

Economic Values of Ecosystem Services in Pastoralist Institutional Arrangements in Kenya

Dr. Kanyuuru Caroline (Ph.D.)

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Introduction

- Common **characteristics of NRK**-low density human population, low rainfall, low primary rangeland productivity levels (Republic of Kenya, 2005) and common property regime (Rota, 2009; Hodgson, 2004)
- **Ecosystem services**-aspects of ecosystem utilized for human well-being (Hassan et al., 2005).
- **Degrading** ecosystem services are a threat to sustainable dependency on the environment for livelihoods(Daily et al., 2009).

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- Policy formulation has largely relied on **traditional economics** (Farber et al., 2006)
- New thinking must explore synergy in interactions of the **environmental** and **economic systems** (Farber et al., 2006)
- **Institutional environment** influences rural producers' choice of production practices and outputs (Barrett et al., 2002).

Objectives

General objective

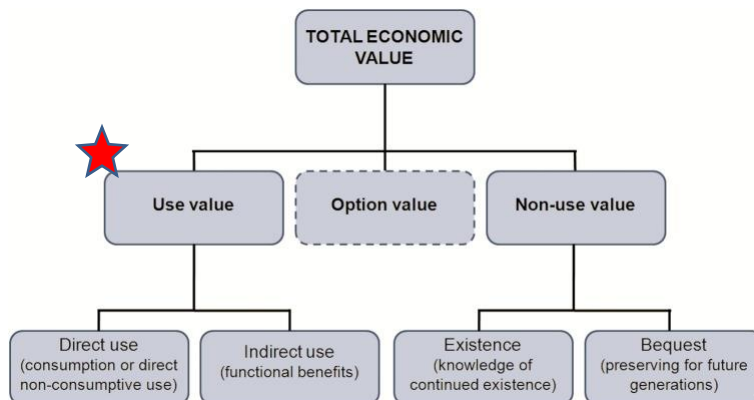
- To understand how institutional arrangements affect ecosystem services benefits in Northern Rangelands of Kenya (NRK)

Specific objectives

- Evaluate changes in resource management in NRK
- Compare economic values of ecosystem services across varying institutional arrangements

Methodology

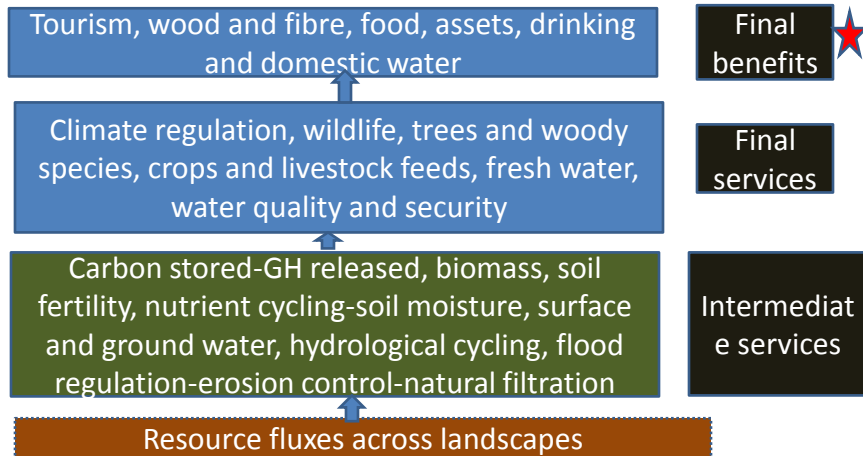
- Total Economic Value Framework (TEV)



Brander et al, 2010

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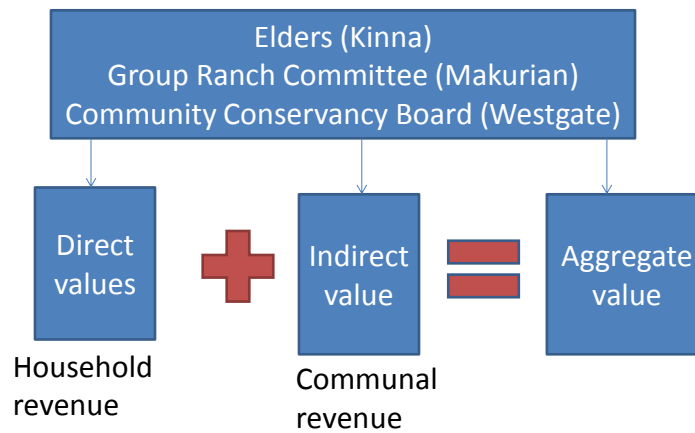
- Classifying ecosystem services



Ericksen et al, 2011

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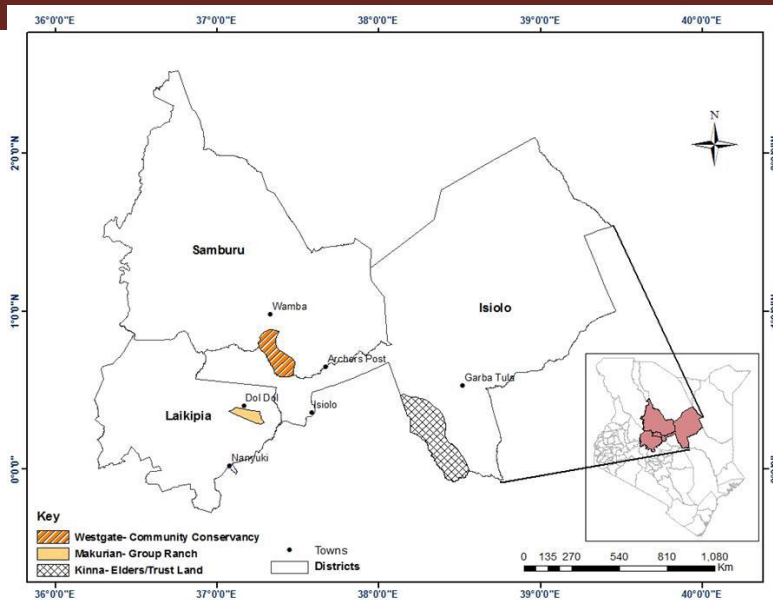
- Conceptual framework adapted from TEV



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- Sample size-150HH (Israel, 2009)
- Sampling-Purposive (IA) and random sampling (Village, HH)
- Data collection- KI, FGDs, HH survey-50 HH per site
- Data mgt & analysis-MS Access, Excel & STATA
- Economic valuation-Market price method

Study area



Institutional arrangements

- Kinna – **Elders**

An informal structure, Dhetha elders, supported by NGOs randomly

- Makurian – **Group Ranch Committee**

A formal structure (registered), elders, youth and women, supported by NGOs randomly

- Westgate – **Community Conservancy Board**

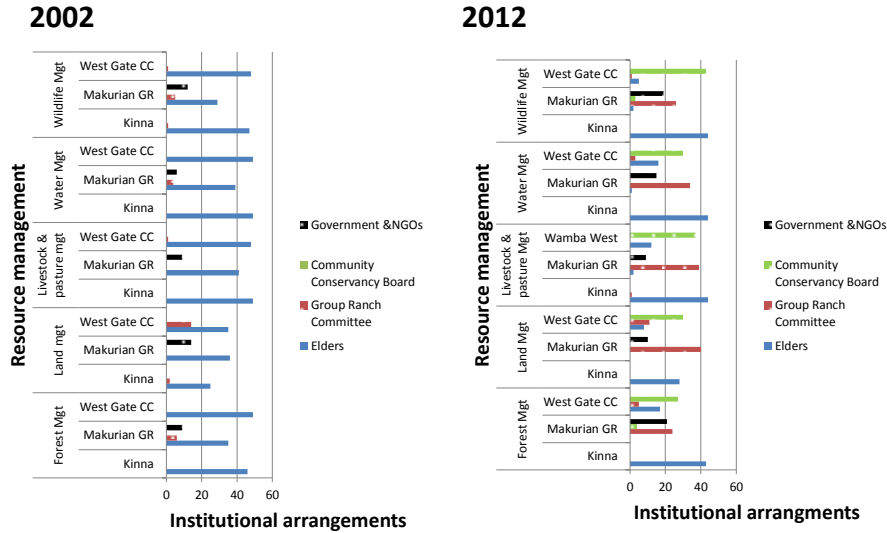
Formal structure (registered), council of elders, women, youth, government reps, private sector, facilitated by NGO in a structured manner.

Results

Sites	HHH education level (%)				HHH occupation (%)					Age	HH size	Gender %	
	Non	Pri	Sec	Ter	LR	Her	PE	CE	Oth	Mean	Mean	M	F
1	41	37	16	6	59	2	14	4	20	44.6	6.2	86	14
2	69	18	8	4	76	6	4	2	10	47.5	5.6	68	32
3	85	13	2	0	96	0	2	0	2	47.6	6.3	69	31

1	Kinna	Elders
2	Makurian	Group Ranch Committee
3	Westgate	Community Conservancy Board

Resource management

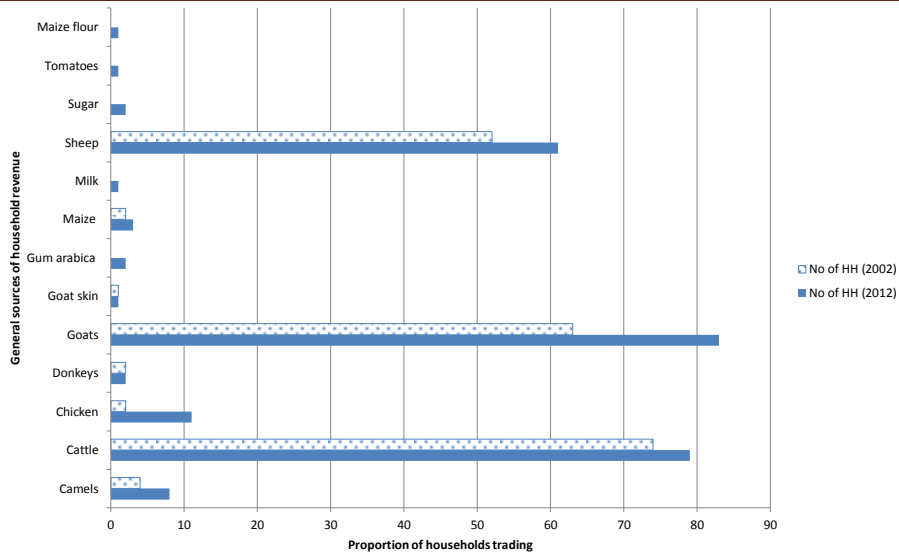


Principle component analysis

	Institutional arrangement resource management domains		
	IA involvement in 2012	IA involvement in 2002	IA involvement in 2002
Forestmgt 2002	-.016	.398	.080
Forestmgt 2012	.198	.080	-.040
Land tenure 2002	.137	-.101	-.011
Land tenure 2012	.219	-.020	-.018
Livestockandpasture 2002	-.017	-.011	.845
Livestockandpasture 2012	.211	-.084	.041
Watermgt 2002	-.006	.413	-.428
Watermgt 2012	.212	.023	-.030
Wildlifemgt 2002	-.011	.397	.164
Wildlifemgt 2012	.182	.061	.021

Extraction Method: Principal Component Analysis.

Sources of household revenue

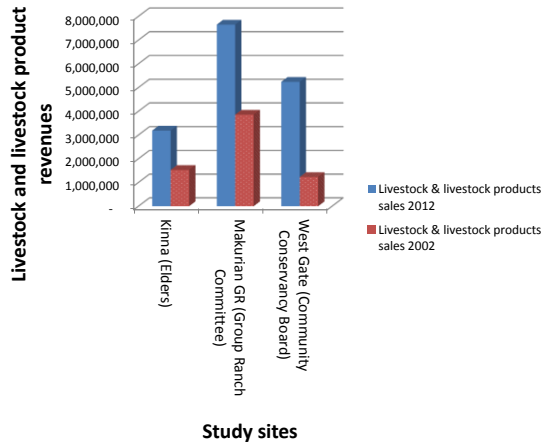


Constituents of direct and indirect value

- **Direct values** – sum of livestock, livestock products revenue and other sources of direct funds
- **Indirect values** – communal revenue accumulated through the institutional arrangement

Livestock and livestock products estimated sales

Trends in 2002 and 2012

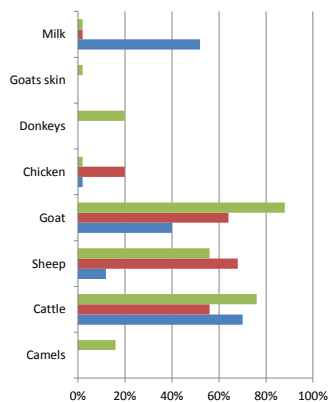


Influencing factors

- Proximity to an urban center
- Infrastructure – good road network
- Institutional arrangement
- Production system

Proportions of HH trading

Livestock species, livestock product

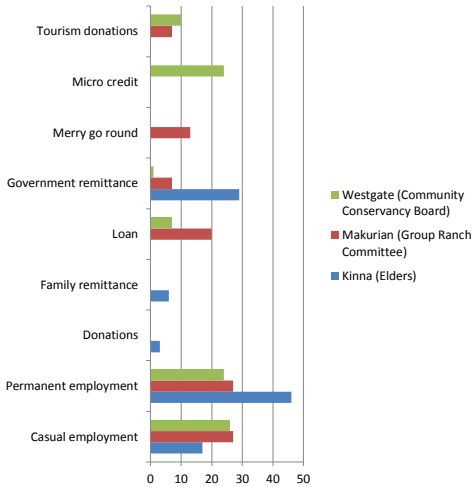


Influencing factors

- Proximity to an urban center
- Cash liquidity
- Production system
- Institutional arrangement
- Education
- Road infrastructure

Other sources of funds to HH

Funds sources

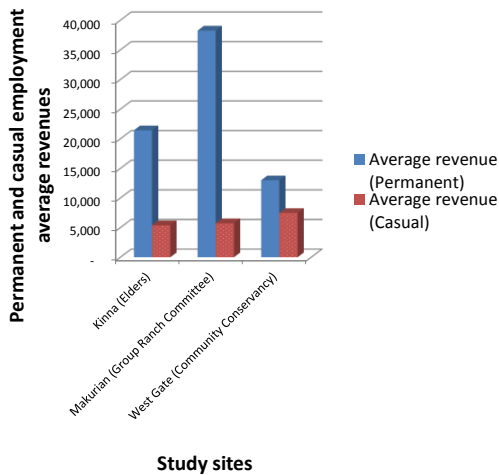


Influencing factors

- Institutional arrangement
- Poverty levels
- Proximity to an urban center
- Education

Households employment revenue

Monthly employment revenues (averages)



Influencing factors

- Education
- Proximity to urban center
- Institutional arrangement

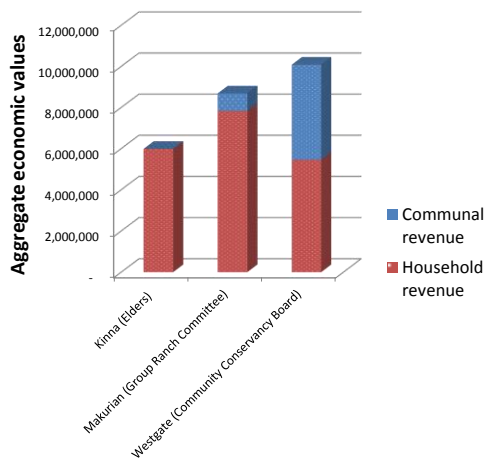
Reported indirect value

- Westgate - Tourism revenues
2012 - **Kshs. 4,000,000**
2011 - Kshs. 2,000,000
2010 - Kshs. 1, 000, 000
- Makurian - Sand revenues
2012 - **Kshs. 858,000KES**
- Kinna – No revenues

Aggregate values vs IAs (2012)

Aggregate economic values

Factors influencing



Institutional arrangements

- Institutional arrangement presence changes dynamic

Conclusions/recommendations

- Institutional arrangements affect value of ecosystem services benefits (ESB)
- Other factors affecting value ESB-education, proximity to urban centers, infrastructure (roads), production system
- Marginalized communities could benefit much more from a robust community institutional arrangement.
- The mechanism can support the government bridge the development gap.

Reviews

- Reviewed by Ecosystem Services Journal
- Economic valuation method is weak
- Economic values factor value of output but did not factor in the cost of production
- The paper has been reconstructed for a different journal

Assessing Livelihood Diversity across Different Institutional Arrangements in Northern Rangelands of Kenya

Thank you!

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Box 30709, Nairobi 00100 Kenya
Phone +254 20 423 3000
Fax +254 20 4233001
Email ilri-kenya@cgiar.org

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