



WORLD  
RESOURCES  
INSTITUTE

# Restoration Opportunities Assessment Methodology (ROAM)



THE GLOBAL  
PARTNERSHIP  
ON FOREST  
LANDSCAPE  
RESTORATION

BONN  
CHALLENGE 2011

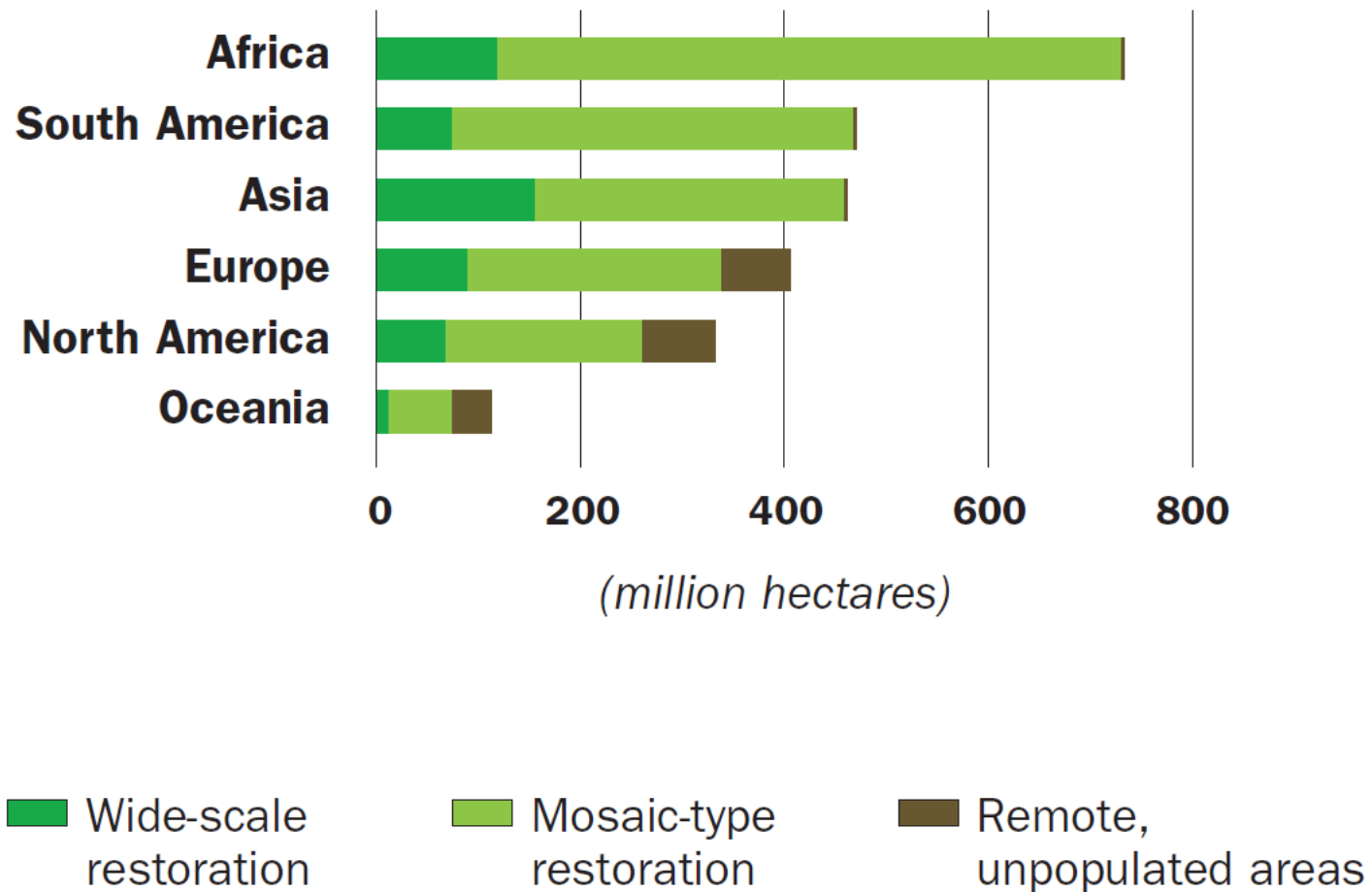
The logo for the Bonn Challenge 2011, featuring three green leaves of varying shades.

# This Presentation Will Cover

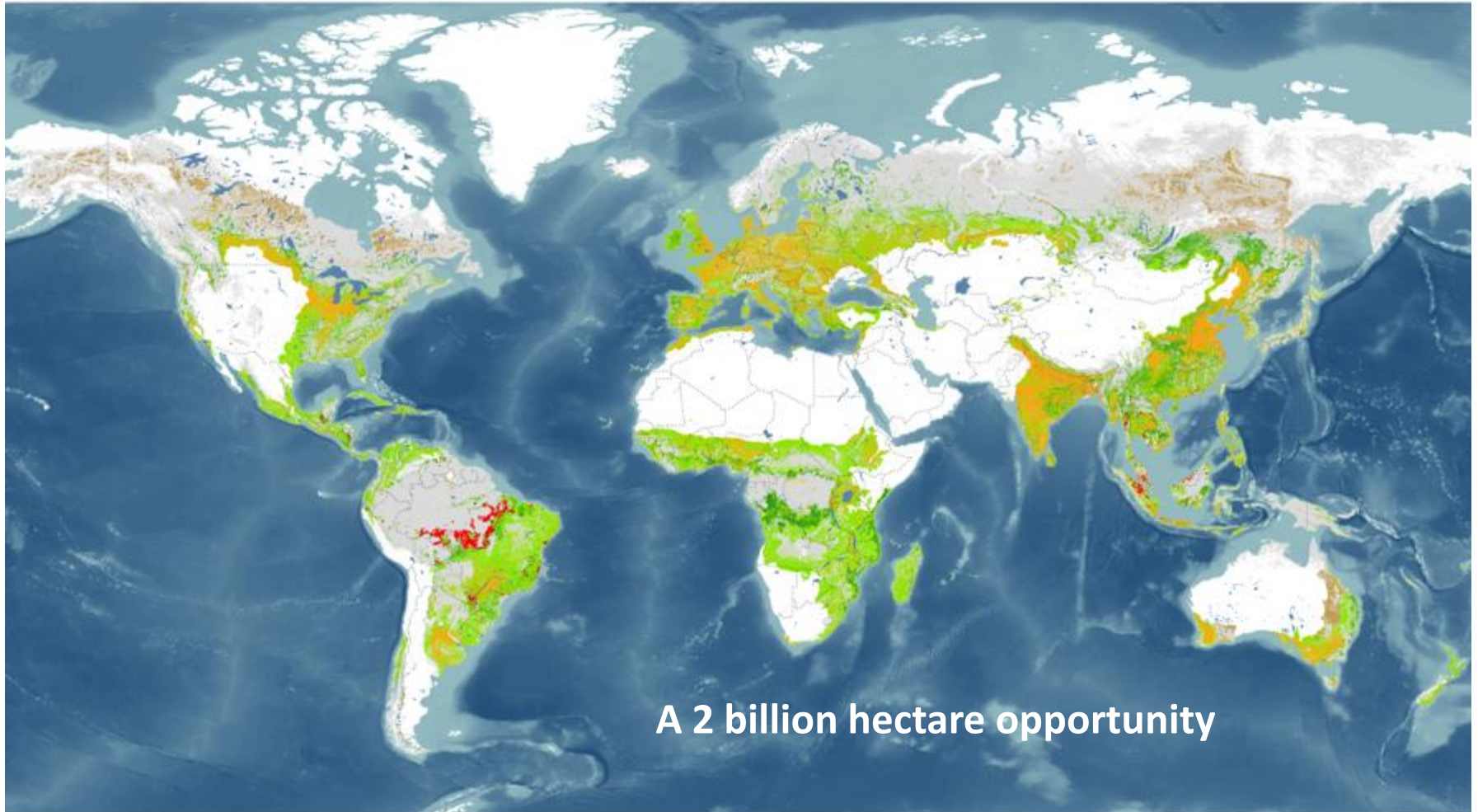
- The global potential for restoration
- The forest landscape restoration approach
- Restoration Opportunities Assessment Methodology (ROAM)
- ROAM applied: examples from Rwanda and elsewhere



# There is opportunity for restoration of degraded lands across the world



# A World of Opportunity for Forest and Landscape Restoration



2 Billion Hectares of Opportunity for Restoration

# Forest Landscape Restoration is an approach that will deliver ecological integrity and human wellbeing through multi-functional restored landscapes

## It involves

Bringing people together to identify, negotiate, and implement practices

That restore an agreed optimal balance of the ecological, social, and economic benefits of forests and trees

Within a broader pattern of land uses.



**Great Lakes Landscape**

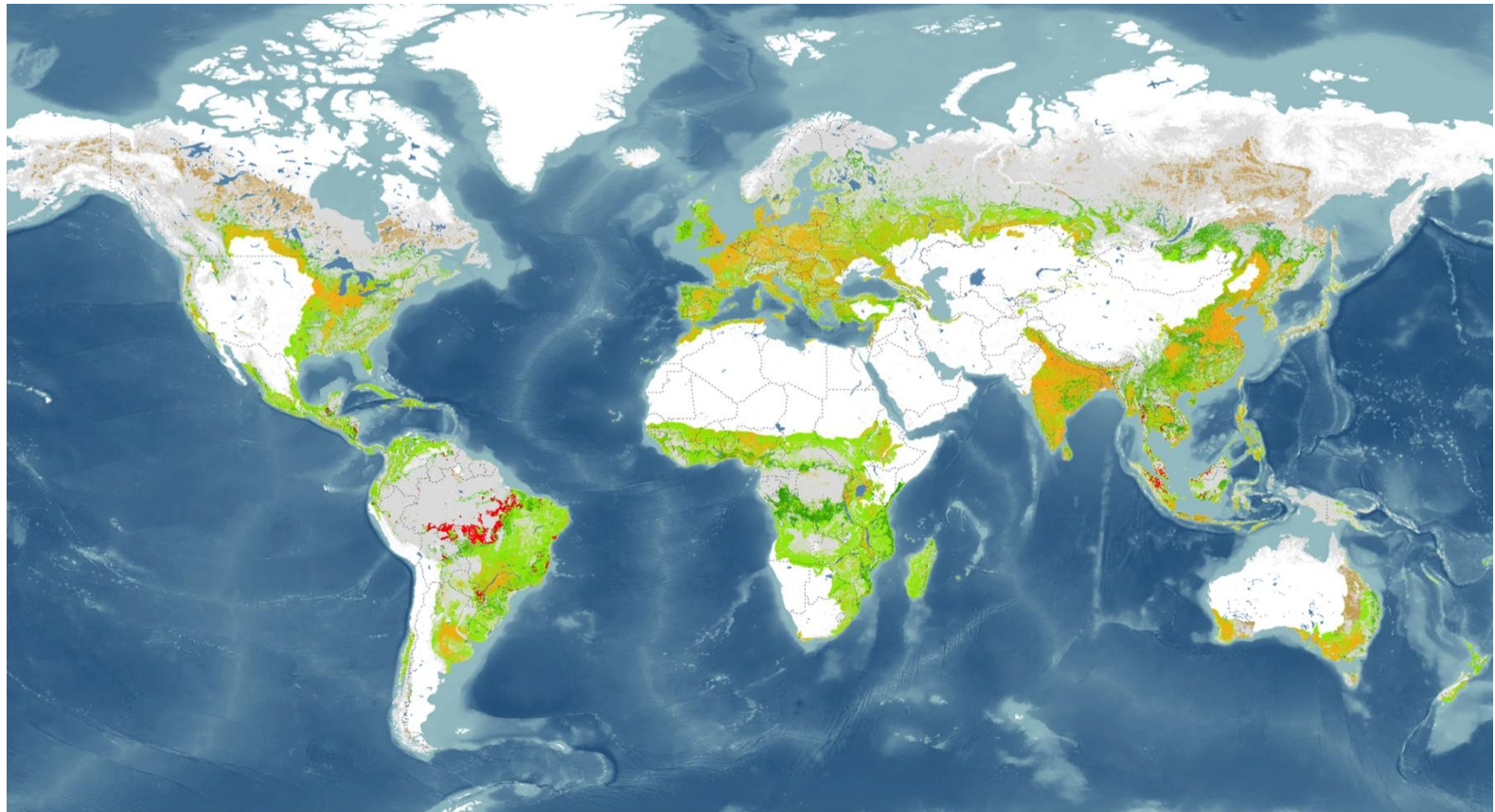
Women association making their own nursery for landscape restoration in Bugarama (Kayanza, Burundi )

# Key characteristics of this approach

- Restoring "forward" to meet current and future uses:
  - Thinking long time/big space.
  - Learning and adapting over time
- Treating the landscape as a mosaic of different sites
- Restoring functionality and productivity, not "original" forest
- Balancing local needs, national and global priorities
- Using a package of restoration strategies



# “Nice global map – but what’s my national opportunity?”



## FOREST AND LANDSCAPE RESTORATION OPPORTUNITIES

- Wide-scale restoration
- Mosaic restoration
- Remote restoration

## OTHER AREAS

- Agricultural lands
- Recent tropical deforestation
- Urban areas
- Forest without restoration needs



# Global data shows opportunities & trends; but too coarse for national strategy

Book2 - Microsoft Excel

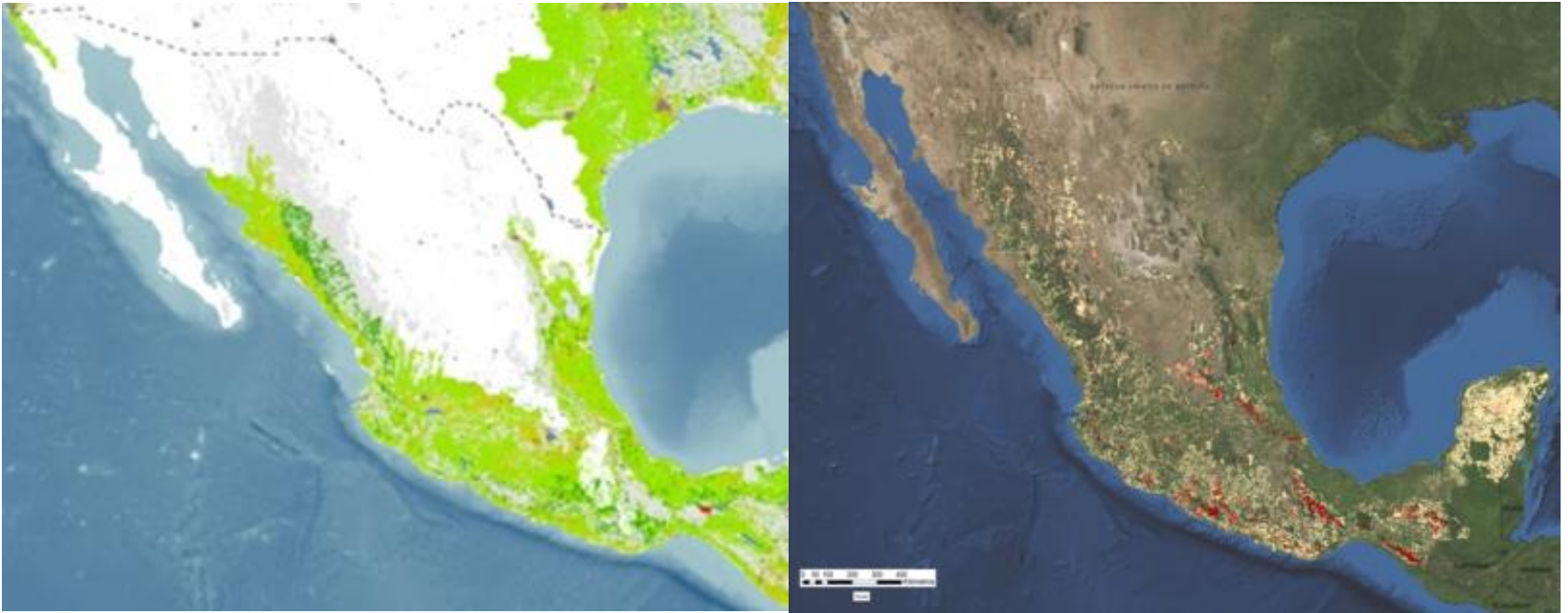
A	B	C	D	E	F	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
ID	Country	Continent	Region	Land area		Ag lands	Mosaic	Wide scale	Remote	w/o ag	mos+wide	Mosaic	Wide scale	Mos+wide	
185	Nigeria	Africa	Western Africa	91		26.1	32.2	4.6	0.0	36.8	36.8	16		16	
29	Benin	Africa	Western Africa	12		2.2	6.1	0.5	0.0	6.6	6.6				
42	Burkina Faso	Africa	Western Africa	27		4.0	14.5	0.0	0.0	14.5	14.5				
47	Cape Verde	Africa	Western Africa	0		0.0	0.1	0.0	0.1	0.2	0.1				
66	Côte d'Ivoire	Africa	Western Africa	32		2.5	18.8	2.0	0.0	20.8	20.8				
91	Gambia	Africa	Western Africa	1		0.3	0.6	0.0	0.0	0.6	0.6				
95	Ghana	Africa	Western Africa	23		3.3	13.5	1.1	0.0	14.5	14.5				
105	Guinea	Africa	Western Africa	25		1.3	7.7	2.0	0.0	9.7	9.7				
106	Guinea-Bissau	Africa	Western Africa	3		0.1	1.1	0.1	0.0	1.2	1.2				
146	Liberia	Africa	Western Africa	10		0.2	1.2	0.0	0.0	1.3	1.3				
158	Mali	Africa	Western Africa	125		3.6	17.2	0.0	0.0	17.2	17.2				
162	Mauritania	Africa	Western Africa	104		0.0	0.0	0.0	0.0	0.0	0.0				
184	Niger	Africa	Western Africa	119		0.4	0.5	0.0	0.0	0.5	0.5				
211	Saint Helena	Africa	Western Africa	0		0.0	0.0	0.0	0.0	0.0	0.0				
221	Senegal	Africa	Western Africa	20		0.9	5.5	0.0	0.0	5.5	5.5				
225	Sierra Leone	Africa	Western Africa	7		0.7	3.1	0.3	0.0	3.3	3.3				
247	Togo	Africa	Western Africa	6		1.4	2.4	1.1	0.0	3.5	3.5				
68	Democratic Republic of the Congo	Africa	Middle Africa	230		7.9	40.2	45.1	0.0	85.3	85.3	11	4	5	
7	Angola	Africa	Middle Africa	125		1.6	57.1	8.8	0.0	65.8	65.8	5	12	7	
45	Cameroon	Africa	Middle Africa	47		2.3	10.7	4.8	0.0	15.6	15.6				
49	Central African Republic	Africa	Middle Africa	62		0.3	16.3	1.9	0.0	18.2	18.2				
50	Chad	Africa	Middle Africa	127		1.9	22.9	0.0	0.0	22.9	22.9				
59	Congo	Africa	Middle Africa	34		0.2	1.6	10.0	0.0	11.7	11.7		10		
77	Equatorial Guinea	Africa	Middle Africa	3		0.0	0.0	0.0	0.0	0.0	0.0				
90	Gabon	Africa	Middle Africa	26		0.0	0.3	2.6	0.0	2.8	2.8				
218	Sao Tome and Principe	Africa	Middle Africa	0		0.0	0.0	0.0	0.0	0.0	0.0				



**The challenge now is to move from the global generic**



## To the national specific



... and to identify priority actions and priority landscapes

**The goal is to frame sub/national programmes that offer workable and cost-effective strategies for landscapes like these**



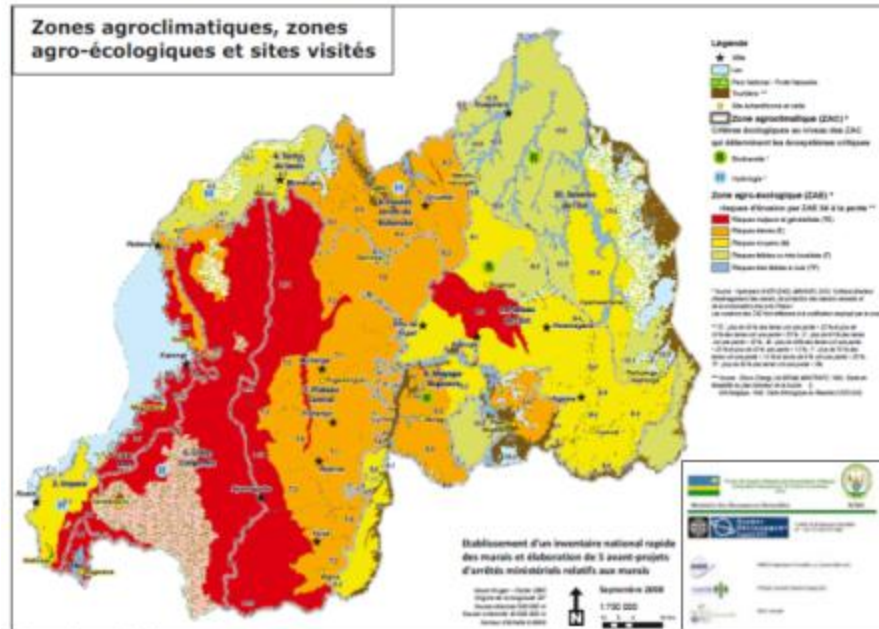
Rwanda's deforested mountains hold tremendous potential for restoration that can improve lives

## Primary challenges include

1. Lack of data: degraded lands and natural resources are opaque – if not invisible – as are the livelihoods of people who live there
  - Spatial and biophysical data needed
  - Economic and social data needed
2. Lack of coherence: in policy & programmes
  - Either institutional competition
  - Or (more likely) institutional myopia

# Restoration Opportunities Assessment Methodology (ROAM) addresses those challenges and others

Figure 4: Agro-climatic zones and risk of soil erosion



By pairing best available science and data..

With best informed knowledge & insights

# The purpose of ROAM assessments is to

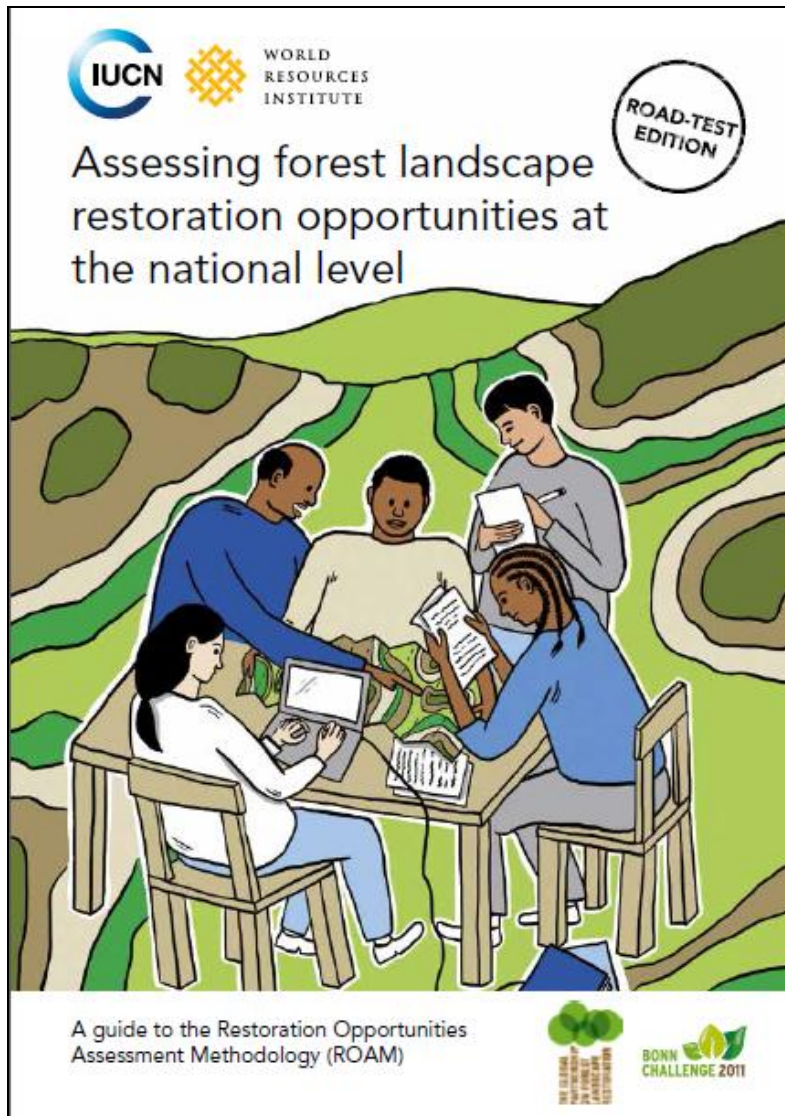
- Identify, analyse and map the overall potential and areas of opportunity for forest landscape restoration (FLR) on a national or sub-national level
- Support countries, organizations, communities and enterprises in defining and implementing pledges to the Bonn Challenge target to restore 150 million hectares worldwide by 2020
- Provide a basis for national policies like NAPAs, contribute to international programmes like UN-REDD, and catalyze innovative financing

# Some key products of ROAM assessments include

- Identification and engagement of stakeholders
- Defined national or sub-national goals for forest landscape restoration
- Geospatial estimate of total extent of restoration potential
- Types of socially and ecologically feasible restoration interventions by suitable area
- Quantification of the costs and benefits of each intervention type
- Estimated value of additional carbon by intervention type
- Identification of key success factors and strategies for addressing missing factors
- Identification of options and models for investment and financing

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# Main steps to ROAM



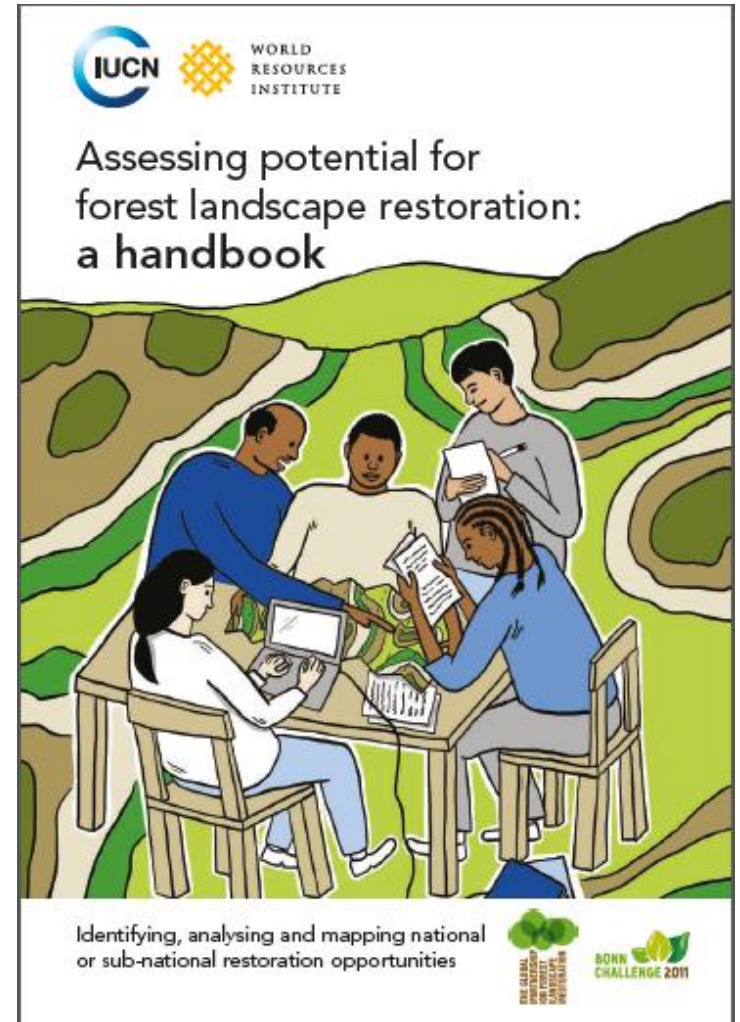
1. Engage stakeholders
2. Identify FLR interventions
3. Align FLR with priorities
4. Conduct FLR analyses
5. Validation and iteration
6. Restore

**Download a ROAM Handbook:**  
**[www.iucn.org/roam](http://www.iucn.org/roam)**



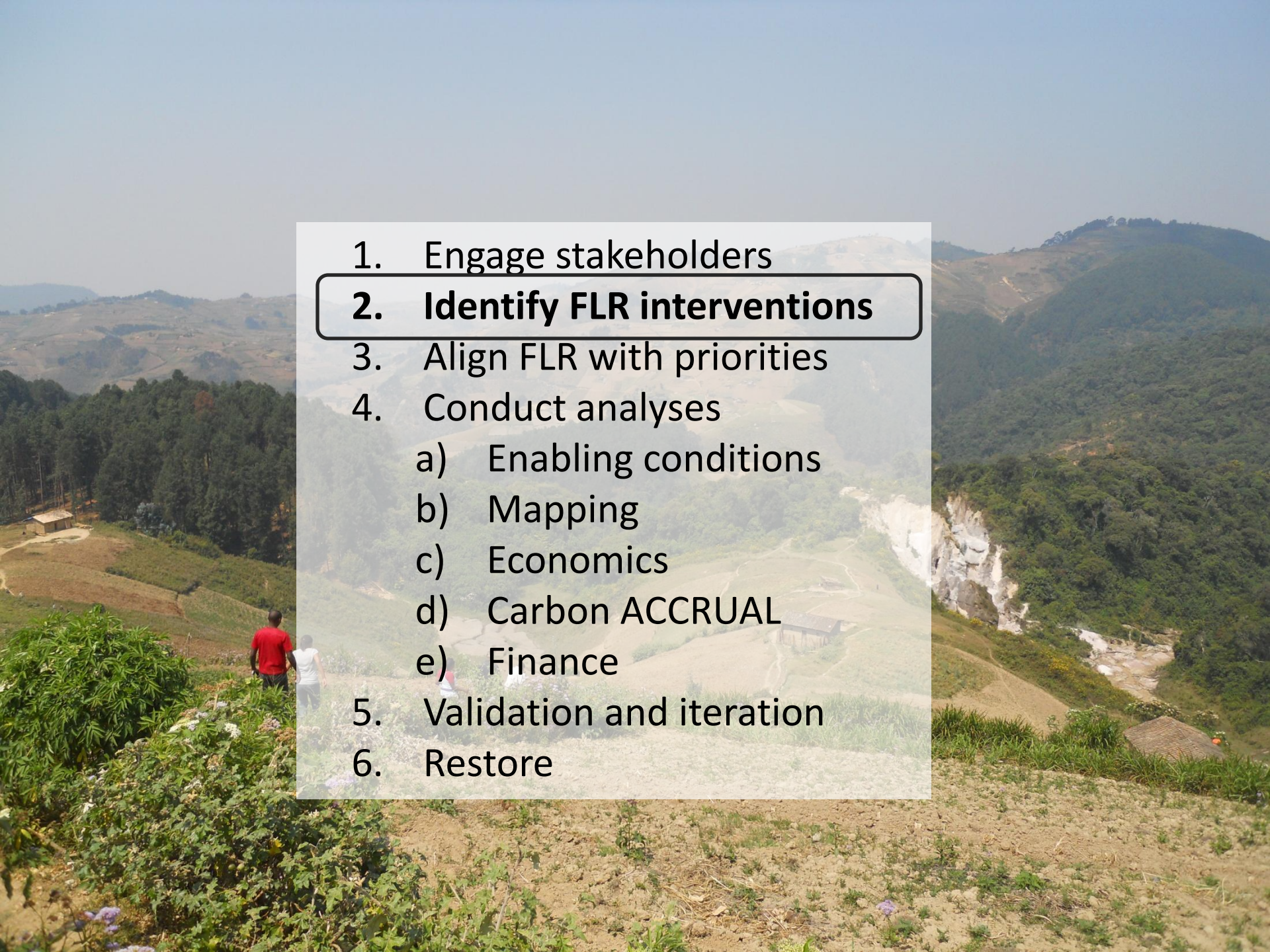
# The Restoration Analyses of ROAM (#4) include

1. Rapid diagnostic for presence of “enabling conditions” for success
2. Mapping of restoration opportunities
3. Economic valuation (costs and benefits)
4. Carbon ACCRUAL analysis
5. Assessment of finance options and needs



# ROAM on the ground: Rwanda

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# Proposed Restoration Interventions

Discussions and field visits resulted in:

1. **Agroforestry on steep sloping lands** for crops and livestock (705k ha)
2. **Agroforestry on flat or gentle sloping lands** for crops and livestock (404k ha)
3. Rehabilitation of **woodlots** for fuel and structural needs (256k ha)
4. Protection and restoration of **natural forests** including small fragments (14k ha)
5. Improvement or establishment of **protective forests** on ridge tops (42k ha) and along water bodies (81k ha)



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# Integrated landscape approach

Natural Forest

Protective Forest

Woodlots

Agroforestry: Flat land

Agroforestry: Sloping land

**Forest**

*Increase forest cover to 30%*

**Energy**

*Electricity to 35%*

**Water**

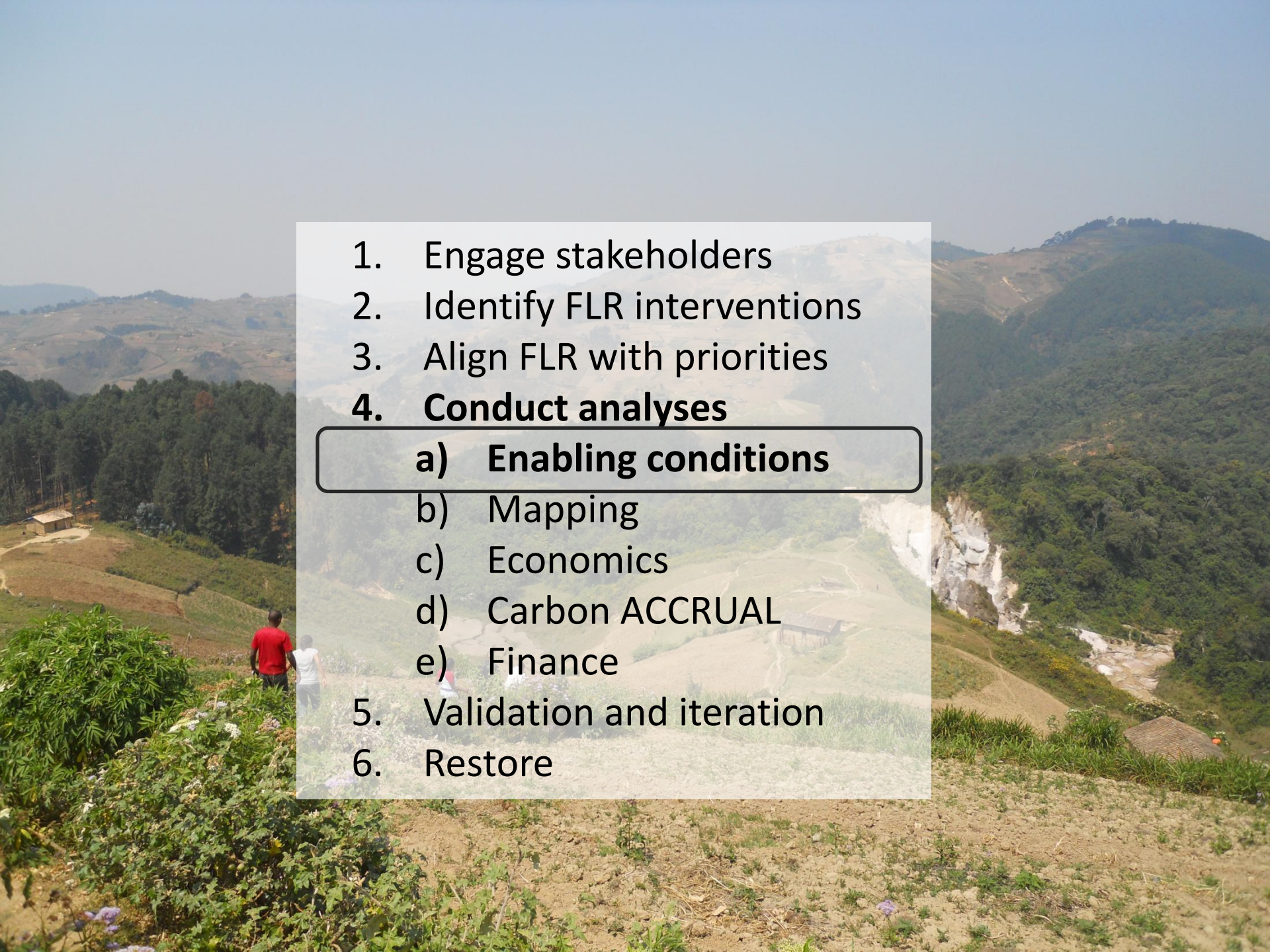
*100% access to clean water*

**Food**

*Agri production to 2200 kcal/day*

**Economy**

*Poverty level to 20%  
Per capita GDP to US\$1,240*

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# RAPID RESTORATION DIAGNOSTIC

A method to help governments, companies, and civil society to successfully accelerate forest landscape restoration



Version 1.0

Report

Draft

January 28, 2014

Prepared by



WORLD  
RESOURCES  
INSTITUTE



As a contribution to



THE GLOBAL  
PARTNERSHIP  
ON FOREST  
LANDSCAPE  
RESTORATION



Theme	Feature	Key success factor	Response
Motivate	Benefits	• Restoration generates economic benefits	Yellow
		• Restoration generates social benefits	Green
		• Restoration generates environmental benefits	Green
	Awareness	• Benefits of restoration are publicly communicated	Yellow
		• Opportunities for restoration are identified	Green
	Crisis events	• Crisis events are leveraged	Green
	Legal requirements	• Law requiring restoration exists	Yellow
• Law requiring restoration is broadly understood and enforced		Red	
Enable	Ecological conditions	• Soil, water, climate, and fire conditions are suitable for restoration	Yellow
		• Plants and animals that can impede restoration are absent	Yellow
		• Native seeds, seedlings, or source populations are readily available	Red
	Market conditions	• Competing demands (e.g., food, fuel) for degraded forestlands are declining	Red
		• Value chains for products from restored area exists	Red
	Policy conditions	• Land and natural resource tenure are secure	Green
		• Policies affecting restoration are aligned and streamlined	Yellow
		• Restrictions on clearing remaining natural forests exist	Green
		• Forest clearing restrictions are enforced	Yellow
	Social conditions	• Local people are empowered to make decisions about restoration	Red
		• Local people are able to benefit from restoration	Green
	Institutional conditions	• Roles and responsibilities for restoration are clearly defined	Red
		• Effective institutional coordination is in place	Red
Implement	Leadership	• National and/or local restoration champions exist	Green
		• Sustained political commitment exists	Yellow
	Knowledge	• Restoration “know how” relevant to candidate landscapes exists	Yellow
		• Restoration “know how” transferred via peers or extension services	Red
	Technical design	• Restoration design is technically grounded and climate resilient	Red
	Finance and incentives	• Positive incentives and funds for restoration outweigh negative incentives	Yellow
		• Incentives and funds are readily accessible	Red
	Feedback	• Effective performance monitoring and evaluation system is in place	Red
• Early wins are communicated		Yellow	

# Feedback from District Workshops

## Key Factors

## Urgent

The economic case is understood at district level

Better local planning processes

Better coordination between government agencies

A government supported campaign

More government finance and incentives

Better district level technical extension

Performance targets for restoration

Better supply of planting material



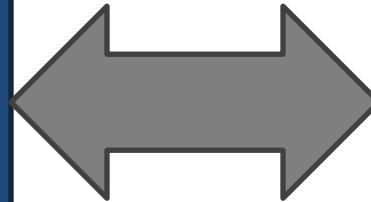
# Strategic Recommendations

## Stimulate Supply

1. Build capacity of Tree Seed Center
2. Stabilize and strengthen network of nurseries
3. Introduce 20% target for native species


## Stimulate Demand

1. Economic case at district level
2. Campaign to highlight benefits
3. Invest in extension to improve district level decision making
4. Add performance targets for restoration

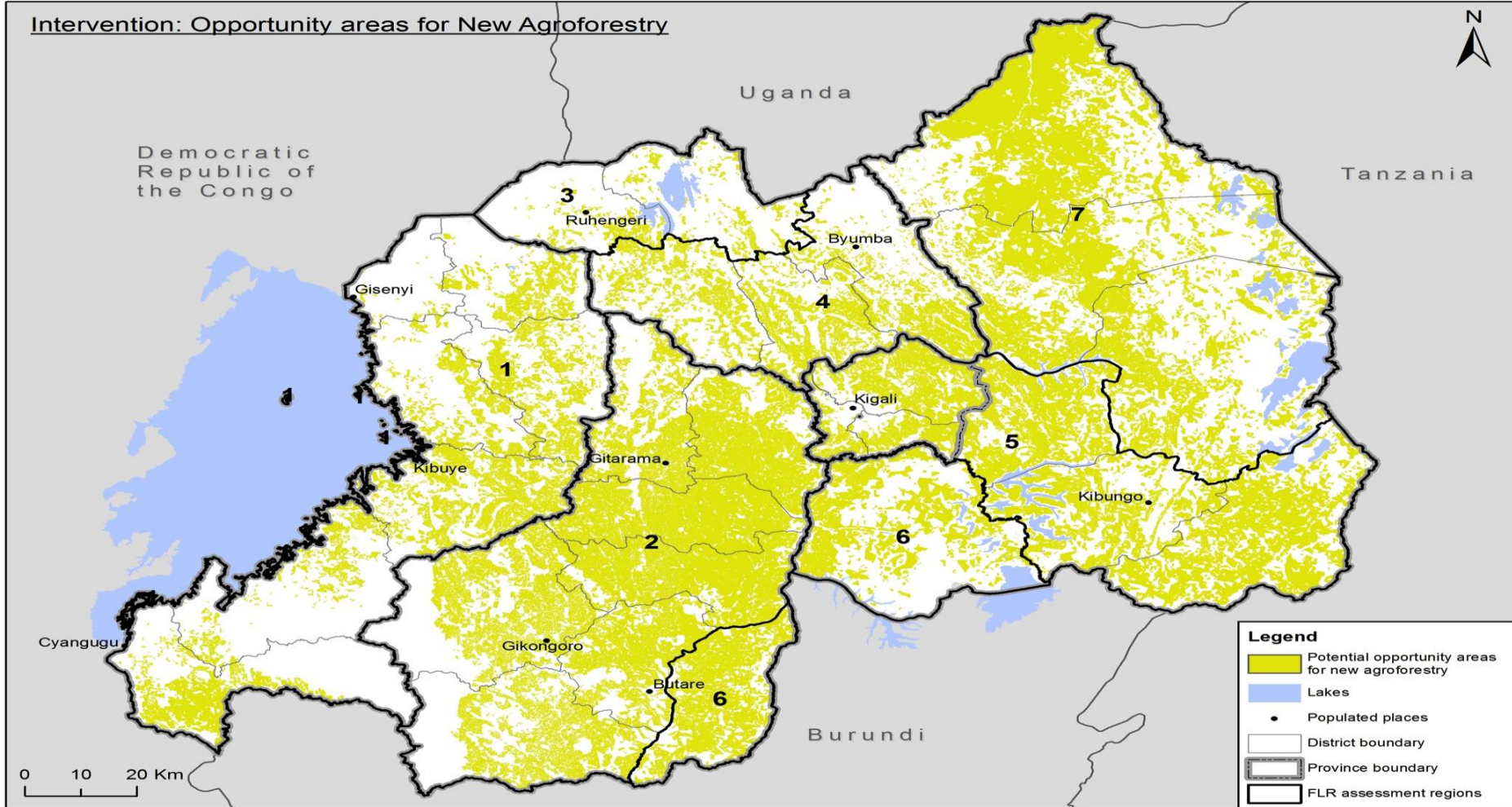


## Increase Coordination

1. Convene stakeholders via Joint Sector Thematic Working Group
2. Ensure Master Plans are complete and communicated
3. Consolidate responsibility for agro-forestry technical guidance

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**Intervention: Opportunity areas for New Agroforestry**



**Benefits to society**

**Benefits to farmers**

**Annual crop value  
(Rwf/ha)**

**Annual woody  
biomass value  
(Rwf/ha)**

**Annual reduced  
erosion (t/ha)**

**Additional carbon  
(t/ha)**

**Average Return on  
Investment**

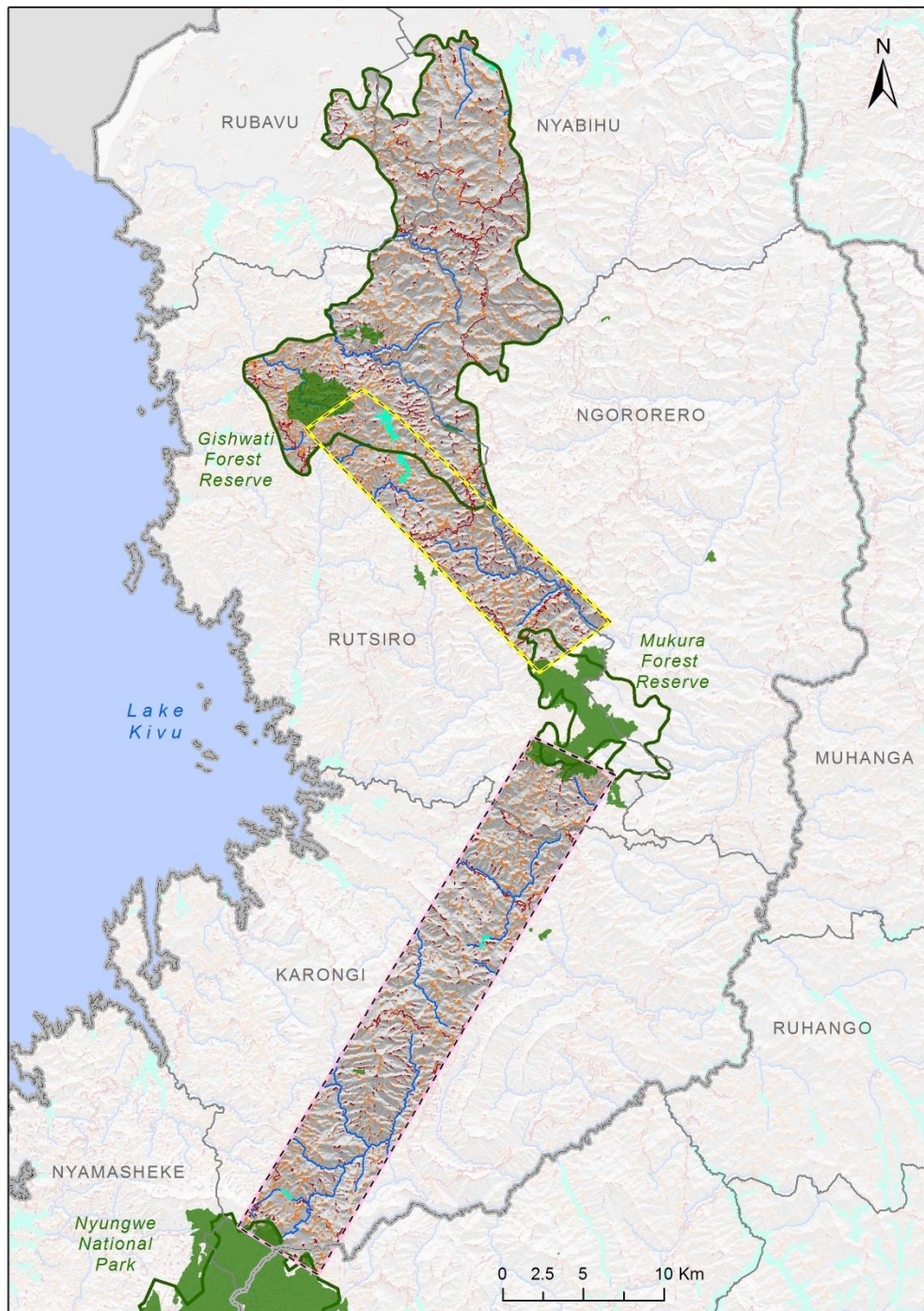
-99,000 to 189,000

75,665 to 132,980

22 to 27

251 to 449

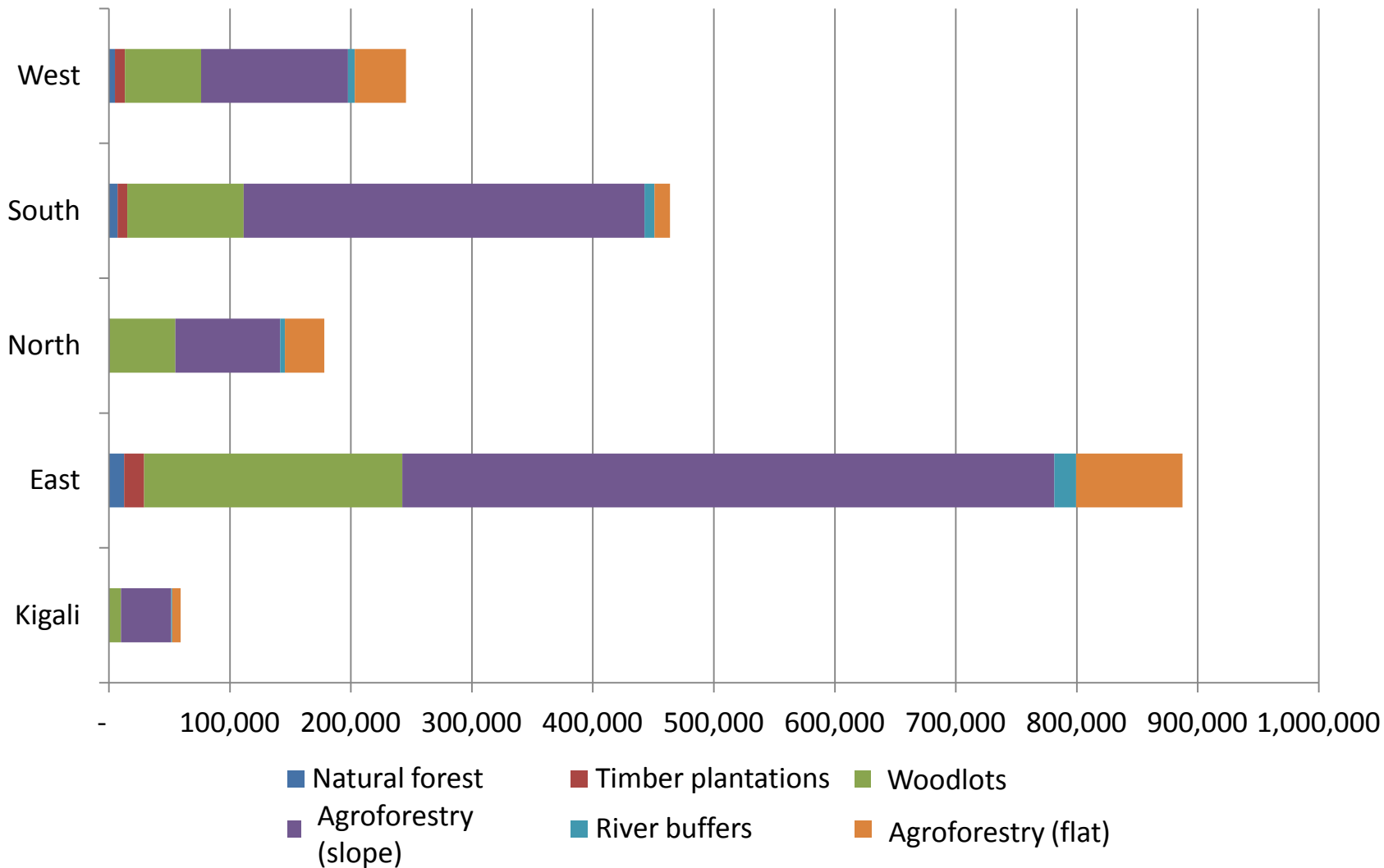
28%




Gishwati Forest Reserve, Gishwati-Mukura Corridor and Nyungwe-Mukura Corridor



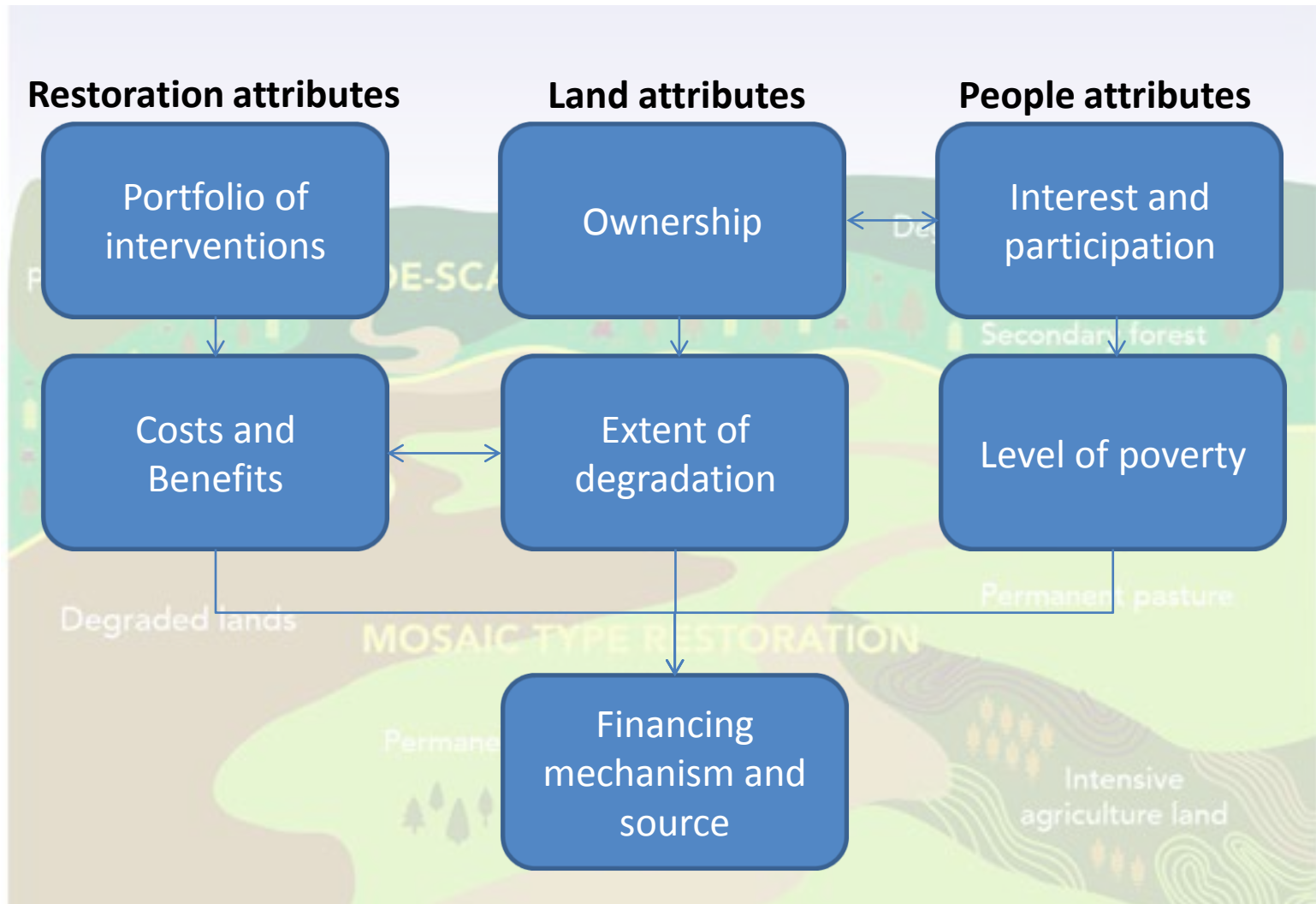
# Interventions (# of hectares) – Rwanda



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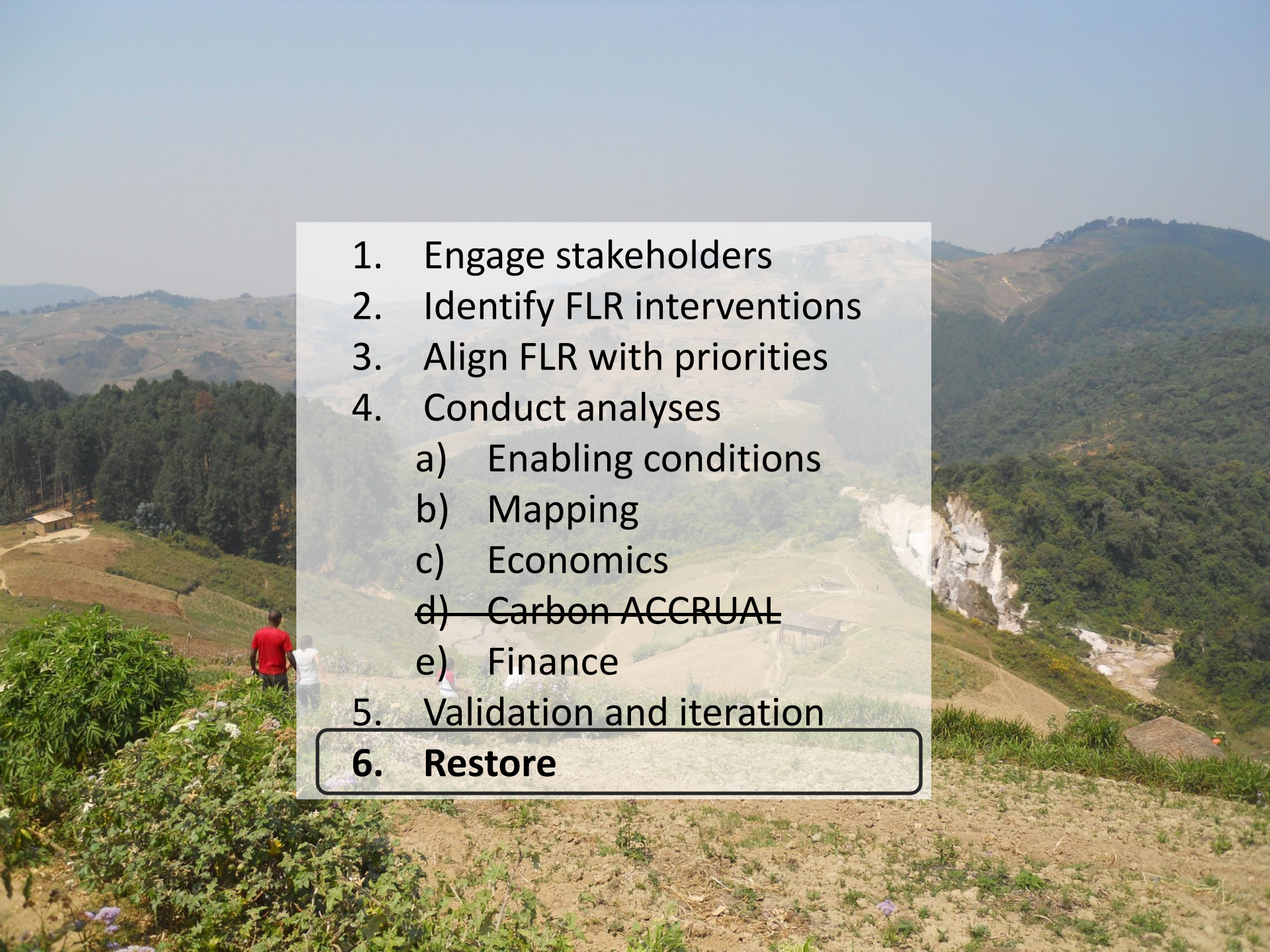
# Financing Landscape Restoration



# Financing Landscape Restoration: 3 Representative Examples

Attribute	Example 1
Intervention	Agroforestry on slopes
Costs & Benefits	Private benefit
Ownership	Small holder owns
Extent of degradation	Moderate
Participation & interest	High
Level of poverty	Low
Financing mechanism	<b>Private loan</b>

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# After ROAM in Rwanda?

- Awaiting approval on recommended initial landscapes
  - Gishwati landscape (West)
  - Muvumba watershed (East)
- Deepening engagement with stakeholders in initial landscapes
- Building capacity for governance within the landscapes
  1. Rights
  2. Processes and participation
  3. Institutions



# **Examples of knowledge created through ROAM in other countries**

# Mexico: A map showing priority areas for restoration based on multiple criteria

Darker color indicates areas with greater potential for forest landscape restoration.

## Nivel de Prioridad

- alta
- media
- baja
- Límite Estatal
- Límite Internacional



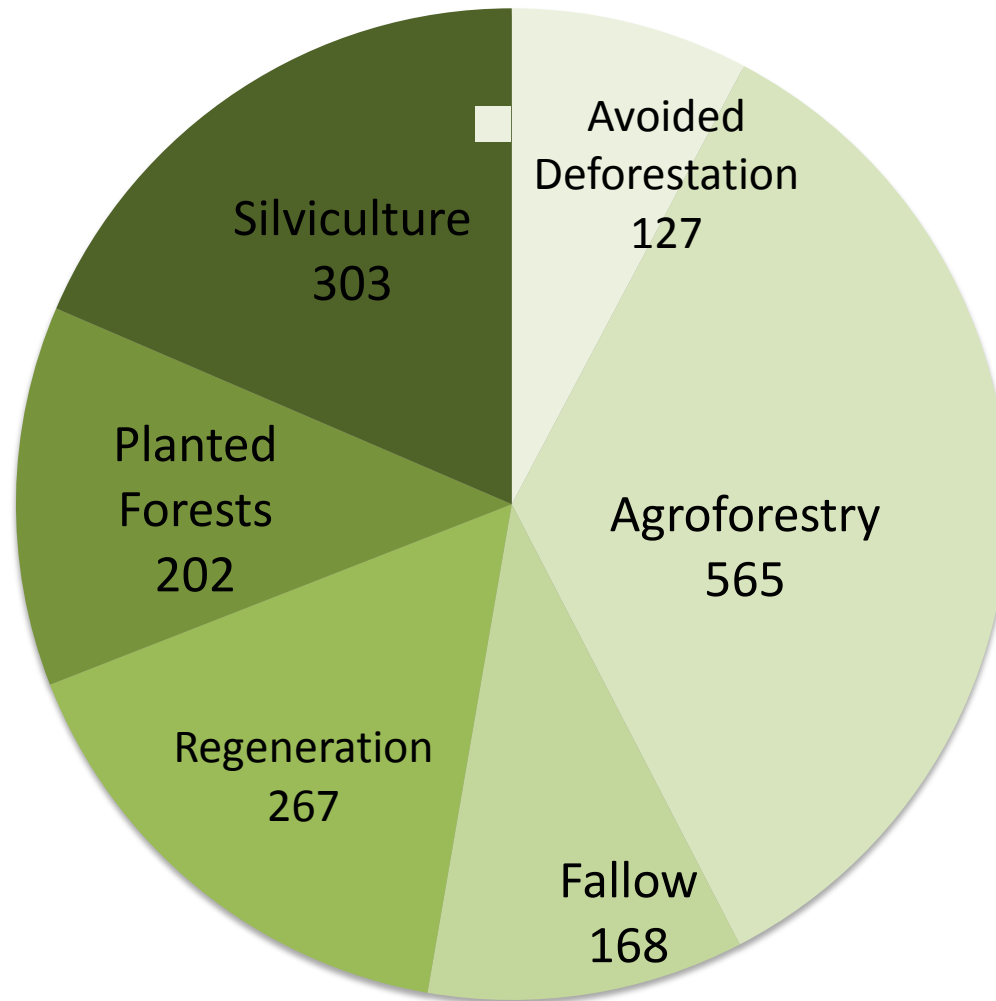
# In Ghana, we considered a host of different restoration interventions based on existing land use

<b>ID</b>	<b>Intervention</b>	<b>Local qualifier</b>
AD-HFZ	Avoided deforestation	High forest zone
AF: AC	Agroforestry	Api-culture
AF: ICC	Agroforestry	Inter-cropping with cocoa
AF: ICFC	Agroforestry	Inter-cropping with food crops
AF: SP	Agroforestry	Silvi-Pastoral
FF: CM	Farm fallow	Contour management
FF: FE	Farm fallow	Fallow enrichment
FF: FM	Farm fallow	Fire management
NR: DS	Natural regeneration	Direct seeding
NR: DS	Natural regeneration	Direct seeding
NR: GM	Natural regeneration	Prevention of overgrazing
NR: WP	Natural regeneration	Wildfire Prevention
NR: WS	Natural regeneration	Weed Supression
PF: EP	Planted forests	Exotic Plantation
PF: EP	Planted forests	Exotic Plantation
PF: FW	Planted forests	Fuelwood
PF: IP	Planted forests	Indigenous Plantations
SC: EP	Silviculture	Enrichment Planting
SC: FP	Silviculture	Bush-fire prevention
SC: GM	Silviculture	Restricted Grazing
SC: LR	Silviculture	Land Reclamation
WB: IM	Water bodies and mangroves	Improved shoreline management
WB: RM	Water bodies and mangroves	Shoreline restoration

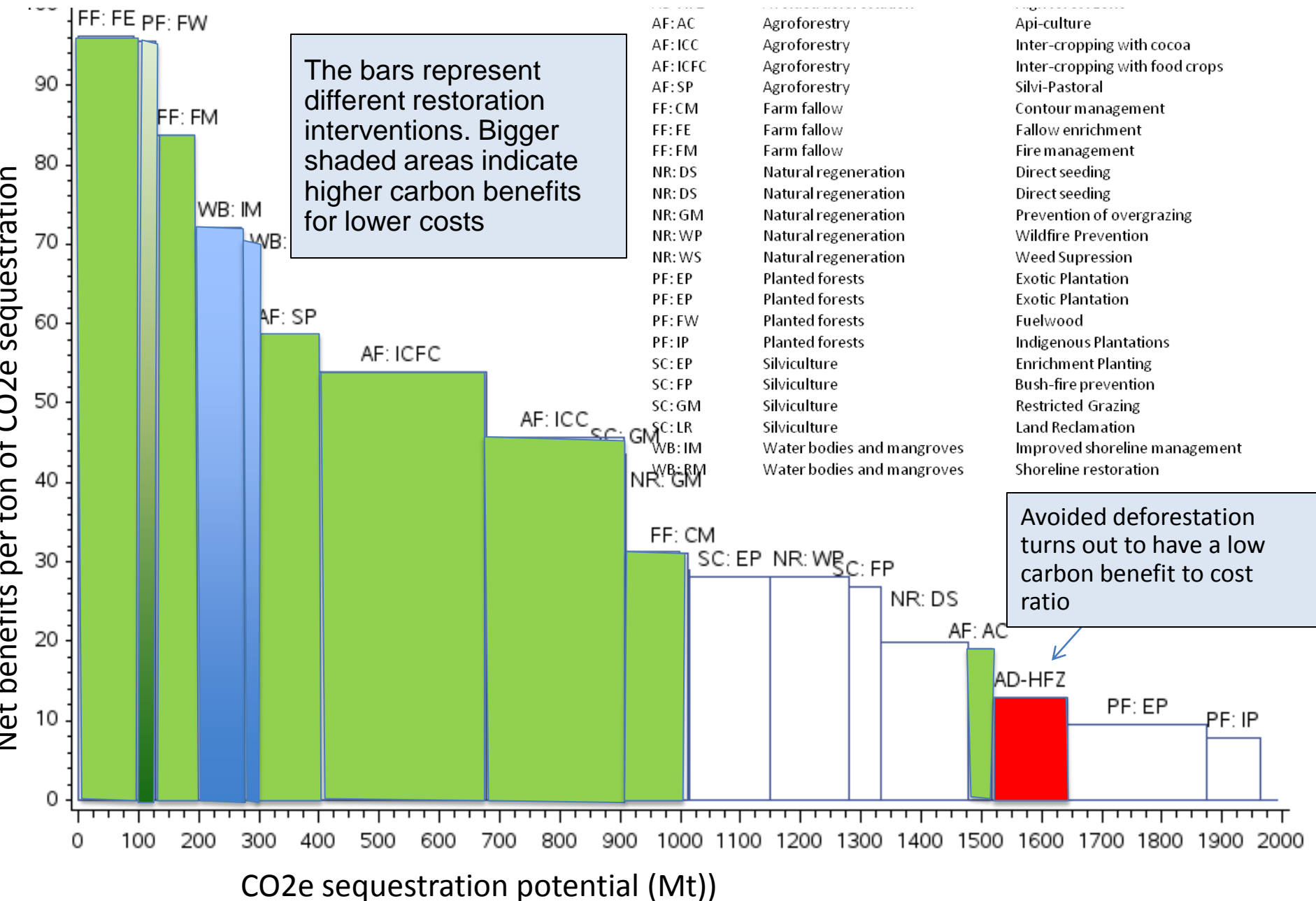


# And quantified the potential of each intervention to sequester carbon

MtCO<sub>2</sub>e



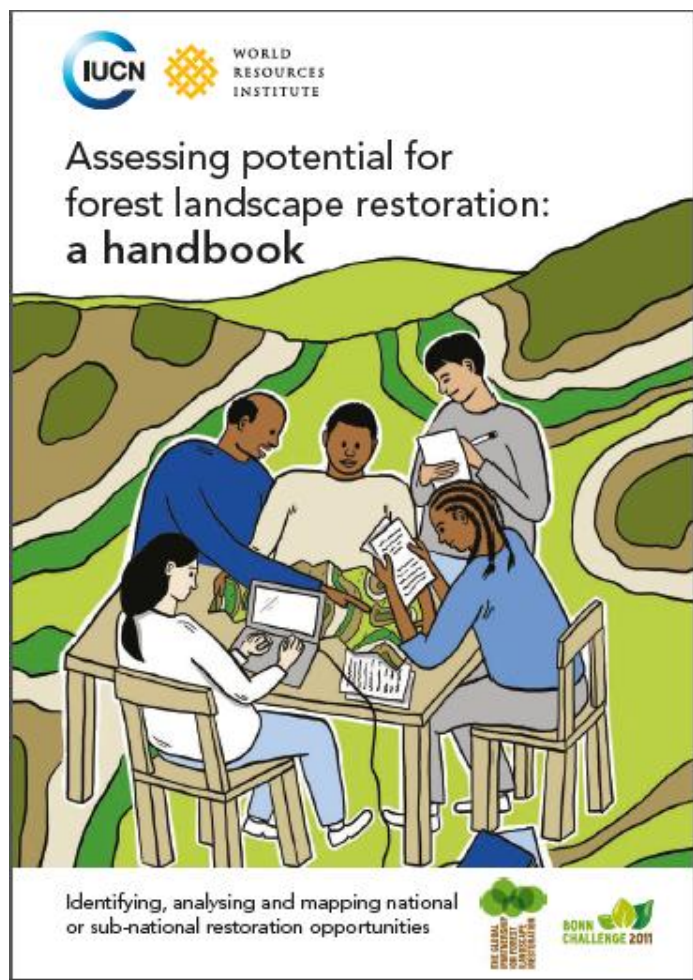
# Allowing us to produce a Landscape Restoration Carbon Cost Abatement Curve



## Other impacts of assessment findings so far:

- Used as key source document in the design and submission of Ghana's investment plan for the Forest Investment Programme (FIP)
- Providing the basis of interagency development of a national strategy on FLR for Mexico and Guatemala
- Formed the basis of a Presidential/Cabinet briefing note and shaping the major GEF landscape restoration project in Rwanda

# To learn more and get involved



Contact us to get more information on ROAM, assessment processes, or what else we can offer.

- Download our road-test handbook on ROAM: [www.iucn.org/ROAM](http://www.iucn.org/ROAM)
- IUCN Digital Restoration Economic Valuation tools will be available late summer, 2014.
- WRI Rapid Restoration Diagnostic of Success Factors manual will be available by September, 2014.
- Contact us at: [flr@iucn.org](mailto:flr@iucn.org)