

A person wearing a vibrant red dress with a circular pattern and a matching headscarf stands in a golden field, their arms raised in a gesture of triumph or connection with nature. The background is a warm, hazy sunset over a line of trees.

**#GGKPWEBINAR**

**SDGS EROSION  
HOW TERRESTRIAL  
NATURAL CAPITAL WILL  
SAVE THE 2030 AGENDA**



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**10 NOVEMBER 2020 | 10AM CET**





THE **E**CONOMICS OF  
**L**AND **D**EGRADATION

# The Economics of Land Degradation (ELD) Initiative

A Global Initiative for Sustainable Land  
Management

**SDGs Erosion: How terrestrial natural capital will save  
the 2030 Agenda**

Mark Schauer

10th November  
2020

# Why value land? - Terrestrial ecosystem services and natural capital

A background image of a seedling tray with many small green plants growing in individual cells.

Land Degradation is a global problem with tremendous costs

How we manage our land makes a difference

- **Global costs of land degradation**

The ELD Initiative estimates ecosystem service values loss of **USD 6.3–10.6 trillion a year.**

- (ELD The Value of Land, 2015)

- **Substantial poverty reduction** could occur if more of the rural population farmed on improving as on degrading agricultural land.

- (ELD Assessment Land and Rural Poor: Barbier 2014)

- In the **short-term, unsustainable practices can be more profitable.**  
→ **Costs are externalised to society, future generations** and (future gains/sustainability is “ignored”)

The world's poor hit hardest

→ True costs of degradation and true benefits of action needed to correct for externalities.

# The ELD Initiative

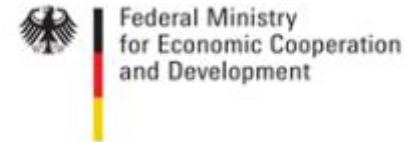
## Background of the ELD Initiative

1. Land degradation is a global problem;
2. The world's poor are hit hardest;
3. How we use our land makes a difference.

## Objective of the ELD Initiative

to demonstrate the true costs of land degradation and to reveal the benefits of sustainable land management to support decision-making.

A global initiative, set up in 2011 by



The ELD Secretariat is hosted by



The German International Cooperation  
in Bonn, Germany

Works at the science-policy interface with core partners from research institutions, independent think tanks, government institutions, NGOs, and organisations working in the field of international cooperation.

# Core partners and contributors



...  
and  
many  
more



# What and how? – Our main action areas

- 1. Generating evidence and knowledge on the economic consequences of land degradation and the benefits of sustainable land management**  
*research, studies following the ELD approach*
- 2. Capacity development to assess the economics of land management**  
*ELD Campus, training courses, ambassador program*
- 3. Promoting dialogue**  
*stakeholder dialogue, using results to inform global discourse, network management*

→ Economic arguments can be strong drivers for sustainable land use!



Unsplash / Devi Puspita Amatha Yahya

# Ongoing projects – Natural Capital / Advancing financing concepts



- (further) developing investment and financing concepts e.g. for sustainable investments in land
- fostering increased financing of SLM
- mainstreaming of land into national natural capital and planning processes

## Natural Capital

In cooperation with



- Supporting [GGKPs Expert Working Group on Natural Capital](#)
- Co-creating solutions with local stakeholders (ground truthing)
- Promoting dialogue, network management, outreach
  - ongoing until 2022 -

## Nature-based solutions

In cooperation with



- Joint development of a report on the *State of Finance and Investment into land-related nature-based solutions*
  - ongoing until mid 2021 -

## Tools for financing

In cooperation with  
bilateral GIZ projects

- e.g. ELD study on agave use for Mezcal production in Oaxaca/Mexico
- Aim: inform ministries of agriculture and environment how ecosystem services can be integrated in planning processes
    - ongoing until mid 2021 -

# Natural capital – Country case studies

## Achieving green growth through terrestrial natural capital restoration

- In cooperation with the



- Applying natural capital accounting to pasture degradation and restoration in Suusamyr valley
- Piloting land accounts

Kyrgyzstan



- Evaluating the impact of land remediation through the lenses of natural capital and SDGs in the Bundelkhand region in Madhya Pradesh, India

India



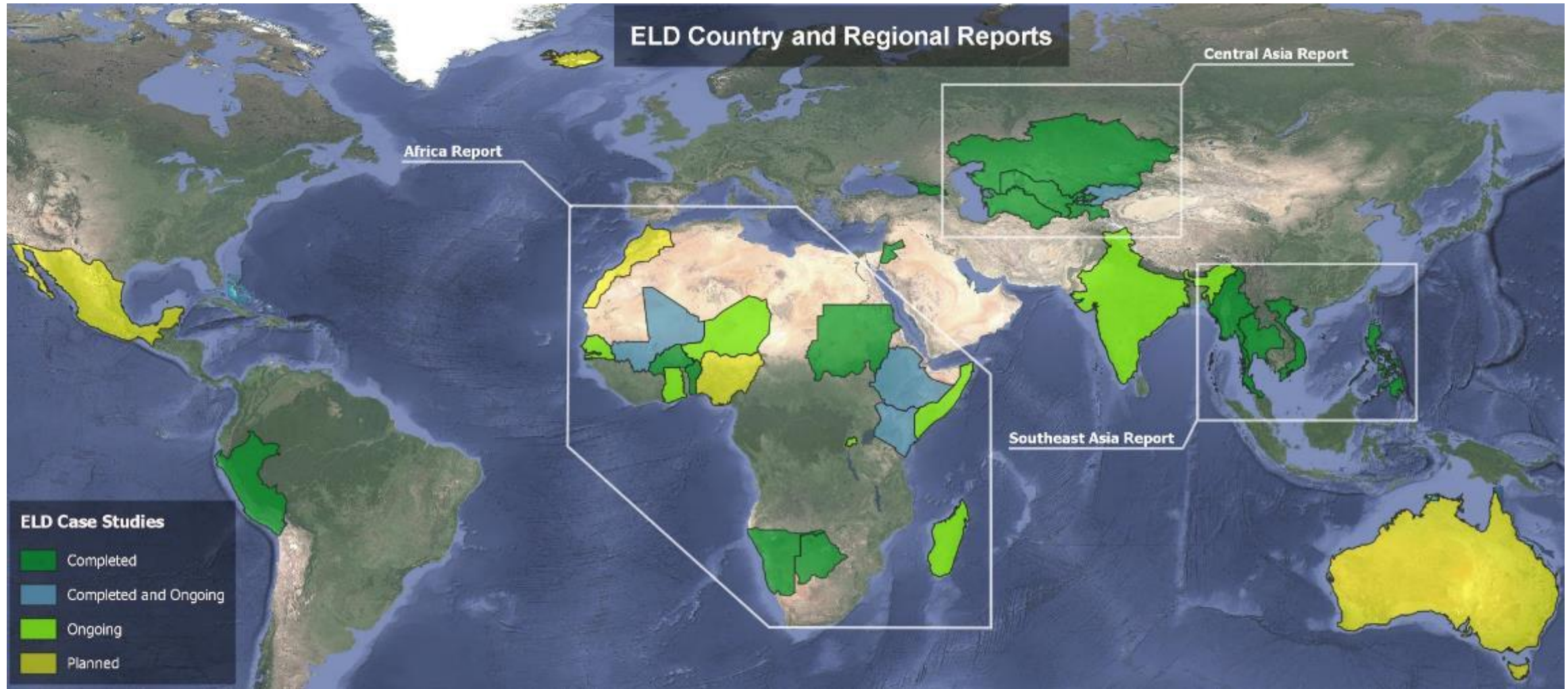
- Valuing natural capital changes from policy scenarios on restoration of terrestrial ecosystem in Rwanda
- InVEST, IEEM platforms + ESM

Rwanda





## Where? – ELD studies following 6+1 step approach



Get further information

[www.eld-initiative.org](http://www.eld-initiative.org)

Get in touch

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Implemented by



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**Anil Markandya**  
**Basque Centre for Climate Change**  
10 November 2020

# Tracking Natural Capital Changes Needed to Meet the SDGs: Methodologies and Applications



# The Natural Capital Gap

## Natural capital gap

- Meeting several SDGs implies an increase in natural capital
- ‘How much the natural capital stock would have to increase to meet different SDGs?’
- Physical terms + Monetary terms
- Global level



# Summary of Estimates of the Gap

Source of Gap	Services Provided	LB*	UB**
Degraded land	ESS from land remediation	13.7	29.6
Air pollution	Reduced health damages from cleaner air	5.1	5.1
Water pollution	Reduced health damages from cleaner water	1.5	1.5
Reduced materials	Reduced damages to ESS	2.6	10.4
GHG emissions	Reduced damages from less climate change	1.6	15.3
Climate-related disasters	Less climate-related disasters and less damages from disasters	3.0	4.3
Coastal & marine areas	Loss of ESS associated with these areas	n.e.	n.e.
Forest loss	Timber, non-timber, carbon, amenity and non-use services from reduced loss of forests	3.8	12.7
Wetlands	Services include: Provisioning (food, water, raw materials, etc.), Regulating (climate regulation, water flow, erosion prevention, etc.), Habitat (nursery and genetic diversity), and Cultural (recreational use, spiritual experience, etc.)	0.1	7.8
Protected areas	Biodiversity and amenity benefits less losses from use for agriculture	0.12	0.21
<b>Total</b>		<b>31.9</b>	<b>86.9</b>
As % of World Bank estimate of natural capital		30.3%	82.7%

\*LB: Lower Bound \*\*UB: Upper Bound

GGKP (2020)

**Value of the  
Natural Capital  
Generated by  
Meeting the  
SDGs**  
(USD<sub>2019</sub> Trillion)

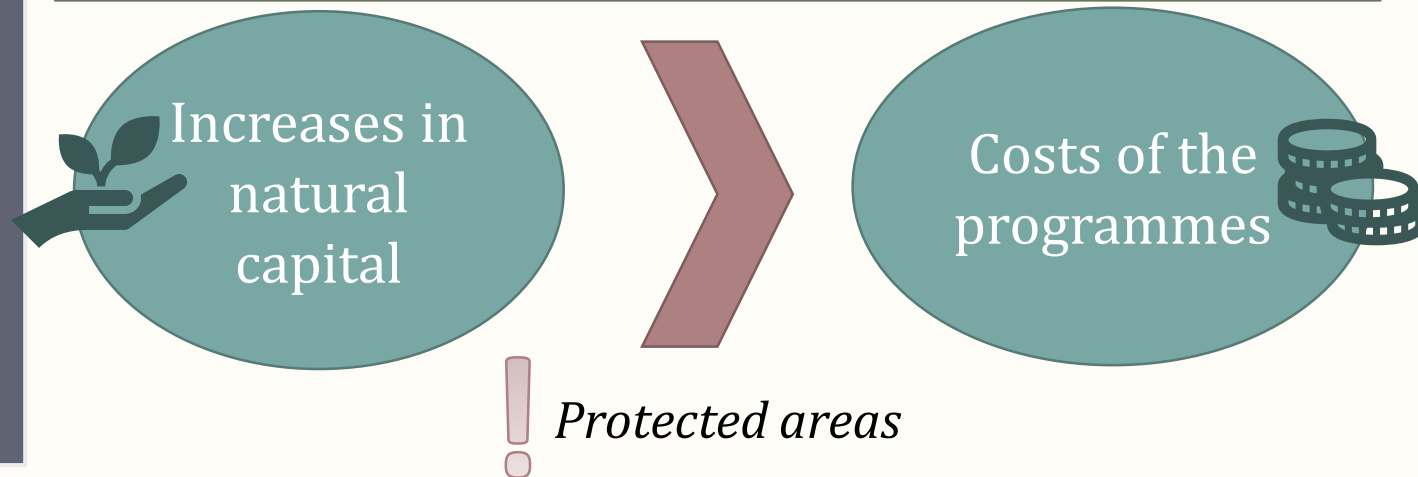
US\$105 trillion globally  
(Lange *et al.*, 2018)

# Financial Capital and Natural Capital

- Increase in natural capital:  
An outlay of financial capital  
**over next ten years**
- Preliminary estimates of  
needs for selected countries  
and worldwide
- **US\$773 billion per year** to  
meet the selected targets for  
8 SDGs by 2030
  - Or under US\$8 trillion

Greatest gains come from investments in :

- 1) Land remediation
- 2) Avoided deforestation
- 3) Wetlands
- 4) Material efficiency
- 5) Air pollution reduction





# Natural Capital Approach at the Project Level

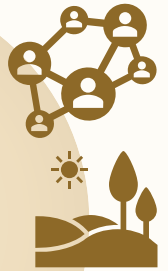


Evaluation of  
investments  
in a land  
remediation  
programme

Traditional cost benefit  
approach

Capitals approach

Increase  
in natural  
and other  
capitals



Financial  
capital  
required



# Introduction to the project

*Valuing land as a function of how it is used.*



By estimating the value of ecosystem services, the augmented value of natural capital i.e. land, air, water and biodiversity was estimated as a function of how the land was used and managed.

Out of the 187 villages where Development Alternatives has intervened, a comparison was made between changes in ecosystem services in a subset of those against a control group-

Traditional cost benefit approach

Capitals approach

# Results: Traditional Benefit Cost

## Benefits valued

Crop & livestock incomes

Timber & non-timber  
forest products

Biodiversity

Carbon sequestration

## Remediation with biodiversity

- Very high benefits to cost ratios

## Carbon benefits

- Important part of the benefits



Traditional cost benefit approach

Capitals approach

# Results: Capitals Approach



## Natural capital increase

- over 100 times financial investment



## Social capital

- Qualitative evaluation
- Less outmigration
- Stronger social institutions

## Contribution to national SDGs

- (a) 7-10% revival of representative ecosystems
- (b) 5% increase in agricultural production systems at very modest cost

## Capitals Approach

allows for assessment of **cost effectiveness of measures** in achieving target increases in natural capital as set in the SDGs.

SDG targets can be translated into a natural capital target.



# Natural Capital and Links to SEEA EA

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## The System of Environmental-Economic Accounting - Ecosystem Accounting (SEEA-EA)

- Provides guidance on the valuation of biotic natural capital based on the discounted present value of the flow of ecosystem services

## Valuation flows

- based on current institutional and social practices
- how ecosystem assets are used

## Link to the SDGs

- by estimating the value of the natural capital
- - if changes were made to the way assets are exploited; and
- - if some more physical and human capital is allocated to their management



# Natural Capital and Links to SSEEA EA

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## Estimate of natural capital gains from the SDGS

- can be made
- consistent with the SSEEA-EA methodology

## Data

- the current ecosystem assets: spatially distributed and valued as part of the national asset accounts

## Changes in management regimes

- need to be discussed with national resource managers
- Consideration would be given to making a shift to sustainable regimes where possible





Thank You





# Evaluating the Impact of Land Remediation in Bundelkhand region in India: A case study towards investing on Natural Capital for achieving SDGs

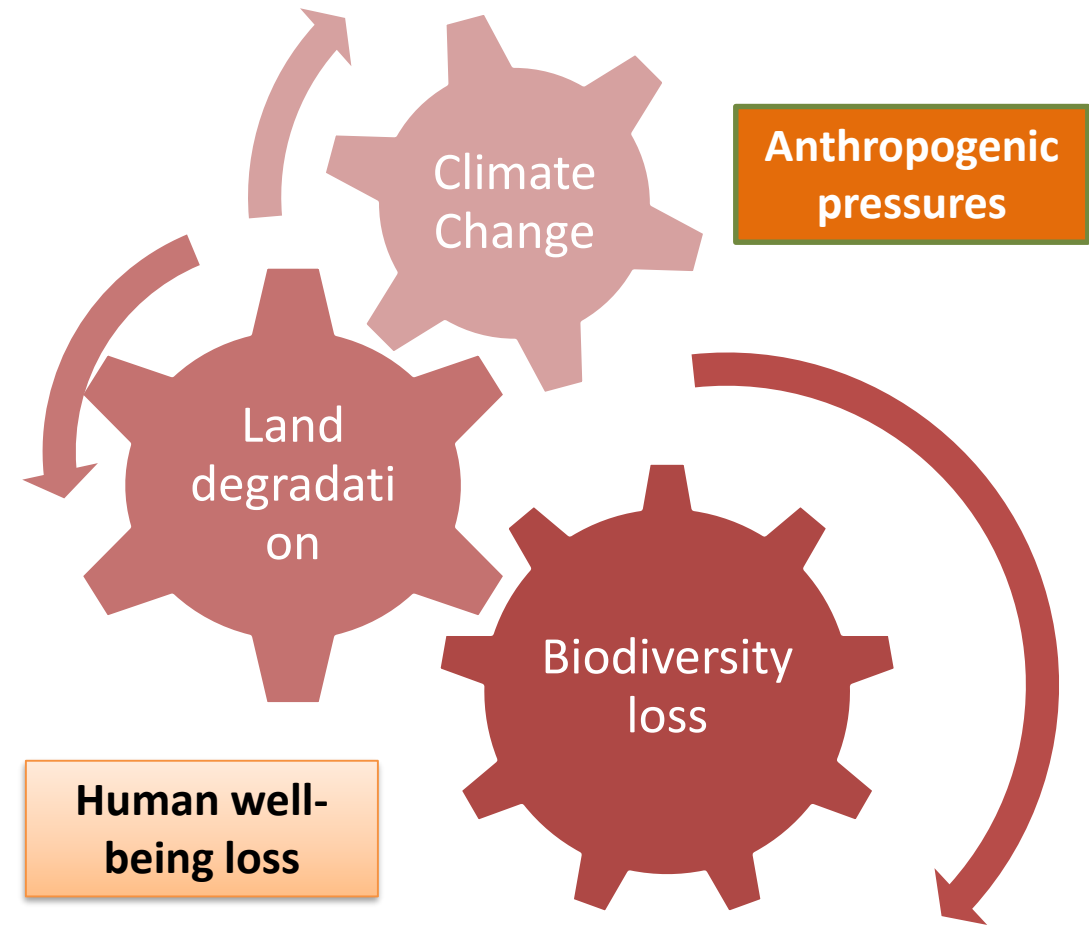
*Ms. Gitika Goswami  
Senior Programme Director, Development  
Alternatives  
GGKP Webinar  
Nov 10, 2020*





# Land Degradation - an overview

- “Land degradation, biodiversity loss, and climate change are three different faces of the same central challenge”- IPBES
- In the coupled human-environmental system land degradation is a significant matter of concern that currently affects 1.3 billion people worldwide directly and poses a threat to 3.2 billion more (Thiaw, 2019)
- The global drivers of land degradation include expansion and unsustainable management of agriculture, unprecedented levels of consumption. This causes significant loss of biodiversity and ecosystem services, such as food security, water purification and the provision of energy.
- Leading factors responsible for land degradation in India are water erosion, vegetation degradation, wind erosion, unsustainable farming and other land use practices
- 96.4 million hectares of land in India is undergoing land degradation and as a result 30% of its land area is witnessing declining productivity (CSE, 2019)
- This eventually leads to loss of biodiversity, food and water security and loss of human well-being along with multiple chain effects





# Land remediation interventions of DA in Bundelkhand

Community capacity building for natural resource management (social and human capital development)



Land remediation interventions (technological/ physical & Natural Capital development)

Watershed Management-  
Check dam,  
Gabion structure

Farm renovation  
Farm pond,  
Field bund

Sustainable  
Agriculture

Climate  
Adaptive  
Planning

Forest  
Management  
& Biodiversity  
Conservation

# Objectives and data collection



To evaluate the potential of land remediation activities as beneficial and cost effective measure for combating desertification



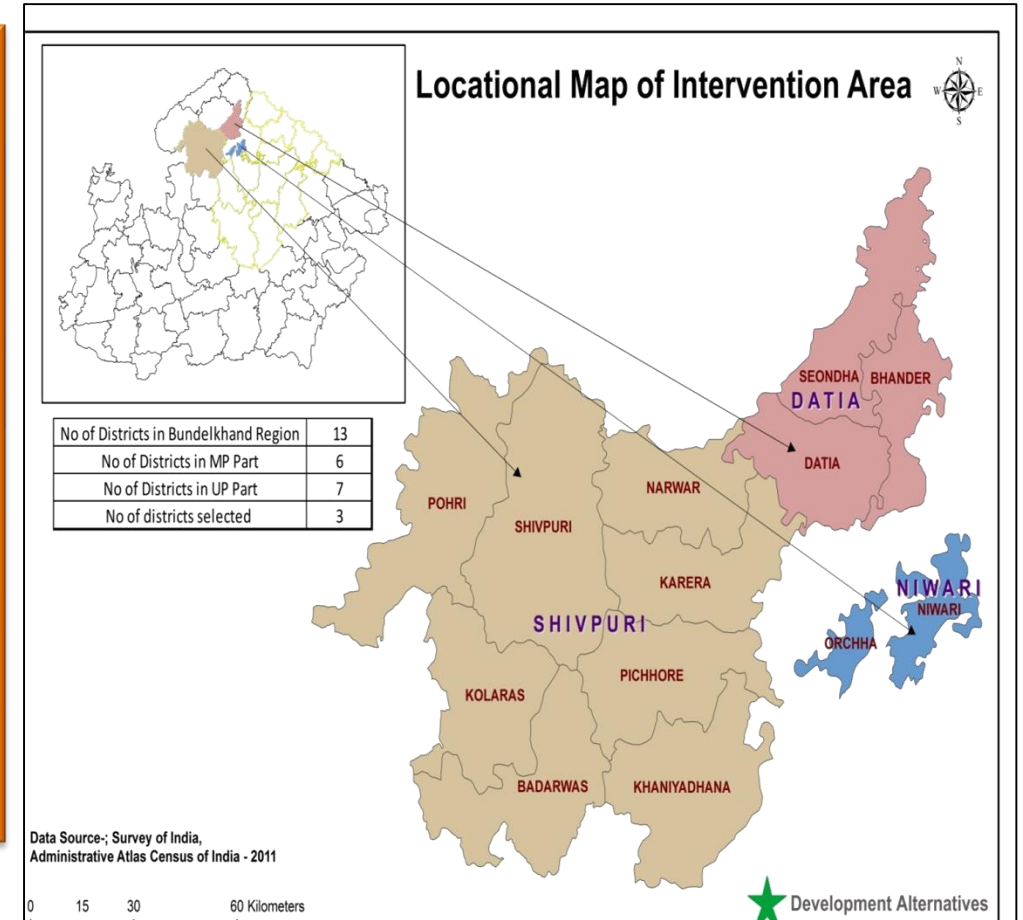
Mapping of intervention benefits with the SDG goals and indicators

## Geographical Coverage

3 districts of Bundelkhand:  
Datia, Shivpuri, Niwari

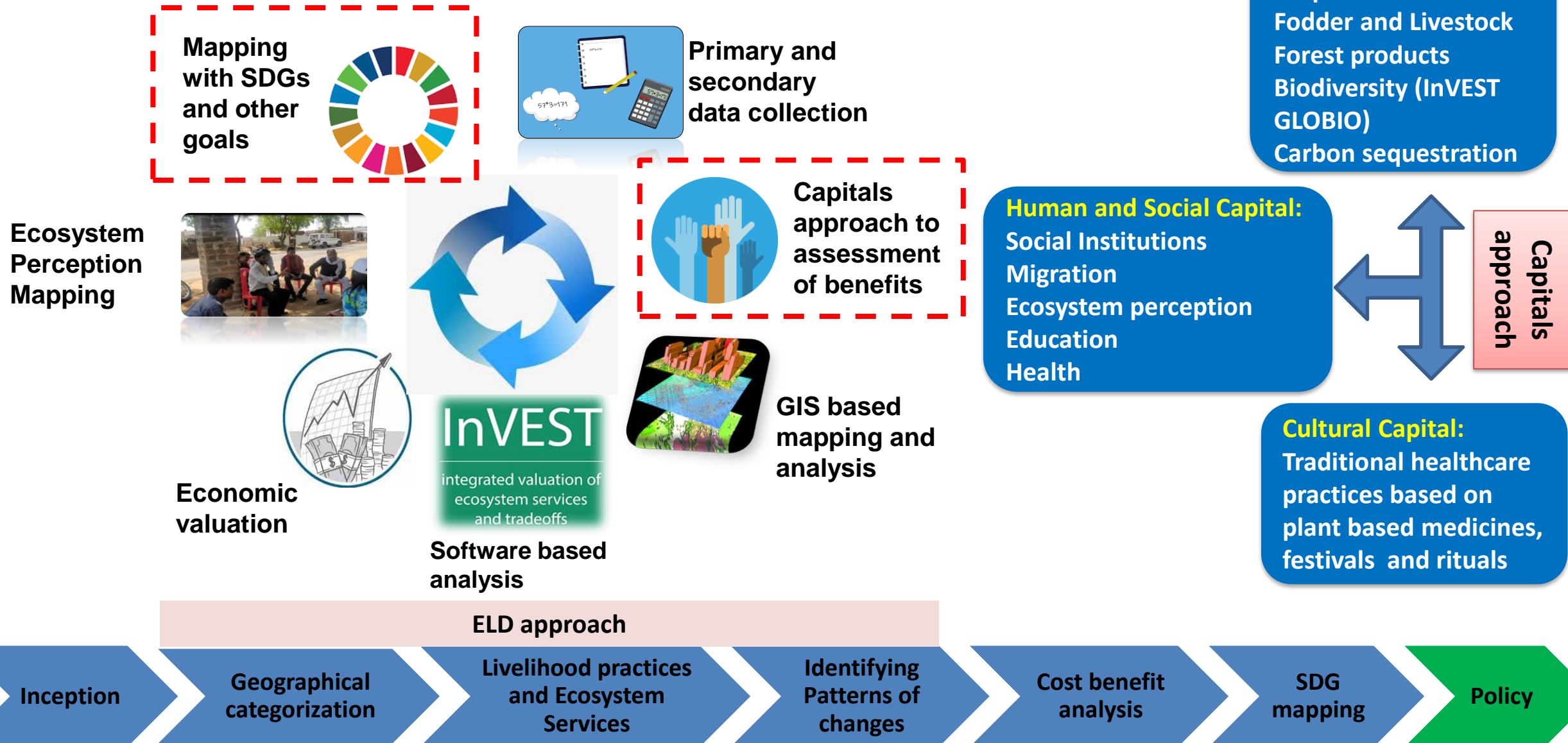
300 households surveyed in 18 intervention villages  
12 Control villages

Comparison years  
2013 and 2018





# Research Methodology





# Ecosystem service indicators

Ecosystem Service categories	Ecosystem Services	Parameters assessed in the study
<b>Provisioning services</b>	Crop production	Yield of crops
	Fodder availability	Produced and purchased fodder
	Water availability for irrigation	No. of irrigation sources
		No. of times irrigation given in a year
	Timber and NTFPs availability	Collection of fuelwood
		Collection of medicinal plants and other eatables from forests
<b>Regulatory services</b>	Carbon	Below and above ground carbon, soil carbon
<b>Supporting services</b>	Soil formation	Soil health
	Maintaining bio diversity	Mean species abundance (MSA)
<b>Cultural Services</b>	Cultural practices and knowledge system	Qualitative assessment of cultural capital through case study

# Outcomes of Land Remediation

## Local level livelihood benefits

- Agriculture
- Livestock rearing
- Associated agro based and livestock produce based activities
- Improved access to water

## Strengthening of human, social and cultural capital

- Community awareness and skill development
- Reduction in migration
- Functionings of community based institutions
- Sustenance of natural resource based cultural activities and healthcare practices

## Ecosystem Benefits

- Positive biodiversity impact
- Improvement in soil carbon storage

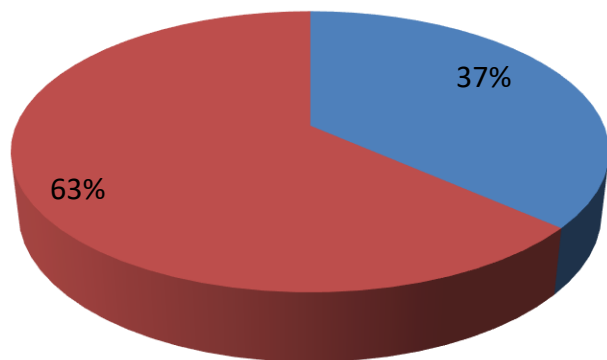
## Contribution in national level targets and commitments

- Contributed to seven Sustainable Development Goals (SDG): 1, 2, 8, 12, 13, 15, 17
- Land degradation neutrality (LDN) target
- Convention on Biological Diversity (CBD) targets
- Intended Nationally Determined Contributions (INDC) of India

# Natural Capital Accounting: Cropland

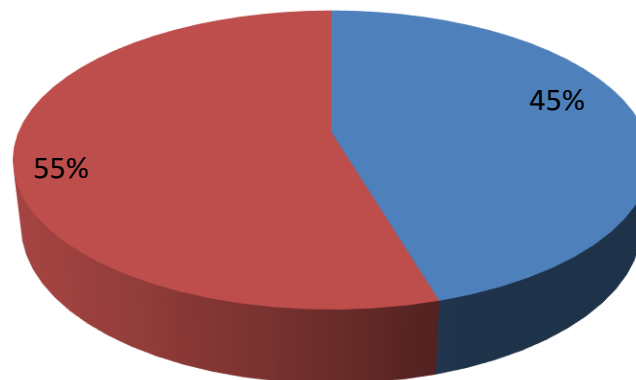
Crops	Δ Income/Ha 2013-2018 Rs.000			Area 2018. Ha.	Net Gain Rs.000
District	Intervention	Control	Net Gain		
Datia	8.46	-31.85	40.31	5,638	227,255
Shivpuri	23.18	-25.73	48.91	965	47,216
Niwari	-0.76	-28.74	27.98	2,266	63,398

*Cropping pattern of beneficiary villages in 2013*



■ Doubled cropped area (Hectares)  
■ Single cropped area (Hectares)

*Cropping pattern of beneficiary villages in 2018*

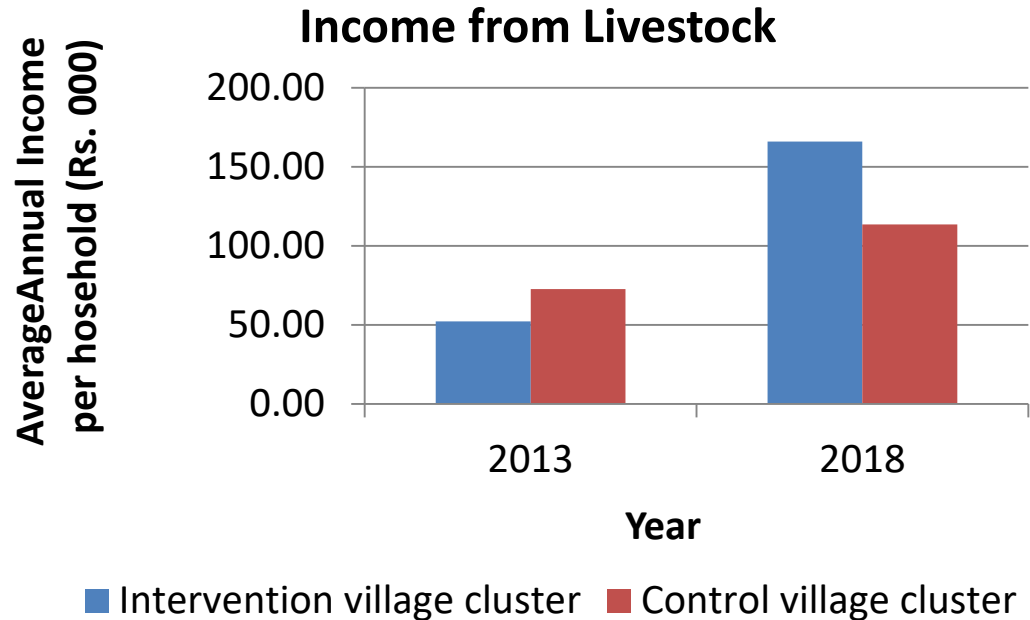


■ Doubled cropped area (Hectares)  
■ Single cropped area (Hectares)

- Increase in net gain from cropland
- Highest aggregate gain in Datia
- Share of double cropped land increased in beneficiary villages
- **Impact of interventions:**
  - Respondents reported increase in irrigation facilities (highest reporting in Datia)
  - Increased land productivity

# Natural Capital Accounting: Livestock and Forest

Gain in Livestock from 2013 (base year) to 2018 (study year)



## Livestock:

- Increase in income was higher in beneficiary villages, leading to higher net gain
- HH income gain was the highest in Shivpuri
- Through formation of SHGs people have got easy access to credit in these villages for carrying out activities for income generation including livestock rearing
- Niwari had lowest gain due to lack of productivity and availability of green fodder, which is a vital source of nutrients for livestock

## Forest:

- Beneficiary villages in only Datia had a gain in income from forest
- Decline in forest cover partially explains the decline in overall net benefit from forest
- Direct use value of forest reduced due to lesser dependence (e.g. Fuelwood, leaves etc.) of the local communities on forest



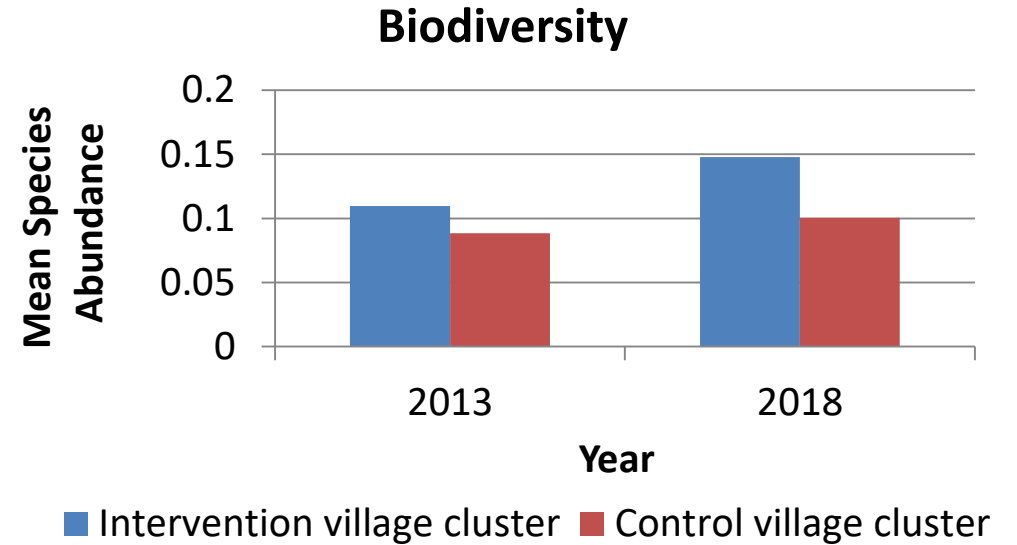
# Impact on Biodiversity

➤ Overall **Biodiversity (mean species abundance)** improved more in beneficiary villages during 2013-2018

➤ **Drivers of improvement in biodiversity:**

-Datia and Niwari : agricultural interventions through promotion of sustainable agriculture practices and construction of water harvesting structures

-Shivpuri: retention of natural water bodies through land and water based intervention and lesser LULC changes



# Changes in Natural Capital

	District	Datia	Shivpuri	Niwari
Ha.	Area Cultivated 2013	5,179	881	2,526
Rs. Crore	Crop Income in 2013	15.0	0.03	4.09
	Livestock Income in 2013	22.0	7.1	5.7
	Forest Income in 2013	0.3	7.2	0.0
	Value of Natural Capital in 2013	373.5	143.0	98.1
Ha.	Area Cultivated 2018	5,638	965	2,266
Rs. Crore	Crop Income in 2018	21.1	2.3	3.5
	Livestock Income in 2018	58.1	28.9	28.0
	Forest Income in 2018	1.26	4.14	0.00
	Value of Natural Capital in 2018	805.2	352.9	315.2
	District	Datia	Shivpuri	Niwari
Rs. Crore	Δ in Biodiversity Services	20.9	28.2	2.52
Rs. Crore	Δ in Carbon Services	65.2	0.4	-1.3
Rs. Crore	Change in Total Natural Capital	517.9 =69.78 m \$	238.6 =32.15 m \$	218.3 =29.41 m \$
Rs. Crore	Cost of Program	3.9 =0.53 m USD	1.5 =0.20 m USD	1.9 =0.26 m \$
Natural Capital Leveraging Per Crore Rupees		132	154	114

# Mapping SDGs against the Land Remediation Activities

	<p><b>Global Targets 1.3, 1.5, 1.5.1.a; National Targets:</b></p> <ul style="list-style-type: none"> <li>• 1.3.4 : Number of Self Help Groups (SHGs) formed and provided bank credit linkage</li> <li>• 1.5.2 : Proportion of States that adopt and implement local disaster risk reduction strategies in line with national disaster reduction strategies</li> </ul>
	<p><b>Global Targets 2.3,2.4; National Targets:</b></p> <ul style="list-style-type: none"> <li>• 2.3.1 : Agriculture productivity of wheat and rice (yield per hectare)</li> <li>• 2.4.1 : Proportion of degraded land to net sown area</li> </ul>
	<p><b>Global Target 6.5; National Targets:</b></p> <ul style="list-style-type: none"> <li>• 6.5.1 : Percentage area of river basins brought under integrated water resources management</li> </ul>
	<p><b>Global Target 8.8; National Targets:</b></p> <ul style="list-style-type: none"> <li>• 8.8.2 : Number of migrant workers</li> </ul>
	<p><b>Global Target 12.2, 12.3; National Targets:</b></p> <ul style="list-style-type: none"> <li>• 12.2.1 : Percentage variation in per capita use of natural resources</li> <li>• 12.3.1 : Per capita food availability</li> </ul>
	<p><b>Global Targets 13.1, 13.2, 13.3; National Targets:</b></p> <ul style="list-style-type: none"> <li>• 13.1.1 : Number of States with strategies for enhancing adaptive capacity and dealing with climate extreme weather events.</li> <li>• 13.2.1 : Pre 2020 action achievements of pre 2020 Goals as per country priority</li> <li>• 13.3.1 : Number of States that have integrated climate mitigation and adaptation in education curricula and outreach programs</li> </ul>

# Mapping SDGs against the Land Remediation Activities



Global Targets 15.1, 15.3, 15.9, 15.9.a, 15.9.b;

National Targets: • 15.1.2 : Percentage of Tree Outside Forest (TOF) in total forest cover

• 15.3.3 : Percentage increase in net sown area

- 15.9.1 : Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategies Plan for Biodiversity 2011-2020
- 15.a.1 : Official development assistance and public expenditure on conservation and sustainable use of biodiversity and eco system.
- 15.b.1 : Percentage of fund utilised for environmental conservation.



Global Target 17.19



# Policy Recommendations

- **Monitoring and Evaluation**

- Schemes, Programmes and Projects commissioned by the government/ private agents/ civil society organizations to follow holistic monitoring and evaluation framework (for micro and macro levels) set through public consultation
- Focus on necessary qualitative information to address the gaps in quantitative evaluation
- Maintenance of baseline information based on a nationally accepted data framework to enable systemic evaluation
- Necessary tracking of the concerned activity to meet national targets and global commitments
- Individual project proponents can explore the scope for replication (through contextual modification) of the ‘Capitals Approach’ applied in the Bundelkhand case study for highlighting the holistic benefits of the concerned project

# Policy Recommendations

- **Financial Resource Allocation Strategy**
  - Criteria for financial resource allocation to take into consideration the monitoring and evaluation framework set for micro and macro levels and keeping record of baseline information
  - To mandate commitment to contribute to national targets
  - To consider both financial viability in short and long term and potential for long term socio-environmental impact
- **Environmental parameters in National Performance Estimation**
  - In the common estimation methods at the national level for tracking economic growth (e.g. Gross Domestic Product) and human development (e.g. Human Development Index) relevant environmental parameters need to be considered
  - Reframing the widely and most commonly used national performance estimation methods through inter and intra country dialogues involving relevant stakeholders (e.g. administrative, academic and research, practitioner etc.)

# THANK YOU

[ggoswami@devalt.org](mailto:ggoswami@devalt.org)



# Kyrgyzstan project

Nazira Kerimalieva



# International and National framework

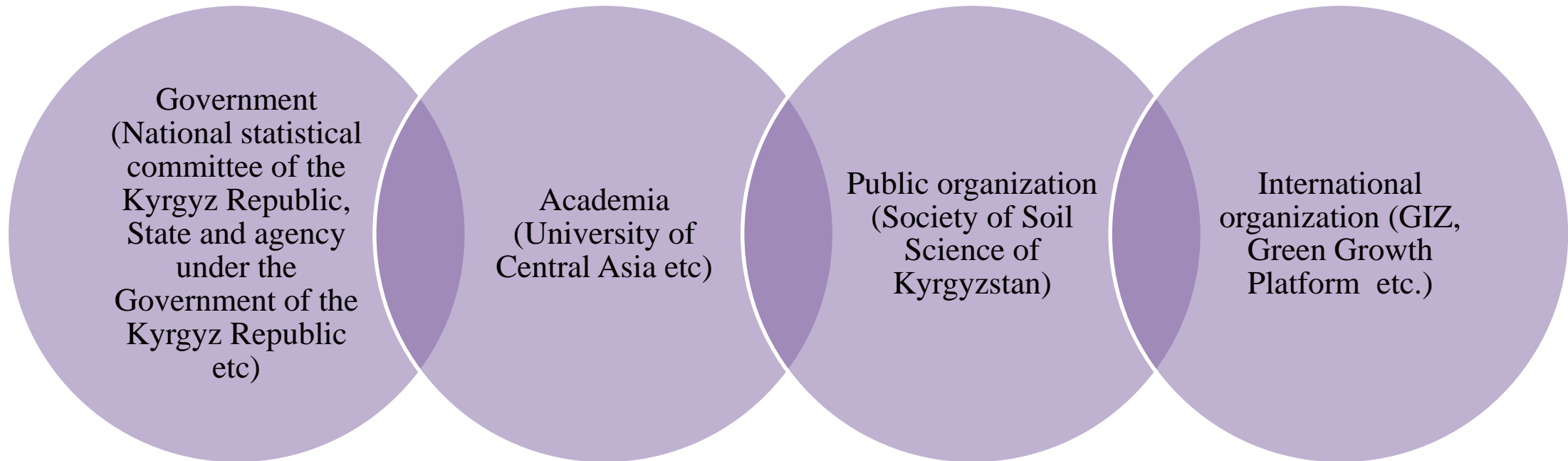
## Global



## National



# Stakeholders



# Achieved Results

- Developed first pilot land accounts for the Kyrgyz Republic in physical terms
- Land use classification (land cover and land use) according to SEEA
- Determination main data gaps for developing land and soil accounts
- Scenarios based on cost-benefit analysis according to ELD 1+6 methodology
- Geodata website for land accounts
- Geodata for land and soil accounts
- Capacity building



**Thank you!**