FOREST & LANDSCAPE RESTORATION

WORLD RESOURCES INSTITUTE

IUCN

Kathleen Buckingham | Jambi, 29 April 2014

Research Associate | World Resources Institute

15 BONN CHALLENGE 2011

THE GLOBAL PARTNERSHIP ON FOREST LANDSCAPE RESTORATION

PRESENTATION STRUCTURE

1 Degradation and Restoration of Land and Ecosystems

2 Restoration Opportunities Assessment Methodology

3 Rapid Restoration Diagnostic

1

Degradation and Restoration of Land and Ecosystems

Review of Global Estimates
29th April 2014

Thomas Caspari
ISRIC–World Soil Information

Sasha Alexander
UNCCD/University of Western Australia

Ben ten Brink
Netherlands Environmental Assessment Agency PBL

Lars Laestadius
World Resources Institute

OBJECTIVES

For ecosystems and landscapes …

- Provide a clear conceptual framework
- Review global and selected sub-global estimates
- Assess global area of degradation and restoration potential ("reasonable estimates")
- Identify and quantify expected benefits of restoration

SIX GLOBAL ECOSYSTEMS WERE ASSESSED

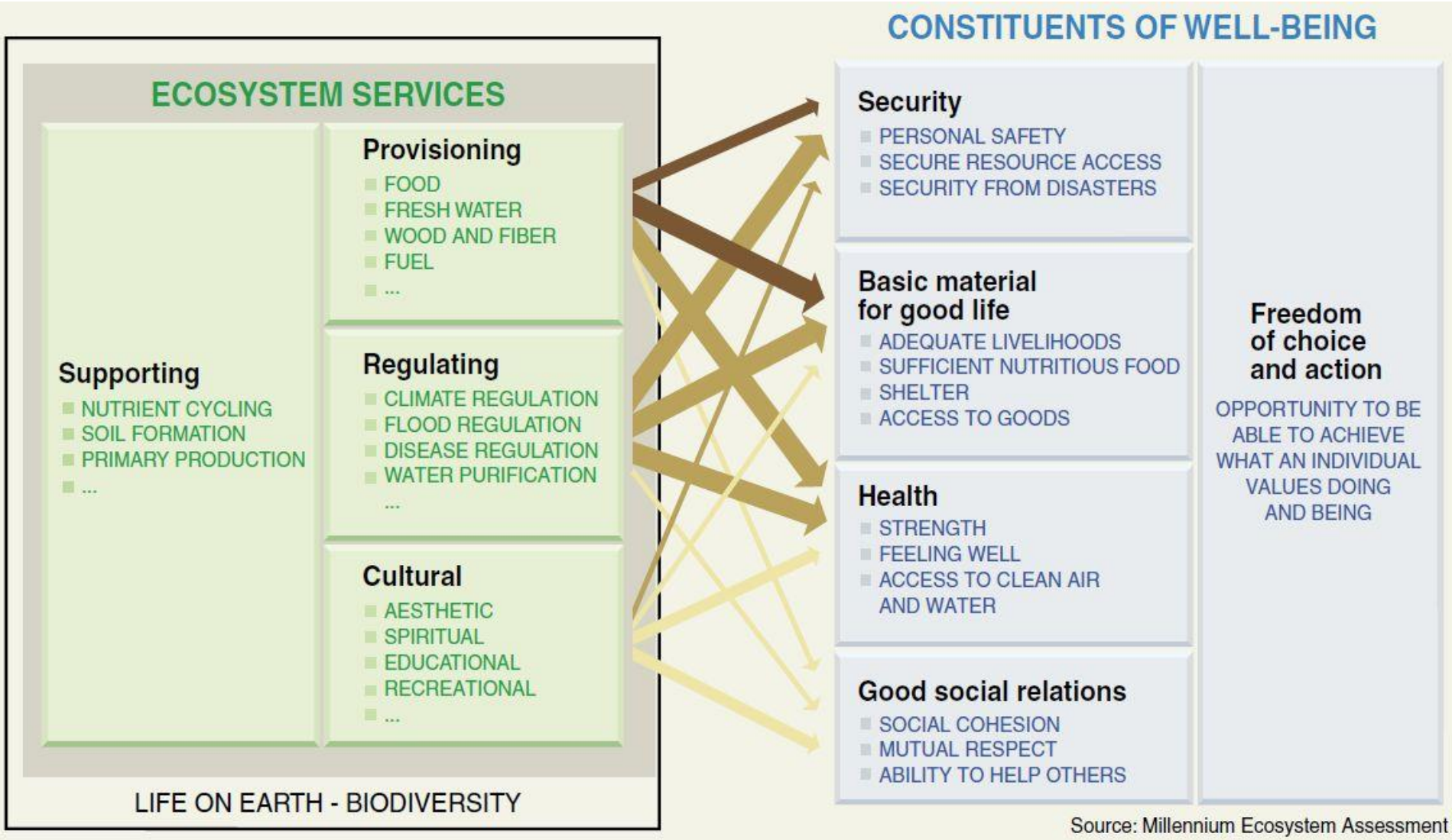
- **Agroecosystems:** irrigated and rainfed cropland; pasture
- **Grasslands ecosystems**: natural grasslands incl. savannah, shrubland, and tundra; pasture
- **Forest ecosystems:** all ecosystems with a tree crown cover of >10%
- **Dryland ecosystems**: all areas under water stress, partly also deserts
- **Wetland ecosystems**: inland freshwater habitats, including peatlands
- **Coastal ecosystems**: terrestrial fraction only, mainly mangroves.

Aichi Biodiversity Targets | 3 "land-based" targets

- Cut natural habitat loss by at least half
- Reduce degradation and fragmentation significantly

- Protect or conserve at least 17 % of terrestrial and inland water areas
- Protect or conserve at least 10 % of coastal and marine areas

- Restore at least 15 % of degraded ecosystems
- Enhance resilience, contribute to climate change mitigation and adaptation, combat desertification through conservation and restoration

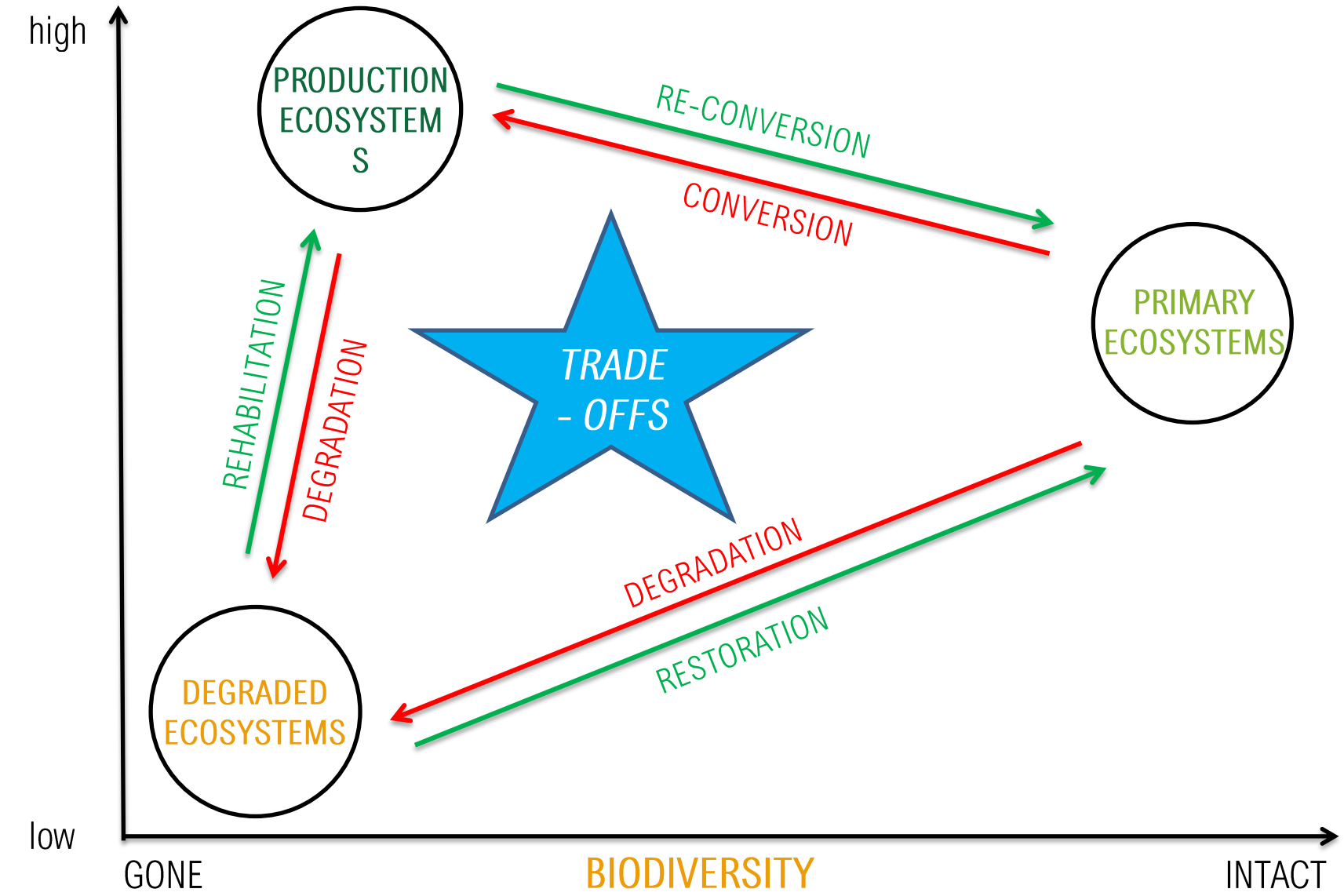


Source: Millennium Ecosystem Assessment

BIODIVERSITY, ECOSYSTEM SERVICES, WELL-BEING

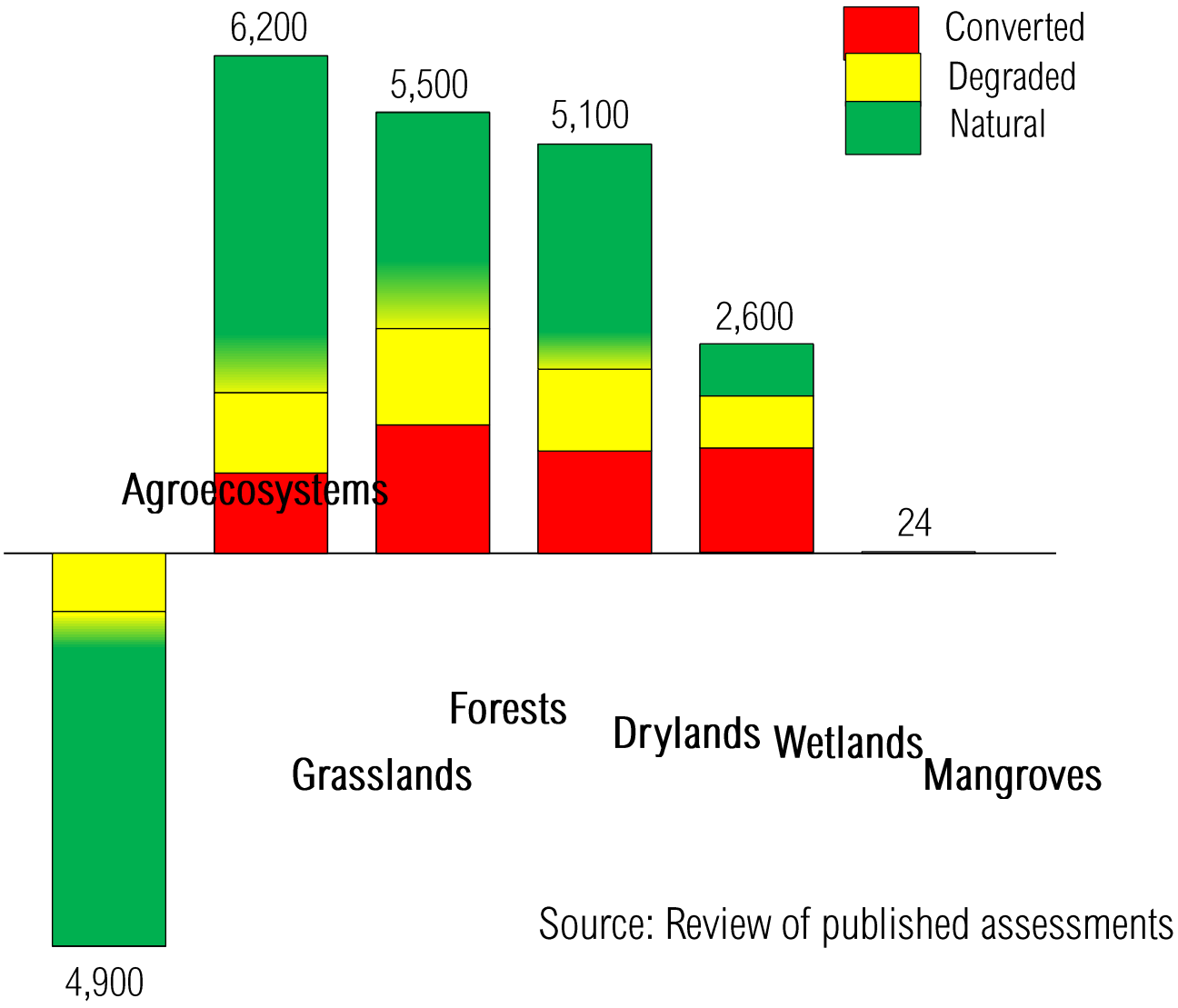
DEGRADATION AND RESTORATION

a simple conceptual framework



GLOBAL ECOSYSTEM STATUS

(extent, million ha)



Source: Review of published assessments

RESULTS

- Estimates are of extent, not intensity
- Extent has generally declined between a quarter and a half
- Wetlands and mangroves are the most diminished
- Estimates vary widely
- Deriving precise estimates at ecosystem level is therefore speculative

WHY DO ESTIMATES DIFFER SO MUCH?

- Definitions are different
  - Ecosystems
  - Degradation
- Data sources are different
  - Ground observations vs. remote sensing
- Observations are missing
  - Existing estimates are uncertain
  - Data gaps are prevalent

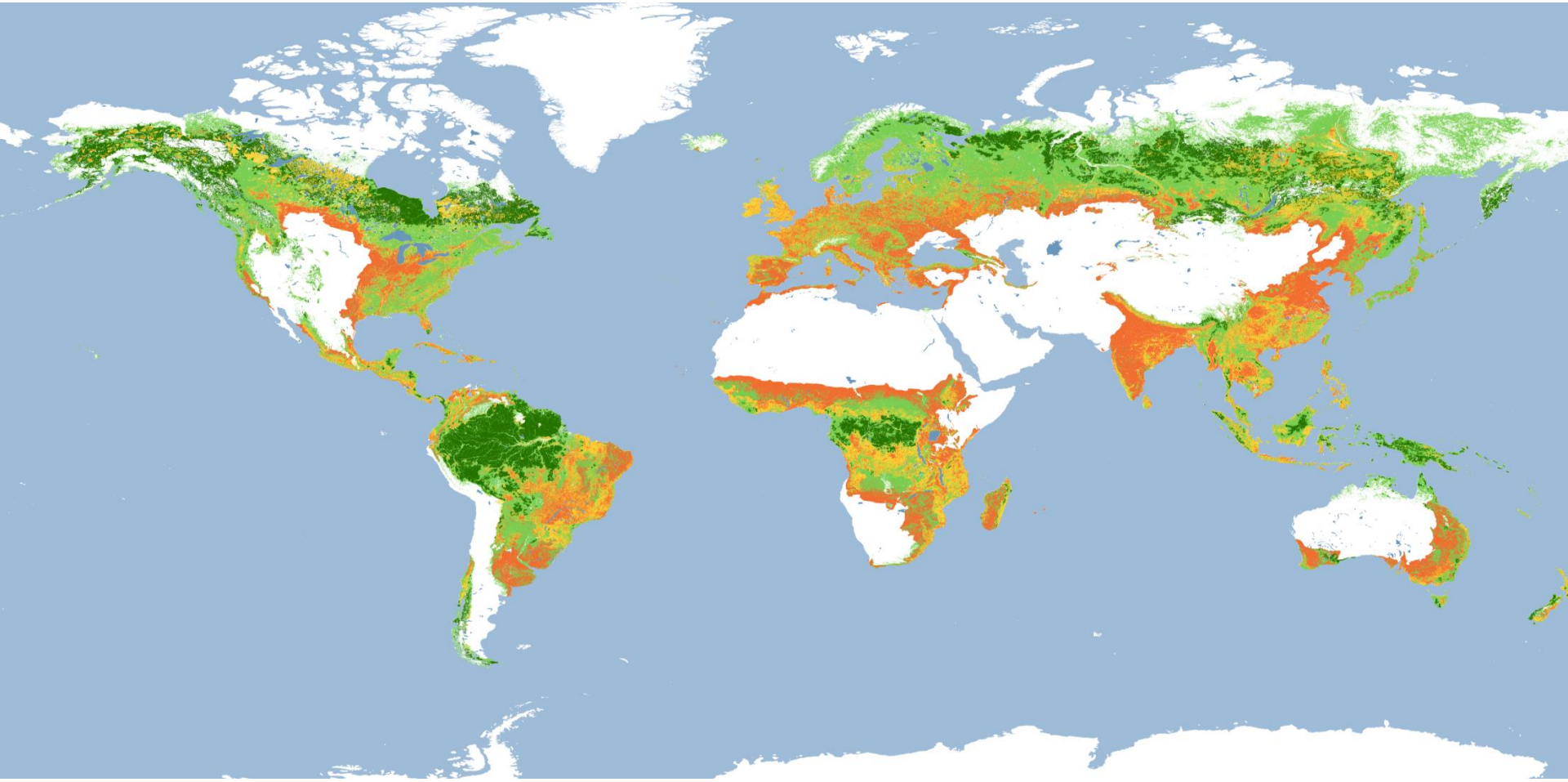
RECOMMENDATIONS

- Do not let terminology get in the way
  - e.g., demarcation of restoration and rehabilitation, or international harmonization of definitions

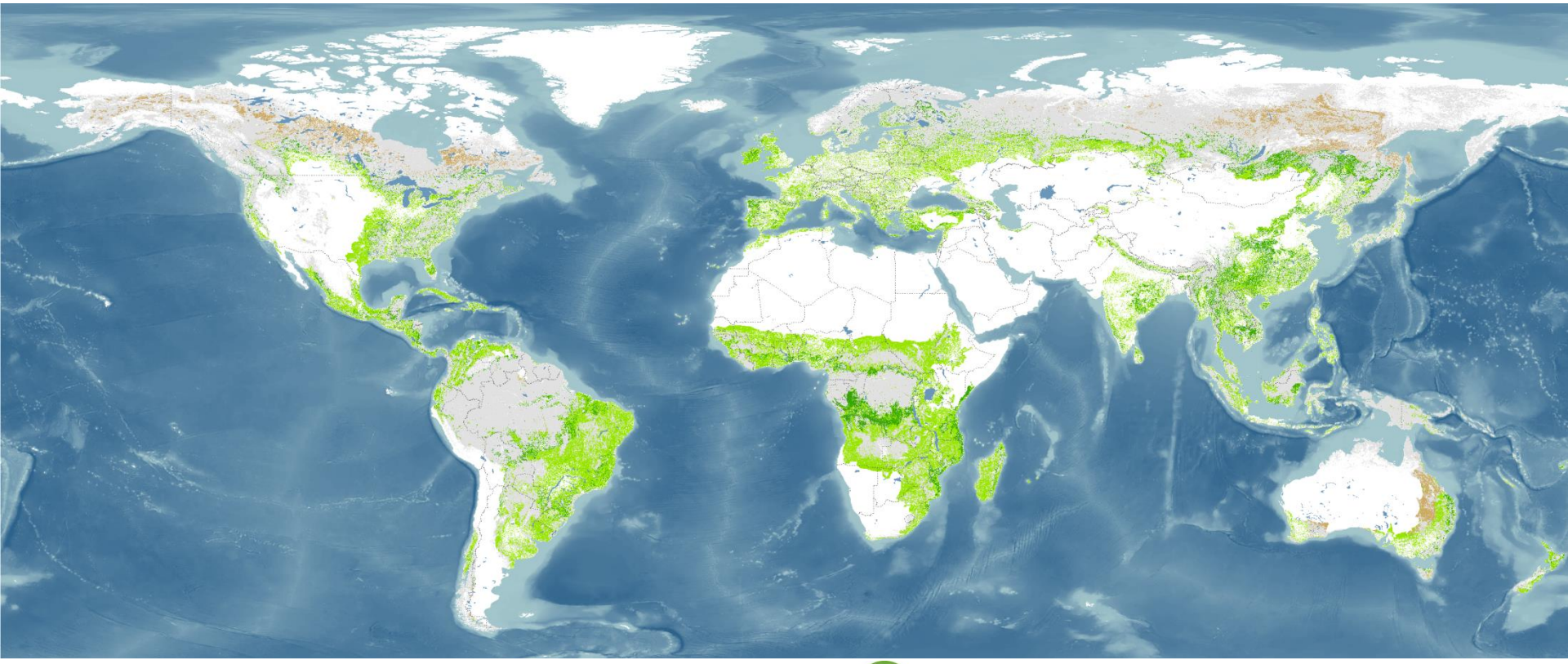
- Increase global efforts in mapping and monitoring
  - now grossly inadequate compared to the complexity of the task and importance of the result

Forest condition

On lands where forests can grow



Forest and Landscape Restoration Opportunity



FOREST AND LANDSCAPE RESTORATION OPPORTUNITIES

- Wide-scale restoration
- Mosaic restoration
- Remote restoration
- Current forest

THE GLOBAL PARTNERSHIP ON FOREST LANDSCAPE RESTORATION

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South Dakota State University

IUCN

Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit

PROFOR

Forestry Commission

2

Restoration Opportunities, Assessment Methodology

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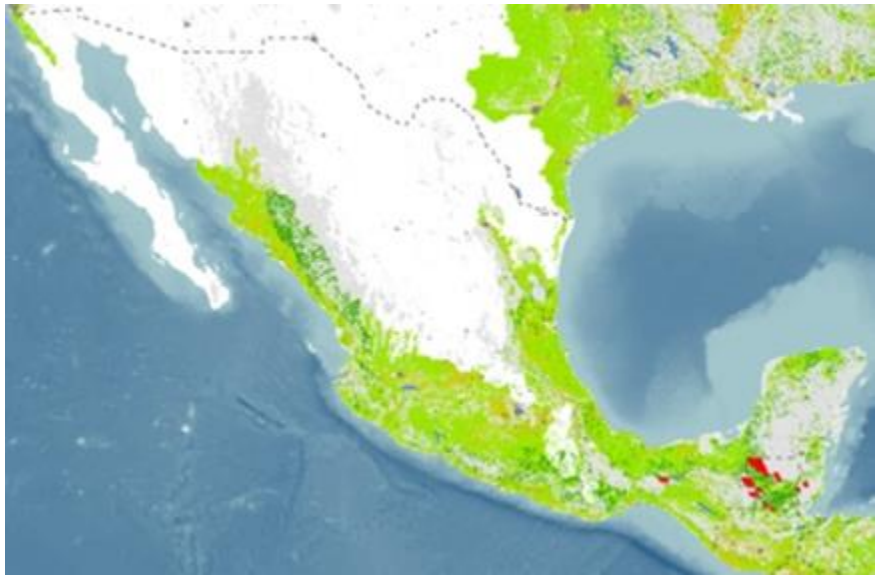
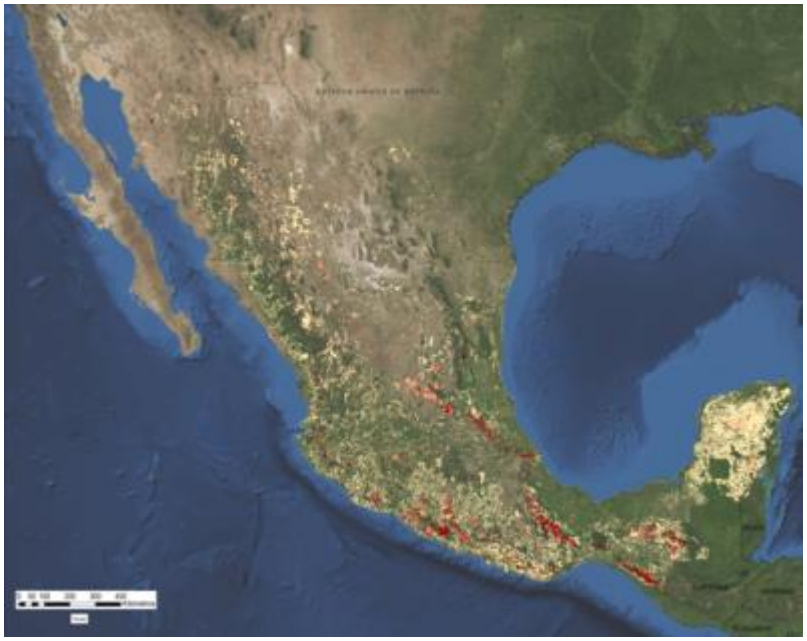
The challenge: to move from the global generic to national specifics





.... 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

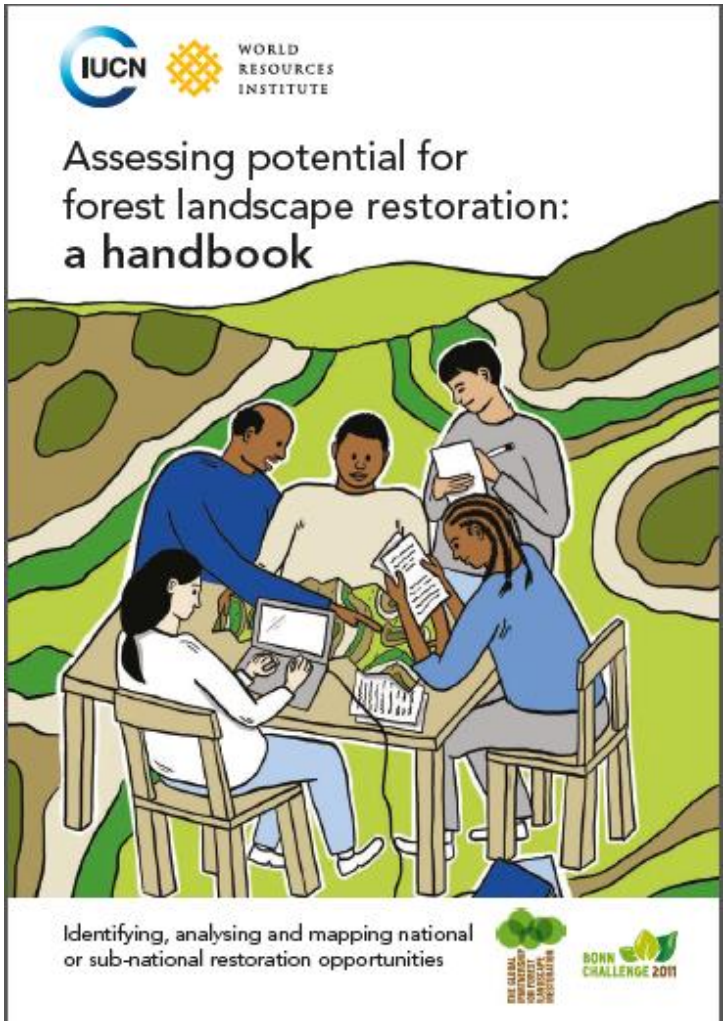
Rwanda's deforested mountains hold tremendous potential for restoration that can improve lives

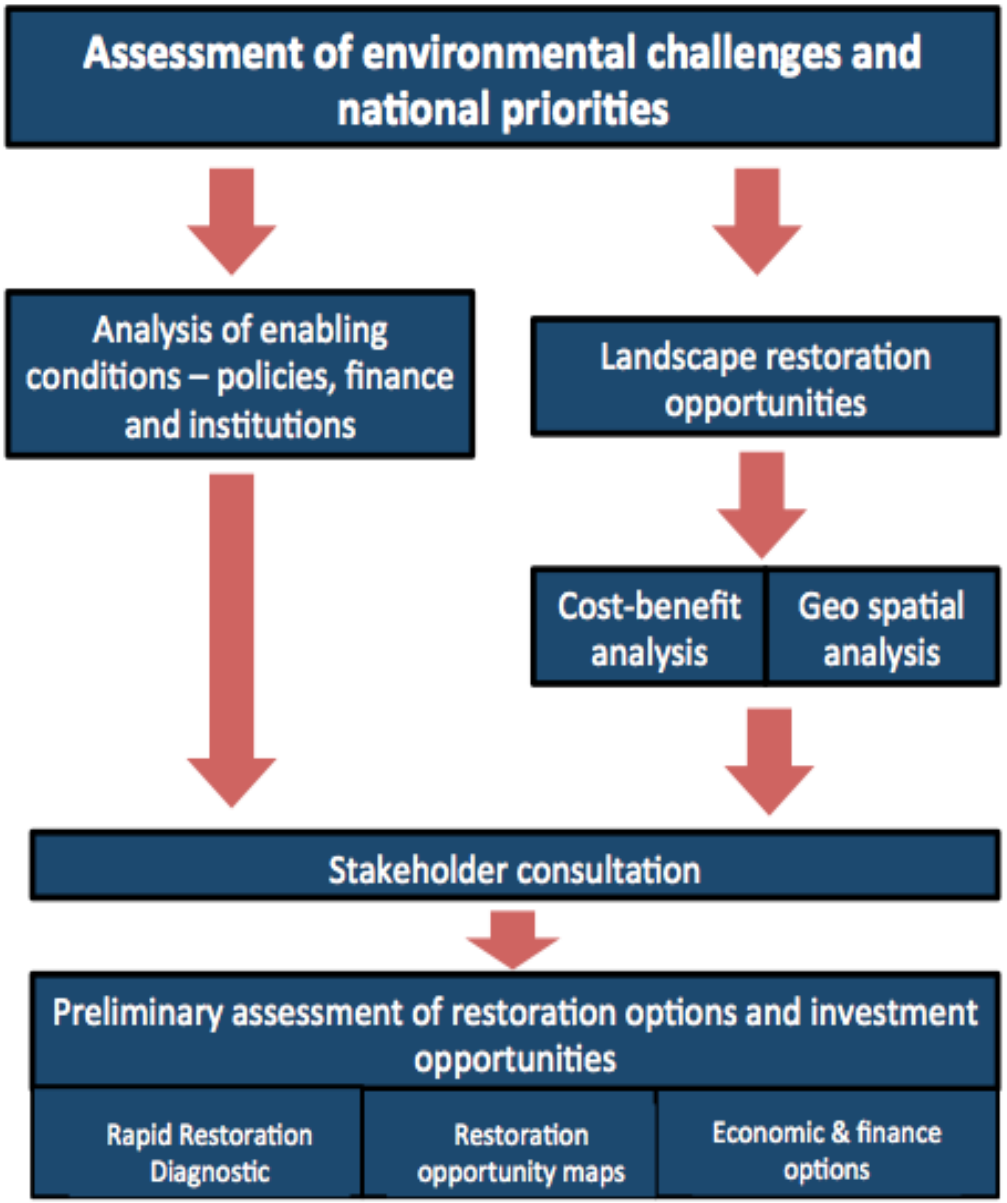
Primary challenges include

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

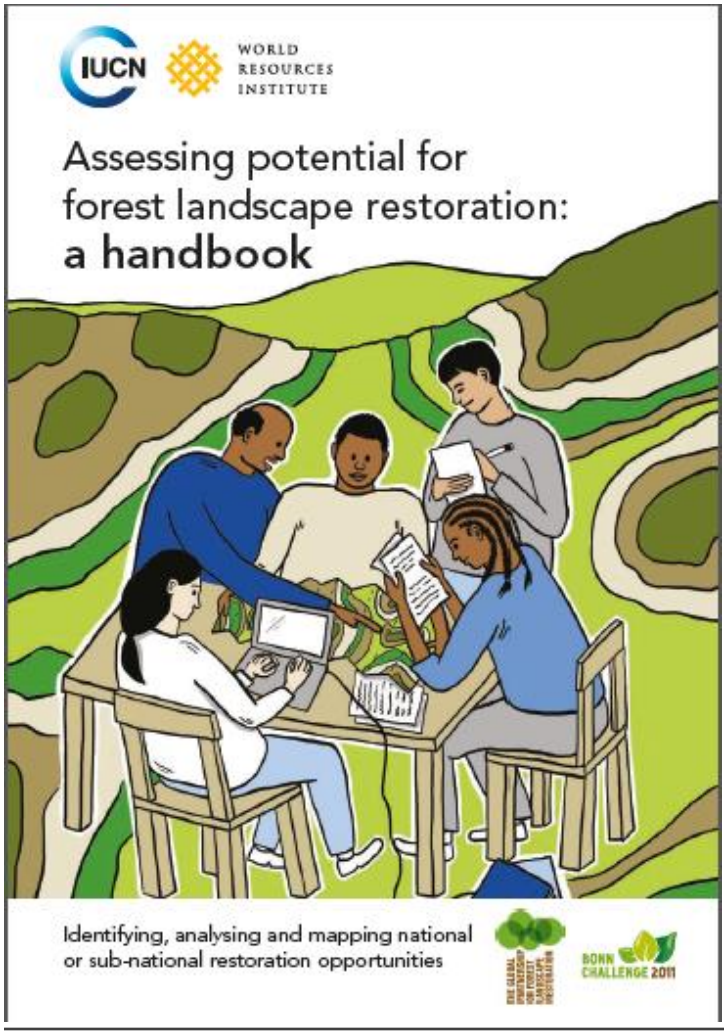
Restoration Opportunities Assessment Methodology (ROAM)





The Components of ROAM include

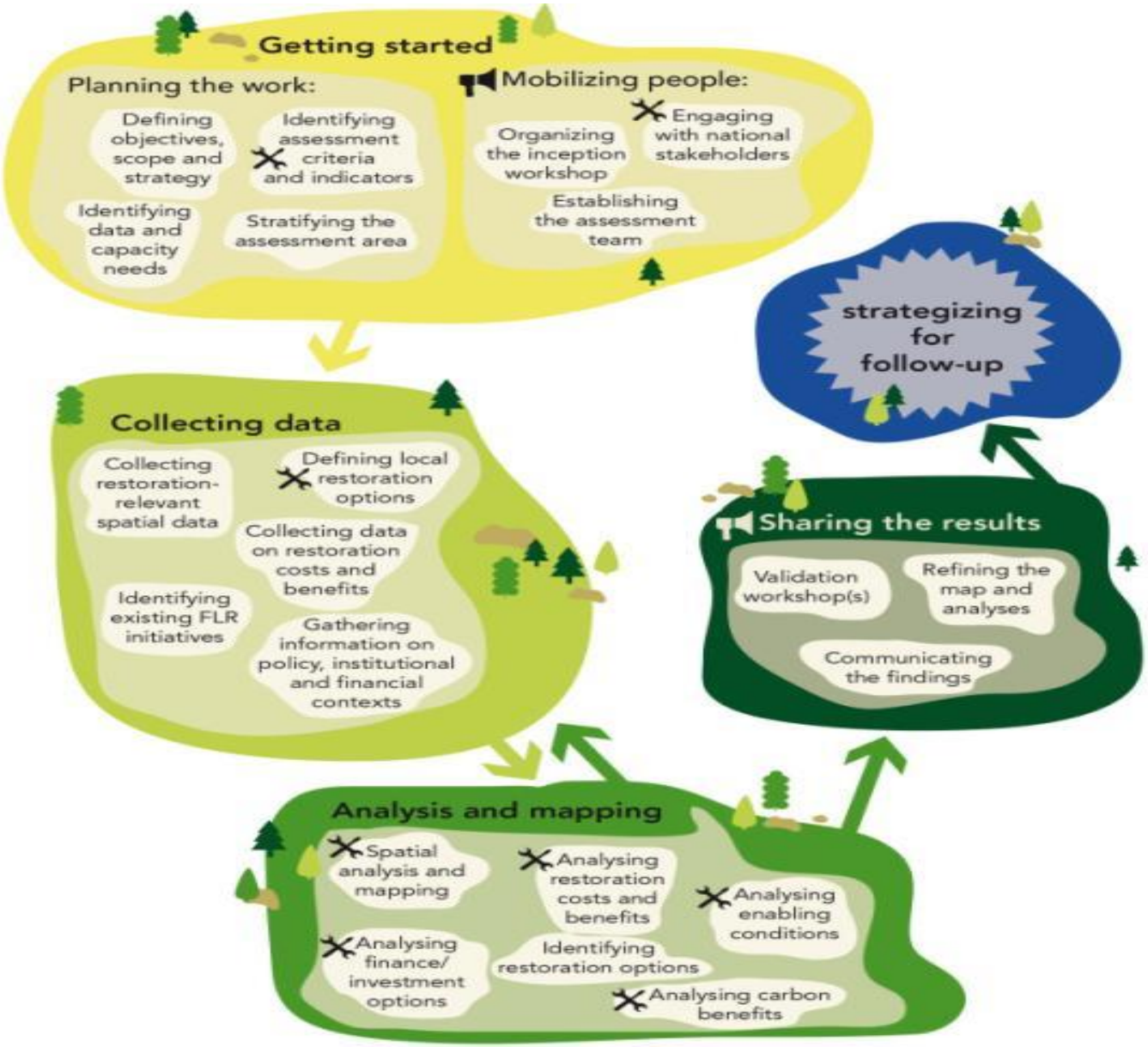
1. Restoration Opportunities Mapping
2. Restoration Economic Valuation
3. Restoration Carbon ACCRUAL
4. Restoration Rapid Diagnostic of Success Factors
5. Restoration Finance Assessment



The purpose of ROAM assessments is to

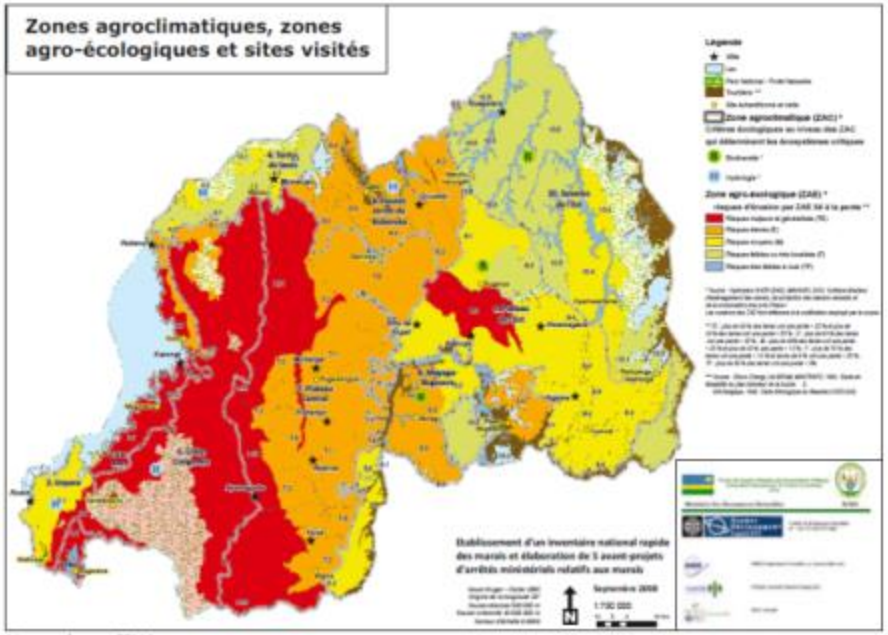
- Identify, analyse and map the overall potential and areas of opportunity for forest landscape restoration (FLR) on a national or sub-national level
- Support countries, organizations, communities and enterprises in defining and implementing pledges to the Bonn Challenge target to restore 150 million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

The ROAM process summarized



The Restoration Opportunities Assessment Methodology aims to bridge these gaps with...

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

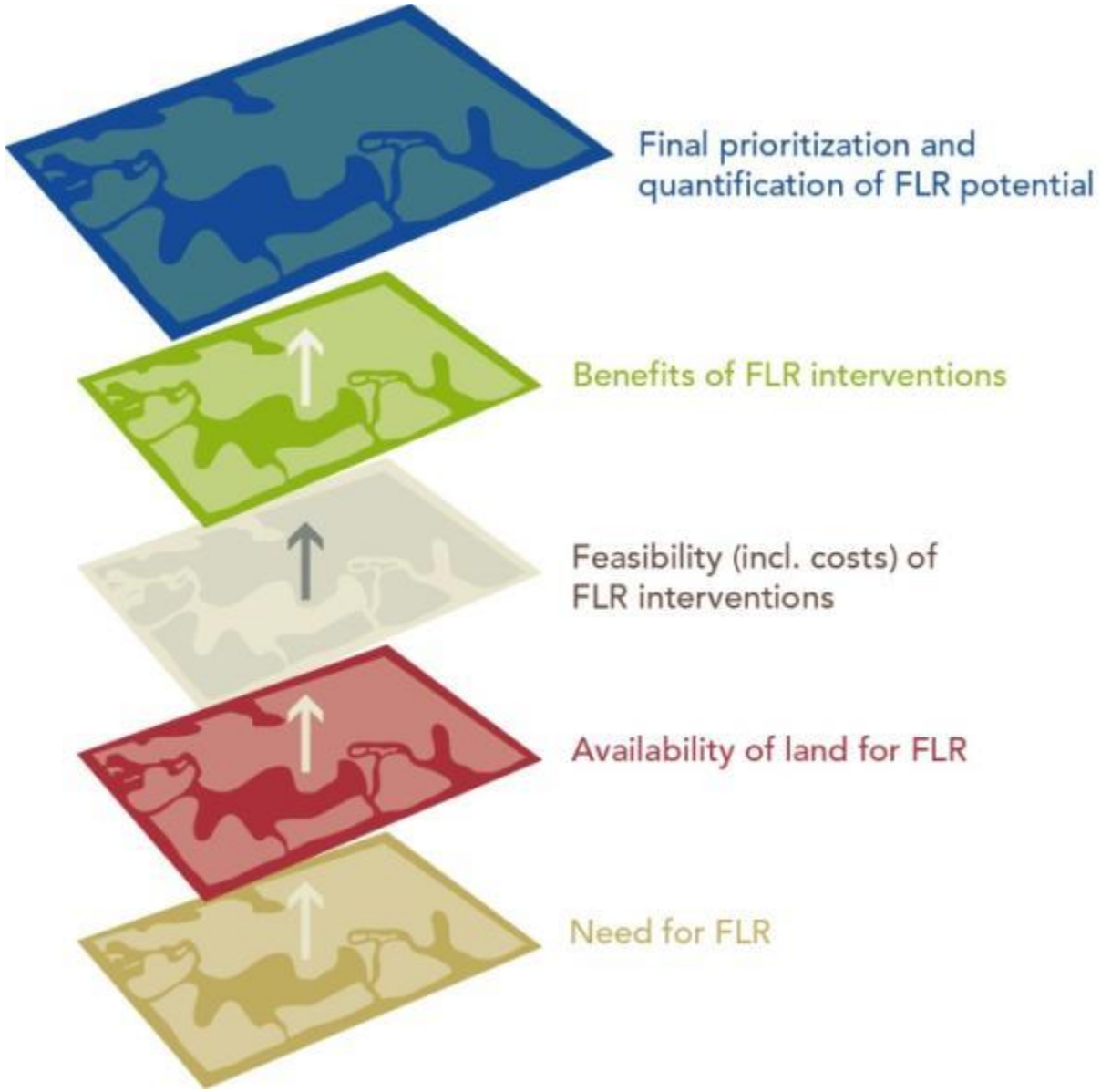


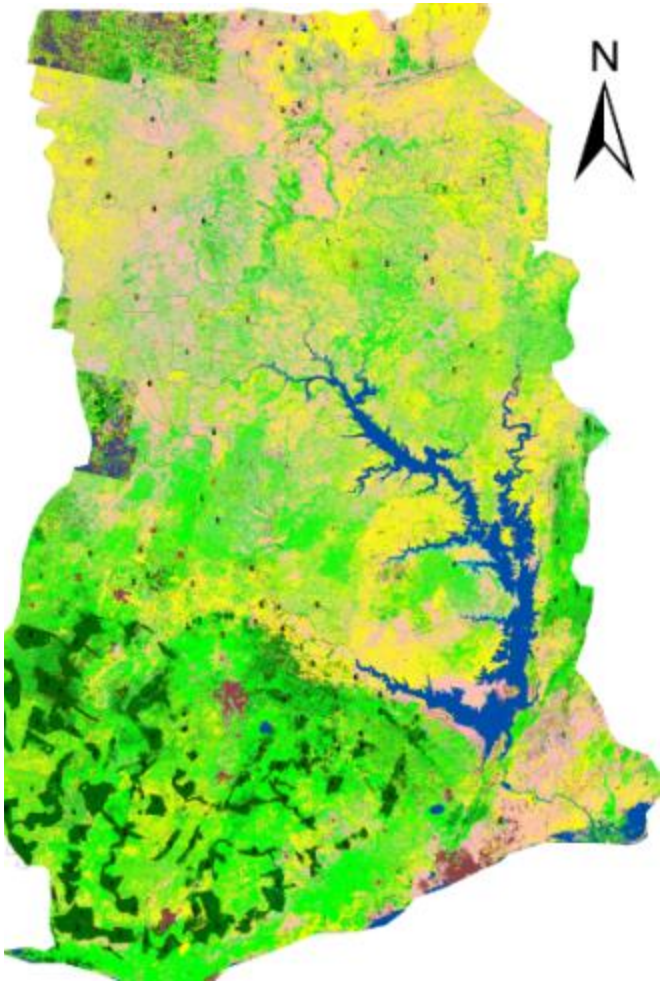
Map production: REMA

Best available science and data

Best informed knowledge & insights

Analysis and Mapping





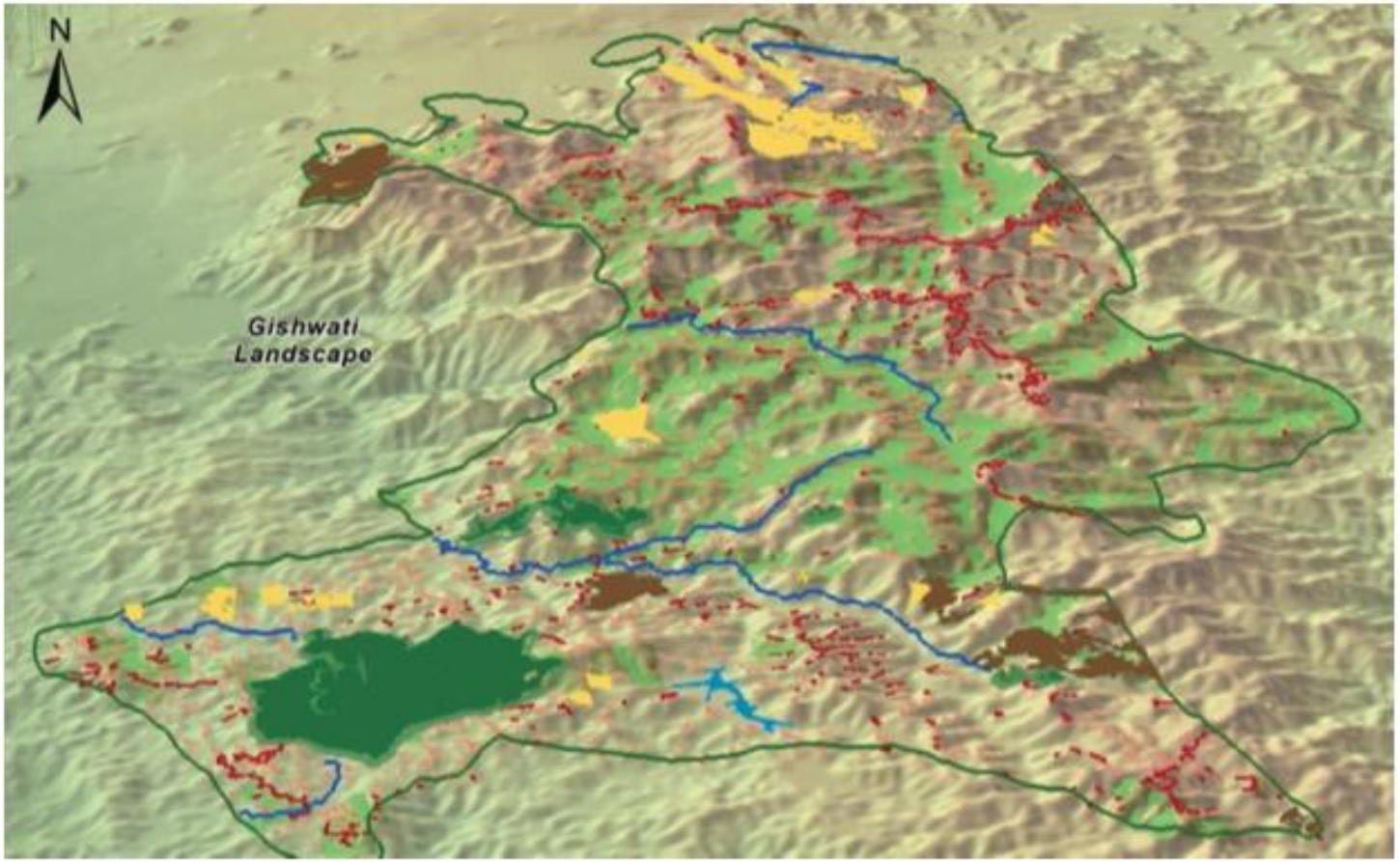
Economic analysis can be a key step in restoration

It allows you to:

- Anticipate costs of interventions
- Understand net benefits – “what, when and to whom”
- Pick high priority / value landscapes – “where”

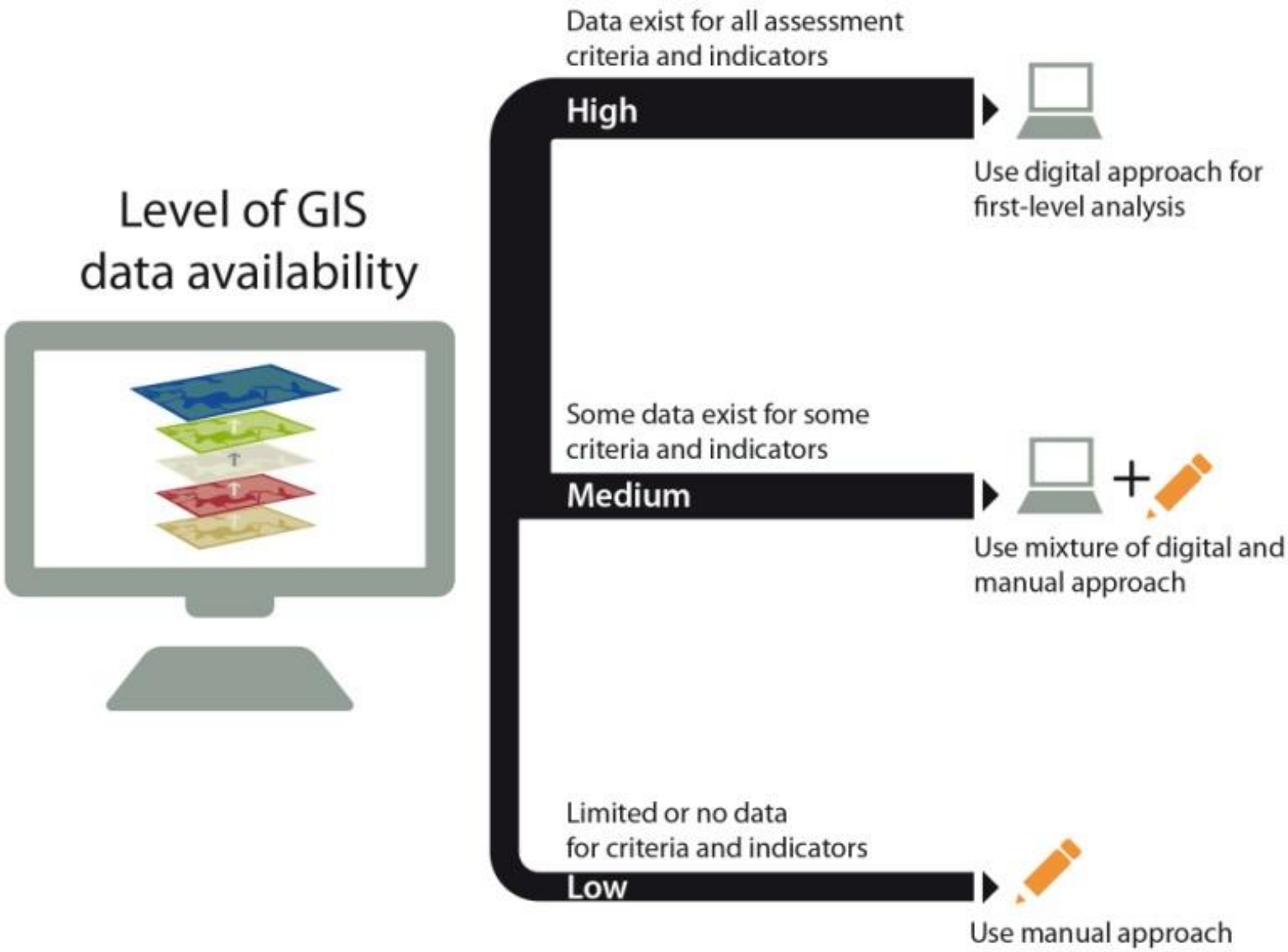
What is the analysis process?

1. Conducting digital spatial analysis



- Deforested area in riparian corridors
- Existing natural forest
- Area for buffers around natural forest
- Degraded natural forest
- Deforested area surrounding wetlands
- Deforested area on steeply sloped ridges (>55%)
- Deforested area on moderately sloped ridges (20% < slope < 55%)
- Degraded agricultural land
- Silvopastoral areas
- Gishwati landscape

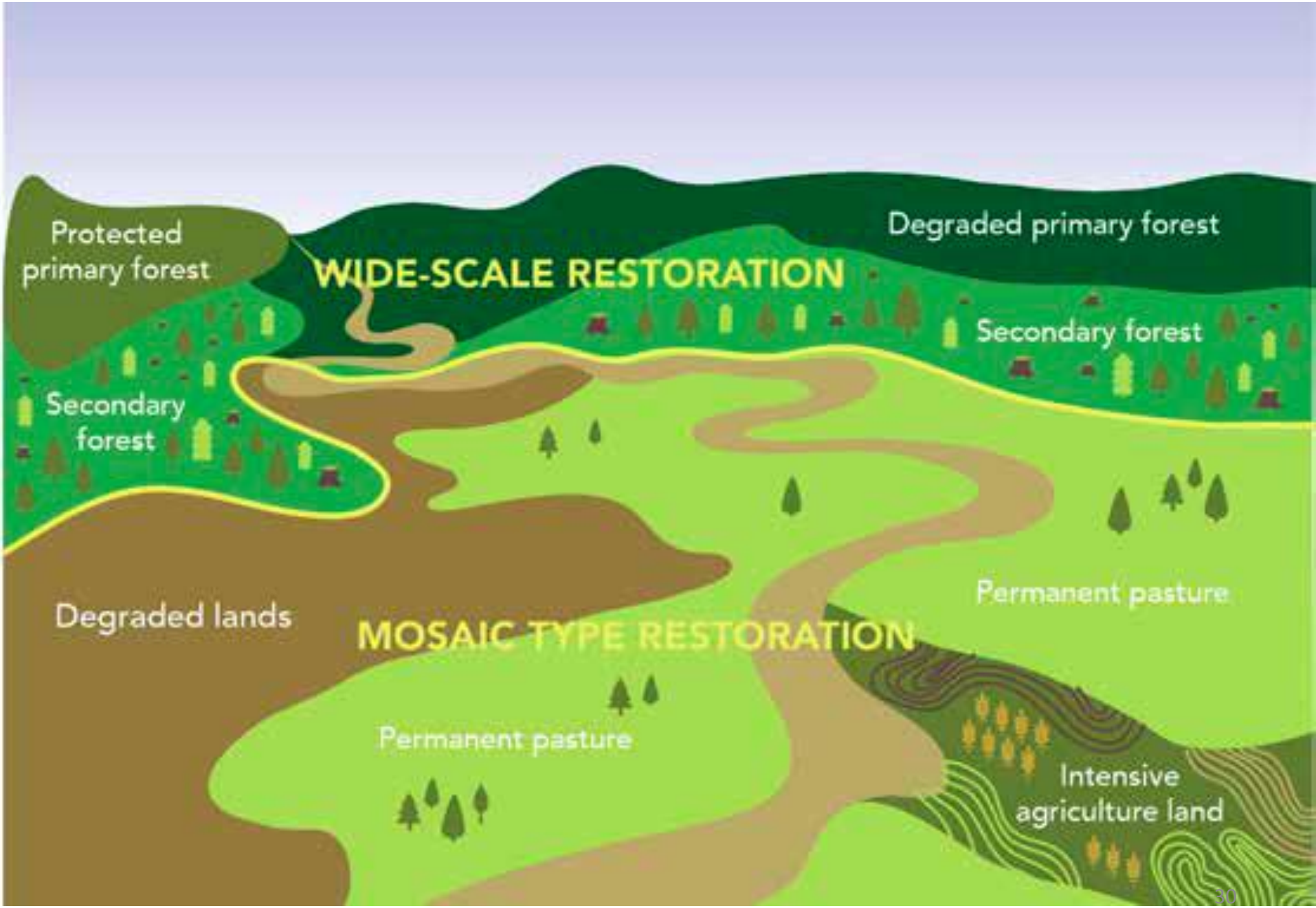
Analysis and Mapping



2. Considering Restoration Transitions

- We consider degraded land uses in the project area:
  - E.g., degraded agriculture, poorly managed woodlots and plantations, deforested land, etc.
- And identify transitions to restored landscapes. E.g.:

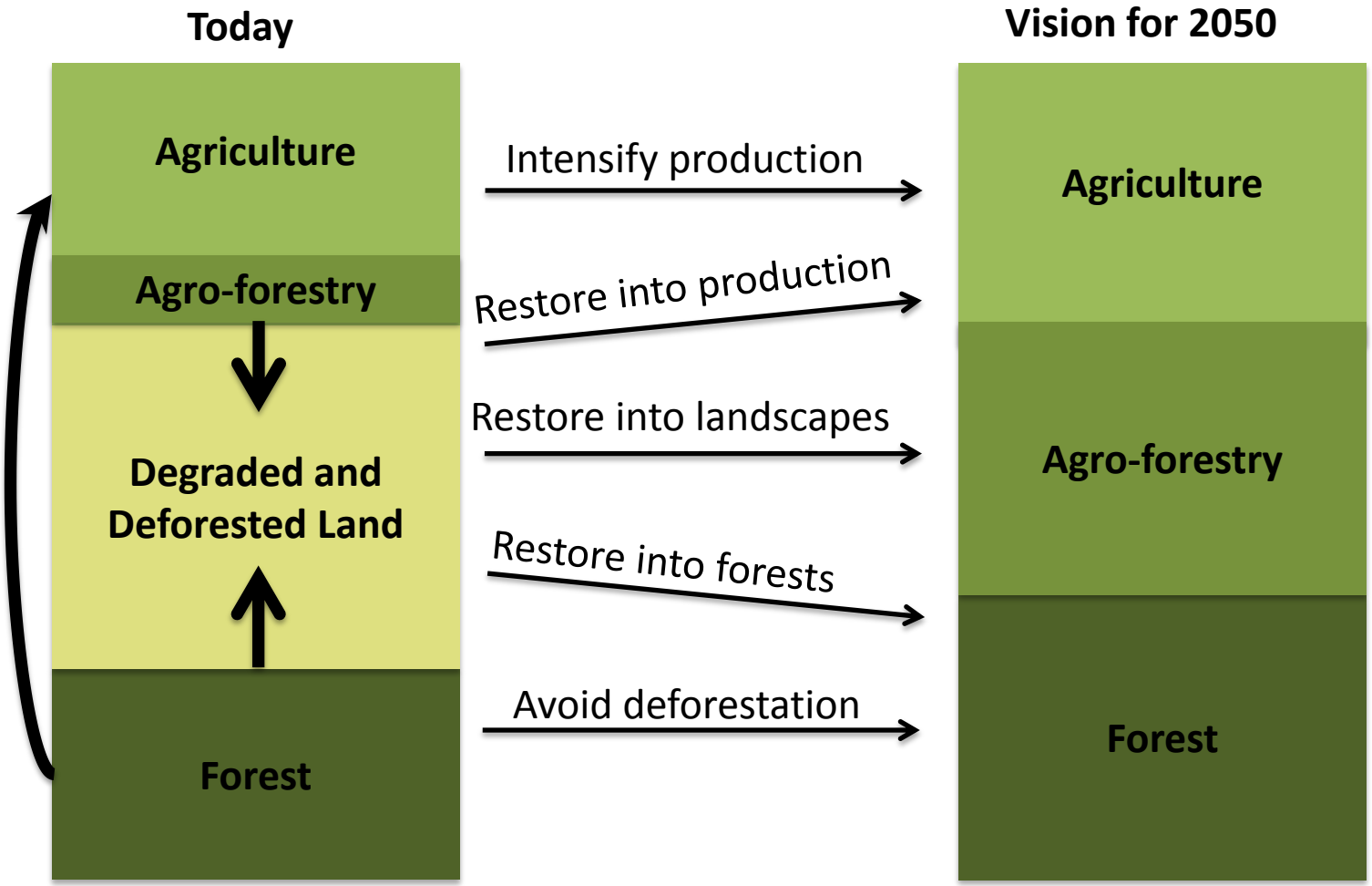
- Agriculture → Agroforestry
- Poorly managed woodlots and plantations → Well managed
- Degraded forest → Naturally regenerated secondary forest
- Deforested land → Protective forests (buffers and ridgetops)


Protected primary forest
WIDE-SCALE RESTORATION
Degraded primary forest
Secondary forest
Secondary forest
Degraded lands
Permanent pasture
MOSAIC TYPE RESTORATION
Permanent pasture
Intensive agriculture land

Identifying potential FLR options

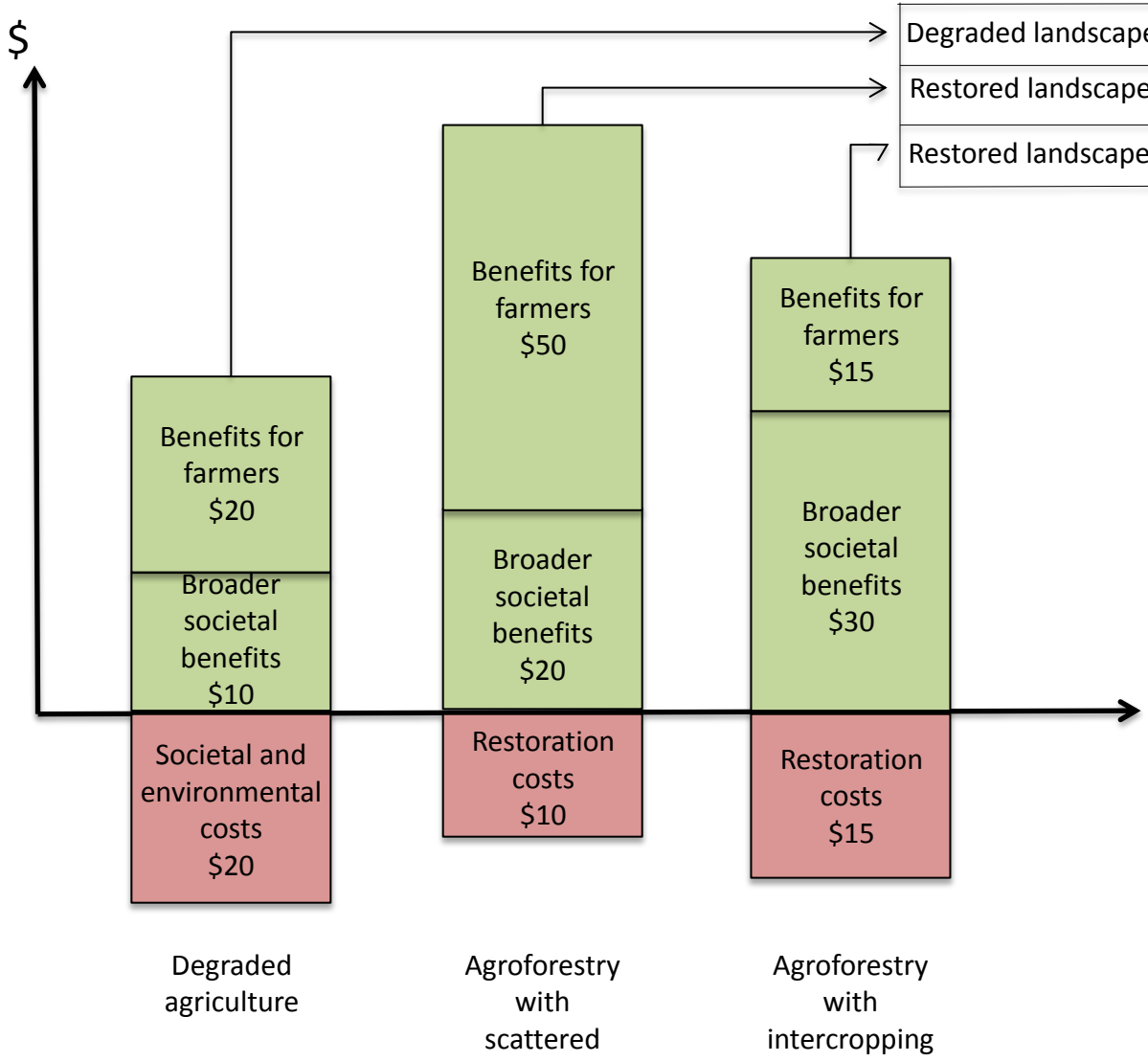
Land Use	General category of FLR option
Forest land 	1. Planted forests and woodlots
Suitable for wide scale restoration 	2. Natural regeneration
	3. Silviculture
Agricultural land 	4. Agroforestry
Suitable for mosaic restoration 	5. Improved fallow
Protective land and buffers 	6. Mangrove restoration
Suitable for mangrove restoration, watershed protection and erosion control 	7. Watershed protection and erosion control

Restoration aims to empower stakeholders to restore productivity and function



3. Clarifying societal and individual costs and benefits of transitions

	Benefits - costs	Net benefit	Marginal benefit
Degraded landscape	$30 - $20	$10	-
Restored landscape I	$70 - $10	$60	$50
Restored landscape II	$45 - $15	$30	$20

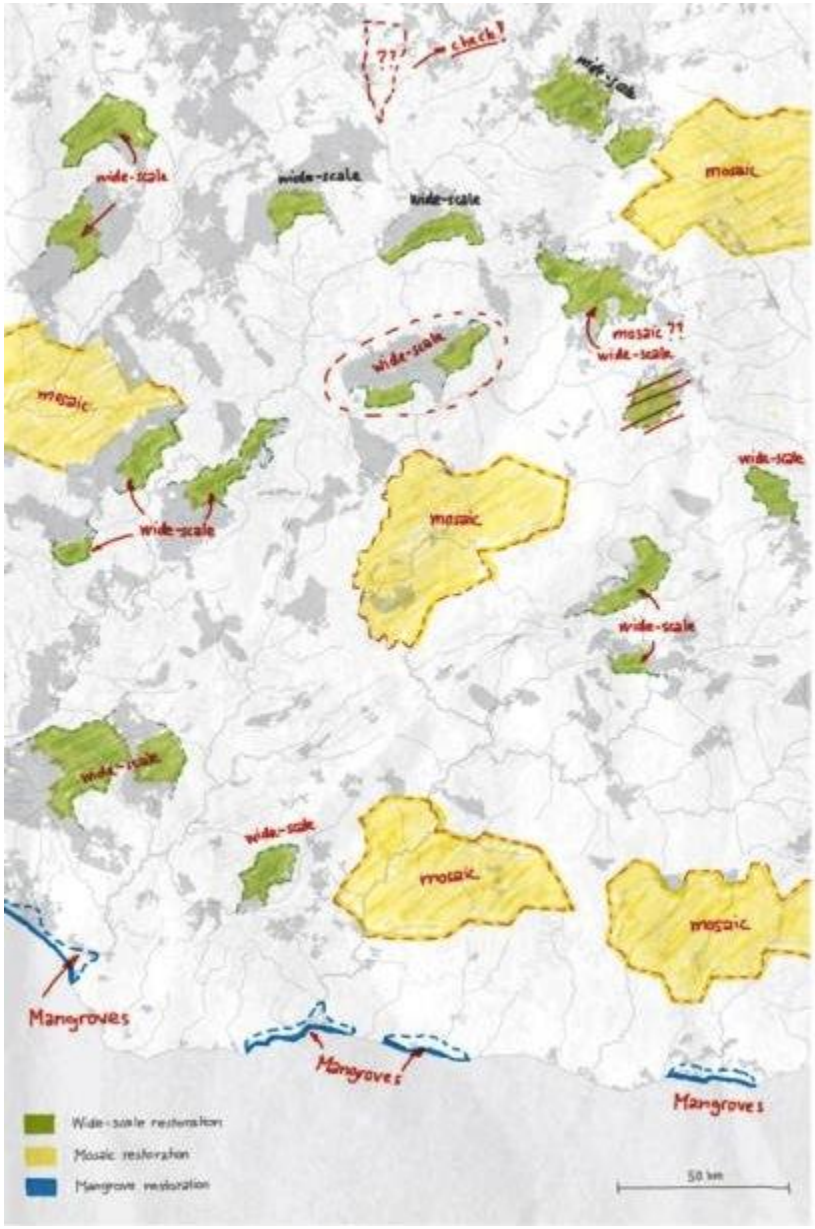


This involves modeling of many values

- Ecosystems services such as:
  - Timber produced
  - Carbon sequestered
  - Erosion controlled
  - Crop yields improved or sustained
  - Other context dependent services, like water supply (varies by country)

- Revenues and costs estimated with market data and budgeting approach
- With repeated random sampling accounting for uncertainty

Next step: Sharing the Results



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

Final step: strategizing for follow-up

Some examples of uptake and impacts of assessment findings so far include:

• 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

3

Rapid Restoration Diagnostic

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Look back to look ahead

Case studies

South Korea

Before 1960

Impact

- Forest cover increased from 35% to 64% of country (1952-2007)
- Forest density increased 14x, population grew 2x, and economy grew 300x (1953-2007)

Motivate

- Land slides, flooding, wood shortages
- President Chung-hee made reforestation a national priority
- Big tree planting campaigns

After 2000

Enable

- ↓ demand for fuel wood (90% of energy in 1950, 5% by 1980)
- Urbanization
- Strong coordination between government levels

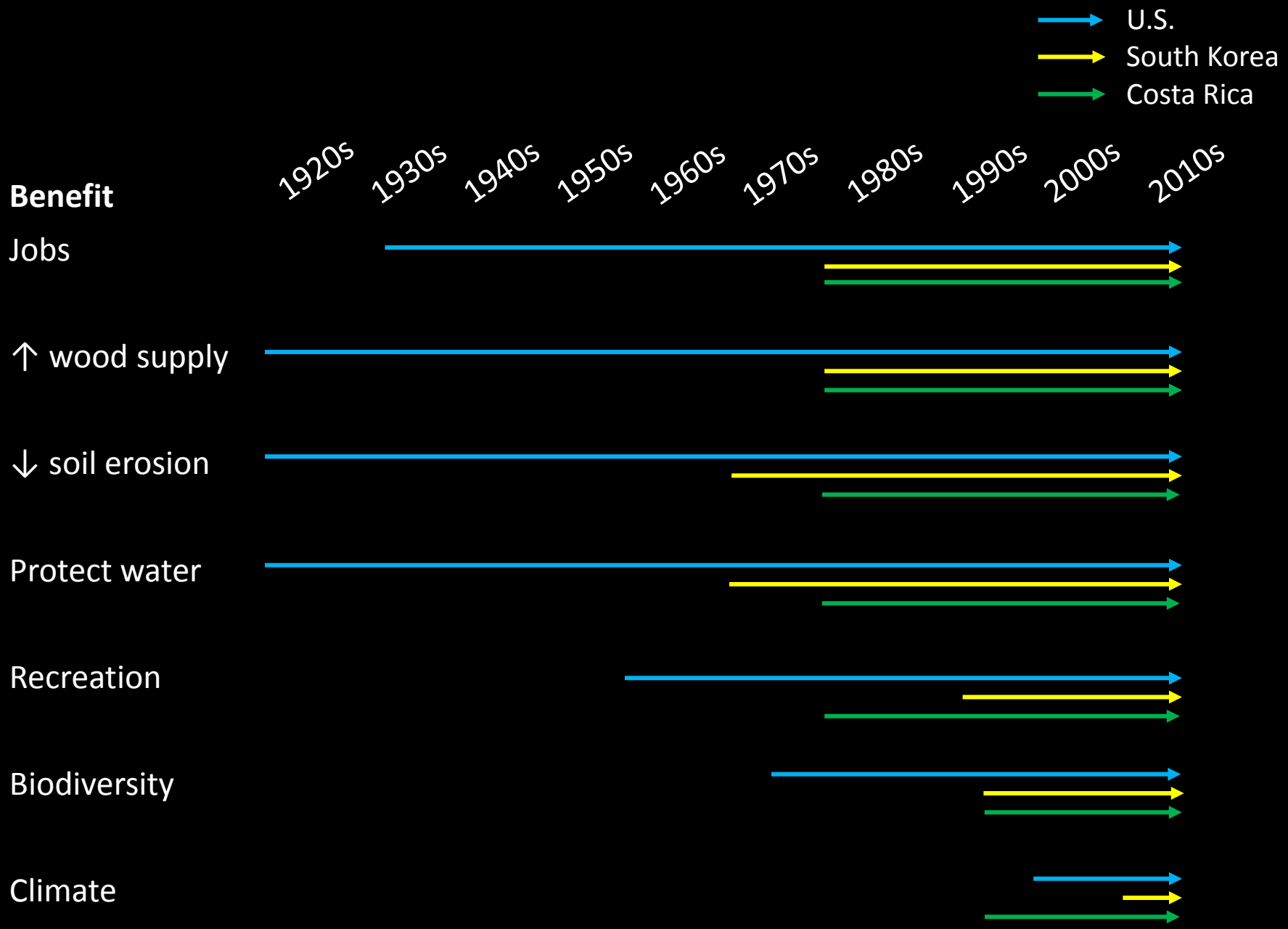
Implement

- Series of 10-year reforestation plans (1973-now) with targets, funds, extension, public outreach, and enforcement
- 460 well-paid nursery experts produced 500 million seedlings/year

NIGER (ZINDER PROVINCE)

Impact	• 5 million hectares restored into agroforestry • Improved food security for 2.5 million people
Motivate	• Drought (1969-73) and famine (1984, 1988)
Enable	• Rural Code reformed to promise farmers “rights to benefits from trees” (1993)
Implement	• Regeneration “know how” spread by farmer to farmer

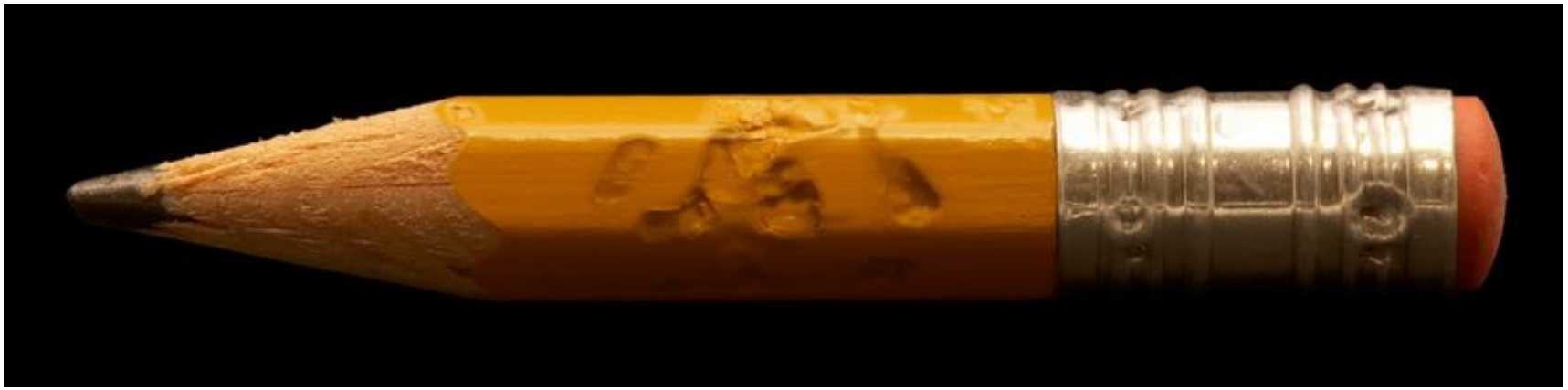
OBSERVATION : DESIRED BENEFITS CAN EVOLVE



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

CAVEATS

- Factors are inter-related
- Not every case example has everything
- The more factors in place, the greater likelihood of success



Rapid Restoration Diagnostic: 3 Steps

1. **Select the scope.** Choose the "scope" or boundary within which to apply the Diagnostic. The selected scope will be the "candidate landscape."

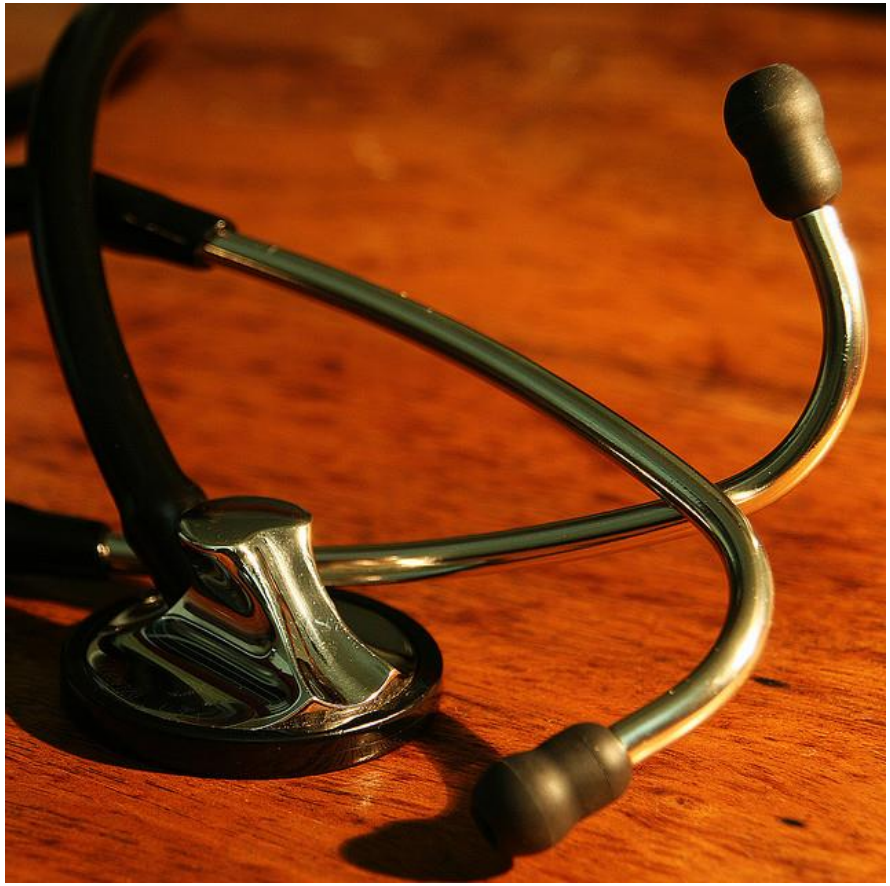
2. **Assess status of key success factors.** Systematically evaluate whether or not key success factors for forest landscape restoration are in place for the candidate landscape.

3. **Identify strategies to address missing factors.** Identify strategies to close gaps in those key success factors that are currently not in place or only partly in place in the candidate landscape.

1. Select the scope

- What geographical space?
  - Landscape (country, region, watershed, etc.)
- What time period?
  - Many decades
- What goals?
  - Food, biodiversity, timber, erosion, water, etc

2. Assess key success factors



Theme	Feature	Key success factor
Motivate	Benefits	• Restoration generates economic benefits
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		• Restoration generates environmental benefits
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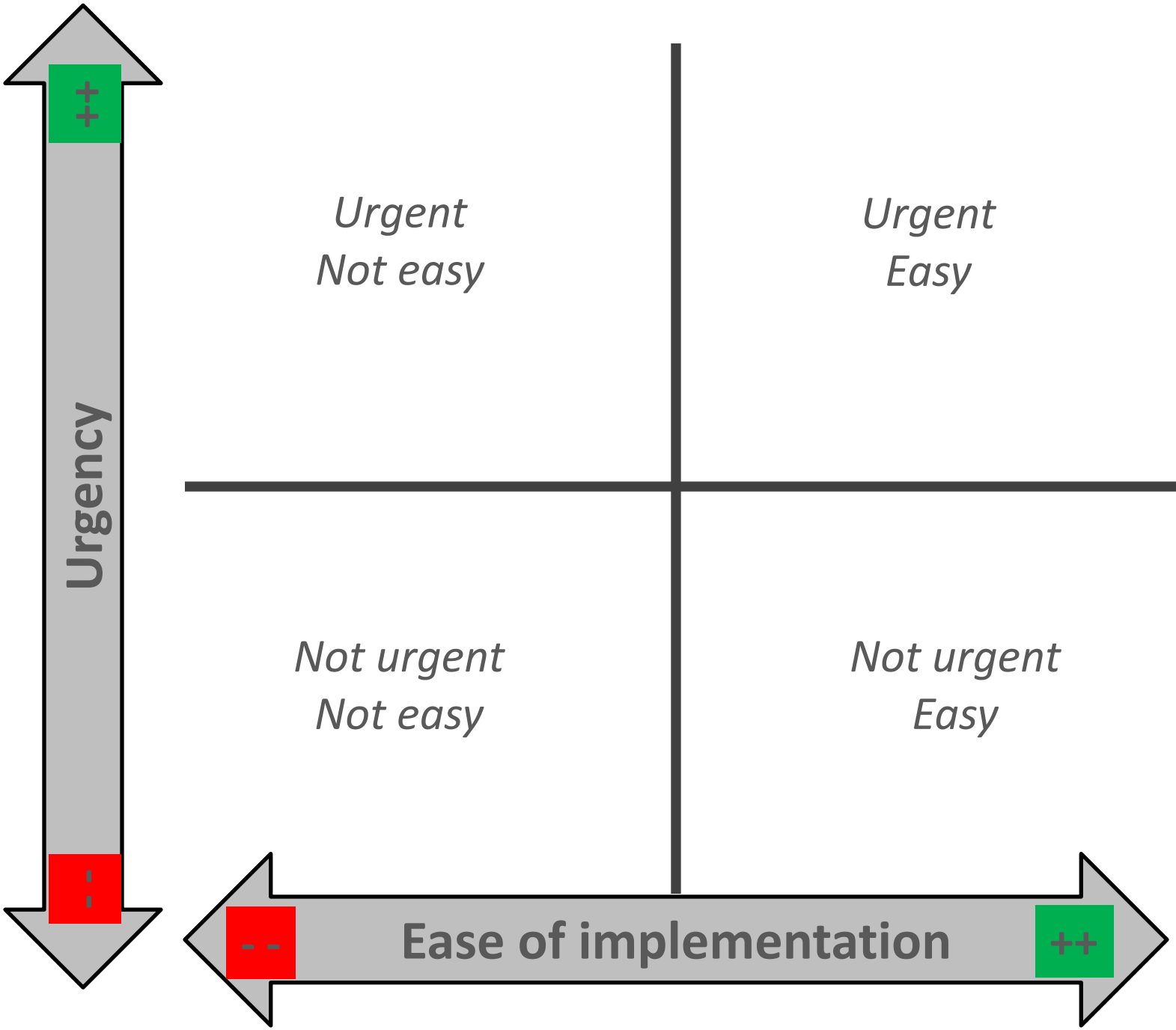
	Technical design	• Restoration design is technically grounded and climate resilient
	Finance and incentives	• "Positive" incentives for restoration outweigh "negative" incentives
		• Incentives and funds are readily accessible
	Feedback	• Effective performance monitoring and evaluation system is in place
		• Early wins are communicated

3. Identify strategies to address missing factors


++
Urgency
- -
Urgent
Not easy
Urgent
Easy
Not urgent
Not easy
Not urgent
Easy
- -
Ease of implementation
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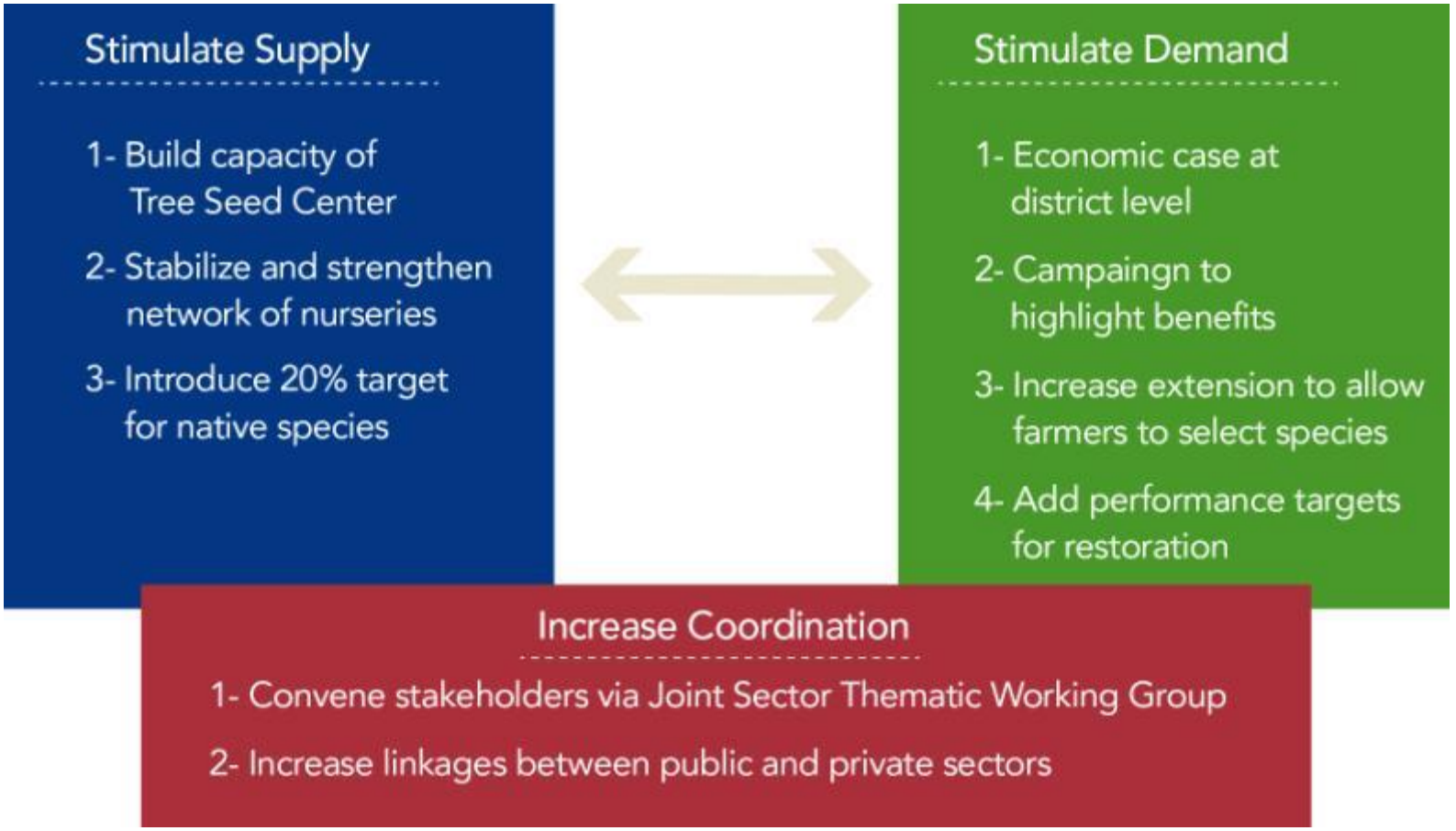
IUCN/WRI Enabling Conditions Diagnostic e.g. Rwanda



DISCUSSION

For more information:

Kathleen Buckingham
Research Associate
Forest and Landscape Restoration
World Resources Institute
kbuckingham@wri.org

Andika Putraditama
Outreach Officer / Jakarta
Forest and Landscape Restoration
World Resources Institute Indonesia
aputraditama@wri.org