

# Stakeholder evaluation of market-based instruments for conservation in Rwanda

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# Rwanda and the Albertine Rift

- Afromontane rainforest of East Central Africa
- More endemic vertebrates than any other region of Africa (Plumptre et al., 2007)
- Major watersheds from Uganda to Zambia
- Densely populated areas of political volatility make corridor establishment difficult (Cordeiro et al., 2007)

## Rwandan context:

- Population: 12.1 million
- Area: 26,338km<sup>2</sup>
- Tea, coffee, and tourism
- 90% smallholder subsistence farmers (Stainback and Masozera, 2010)
- Landmark GDP growth and government stability since 1994

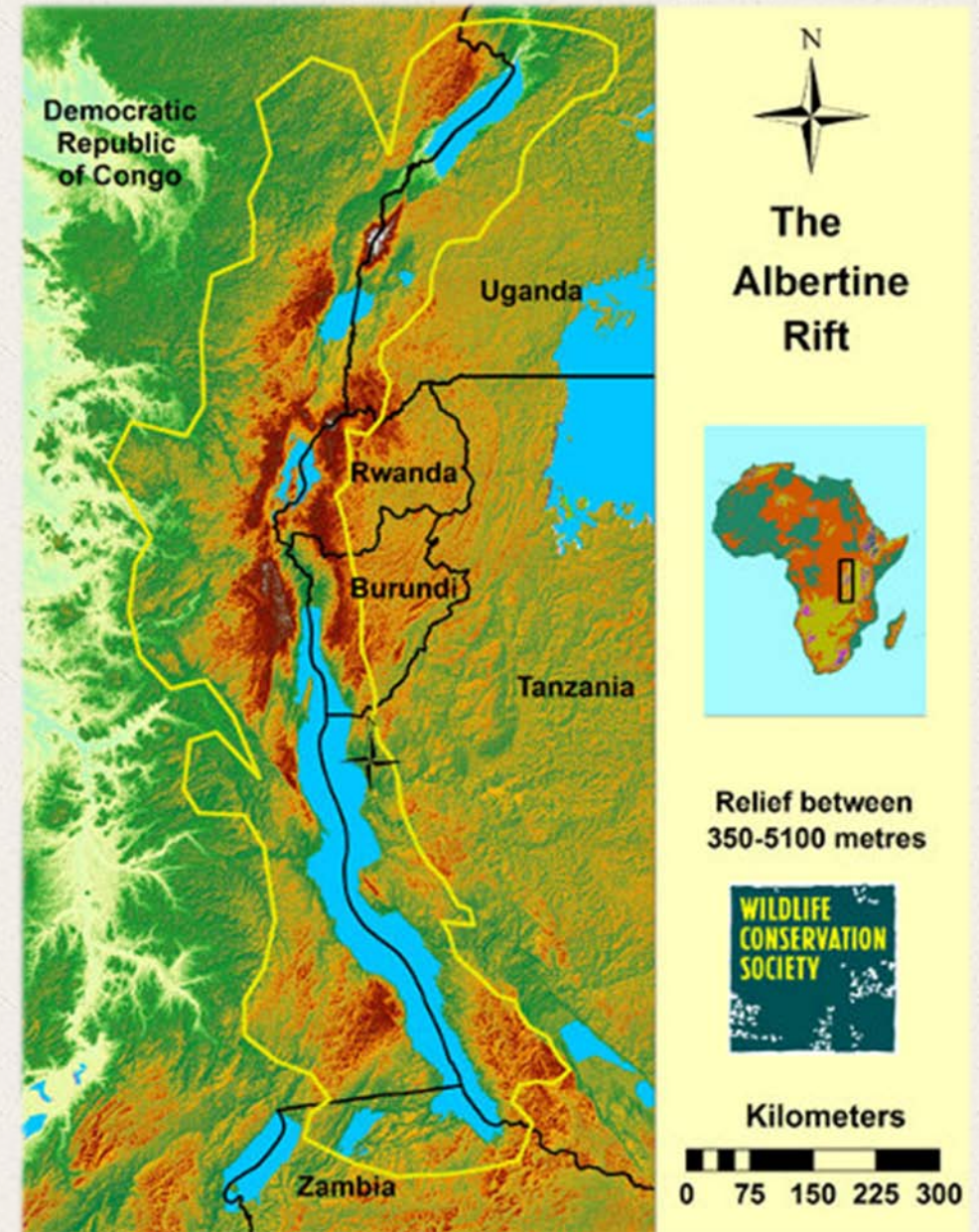


Image credit: Wildlife Conservation Society Rwanda

# Nyungwe National Park

- Southwestern Rwanda
  - 1,000km<sup>2</sup>
  - 3,000m maximum altitude
- High diversity and endemism even within the Rift (Plumptre et al., 2007)
  - 300 tree and shrub species
  - 260 bird species
  - 13 primate species
- Regional land use pressures
  - Harvest of forest products
  - Encroachment on protected areas
  - Agricultural conversion



Photo credit: Kel Rayens

# Project objective

At the local and national levels, conduct an ex-ante evaluation of market-based instruments (MBIs) for conservation in Rwanda

- Through stakeholder focus groups:
  - Identify important criteria and indicators for evaluating success of an MBI
  - Rank criteria and indicators based on importance
  - Rank MBIs based on fulfillment of the criteria



Photo credit: Kel Rayens

# Focus group descriptions

## **June 19, 2014**

- Identify criteria and indicators by which to evaluate MBIs through multi-criteria analysis
- 30 participants from government, NGOs, and local agriculture cooperatives

## **October 31, 2014**

- Use the analytic hierarchy process (AHP) to rank importance of each criterion and indicator
- 37 participants from five regional tea, coffee, and rice cooperatives

## **October 30, 2014**

- Use the analytic hierarchy process (AHP) to rank importance of each criterion and indicator
- 34 participants from four regional rice-growers' cooperatives

## **November 4, 2014**

- Use the AHP to rank importance of criteria, then rank importance of potential MBIs (PES, subsidies, certification, taxes)
- 10 participants from national government and NGOs

# The Analytic Hierarchy Process

- Thomas Saaty, 1977; decision-making in complex scenarios

		<u>Economic</u>																		
		<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 5px; width: 150px;"> <p>Equally Important</p> <p>Slightly More Important</p> <p>Much More Important</p> <p>Very Much More Important</p> <p>Extremely More Important</p> </div> <div style="width: 80%;"> <p>Increase the number and diversity of local businesses and jobs</p> <p>Improve infrastructure (roads, water, electricity, schools, clinics)</p> <p>Increase income and/or yield from agricultural production</p> </div> </div>																		
		Extremely More Important	Very Much More Important	Much More Important	Slightly More Important	Equally Important	Slightly More Important	Much More Important	Very Much More Important	Extremely More Important										
		9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9		
Increase the number and diversity of local businesses and jobs													Improve infrastructure (roads, water, electricity, schools, clinics)							
Improve infrastructure (roads, water, electricity, schools, clinics)																			Increase income and/or yield from agricultural production	
Increase the number and diversity of local businesses and jobs																			Increase income and/or yield from agricultural production	

# The Analytic Hierarchy Process

- Utilize the eigenvalue method

		Improve infrastructure (roads, water, electricity, schools, clinics)	Increase income and/or yield from agricultural production	
Increase the number and diversity of local businesses and jobs	1	1/2	1/3	0.164
Improve infrastructure (roads, water, electricity, schools, clinics)	2	1	1/2	0.297
Increase income and/or yield from agricultural production	3	2	1	0.539

# Results from June 19, 2014

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## CRITERIA

### ECONOMY

### ENVIRONMENT

### EQUITY

Increase the number and diversity of local businesses and jobs

Increase populations of target animal species

Use bottom-up approach in making decisions, with equal access to information among all stakeholders

Improve infrastructure (roads, water, electricity, schools, clinics)

Decrease incidence of threats to key conservation targets (e.g. fires, poaching, and mining)

Consider vulnerable group (e.g. women, low-income households) when distributing funds or making investment contributions

Increase income and/or yield from agricultural production

Improve land management practices to reduce soil erosion and water pollution from sedimentation

Promote cohesion and empowerment of communities through collaborative participation

Increase forest cover

*Table 1: June 19<sup>th</sup> – criteria and indicators by which to evaluate MBIs*



# Results from October 30, 2014

CRITERIA & INDICATORS	Group 1 (rice)	Group 2 (rice)	Group 3 (rice)	Group 4 (rice)
<b>Economic</b>	<b>0.081</b>	<b>0.333</b>	<b>0.311</b>	<b>0.196</b>
Jobs & businesses	0.013 (0.163)	0.180 (0.540)	0.153 (0.493)	0.041 (0.210)
Infrastructure	0.024 (0.297)	0.099 (0.297)	0.097 (0.311)	0.108 (0.550)
Agricultural income	0.044 (0.540)	0.054 (0.163)	0.061 (0.196)	0.047 (0.240)
<b>Environment</b>	<b>0.577</b>	<b>0.570</b>	<b>0.493</b>	<b>0.493</b>
Target species	0.062 (0.108)	0.070 (0.123)	0.068 (0.138)	0.043 (0.087)
Decrease threats	0.257 (0.445)	0.214 (0.376)	0.136 (0.276)	0.190 (0.385)
Land management	0.149 (0.258)	0.151 (0.265)	0.193 (0.391)	0.179 (0.364)
Forest cover	0.110 (0.190)	0.134 (0.235)	0.096 (0.195)	0.081 (0.164)
<b>Equity</b>	<b>0.342</b>	<b>0.097</b>	<b>0.196</b>	<b>0.311</b>
Bottom-up	0.114 (0.333)	0.048 (0.493)	0.097 (0.493)	0.097 (0.311)
Vulnerable groups	0.048 (0.140)	0.019 (0.196)	0.038 (0.196)	0.061 (0.196)
Community cohesion	0.181 (0.528)	0.030 (0.311)	0.061 (0.311)	0.153 (0.493)

Table 2: Oct 30<sup>th</sup> – priority scores for criteria and indicators, indicating the importance of each criterion or indicator relative to the others

# Results from October 30, 2014

CRITERIA & INDICATORS	Group 1 (rice)	Group 2 (rice)	Group 3 (rice)	Group 4 (rice)
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# Results from October 31, 2014

CRITERIA & INDICATORS	Group 1 (rice)	Group 2 (tea)	Group 3 (coffee)	Group 4 (tea)	Group 5 (rice)
<b>Economic</b>	<b>0.131</b>	<b>0.238</b>	<b>0.268</b>	<b>0.172</b>	<b>0.614</b>
Jobs & businesses	0.017 (0.127)	0.044 (0.184)	0.053 (0.196)	0.041 (0.238)	0.377 (0.614)
Infrastructure	0.024 (0.186)	0.139 (0.584)	0.132 (0.493)	0.108 (0.625)	0.072 (0.117)
Agricultural income	0.090 (0.687)	0.055 (0.232)	0.083 (0.311)	0.023 (0.136)	0.165 (0.268)
<b>Environment</b>	<b>0.661</b>	<b>0.625</b>	<b>0.614</b>	<b>0.726</b>	<b>0.268</b>
Target species	0.062 (0.094)	0.049 (0.078)	0.126 (0.205)	0.116 (0.160)	0.023 (0.085)
Decrease threats	0.094 (0.142)	0.269 (0.431)	0.170 (0.277)	0.201 (0.277)	0.081 (0.304)
Land management	0.364 (0.550)	0.188 (0.300)	0.090 (0.146)	0.339 (0.467)	0.121 (0.451)
Forest cover	0.141 (0.214)	0.120 (0.192)	0.229 (0.373)	0.069 (0.095)	0.043 (0.160)
<b>Equity</b>	<b>0.208</b>	<b>0.136</b>	<b>0.117</b>	<b>0.102</b>	<b>0.117</b>
Bottom-up	0.027 (0.740)	0.032 (0.443)	0.031 (0.540)	0.018 (0.687)	0.072 (0.634)
Vulnerable groups	0.137 (0.094)	0.085 (0.169)	0.072 (0.163)	0.074 (0.186)	0.031 (0.192)
Community cohesion	0.043 (0.167)	0.018 (0.387)	0.014 (0.297)	0.010 (0.127)	0.014 (0.174)

Table 3: Oct 31<sup>st</sup> – priority scores for criteria and indicators, indicating the importance of each criterion or indicator relative to the others

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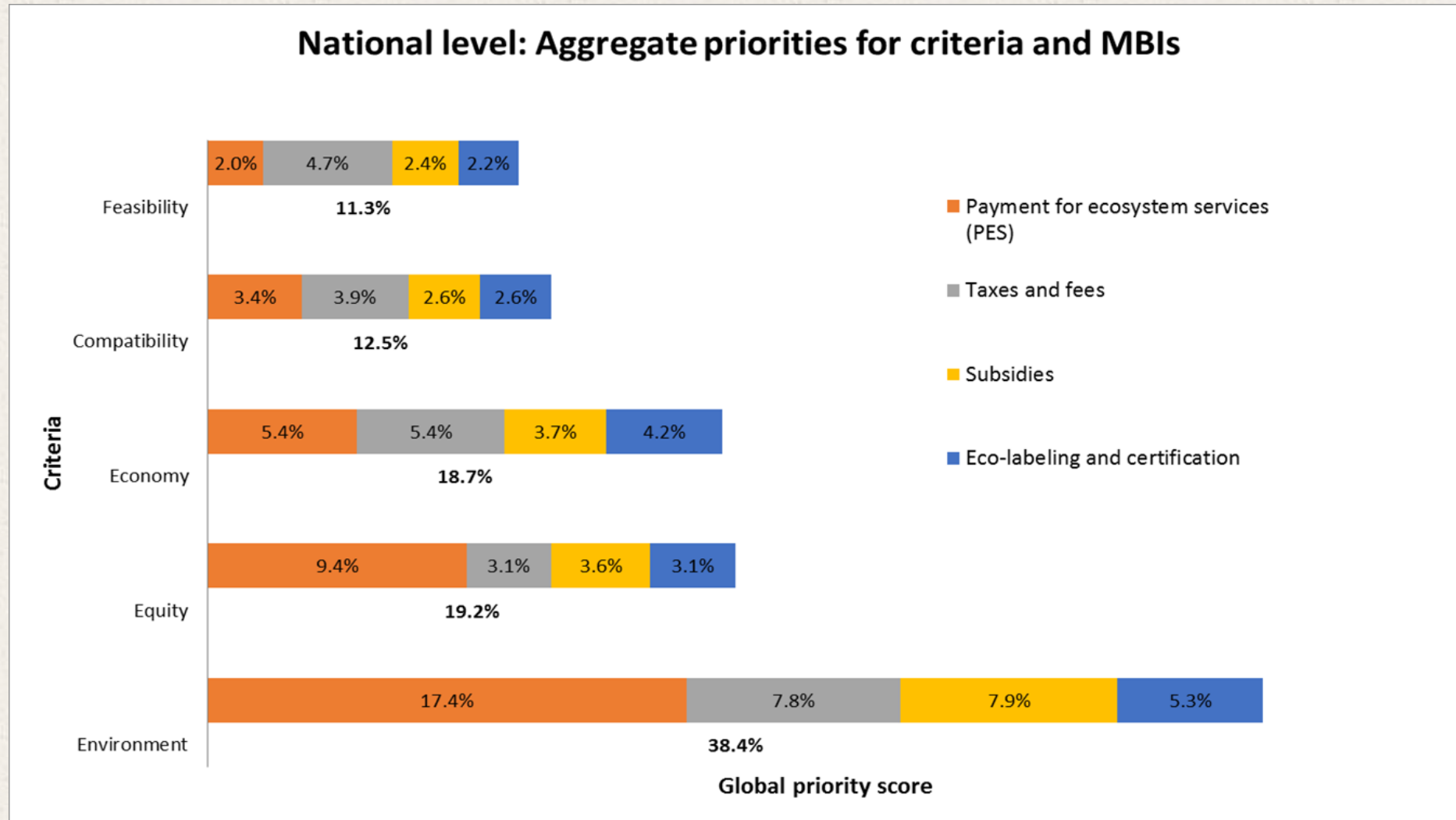


Figure 1: Nov 4<sup>th</sup> – priority scores for criteria and MBIs

# Conclusions

- Across rice, tea, and coffee industries, local farmers place highest priority on environmental protection
  - Environmental stewardship will result in economic benefit
  - Low values for equity criterion & indicators
- At the national level, representatives place highest priority on environmental protection
  - Preferred MBI: Payments for ecosystem services (PES)
  - Second in priority: Taxes and fees
  - Group discussion revealed concerns about administrative costs

# Acknowledgements

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