United Nations
Convention to Combat Desertification

Economics of Land Degradation

Insights from an evaluation study in Bundelkhand by Development Alternatives Group

Presented at UNCCD COP 14
Rio Pavilion
3rd September, 2019




UNCCD COP14 NEW DELHI INDIA 2019
Restore land. Sustain future

Side Event

Evaluating the Impact of Land Remediation through the Lenses of Natural Capital and SDGs in the Bundelkhand Region in Madhya Pradesh, India

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

bc3 BASQUE CENTRE FOR CLIMATE CHANGE
Klima Aldaketa Ikergai
Sustainability, that's it!

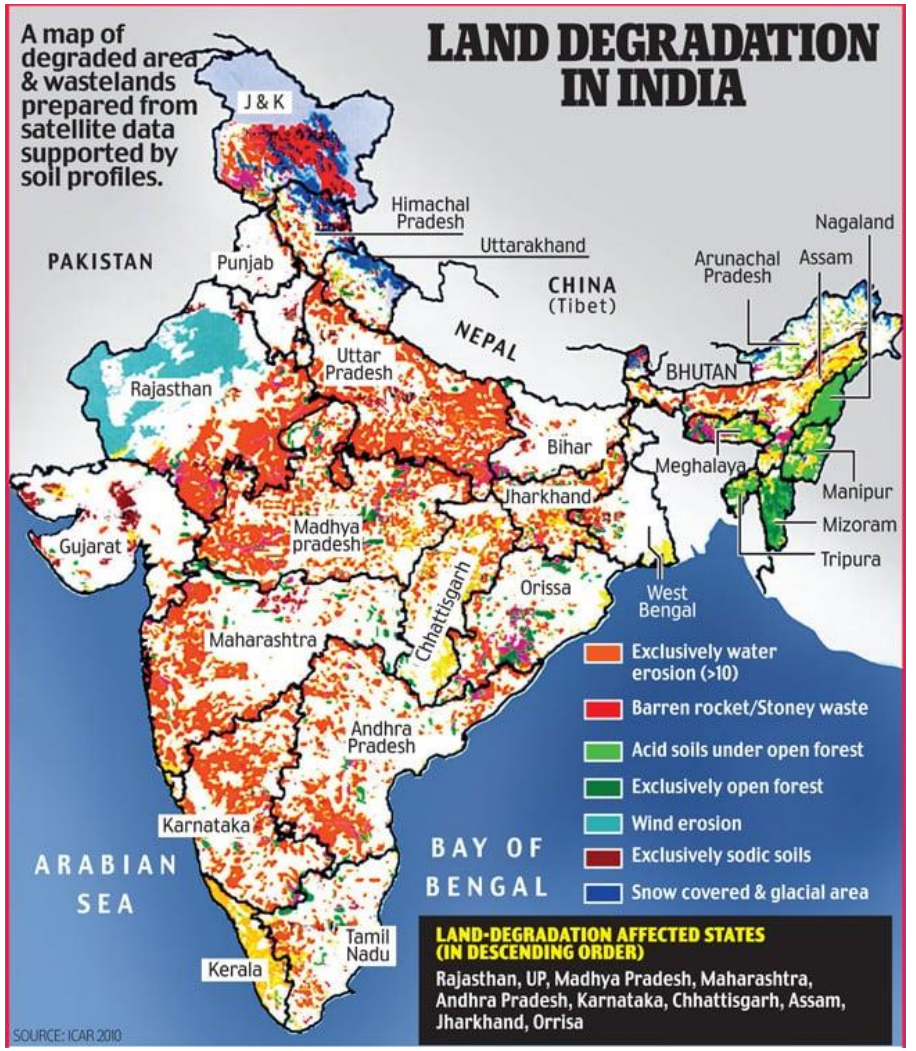
Development Alternatives

Content

- Land Degradation – Current scenario in India
- Bundelkhand – A Brief Profile
- Introduction to Project- ELD
- ELD Methodology Adapted to Local Context
- Insights from Field : TBL impact of Land Management.
- Initial Evaluation Findings
- Opportunities for India
- Emerging Questions

The India Context : Land Degradation and Livelihood Dependence on Land

- India, with 2.4% of the world's land but 17% of its population has very low per capita availability of land (SoER, 2015)
- 97 mn (i.e. 29%) hectares of land is under degradation and of this 83 Mha is undergoing desertification (SoER, 2015)
- Major causes of degradation are water erosion (36 Mha) and wind erosion (18 Mha) (SoER, 2015)
- 67% of net sown area is rain-fed and therefore completely dependent on ecosystems for water access (CRIDA)
- India is losing Rs. 28,500 crore, on account of degraded lands equal to 12% of total value productivity of these lands (Ankita Rai, 2015)



The Bundelkhand Context

Environmental

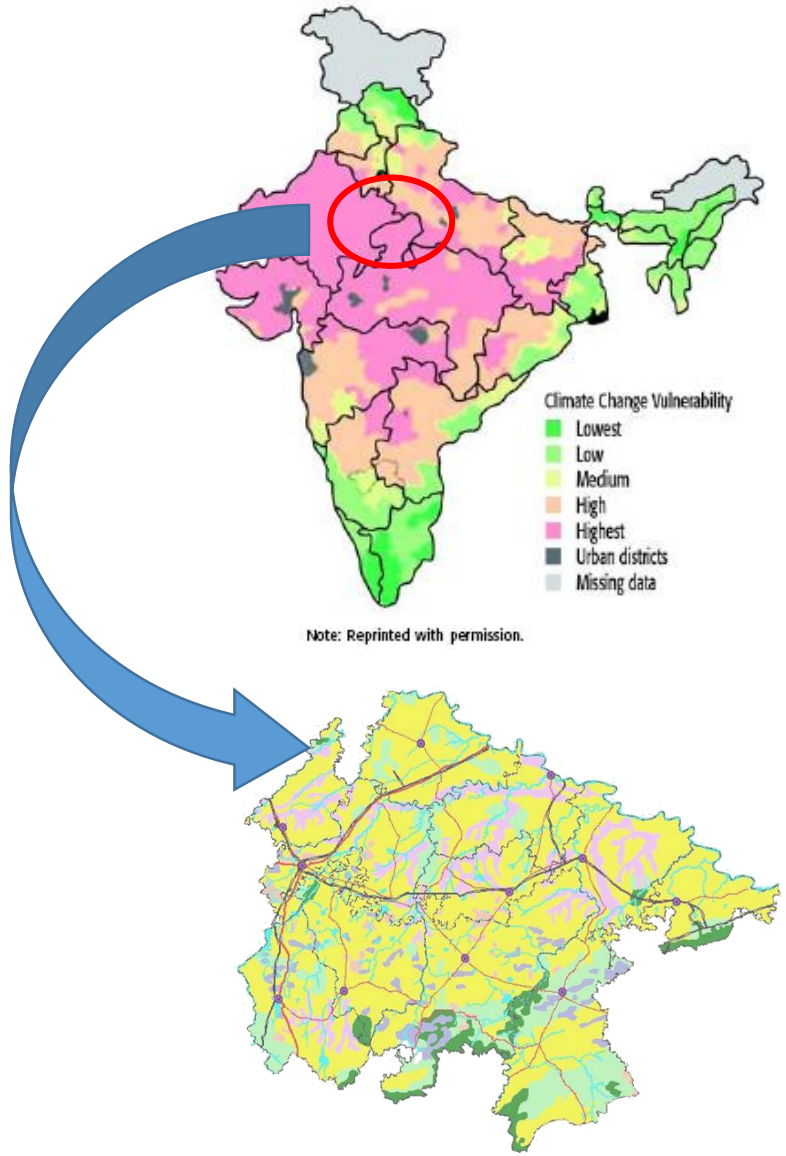
- Reduced precipitation rate by 32% between 2013-2018 (IMD)
- 33% of the cropped area receives less than 750 mm rainfall
- 22 % of total area under forests mainly shrub and heavily encroached
- Shift in monsoon period by 55-60 days, from mid-June to mid-August
- 70% of tanks, ponds and reservoirs are dry due to fall in surface and groundwater

Social

- Seasonal migration rate in Bundelkhand is 39.4%
- Aggregated HDI rank at 0.594 is amongst the lowest in the country (India average is 0.663)
- Average literacy rate 66 % , lower than the state average of MP and UP which is 69%
- 48 % of population below poverty line
- 26% of population belong to lower social class

Economic

- Per capita income is 50-55% lower than the national average
- 67% population is in agriculture and 77% of those are small and marginal farmers
- Small and fragmented size land holdings
- Per capita food availability is only 330kg per annum



Note: Reprinted with permission.

Development Alternative's Work on Natural Resource Management in Bundelkhand

Watershed Development

- Soil water conservation
- Participatory net planning
- GIS based planning
- Water use efficiency

Sustainable Agriculture

- Crop diversification and integrated farming
- Climate resilient agri-practice
- Organic farming
- Farmer producer Org.

Climate Adaptive Planning

- Awareness generation
- Climate adaptive decentralized planning

Reviving Natural Ecosystems

- Ecological rejuvenation in arid and semi arid region
- Afforestation

Research & Policy Influence

Training & Capacity Building

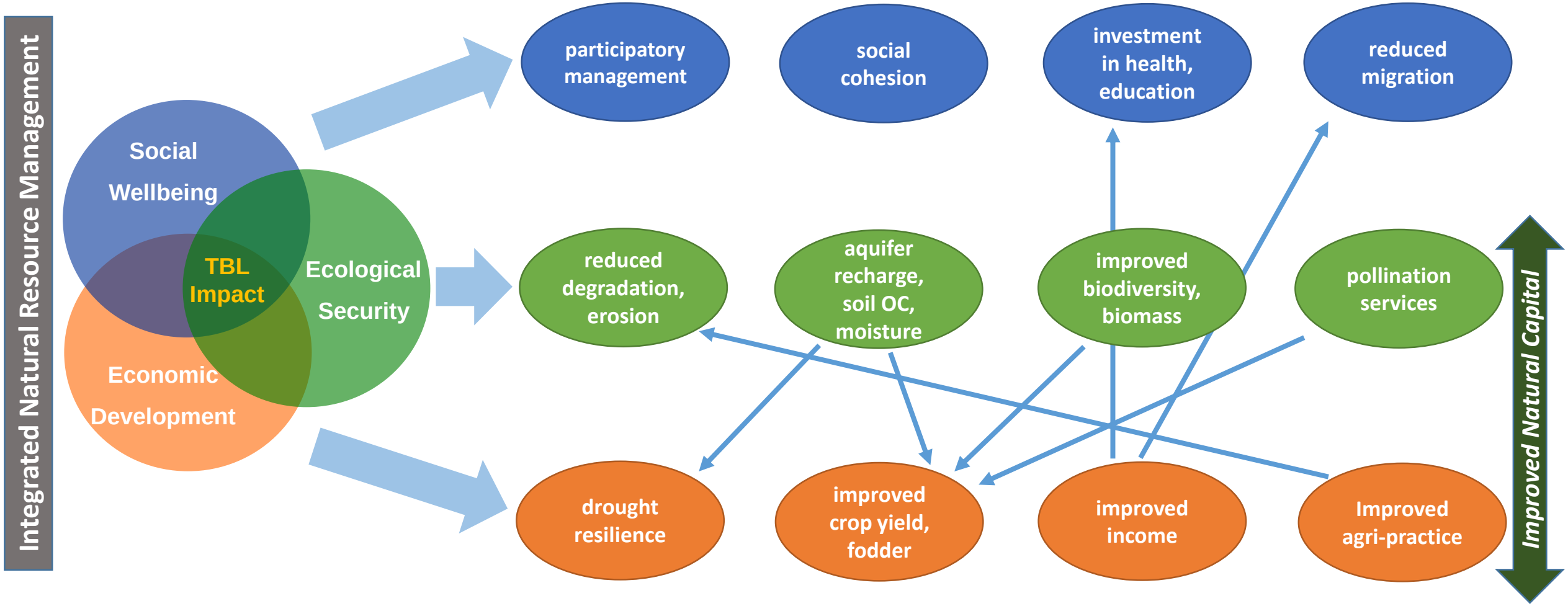
Outreach & Awareness Creation through Rural Communication Channels

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

bc3 BASQUE CENTRE FOR CLIMATE CHANGE Klima Aldaketa Ikergai Sustainability, that's it!

Development Alternatives

Insight from Field : Triple Bottom-Line Impact of Land Management



Valuing land as a function of how it is used

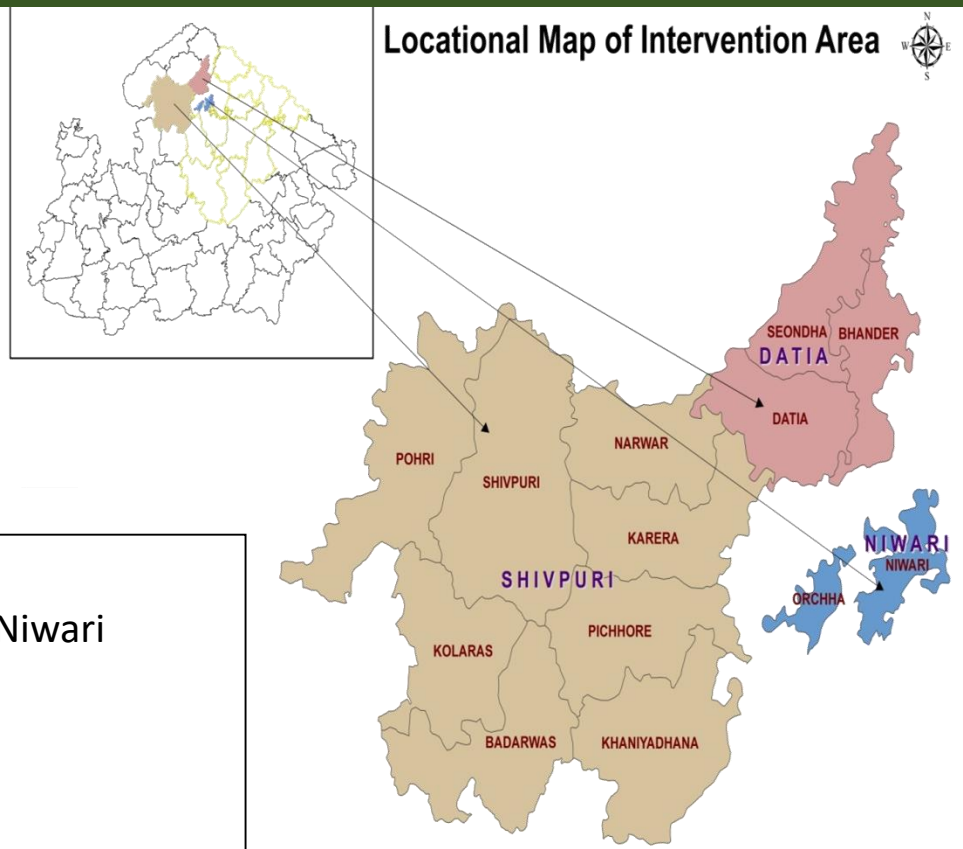
- We present an '*economic*' approach that values natural resources under different management regimes to combat desertification.
- **Using the value of ecosystem services, the augmented value of our natural capital is estimated as a function of how the ecosystems are used and managed.**
- Increases in the value of services of land through remediation are compared with the costs of remediation.

Introduction to the Current Study

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

To develop a toolkit for assessment of similar land remediation programmes under similar environmental and socio-economic conditions

To evaluate changes in SDG indicator values for a reduction in land degradation.



Geographical Coverage

3 districts : Datia, Shivpuri, Niwari

Comparison Period

2013 and 2018

Partners:

bc3 BASQUE CENTRE FOR CLIMATE CHANGE Klima Aldaketa Ikergai Sustainability, that's it!

Development Alternatives

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

GREEN GROWTH Knowledge Platform

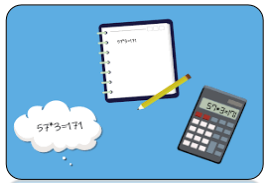
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

bc3 BASQUE CENTRE FOR CLIMATE CHANGE Klima Aldaketa Ikergai Sustainability, that's it!

Development Alternatives

ELD Research Methodology Adapted to Local Context

SDGs Mapping



Primary and secondary data collection

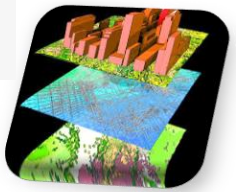
Perceptions Mapping

Social capital assessment

Economic valuation

InVEST
integrated valuation of ecosystem services and tradeoffs

Software based analysis



GIS based mapping

- Habitat Quality
- Crop Pollination
- Carbon storage and Sequestration
- Forest Carbon Edge Effects
- Annual Water Yield
- Nutrient Delivery Ratio
- Sediment Delivery Ratio
- Seasonal Water Yield
- Crop Production
- InVEST GLOBIO
- Visitation: Recreation and Tourism
- Social Capital

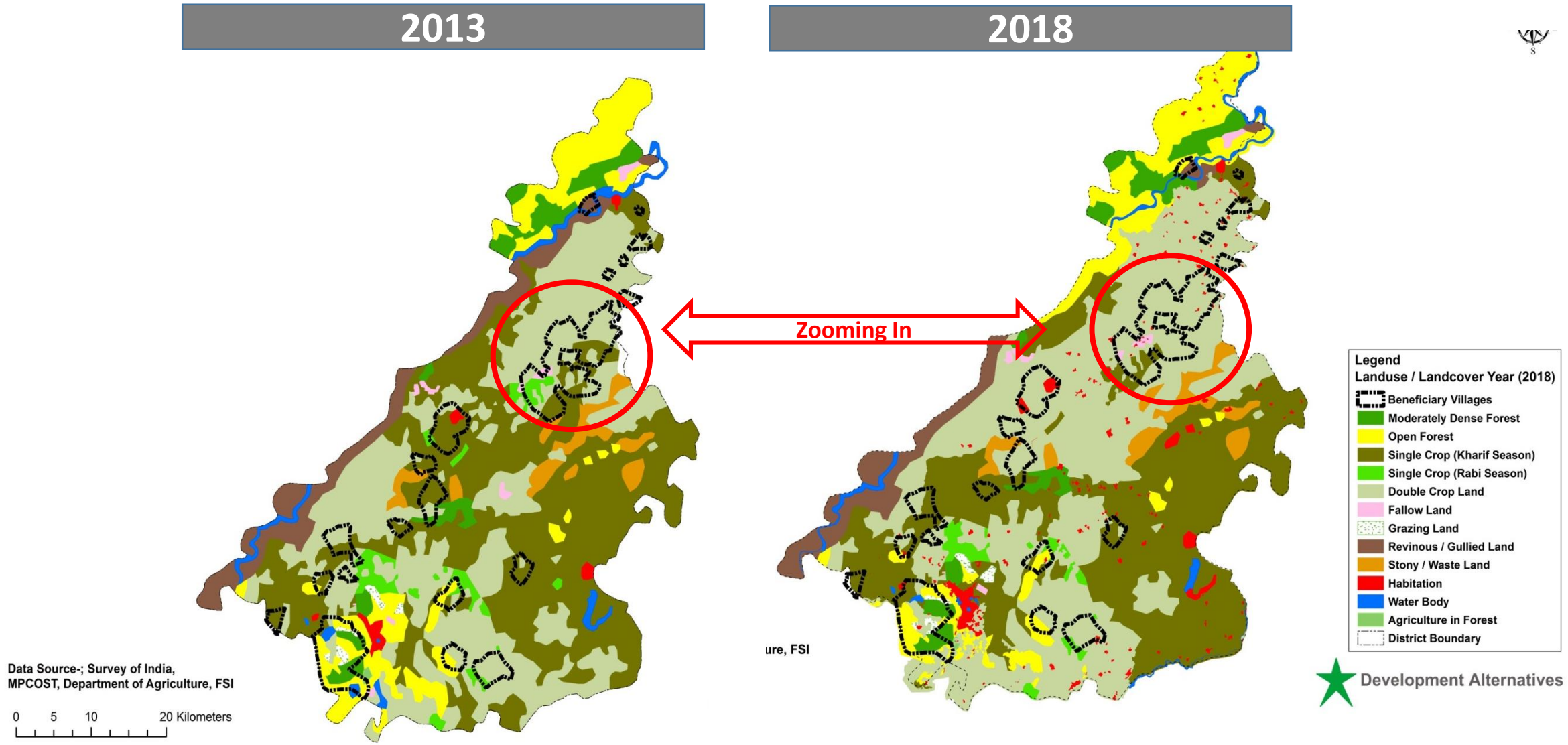
Inception → Geographical categorization → Types of Ecosystem Services → Ecosystem services and economics → Identifying Patterns and Pressures → Cost benefit analysis and others → Take action

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

bc3 BASQUE CENTRE FOR CLIMATE CHANGE Klima Aldaketa Ikergai Sustainability, that's it!

Development Alternatives

Initial Evaluation Findings – Land Use Changes from 2013 to 2018 – In Intervention Cluster



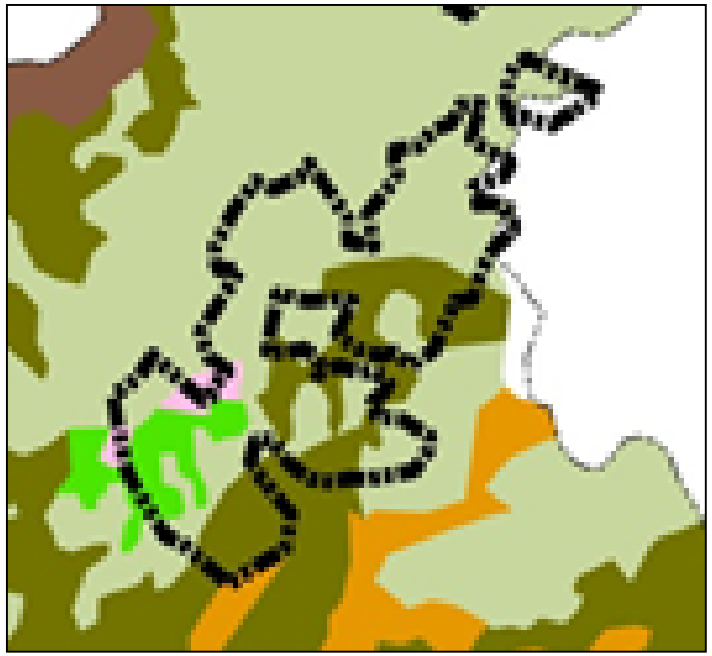
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

bc3 BASQUE CENTRE FOR CLIMATE CHANGE Klima Aldaketa Ikergai Sustainability, that's it!

Development Alternatives

Initial Evaluation Findings – Land Use Changes from 2013 to 2018 – In Intervention Cluster

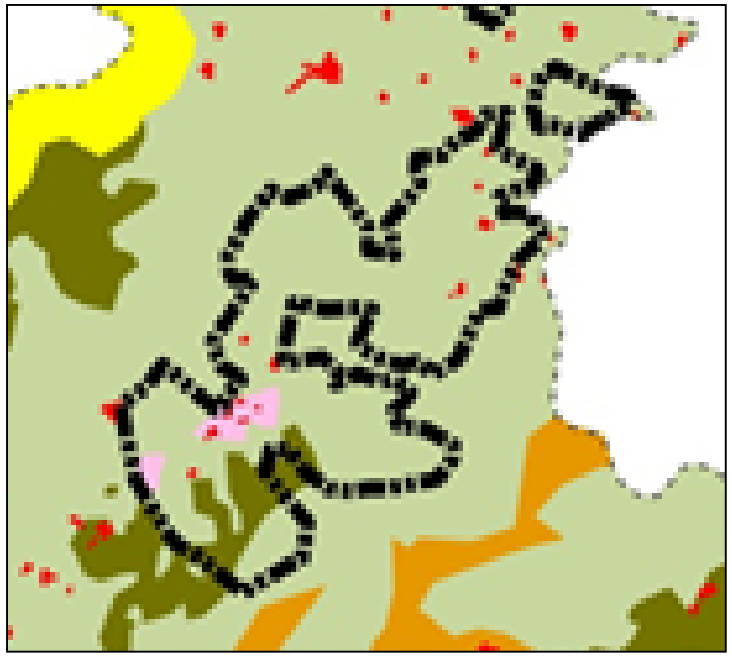
2013



Conversion of single cropped land to double cropped land

Increase in on-farm habitation

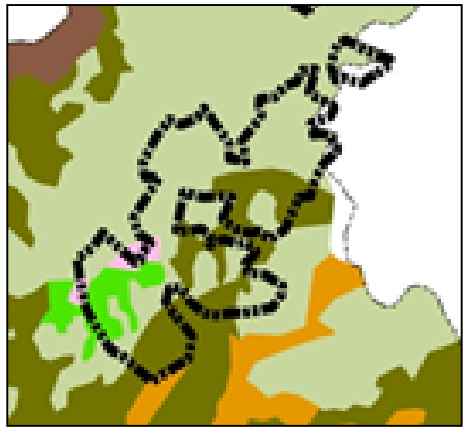
2018



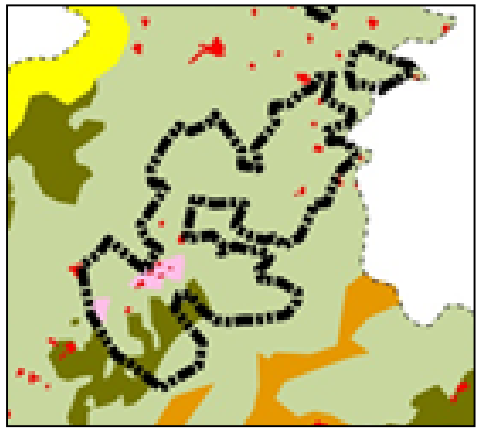
Initial Evaluation Findings – Relative Change in Land Use from 2013 to 2018 – In Intervention & Control Cluster

Intervention

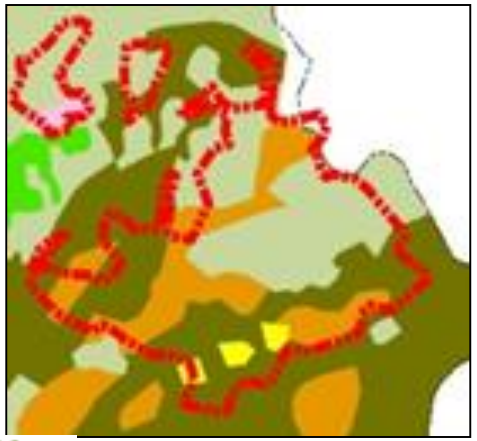
2013



2018

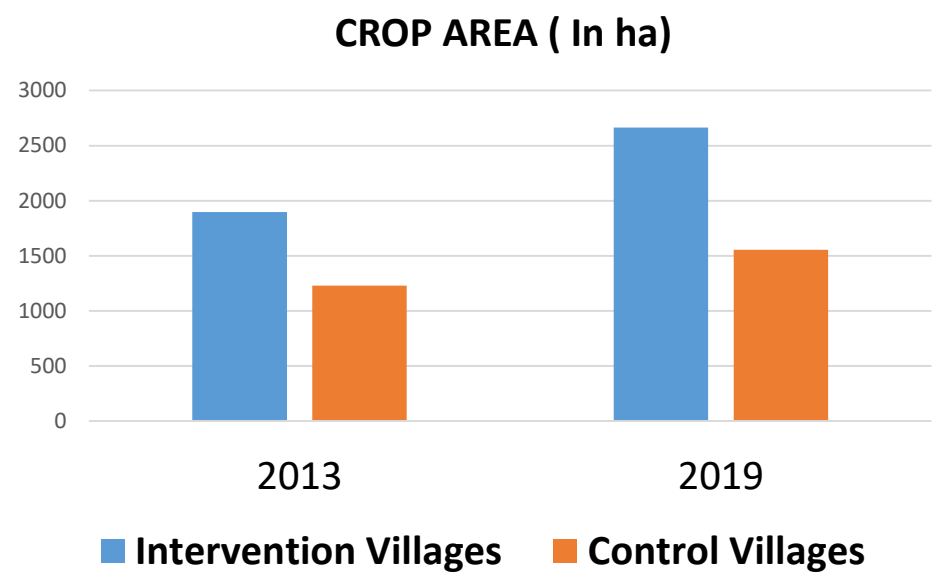


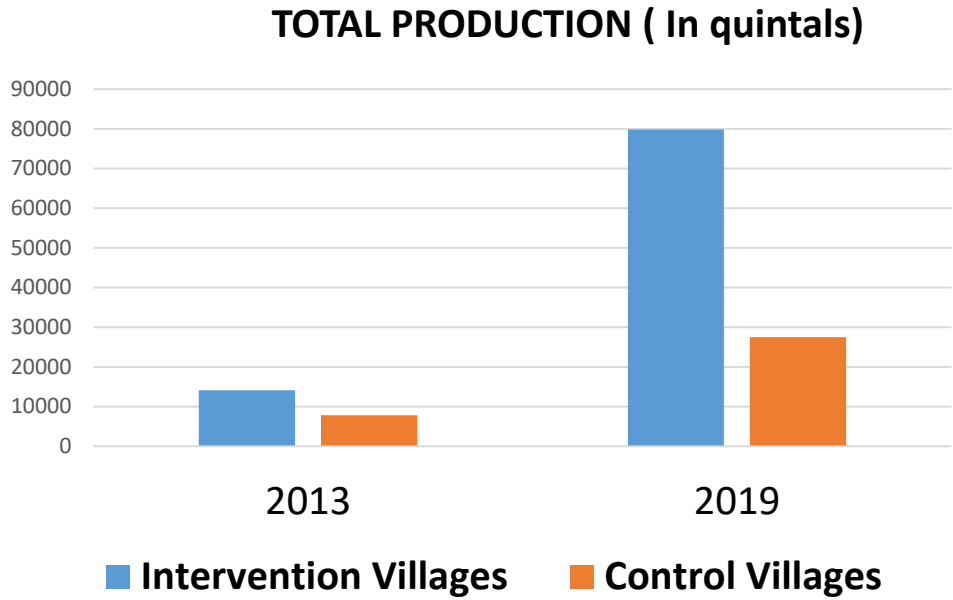
Control

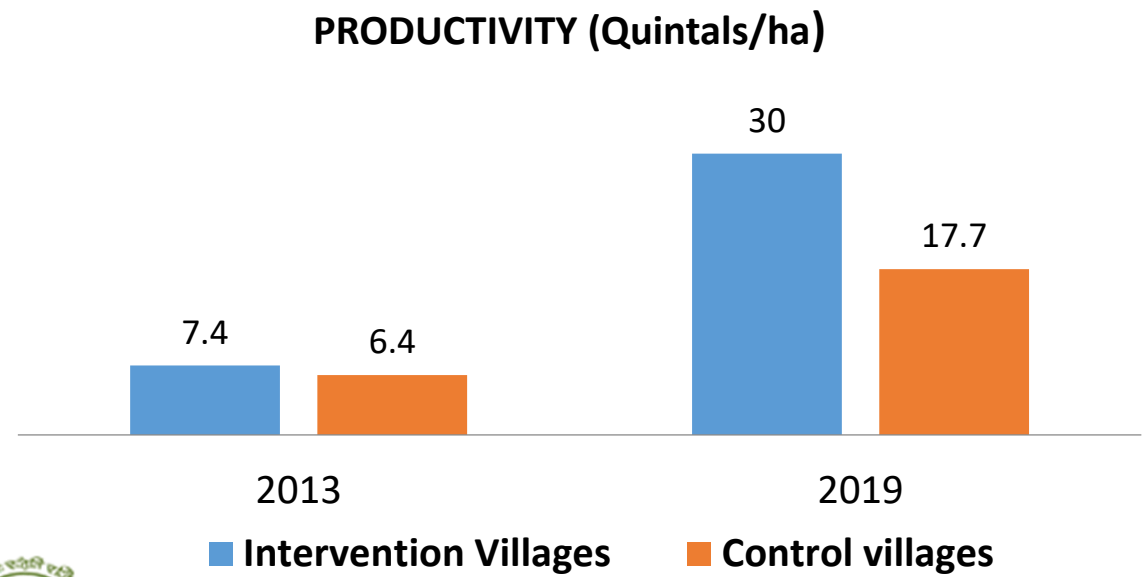


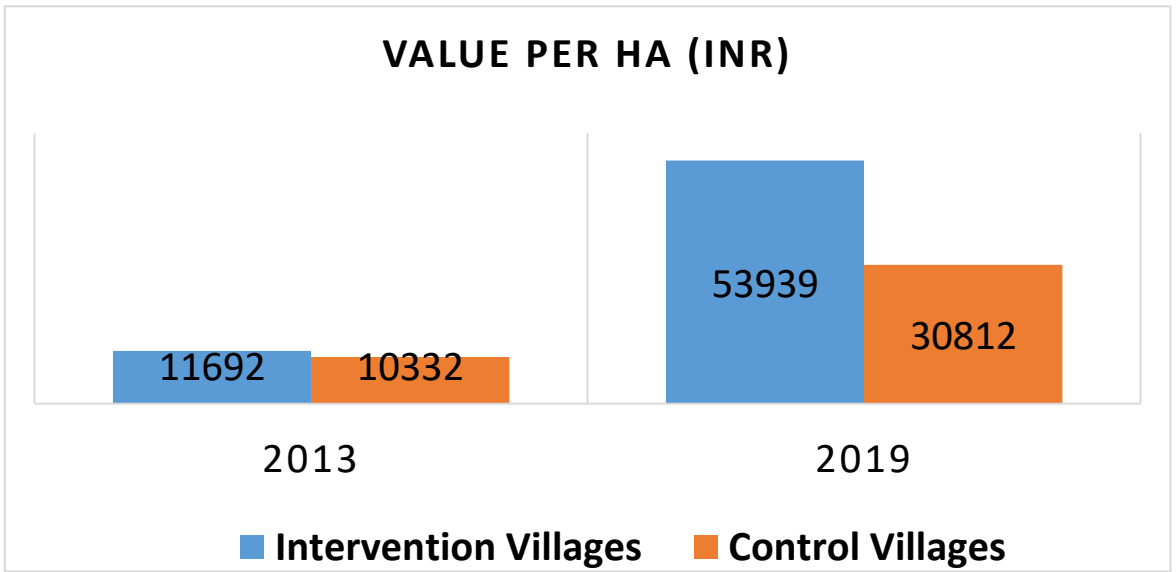
- Increase in area under double cropping by 3 times in the beneficiary village
- All the single crop area during rabi season (Oct-Feb) got converted to double cropping, farmers have started cultivating Khariff season crops like paddy, groundnut and Black gram
- Increase in double crop area in control villages also, but not as much as in intervention villages

Initial Evaluation Findings-Crop Production









giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

bc3 BASQUE CENTRE FOR CLIMATE CHANGE Klima Aldaketa Ikergai Sustainability, that's it!

Development Alternatives

Benefits from land remediation

Benefits from land Remediation	Rs. Lakh	
	If Sustained (For 30 years)	If Limited (For 10 years)
Crop Production	10,033	6,020
Carbon Sequestered	332	199
Total	10,364	6,219
Costs of Remediation (Project costs)	450	450
Benefit-Cost Ratio*	**23.0**	**13.8**

*Benefits are present values at 4% discount rate

- The initial results show that the benefits received from the land remediation activities (natural capital) are much greater than the costs and are unparalleled in terms of economic value
- The study can provide scientific evidence for policy recommendation of where to invest in remediation and how much to invest
- It can contribute to India's commitment of achieving the LDN targets of halting any further land degradation and rehabilitation of at least 30 m ha degraded wasteland, forest and agricultural land

Key Emerging Questions

- Can this methodology play an important role in restoring the land degradation and achieving the LDN target ?
- Can this contribute to the decision making and incentivize investments in land restoration?
- Can this influence biodiversity conservation and better management of ecosystem services


THANK YOU