

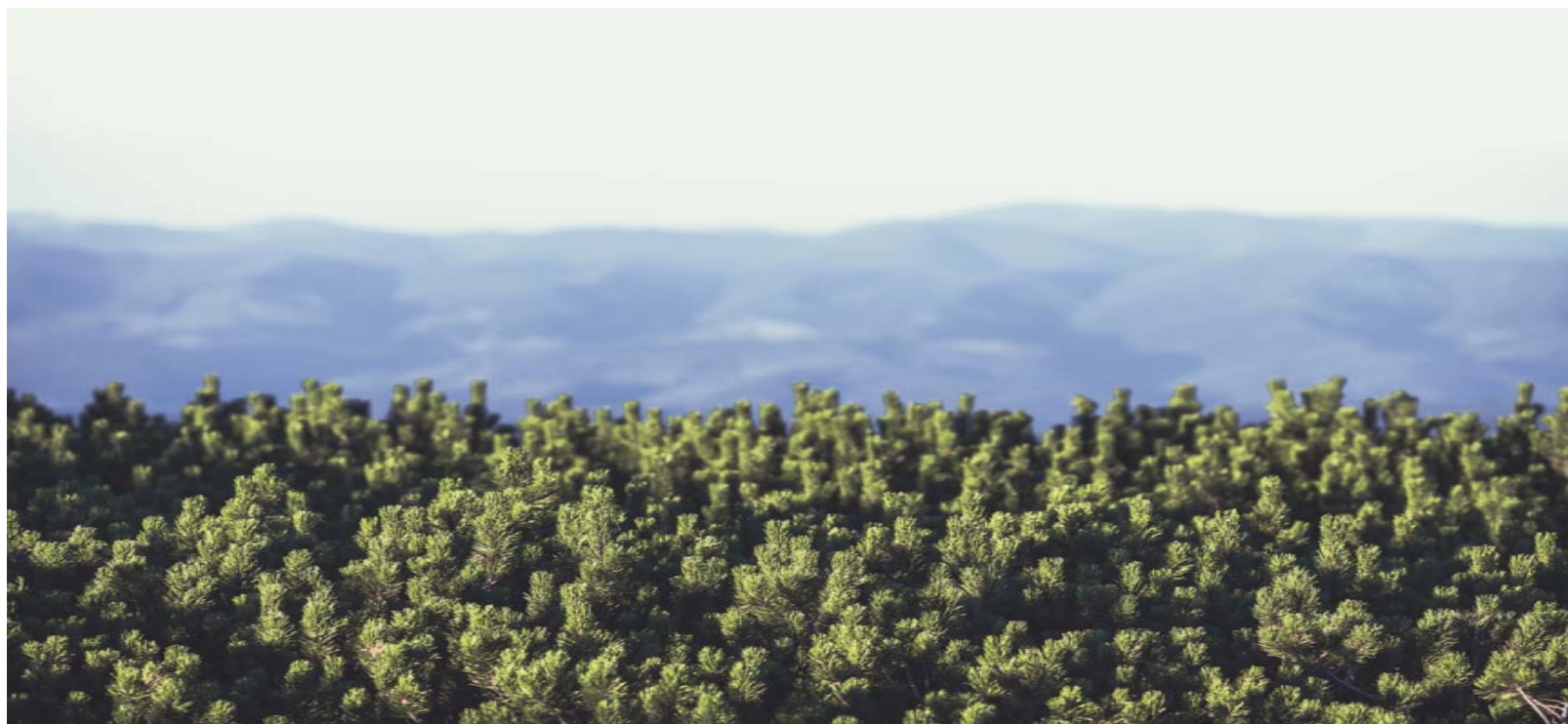


Forest Landscape Restoration

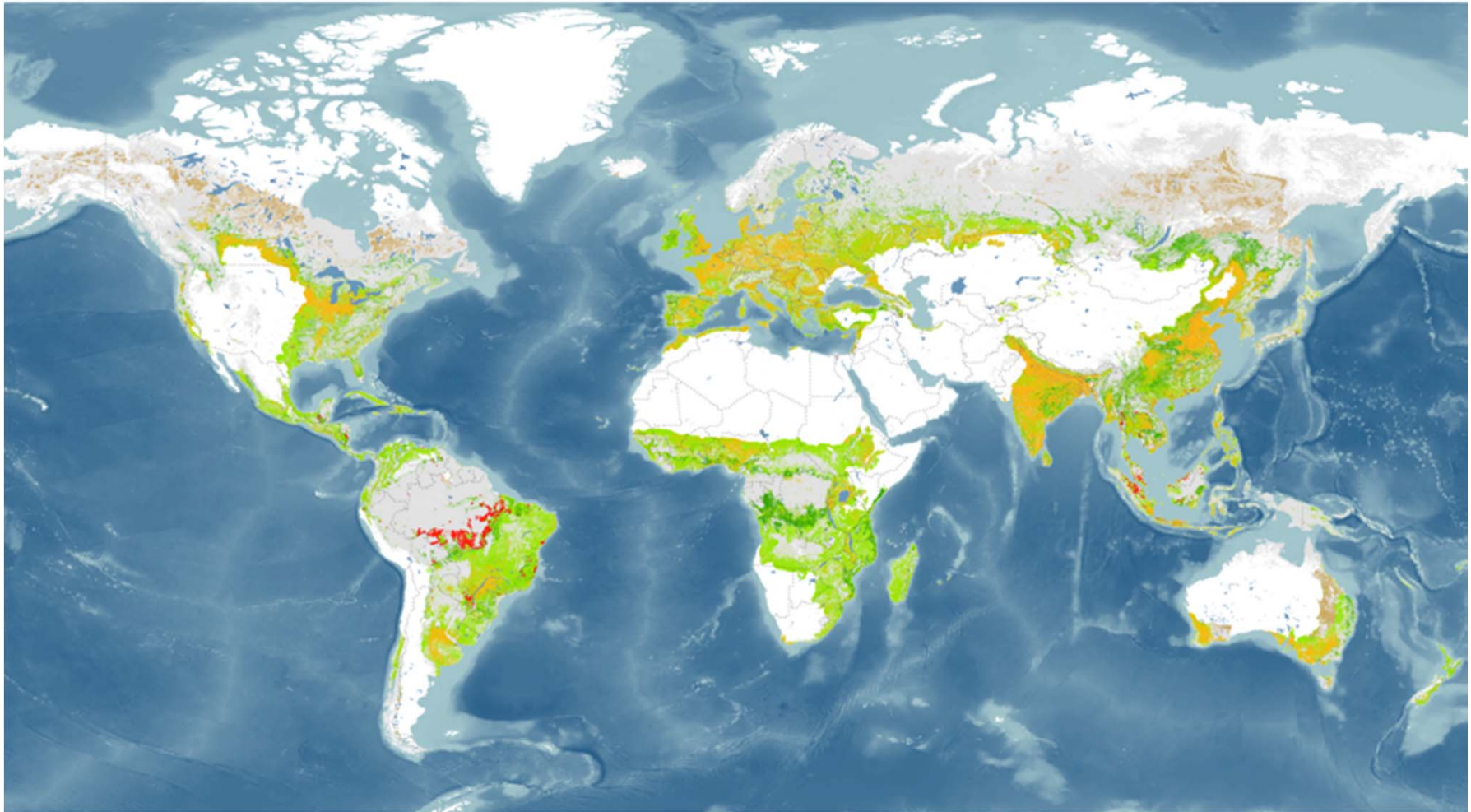


This Presentation Will Cover

- Our planet's great potential for restoration
- The forest landscape restoration approach and its place in REDD+
- Partnerships that are driving change
- How IUCN is supporting restoration
- How restoration opportunities can be identified and realized



A World of Opportunity for Forest and Landscape Restoration



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



Forest Landscape Restoration Potential Southeast Asia

Prepared by: Craig R Beatty IUCN October 2014
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Lars Laestadius and Susan Minnemeyer (World Resources Institute), IUCN, Forest and Landscape Restoration Opportunities, Peter Potapov (University of Maryland), PROFOR, BMU



Restoration Potential
Opportunities for restoration of degraded lands were assessed by creating a map of land use intensity (human pressure) which in turn was used to classify degraded lands by suitability for different types of restoration. The dataset was generated at 1km cell resolution. For further information see (WRI 2011).

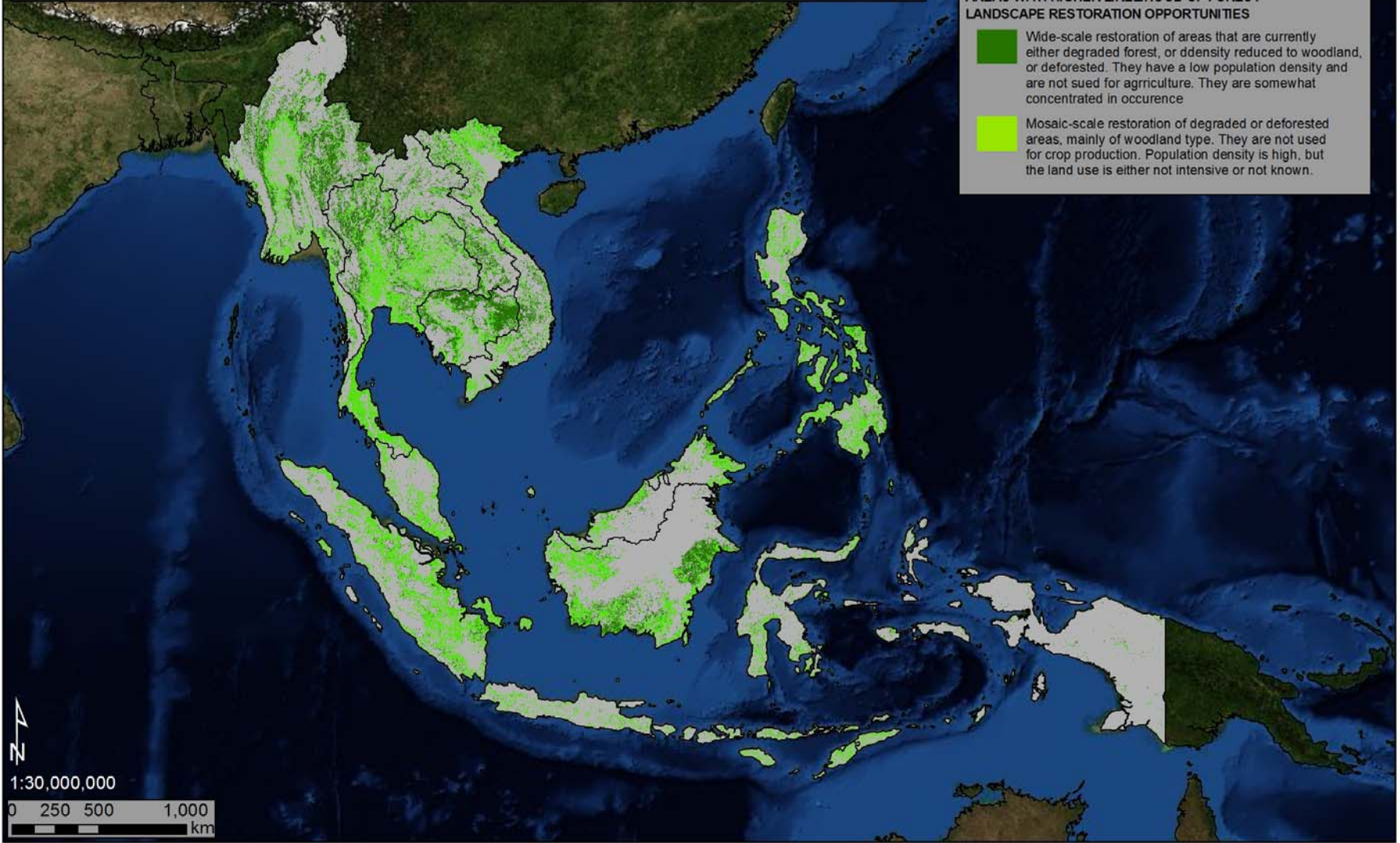


A World of Opportunity

The World from a Forest Landscape Restoration Perspective

AREAS WITH HIGHER LIKELIHOOD OF FOREST LANDSCAPE RESTORATION OPPORTUNITIES

-  Wide-scale restoration of areas that are currently either degraded forest, or density reduced to woodland, or deforested. They have a low population density and are not used for agriculture. They are somewhat concentrated in occurrence
-  Mosaic-scale restoration of degraded or deforested areas, mainly of woodland type. They are not used for crop production. Population density is high, but the land use is either not intensive or not known.



FLR is more than planting a single species of tree; its about restoring landscapes with diverse mix of species



Diversity delivers a broader range of forest goods and services...



Across different land uses



For different social groups



But only if we work to restore at a sufficient “landscape” level

Forest Landscape Restoration is an approach that delivers ecological integrity and human wellbeing through multi-functional 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

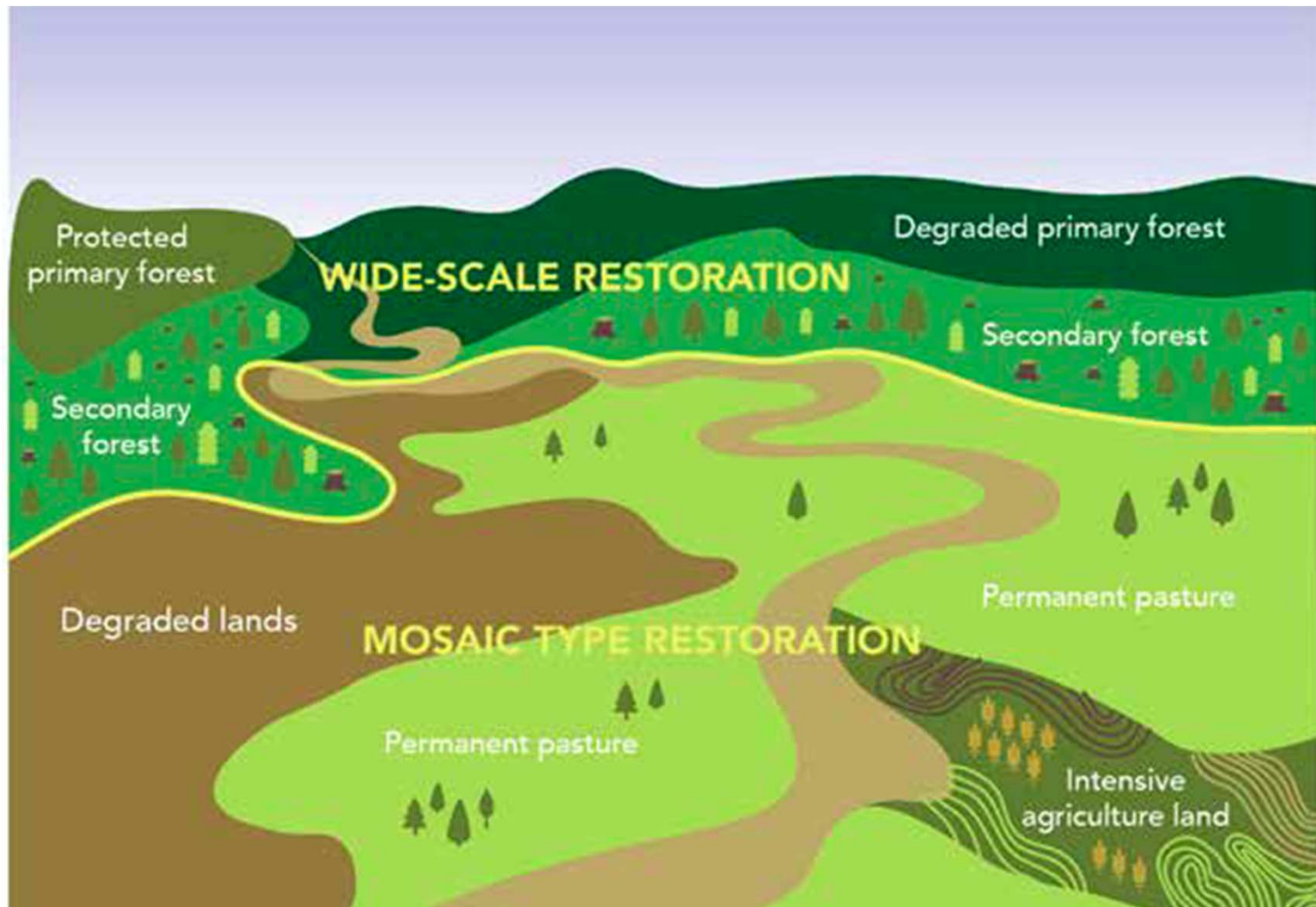
Within a broader pattern of land uses.



Great Lakes Landscape

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

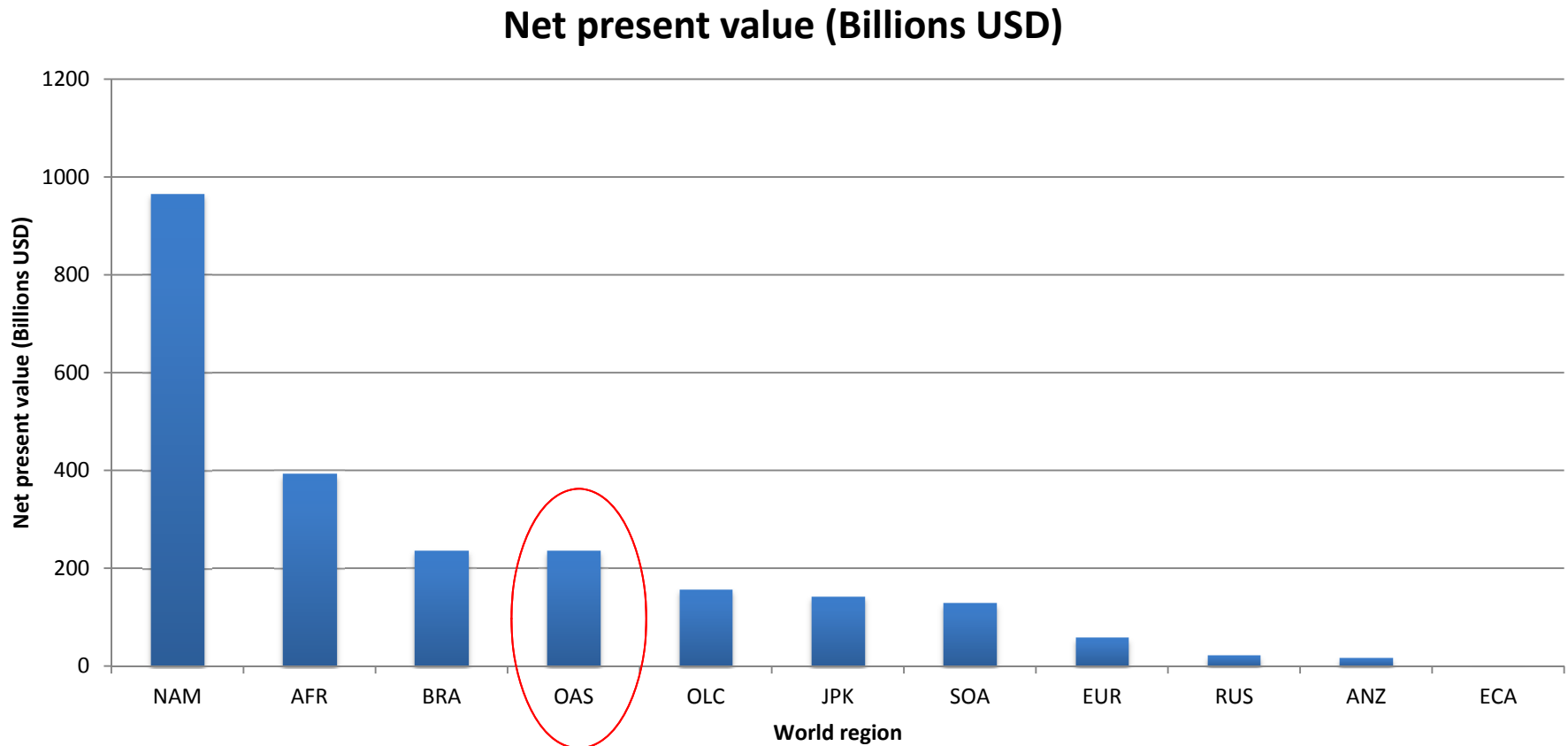
A restored forest landscape incorporates many diverse land uses - based on the context of the land and the needs of the community



Economic appraisal of restoring 350 mil hectares

What is the likely economic impact of restoring 350 million hectares of degraded forest landscapes worldwide?

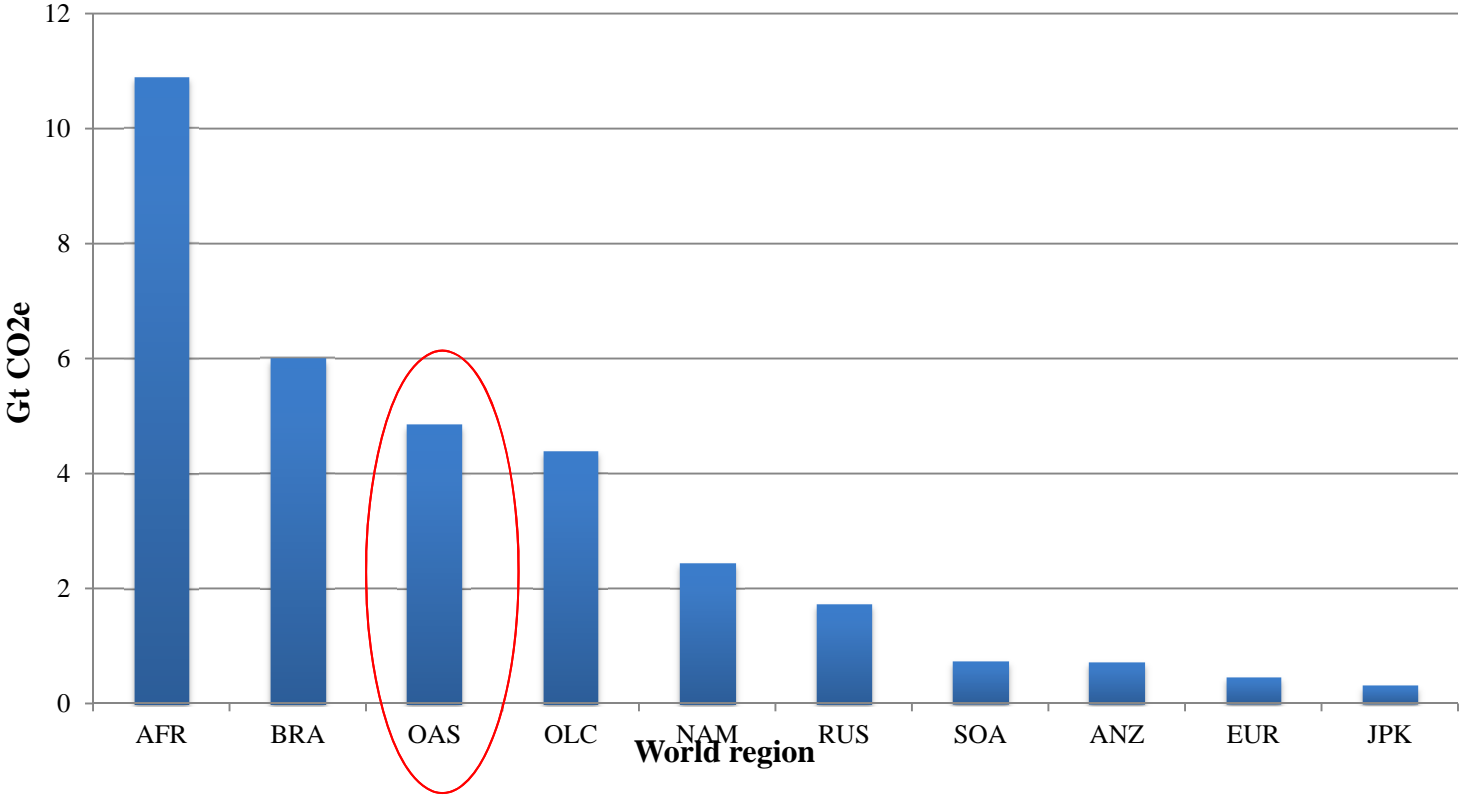
= **\$110 billion** per year and **\$0.45 – \$5.5 trillion** in net benefits over 50 years



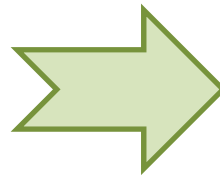
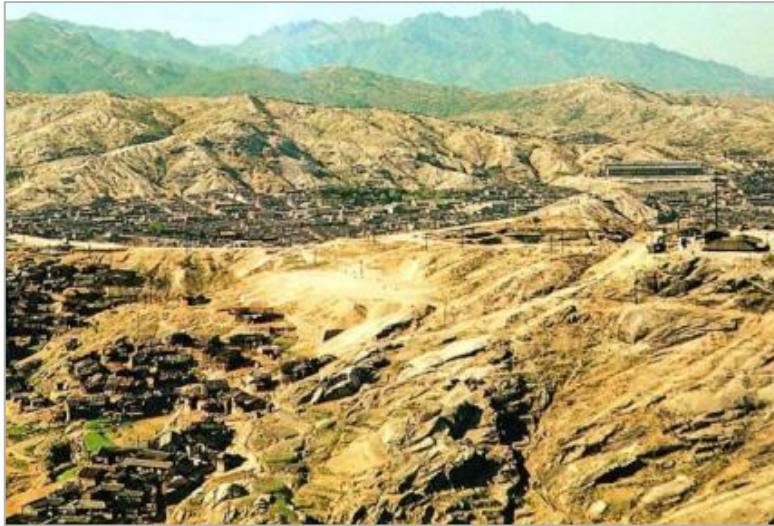
Emission reduction appraisal of restoring 350 mil hectares

Over a 50-year period restoring 350 million hectares of degraded forest land would:

- Sequester **33 GtCO₂e**
- Reduce the current “emissions reduction gap” by between **5% to 8%**.



Many have already successfully turned degraded lands into healthy, functioning landscapes



Investment (budget in 2011)

KFS	USD 1.4 bil
Local governments	USD 0.6 bil
Total	USD 2.0 bil



Benefits

Forest products	4.7 bil
Public benefits	70.0 bil
Reduced medical costs	2.4 bil
Landscaping & carbon	NA

Increasing tree cover in the country from 35% to 64% (1952-2007)
Population grew by 2x, and economic growth by 300x (1953-2007)

Why use a landscape approach and how does it fit into REDD+?



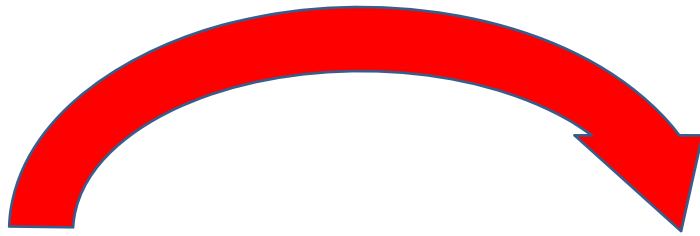
A principle focus on improved agricultural productivity may:

bring some degraded land into production while increasing the area and yield of agricultural land....but causing impacts on degraded forestland and other locations....but

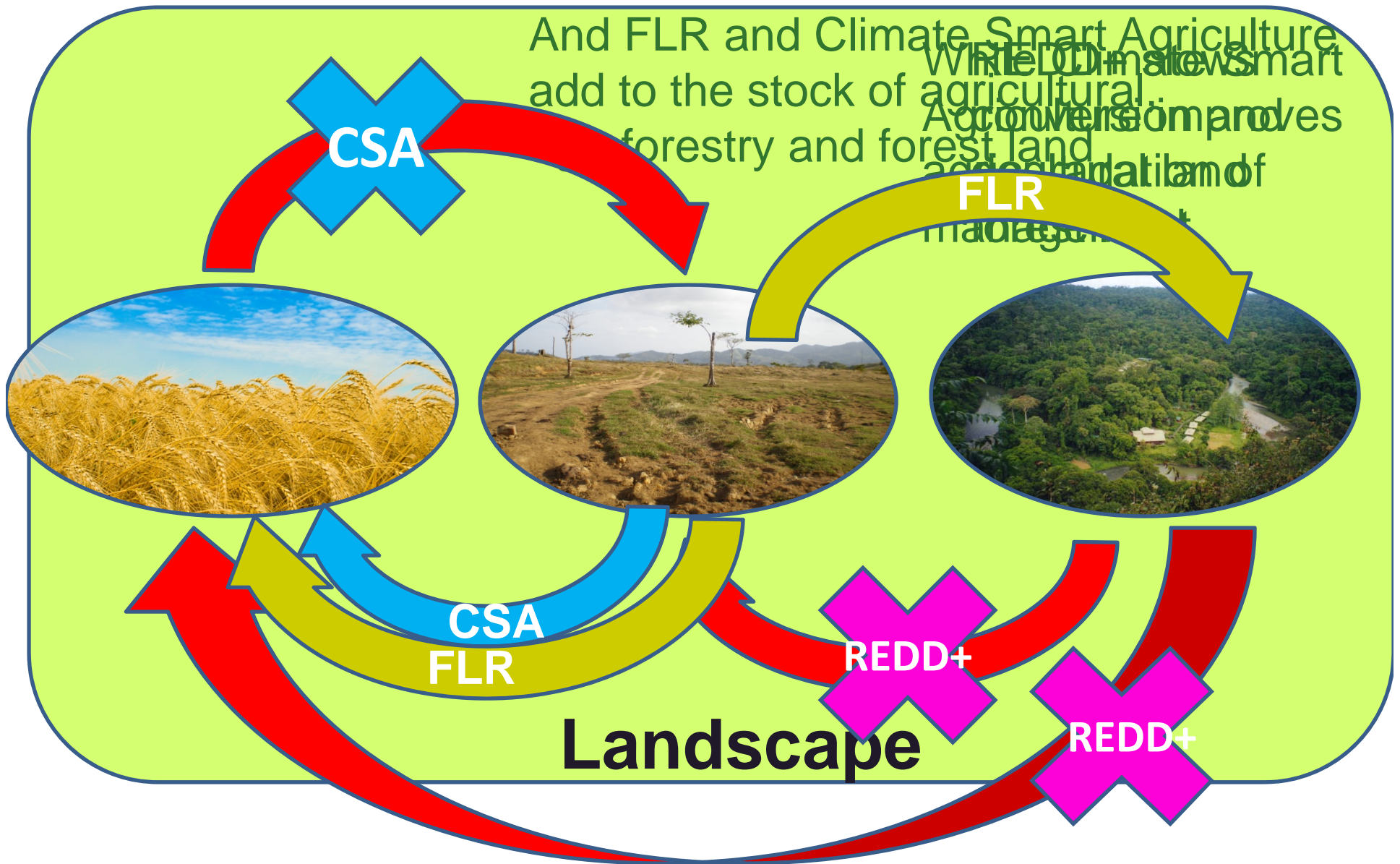


A principle focus on avoided deforestation

May and future
preservation through
agritech fallow
periods



A landscape perspective integrates the actions of REDD+, Climate Smart Agriculture and FLR



We are working in partnerships to advance restoration

The **Global Partnership on Forest/Landscape Restoration** was launched by the UK, IUCN and WWF at FAO COFO in 2003.

It's a worldwide network of more than 30 partners from governments (including UK, US, Germany, Netherlands, Norway, China, etc.) and international organizations (including WRI, FAO, World Bank, Tropenbos, IUFRO, UNFF, etc.) that works to:

- Build support for forest restoration with key decision makers, at the local and international level; and
- Provide information and tools to strengthen restoration efforts around the world.



Together we launched the Bonn Challenge in 2011



A global goal to restore **150 million hectares** of degraded and deforested lands by 2020



How will it work?

Governments, private enterprises, communities, NGOs or others who own or control or otherwise manage land ...

Commit to initiate restoration (using a forest landscape restoration approach) over a specified number of hectares by 2020



The Bonn Challenge will serve as an implementation vehicle for existing global commitments



United Nations
Framework Convention on
Climate Change



United Nations Convention
to Combat Desertification



Pledges have been strong so far

More than 50 million hectares in pledges have been announced:

- **Ethiopia:** 22 million ha
- **US Forest Service:** 15 million ha
- **Democratic Republic of Congo:** 8 million ha
- **Uganda:** 2.5 million ha
- **Rwanda:** 2 million ha
- **Guatemala:** 1.2 million ha
- **Brazil Mata Atlantica Restoration Pact:** up to 1.1 million ha
- **El Salvador:** up to 1 million ha
- **Costa Rica:** up to 1 million ha

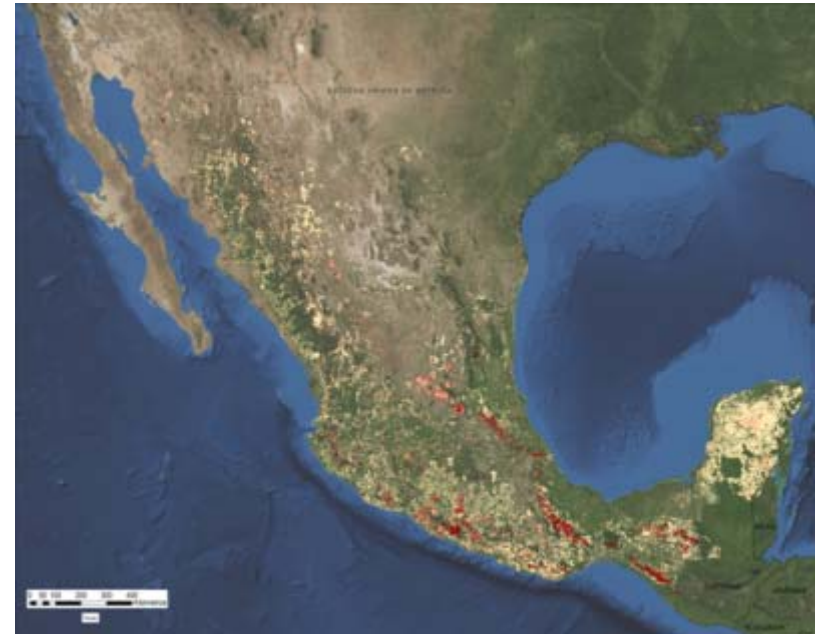


**Now we are supporting
countries in defining pledges
and really implementing
landscape restoration at scale**

The challenge is to move from the global generic



To the national specific



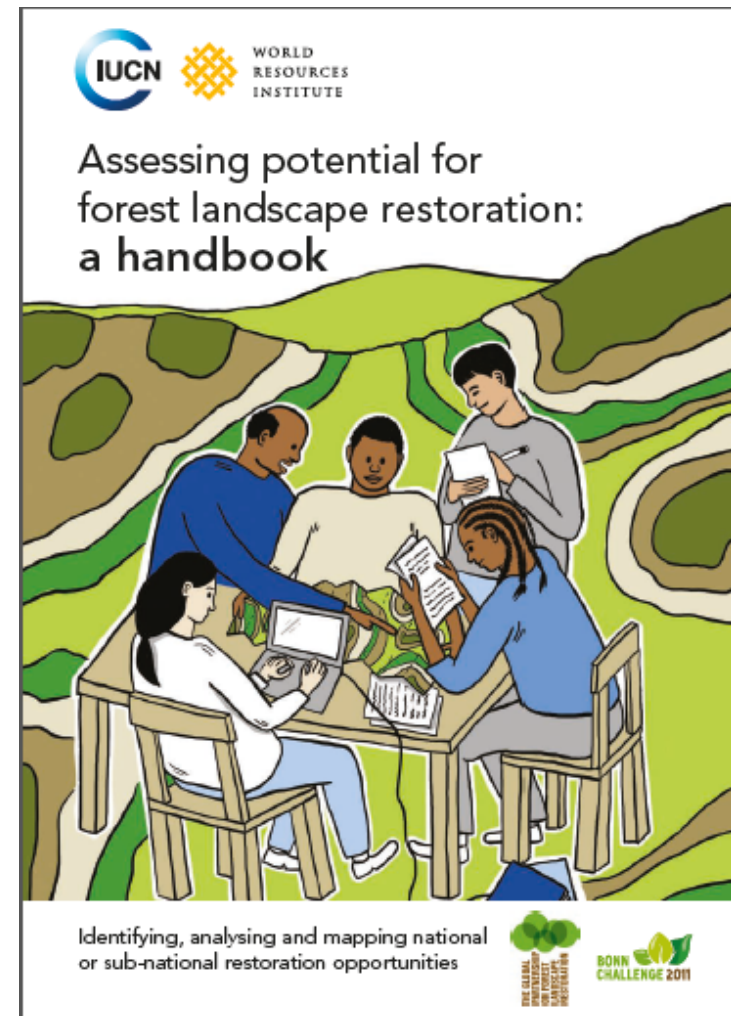
**.... and to identify priority actions and
priority landscapes**

One way forward is the Restoration Opportunities Assessment Methodology (ROAM)

ROAM is a framework, produced by IUCN and WRI, for assessing national and subnational restoration potential – and much more.

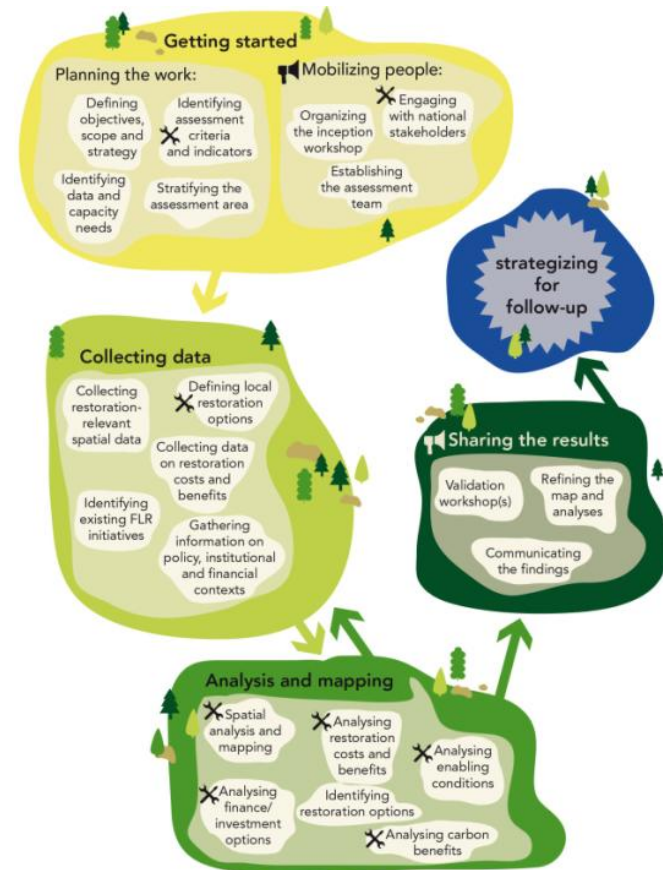
It can help governments and institutions:

- Find the best, priority landscapes to start restoration
- Estimate the costs and benefits of restoration strategies and opportunities
- Set the stage for national-level strategies on restoration
- Provide often-missing landscape-level data
- Build high-level support for restoration



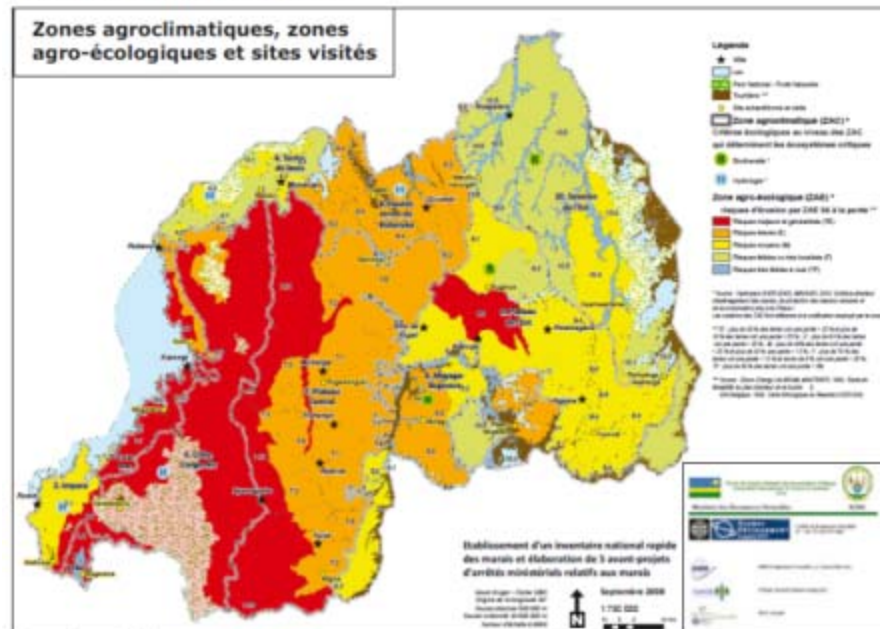
ROAM involves

1. Spatial analysis / mapping
 2. Rapid enabling conditions diagnostic
 3. Costs and benefits appraisal
 4. Carbon abatement cost curve
-
1. Identification of restoration and investment options



Incorporating

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



Best available science and data with



Best informed knowledge & local insights

To answer the following types of questions

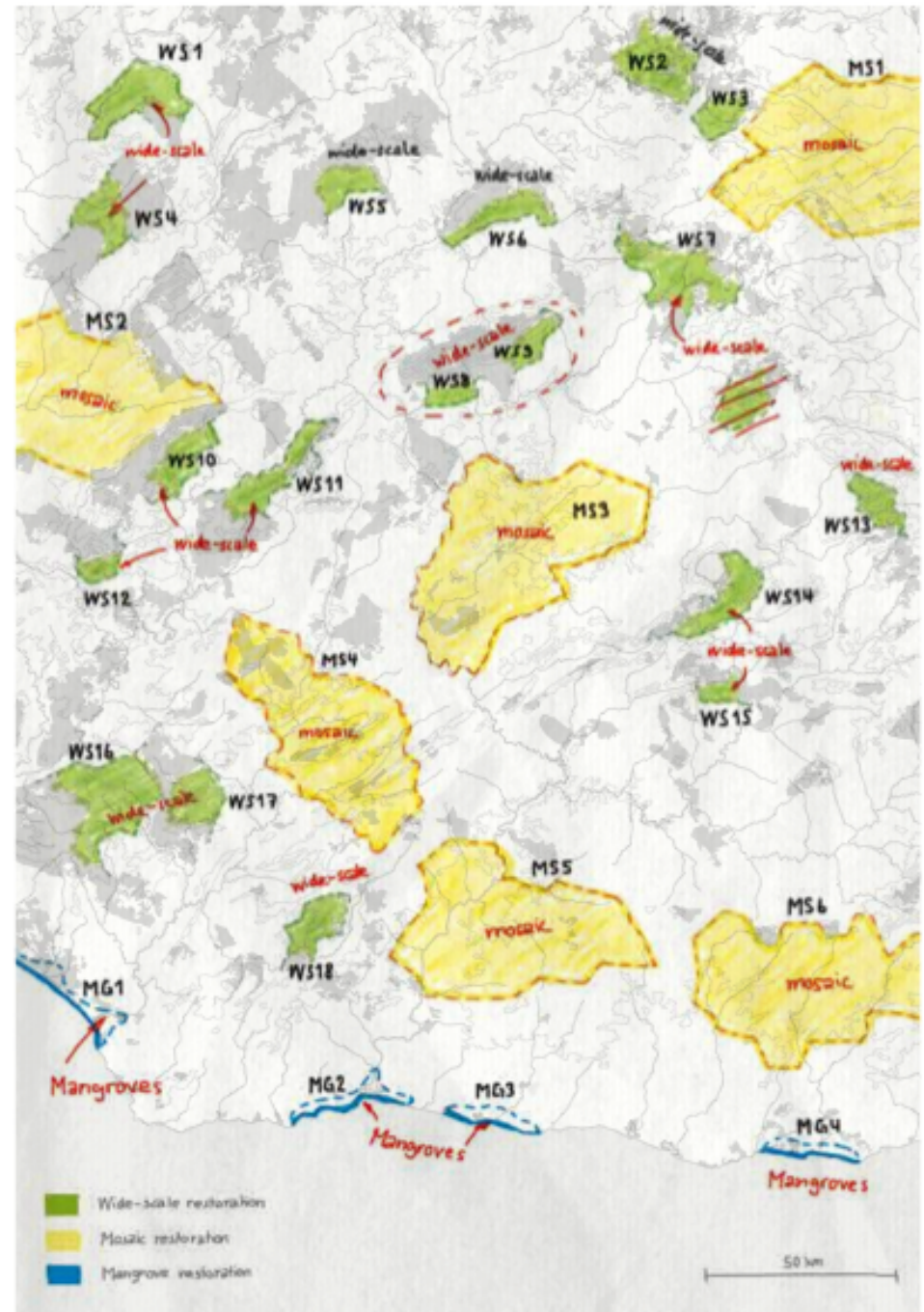
- (1) Where can degraded land be restored and how?
- (2) What are the benefits and costs of restoring degraded land?
- (3) Are key success factors in place?
- (4) How can restoration be financed?



Where can degraded land be restored and how?

Restoration opportunities identified in Ghana

- Map degraded land uses
 - E.g.:
 - Degraded agriculture
 - Poorly managed woodlots
 - Deforested land
- Characterized land uses in terms of:
 - current land uses
 - land cover
 - weather
 - socio-economic conditions
 - other contextual information



How can land be restored?



Agriculture



Agroforestry



Poorly managed woodlots



Well managed woodlots



Deforested land



Naturally regenerated forests

**What are the benefits and costs
of restoring degraded land?**

One land use, many different functions



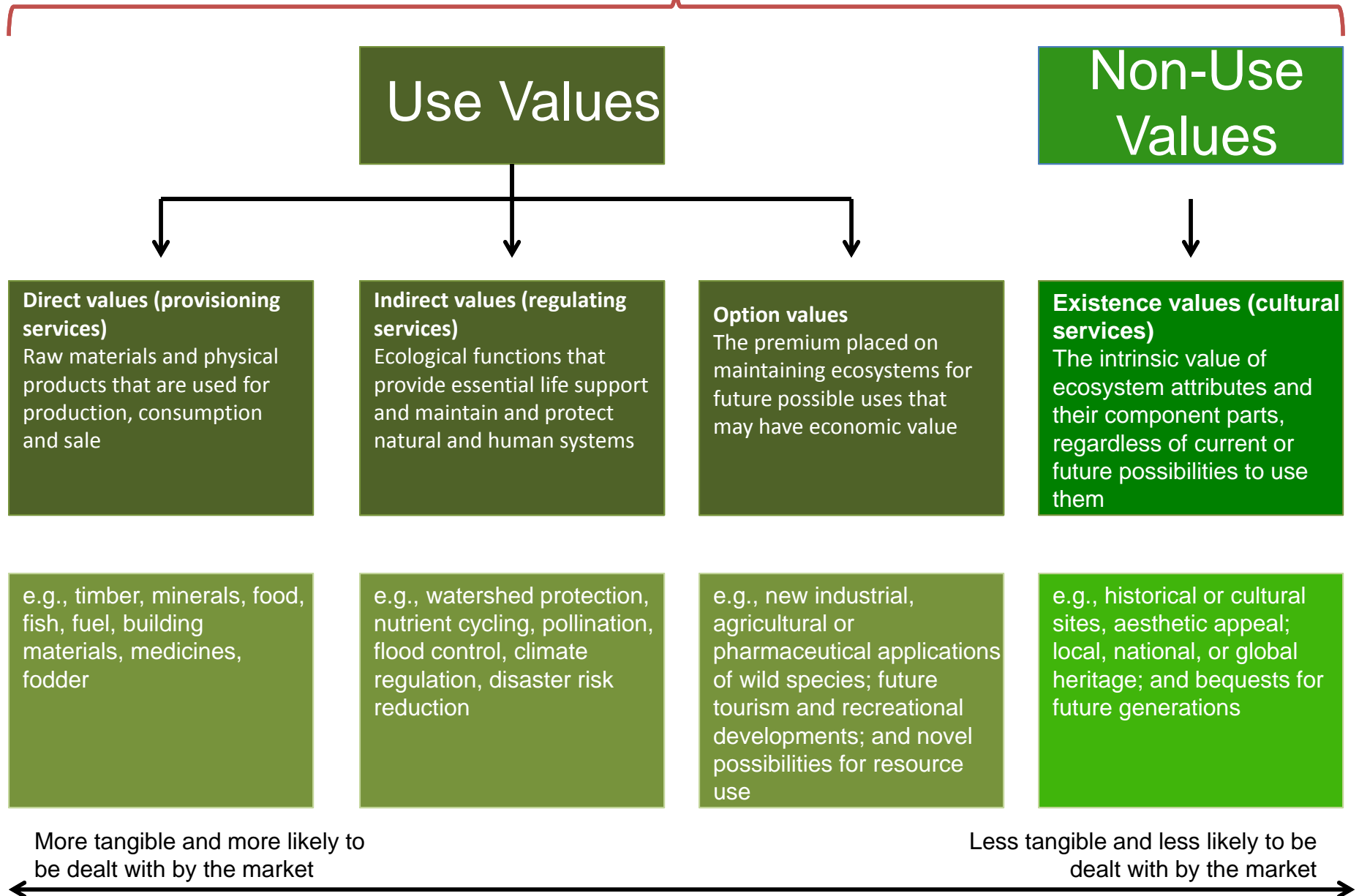
What do we get from these land uses?

- A water purification plant
- A flood control mechanism
- Habitat for biodiversity
- Food
- Beauty
- A place of worship
- A cure
- A way of life
- A paradise for tourism



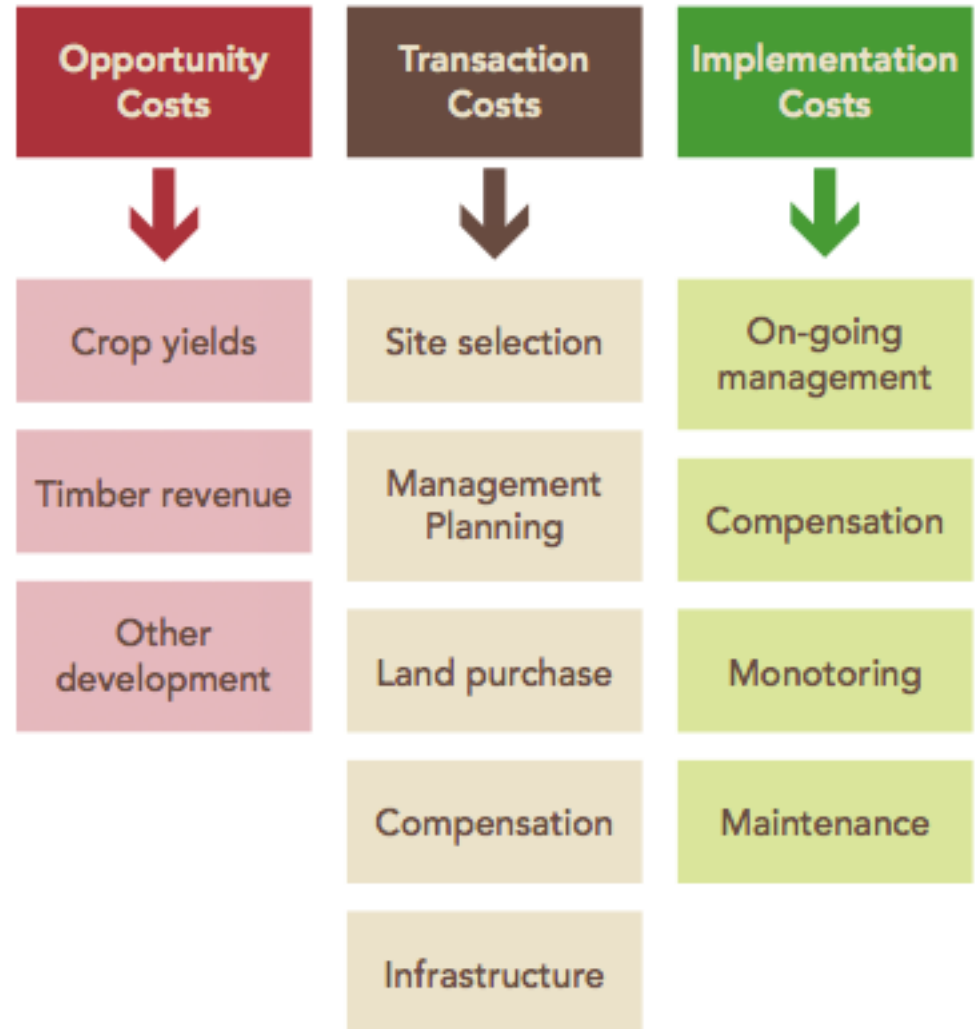
One ecosystem, many different services and benefits

Value of a single land use is a Total Economic Value



What are the costs of restoration?

1. Opportunity costs represent the tangible goods and services that were given up to make restoration possible
2. Transaction costs represent the cost for landowners and implementing agencies to identify viable land and negotiate over terms that ensure restoration meets both local and national priorities
3. Implementation costs represent investments in land, labor, and materials

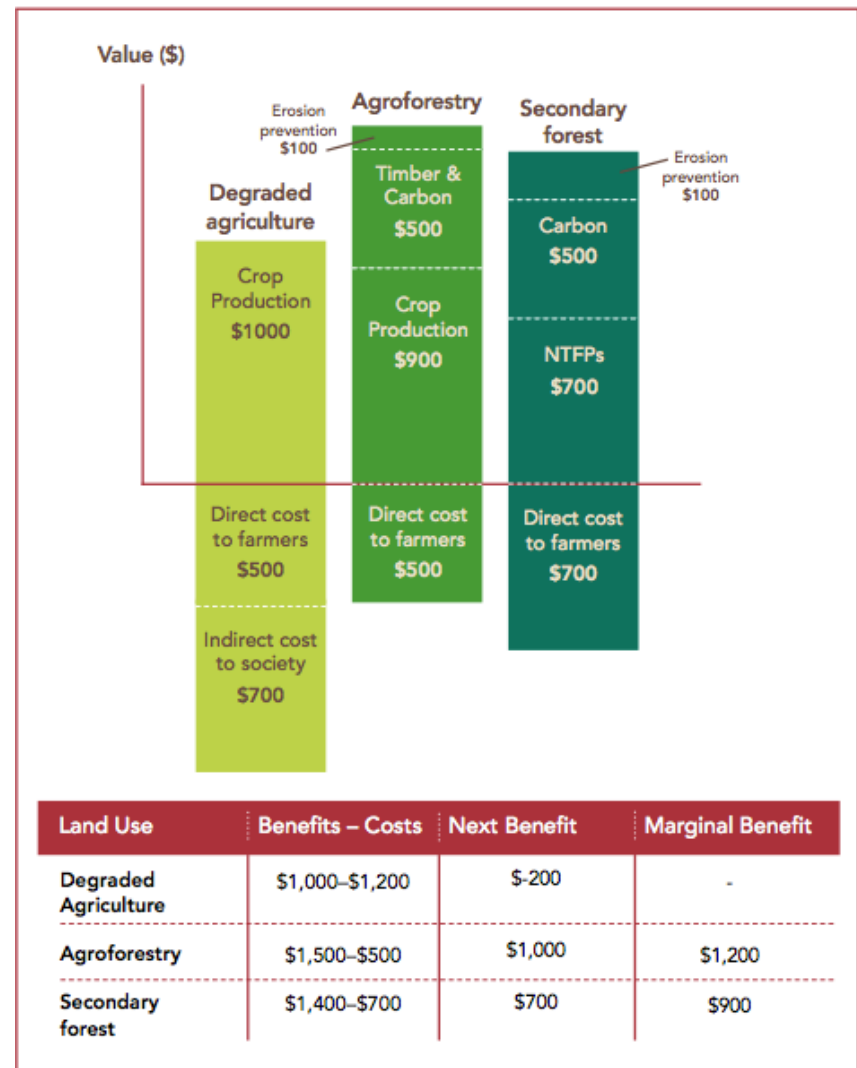


Benefit-cost analysis

Policy-makers will want to know how much it will cost, who will pay, would public money be better spent elsewhere, and if there is a more cost-effective way to deliver the same results

Cost-benefit analysis (CBA) is the core of the economic analysis. A good CBA will:

- Capture a broad range of values that are important to society
- Allow an ‘even-playing field’ comparison of market and non-market values
- Put values on ecosystem goods and services that underpin other important sectors
- Enable a fair comparison between restoration and other types of public and private works



**Are key success factors in
place?**

Looking back to look ahead



Case studies



Analysis of key success factors

Preliminary assessment of the extent to which key success factors are in place in the country to facilitate restoration at scale

The Diagnostic classifies the key success factors into three themes:

- **A clear motivation -**
Stakeholders aware of the need for forest landscape restoration and inspired or motivated to support it
- **Enabling conditions in place -**
A sufficient number of ecological, market, policy, social, and/or institutional are in place
- **Capacity and resources for sustained implementation -**
Capacity and resources need to exist and be mobilized to implement forest landscape restoration

Process of analyzing key success factors

Step			
Activity	Choose the "scope" or boundary within which to apply the Diagnostic. The selected scope will be the "candidate landscape".	Systematically evaluate whether or not key success factors for forest landscape restoration are in place for the candidate landscape.	Identify strategies to close gaps in those key success factors that are currently not in place in the candidate landscape.
End product	Candidate landscape for conducting Diagnostic	List of missing (partially or entirely) key success factors	Set of strategies
Estimated time	A few days	1-2 weeks	1-2 weeks

Topic	Feature	Key success factors	Status
Motivate	Benefits	• Restoration generates private benefits	Green
		• Restoration generates public benefits	Green
		• Restoration generates environmental benefits	Green
	Awareness	• The public is aware of the benefits of restoration	Yellow
		• Restoration opportunities are identified	Green
	Crisis events	• Crisis events are leveraged	Green
	Legal requirements	• National and international laws require restoration	Green
		• The laws are understood and applied	Red
Enable	Ecological conditions	• Soil, water, climate and fire conditions of are suitable for restoration	Green
		• The plants and animals that may impede the restoration are absent	Red
		• Native seeds or species are available	Green
	Market conditions	• Competing demands of degraded forest land decrease	Yellow
		• Value chains for products of restoration exist	Green
	Political conditions	• Land and natural resource tenure is in place and assured	Green
		• Policies affecting restoration are aligned and optimized	Green
		• Logging restrictions in natural/primary forests	Green
		• Felling restrictions are in place	Red
	Social conditions	• The local population is empowered to make restoration decisions	Green
		• The local population benefits from restoration	Green
	Institutional conditions	• The roles and responsibilities of restoration are clearly identified	Yellow
• There is effective institutional coordination		Yellow	
Implement	Leadership	• There are local advocates/'champions' of restoration	Red
		• There is sustained political commitment	Green
	Knowledge	• There is specific knowledge of relevant candidate landscapes to restore	Green
		• Specific knowledge of restoration transferred between collaborators or through extension services	Yellow
	Technical design	• Restoration design is based on technical knowledge future climate scenarios	Green
	Finance and incentives	• Positive incentives and funds for restoration outweigh the negative incentives	Green
		• Incentives and funds are easily accessible	Red
	Feedback	• An effective system of performance monitoring and evaluation is in operation	Green
• The benefits are diffused amongst beneficiaries		Green	

How are results from ROAM useful? Examples from Mexico, Ghana, and Rwanda



Rwanda

- Background - Rwanda's Vision 2020 seeks to increase forest cover from 17% to 30% by 2020
- Problem - Land tenure is secure so restoration must benefit smallholders, which may require the use of incentives
- Objective - Identify restoration options that meet national priorities, policies to support them, and assess the state of key success factors
- Outcome - Restoration opportunity assessment leading to donor funding for a pilot project and potential to upscale

Integrated landscape approach

Natural Forest

Protective Forest

Woodlots

Agroforestry: FMNR

Agroforestry: Sloping land

Forest

Increase forest cover to 30%

Energy

Electricity to 70%

Water

100% access to clean water

Food

Agricultural production to 2600 kcal/day

Economy

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

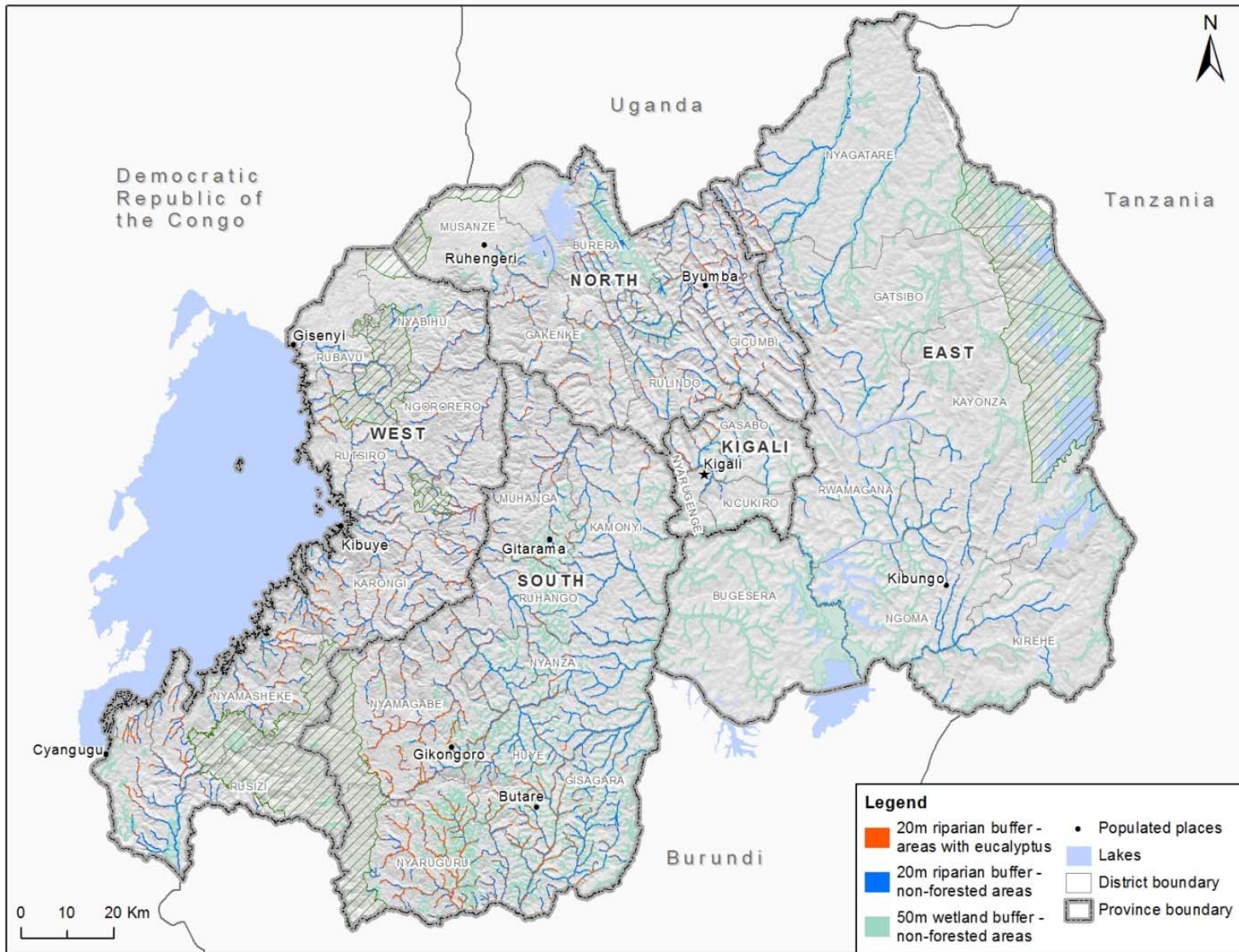
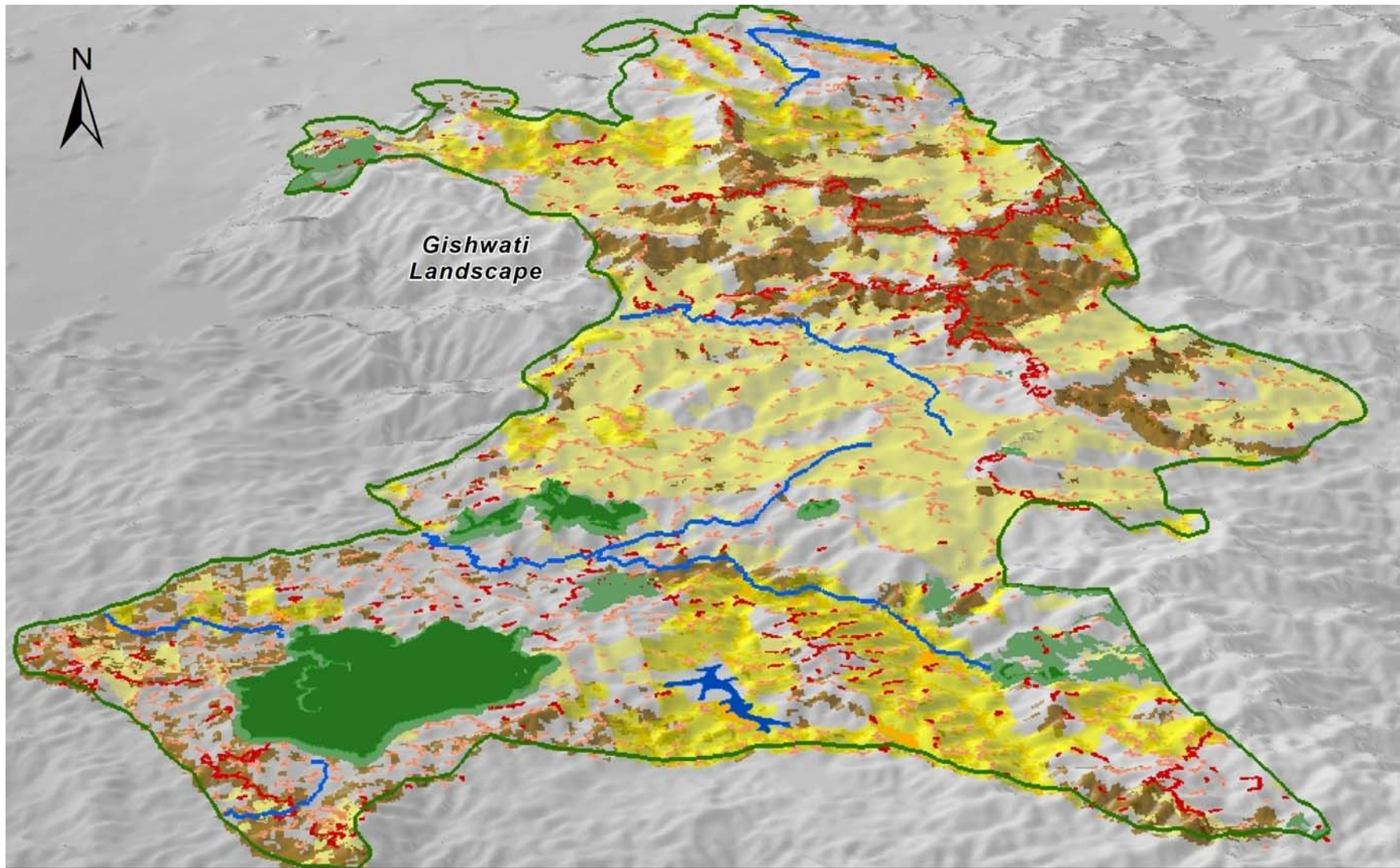













Figure 1: Opportunity areas for the following protective forest interventions: planting native tree species to create 20-m buffers of non-forested river courses; replacing existing eucalyptus with native tree species within 20-m of river courses; and planting native trees species as buffers within 50-m of wetlands.



Legend

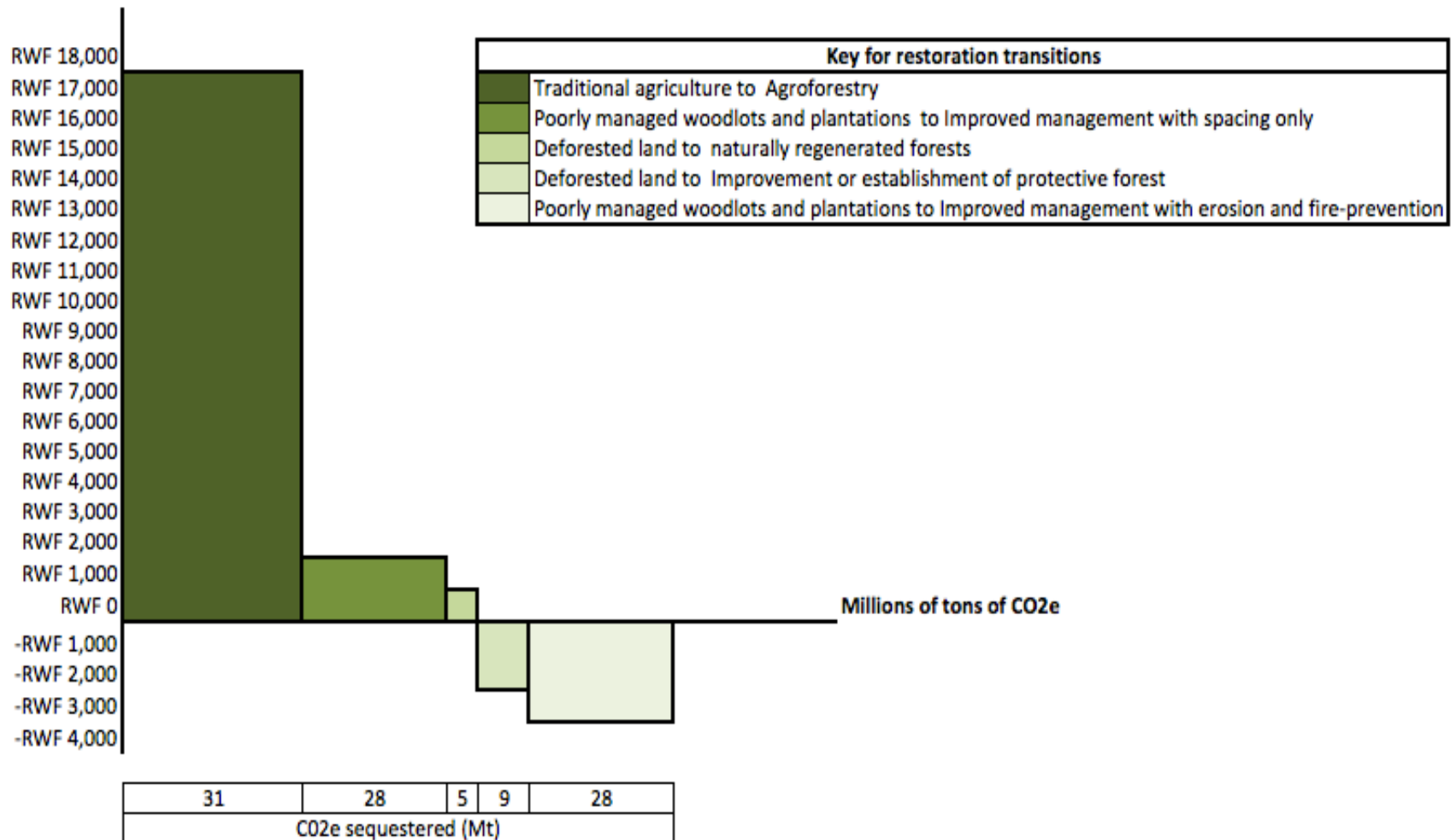
- | | | | | | |
|---|---|---|---|---|---|
|  | Closed natural forest |  | Agroforestry on sloping lands with bench terraces |  | Protective forest buffers for rivers and wetlands |
|  | Natural forest regeneration |  | Agroforestry on pasture lands, including farmer-managed natural regeneration (FMNR) |  | Gishwati landscape |
|  | Protective forest on very steep slopes (>55%) |  | Improved woodlot and timber plantation management |  | Elevation |
|  | Protective forest on steep slopes (20%-55%) | | | | High |
|  | Agroforestry on flat lands | | | | Low |

Carbon (REDD+ and Afforestation/Reforestation)

- Rwanda has the potential to reduce approximately 75 Mt of CO₂e emissions through restoration transitions
- Greatest potential is by using transitions that provide the largest private (i.e. livelihood) benefits
- Transitions that produce more public benefits are less permanent means of storing carbon

Carbon (REDD+ and Afforestation/Reforestation)

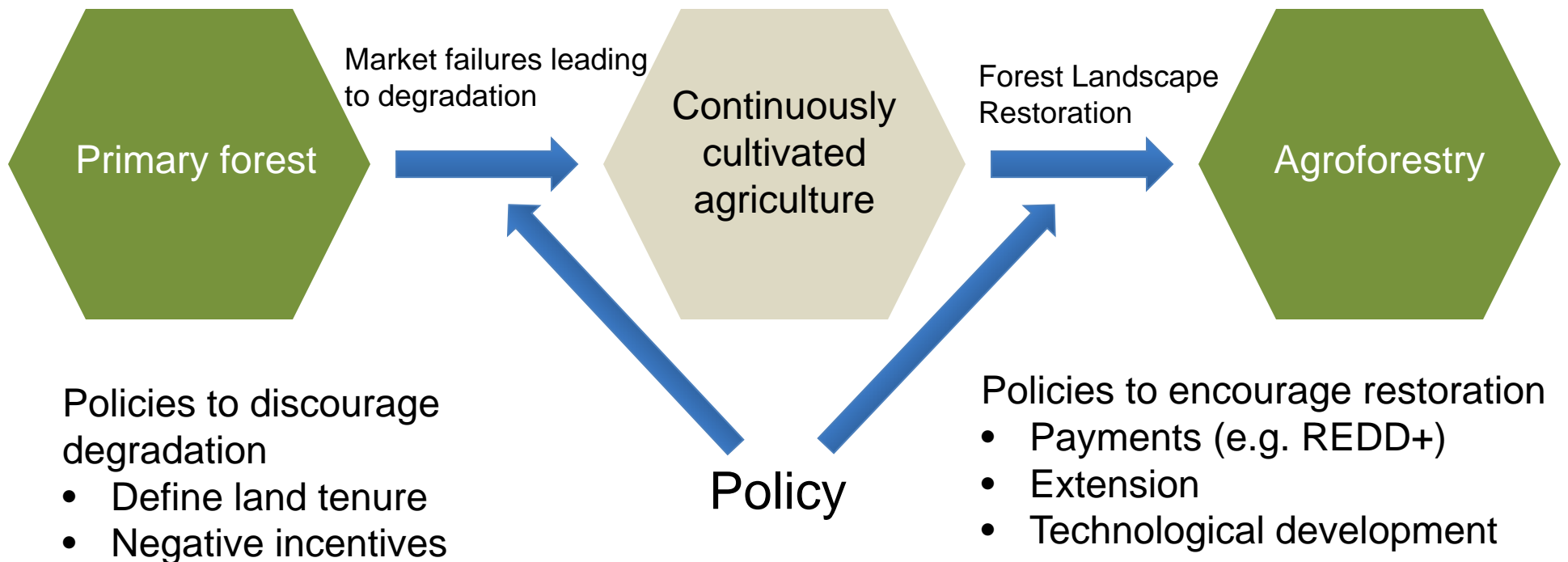
NPV per ton of CO₂e (Rwf)



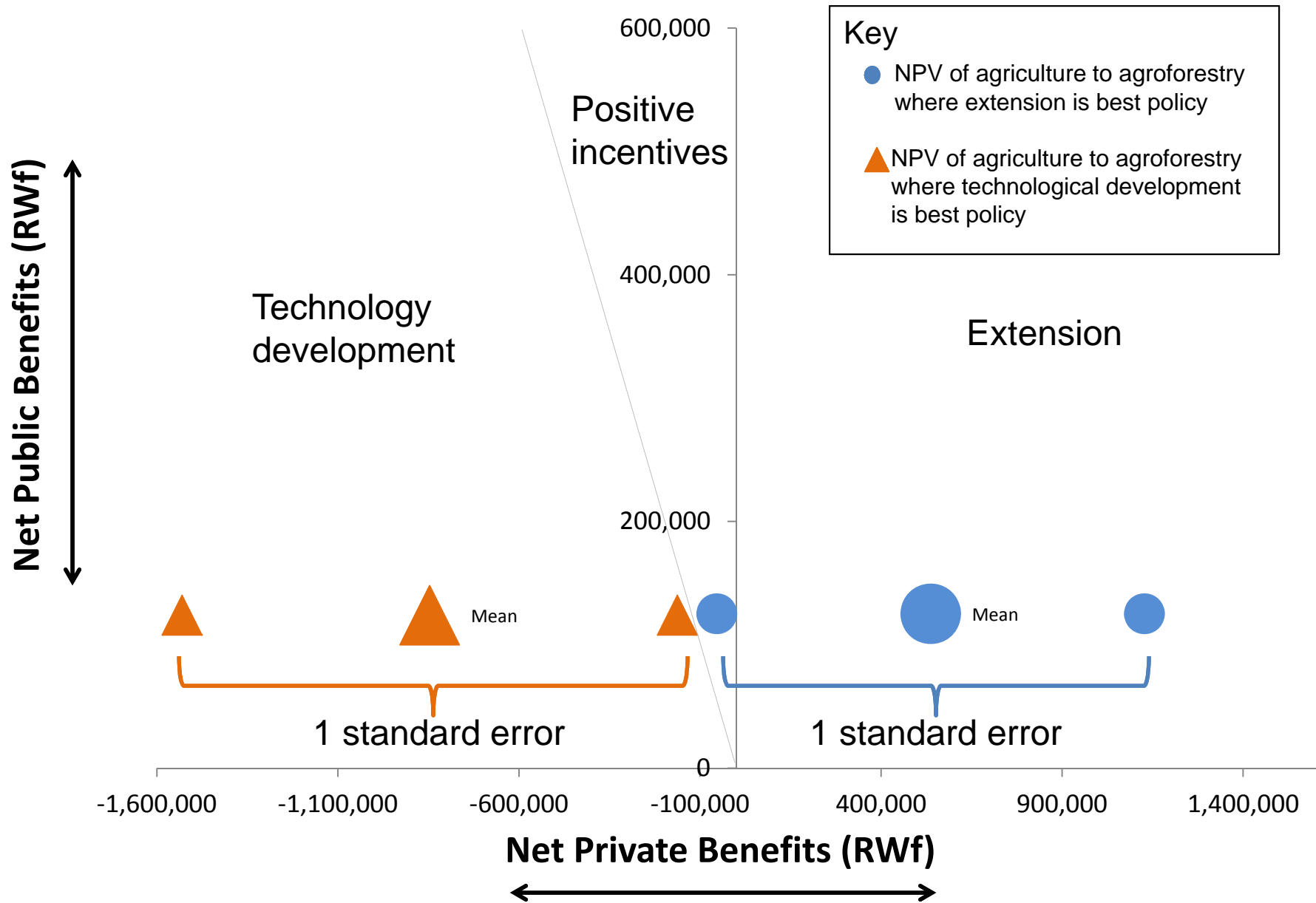
Which policies support restoration?






Choice of policy depends on specific context:





- What is the source of market failure that led to degradation?
 - Does the policy need to encourage restoration directly or discourage degradation?
- Who receives the benefits from restoration and who pays the costs?






Policy analysis for agroforestry in Rwanda



A CLEAR MOTIVATION			
<i>Feature</i>	<i>Preliminary Result</i>	<i>Preliminary Rationale</i>	<i>Ability to Improve</i>
Benefits	 <i>Partially in place</i>	While the potential benefits are clear of restoration are clear, proven economic cases for the forest landscape restoration interventions highlighted above, including agroforestry, remain lacking.	<u>High</u> Quantify economic results through representative test cases
Awareness	 <i>Partially in place</i>	Clear national roadmaps exist via Vision2020, the Economic Development and Poverty Reduction Strategy (EDPRS) and associated sector level strategies. Annual tree week & Umuganda promote reforestation. However, benefits of forest landscape restoration interventions remains unclear to farmers	<u>High</u> Increase interaction with landowners to understand needs and capacities; socialize the benefits of restoration
Crisis events	 <i>In place</i>	Rwanda is prone to widespread soil erosion, runoff and sedimentation. Wide-scale over-farming has led to poor soil fertility and lack of organic matter. Displacement and migration over past 25 years has exacerbated the situation.	N/A
Legal requirements	 <i>Mostly not in place</i>	Laws and policies to govern forests exist but are not adequately enforced. Afforestation and agroforestry commitments are not coded in law. Laws to protect water bodies with forested buffer zones exist, but are also not adequately enforced. There is no specific law related to restoration. How does it come separate from the prevailing legislation on Forestry?	<u>Low</u> Laws and policies are important, but enforcement has been a major problem and is expected to continue to be a problem due to lack of budget and human resources
Culture		There is a strengthening, progressive cultural identity of being Rwandan.	<u>Medium</u>

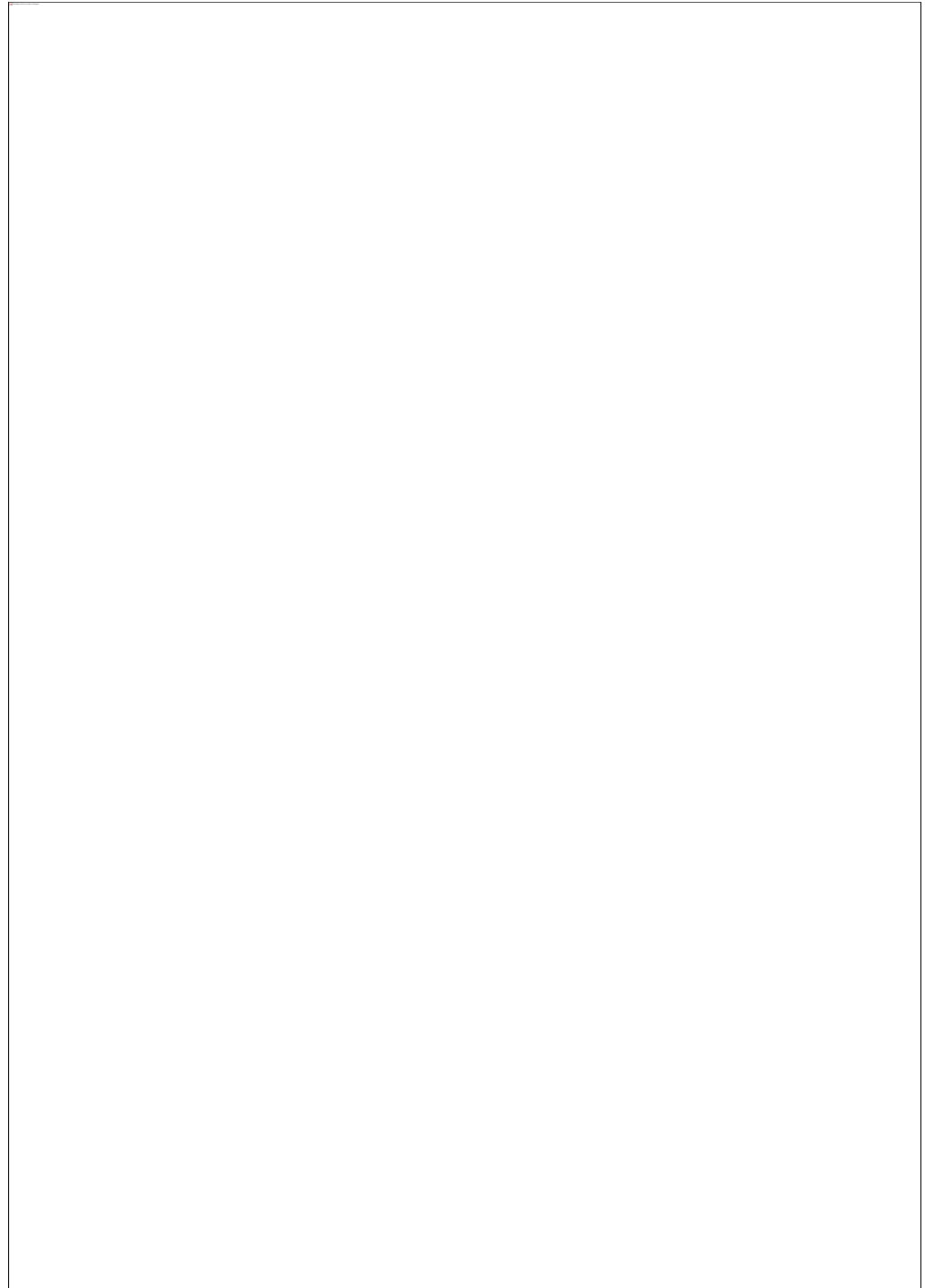
ENABLING CONDITIONS IN PLACE			
<i>Feature</i>	<i>Preliminary Result</i>	<i>Preliminary Rationale</i>	<i>Ability to Improve</i>
Ecological Conditions	 <i>Partially in place</i>	There are opportunities for restoration. Many steep slopes are not well suited to agriculture. Natural regeneration is a viable option in many of the flat areas. Limited rainfall in Eastern province and a lack of quantity, quality and diversity of native seeds and seedlings throughout Rwanda are issues.	<u>High</u> Capacity of the Tree Seed Center and network of nurseries to be increased and focused on native species
Market Conditions	 <i>Partially in place</i>	The growing population and extent of farming households puts pressure on land. As such, pasture and crop intensification are major priorities. Domestic demand exists for a range of forest products, but ability to process and transport is limited.	<u>Low</u> Bolster the domestic supply chain for forest products in strategic areas in Rwanda. Link agroforestry with intensification programs.
Policy Conditions	 <i>Partially in place</i>	Land and natural resource tenure are reasonably secure. Tenders with tree nurseries are limited to twelve months in length, which has led to weak seedling production. Though many laws, policies and strategies exist, enforcement, governance and implementation remain inadequate.	<u>Medium</u> It is important that policies and strategies are published by relevant agencies to provide transparency and aid in coordination efforts. However, enforcement is not likely to improve dramatically without additional funds.
Social		From a rights perspective, substantial progress in providing individual land	<u>High</u>

IMPLEMENTATION CAPACITY & RESOURCES			
<i>Feature</i>	<i>Preliminary Result</i>	<i>Preliminary Rationale</i>	<i>Ability to Improve</i>
Leadership	 <i>Mostly in place</i>	Rwanda has strong political leadership and commitment. Rwanda has already made a substantial commitment to the Bonn Challenge and the Aichi targets. There is a need to invest to build more restoration champions at the district, sector and village level.	<u>High</u> Honor existing champions. Identify potential champions among civil society and community groups. Identify strategies to build their capacity and honor their efforts.
Knowledge	 <i>Mostly not in place</i>	There is a small but strong university network. Rwandan stakeholders already possess an impressive amount and quality of GIS and other data. However, there is a lack of knowledge produced about opportunities in the drier and flatter lands in the Eastern province. There is a general lack of knowledge and data related to native species. There is also a lack of a cadastral map for forests, which is a major problem. Additionally, extension services are not focused on restoration (e.g. Forests promotes woodlots and Agriculture promotes traditional methods of intensification)	<u>Medium</u> Focus additional resources on native species and on drier areas of the country. Invest in creating and maintaining a cadastral forest map. Increase the quantity, quality and breadth of extension services available to communities.
Finance & Incentives	 <i>Not in place</i>	There are insufficient funds available from government, the private sector, civil society and donors to engage in restoration at scale. Many smallholder farmers are poor and lack access to appropriate loans, grants and/or incentives. Need creative financing mechanisms to help build the capacity of cooperatives, NGOs and private sector companies to implement	<u>Medium</u> Engage poor landowners with funds in exchange for labor. Quantify the economic and social returns of restoration and conduct a campaign to raise a

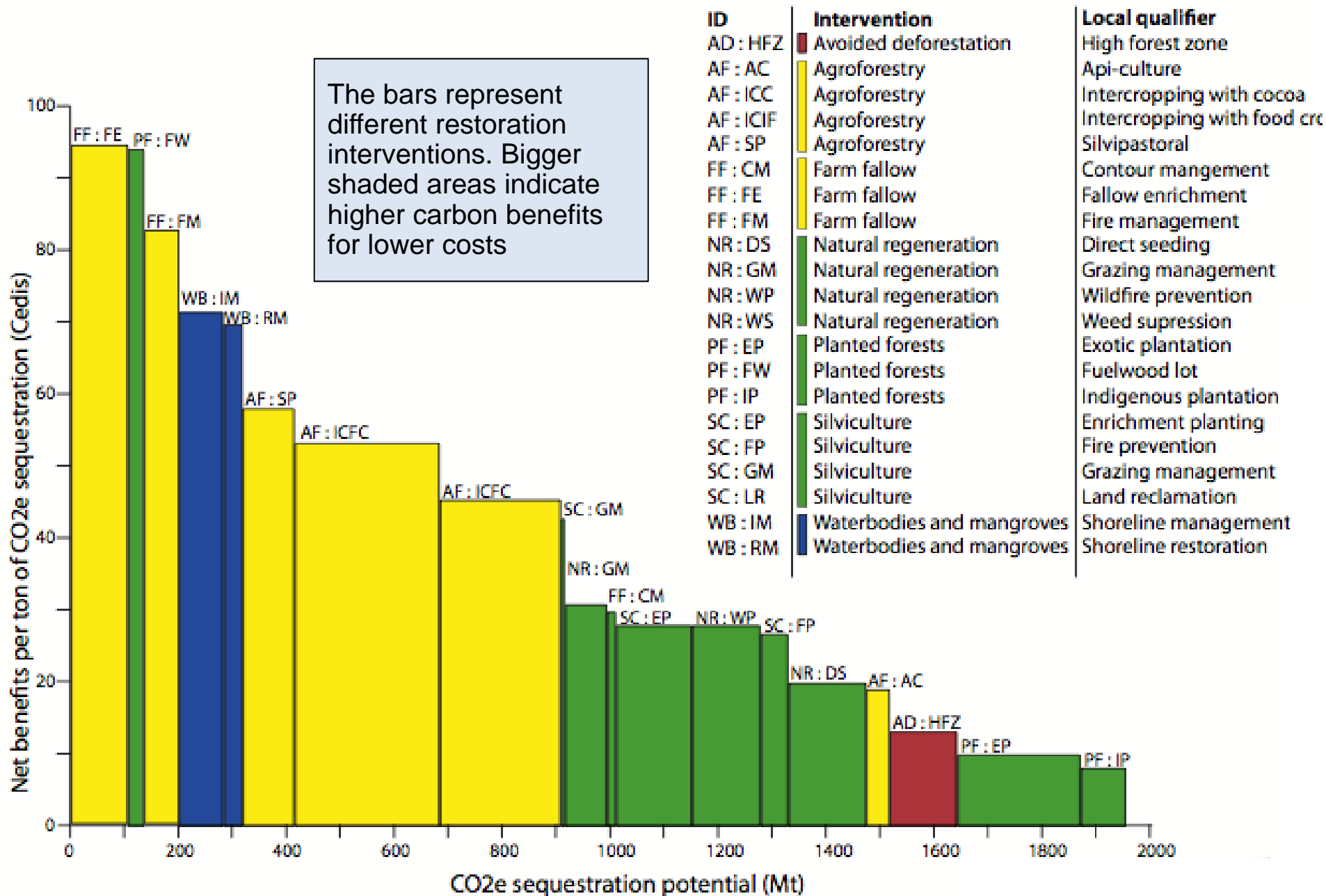
Ghana

- Background - Ghana applied to Forest Investment Program to secure forests and reduce emissions
- Problem - Was not clear which restoration activities should be prioritized for carbon and co-benefits
- Objective - Identify restoration activities that could reduce emissions and produce co-benefits
- Outcome - Several FLR activities were identified for carbon and co-benefits leading to funding for activities

- You cannot manage what you have not measured
- Protecting natural landscapes maintains healthy, productive ecosystems - and ensures that communities receive the forest resources and natural benefits they depend on
- Map helps us say which forest reserves are healthy and which are in a degraded state and may require restoration



Ghana: quantification of the potential of different landscape restoration interventions to sequester carbon



Lessons and conclusion

- **There is potential to restore degraded land in every region of the World**
 - More than 2 billion hectares in total
- **Forest Landscape Restoration can restore landscapes to deliver multiple benefits to multiple stakeholders at multiple scales**
 - Including significant carbon sequestration benefits
- **FLR fits into REDD+ by enhancing forest carbon stocks**
 - Also helps to balance each countries land use portfolio
- **Processes like ROAM work with forest stakeholders to identify restoration opportunities that achieve specific national and sub-national goals**
 - Identifies economically viable opportunities and the conditions that need to be created for restoration to be successful



BONN CHALLENGE



**Thank
you!**

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