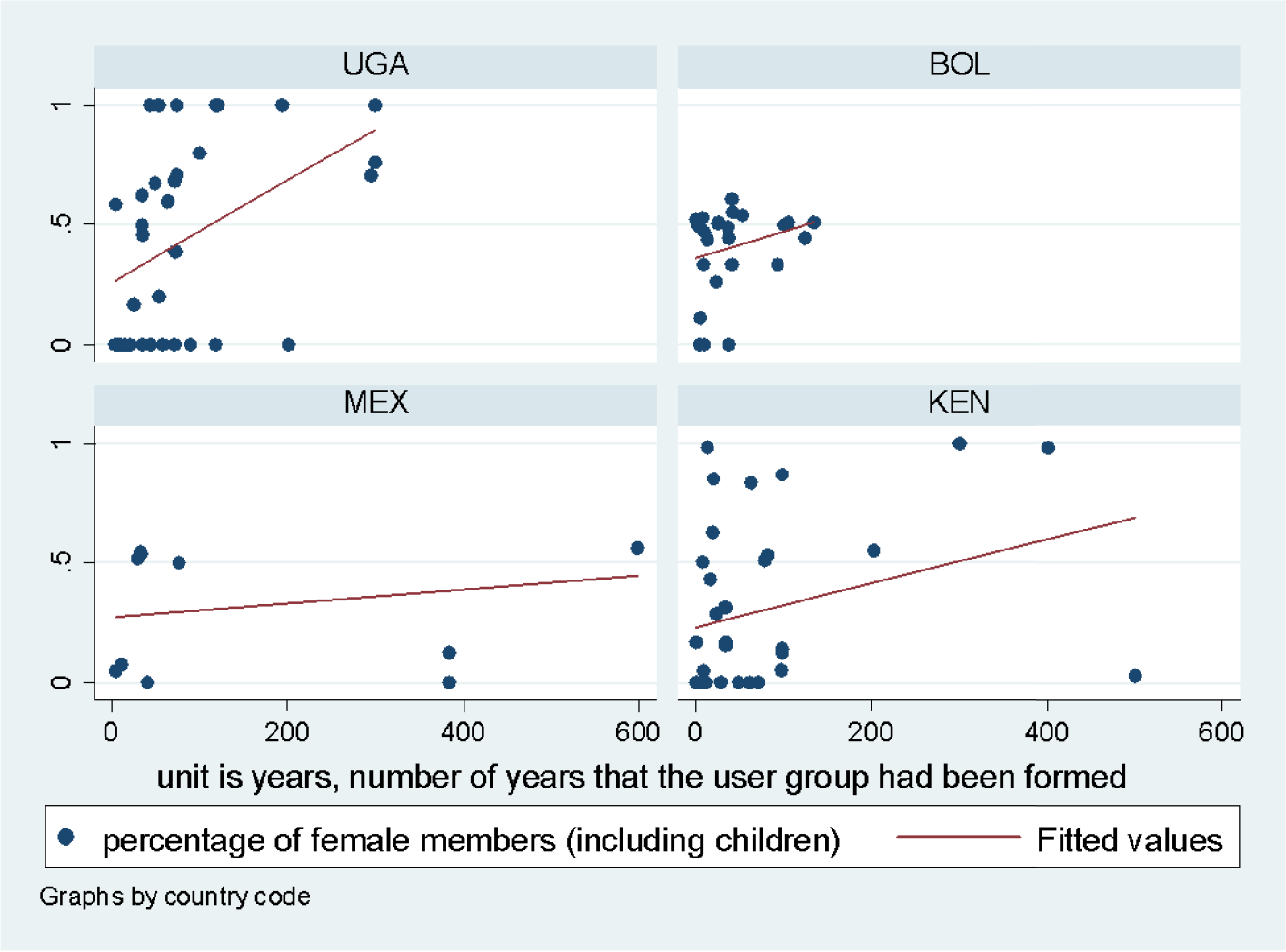
- Duration: 1400, 2000
- 35%: 0-1Km
- 55%: 1-5Km
- 5%: 5-10Km
- 5%>10
- Size: 10 or less (in Uganda, Kenya or Bolivia) to more than 200 individuals (in both Kenya and Mexico).

Forest Dependence: Percentage of user group's needs

Product	Total observation	Mean	Min.	Freq of Min.	Max	Freq of Max.
Need for fodder	150	29%	0%	66	100%	11
Need for fuelwood	156	60%	0%	28	100%	60
Need for housing timber	156	44%	0%	49	100%	40
Need for biomass	150	6%	0%	120	100%	4
Need for food	140	18%	0%	45	100%	9

Gender Composition of User Group (unit is % of # of User Groups)

Country	All Male Group	Male Dominated	Female Dominated	All Female Group
Uganda	35%	15%	34%	16%
Bolivia	35%	37%	22%	6%
Kenya	9%	47%	44%	0%
Mexico	10%	37%	53%	0%


UGA
BOL
MEX
KEN
0
.5
1
0
200
400
600
unit is years, number of years that the user group had been formed
percentage of female members (including children)
Fitted values
Graphs by country code

Some analysis

- Split into two groups: East Africa & Latin America
- male dominated (female n<=33%), gender balanced (0.33<proportion<=0.66), female dominated (>0.66)
- Assessed relationships between group type and behavior (Fisher's exact)

Property rights—East Africa
(percentage of groups in each category reporting they have a right to harvest)

Rights to harvest	Predominantly Male	Mixed	Predominantly Female	Total
Trees	37.50	50.00*	64.29*	47.06
Bushes	39.58	70.59*	64.00*	52.22
Grass	47.92	61.11	52.17	51.69
Ground leaves	48.84	75.00*	76.19*	61.25
Climbing leaves	52.17	62.50	69.57	58.82
Water	98.08	100.00	95.65	97.73
Wildlife	23.08	33.33	0.00	19.54

* =significantly higher than other group(s)

Property rights—Latin America
(percentage of groups in each category reporting they have a right to harvest)

Right to harvest	Predominantly Male	Mixed	Total
Trees	85.71	92.59	91.18
Bushes	100.00	95.45	96.30
Grass	100.00	88.00	90.32
Ground leaves	100.00	94.12	96.45
Climbing leaves	100.00	94.44	95.65
Water	100.00	91.67	93.33
Wildlife	83.33	87.50	86.67

Governance--Africa
(percentage of groups in each category reporting they have certain practices)

	Predominantly Male	Mixed	Predominantly Female	Total
Rule making	12.07	19.05	6.67	11.93
Monitoring & Sanctioning	15.52*	28.57*	0.00	13.89
Leadership	16.95	9.52	17.86	15.74
Management	13.33	9.52	13.33	12.61
Other improvements	25.00	28.58	10.00	21.62
Technologies	23.33	23.81	6.67	18.92
Conflicts	37.93	30.00	17.24	30.84

Governance—Latin America
(percentage of groups in each category reporting they have certain practices)

	Predominantly Male	Mixed	Total
Rule making	100.00*	60.00	70.83
Monitoring & Sanctioning	53.85	34.29	39.58
Leadership	38.46	25.00	28.57
Management	84.62*	52.63	60.78
Other improvements	23.08	28.95	27.45
Technologies	38.46	31.58	33.33
Conflicts	70.00*	37.84	44.68

Some results

- Property rights
  - East Africa:
    - Mixed and predominantly female more likely to have harvest rights to trees, bushes, ground leaves
    - No difference in rights to other products for all three groups
  - Latin America
    - No difference among mixed and predominantly males groups for rights to all products
    - High levels of reporting by user groups for all products

Governance

- East Africa
  - Mixed groups and predominantly male groups seem more likely to undertake monitoring than predominantly female (Labor/time constraint?)
  - Generally low levels for most management activities, but seems even lower for predominantly female groups (Labor, access to tech)
  - Conflict seems generally lower among predominantly female than mixed and predominantly male groups (okay)

Governance (2)

- Latin America
  - Predominantly male groups, who seem more likely to engage in rule making and management than mixed groups. They seem more likely to have conflicts.
  - No female groups
- B/w EA & LA
  - Predominantly female groups: none in LA, some in EA
  - Rule making: higher in LA (central govt vs local vs community)

So?

- Seems like when people are able to make rules, more likely to invest in resource enhancing management behavior (duh)
- Women in the woods. Still.

Now what?