

# **biodiversity & sustainable livelihoods**



*conserving and capturing benefits  
of biodiversity*

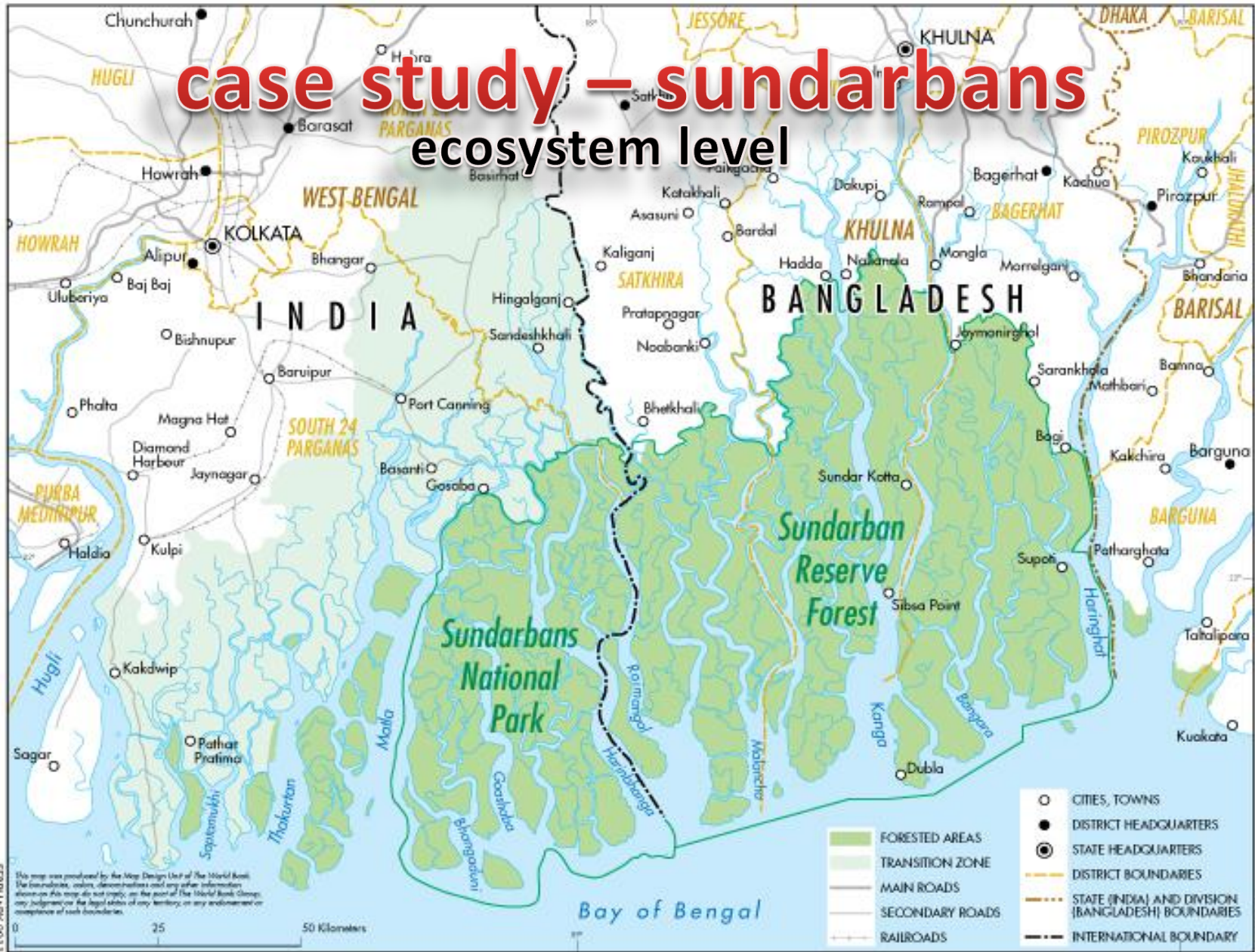


# biodiversity is central to life... and livelihoods

- about 400 million south Asians directly depend on biodiversity for life and livelihoods
  - provisioning services for livelihood support
    - food/firewood/fodder/financial
  - protection services for reducing vulnerability
    - bioshields/biomolecules/biobuild
- estimates of direct dependence vary
  - >84% dependence of rural poor in SA (Jodha 1990)
  - 72% depend on forest products in SEA (Levand *et al* 2005)
  - 75% depend on forest for fuel & fodder in SA (Sharma *et al* 2009)

# case study – sundarbans

## ecosystem level

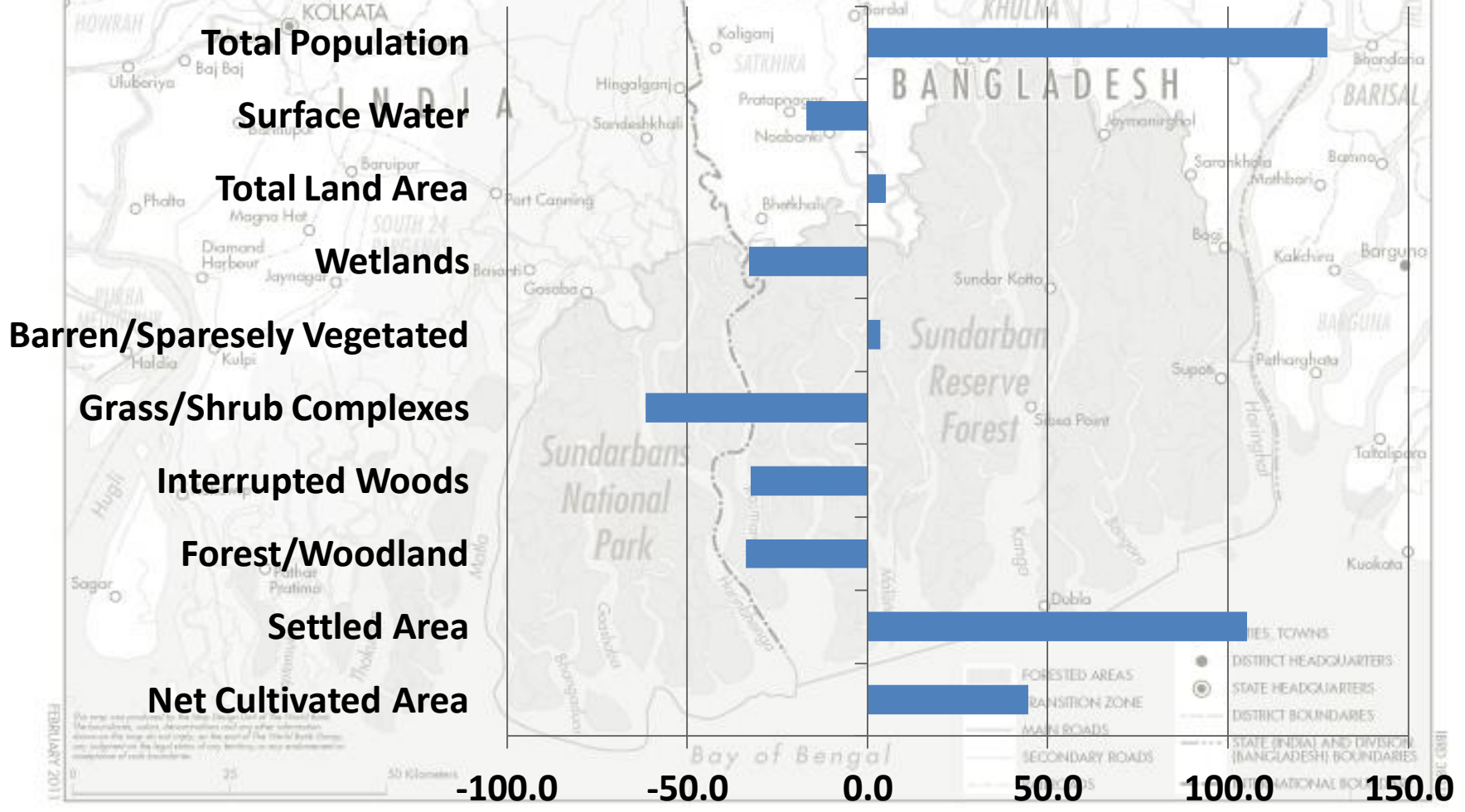


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# an ecosystem in peril

## socio-economic and ecologic trends

Percent change in land use of three Sundarbans districts (Khulna and Bakarganj, Bangladesh, 24 Parganas (including Calcutta), India): 1880-1950

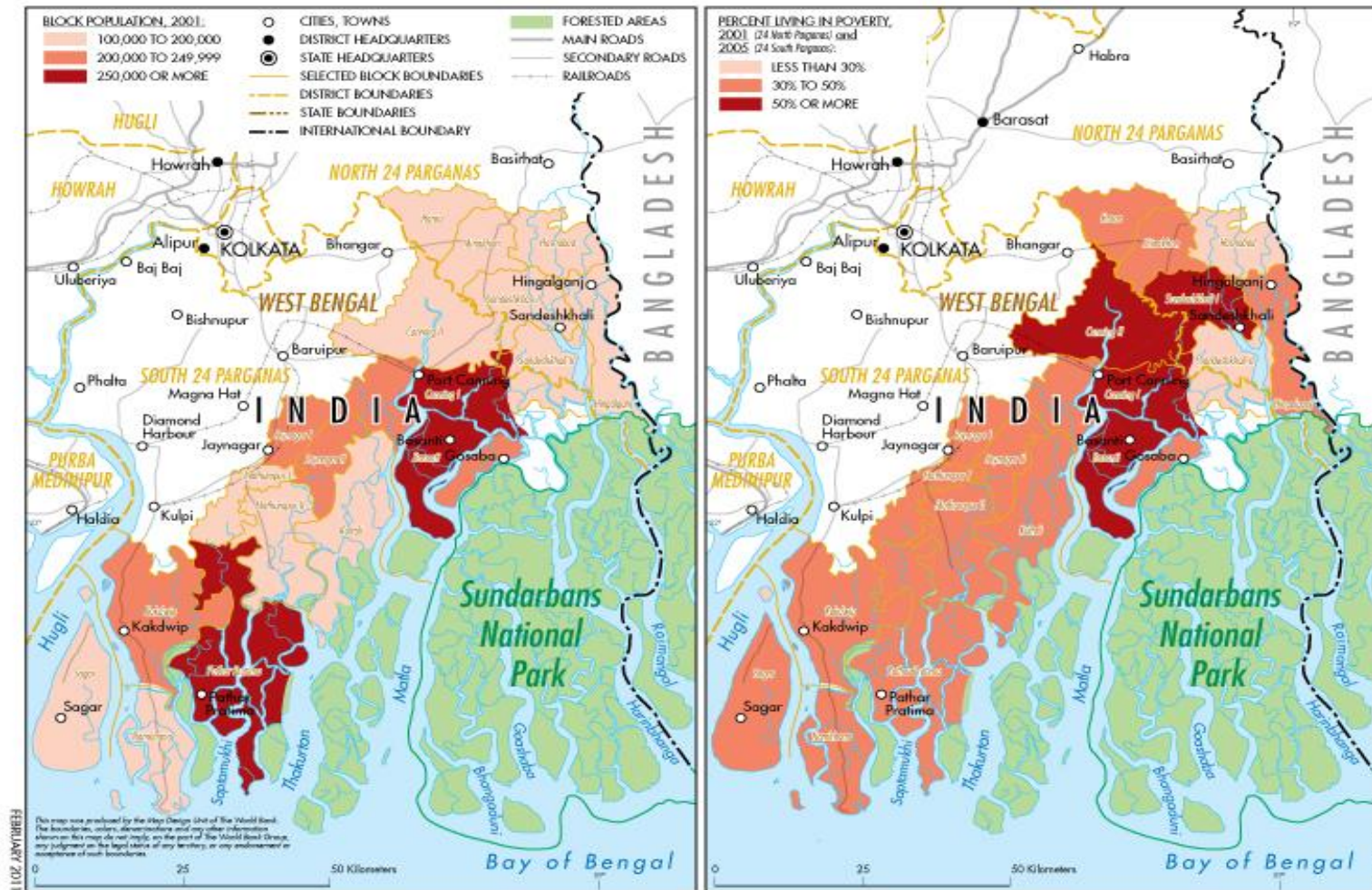


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# mapping biodiversity and poverty

## 4.1 million; 50% BPL





# unsustainable livelihoods



# threat analysis

- **ecosystem carrying capacity is limited to support life**
  - 1000-1400 tons of mud crabs extracted annually (recorded)
- **changing land use pattern is shrinking the natural habitat**
  - Settled and built-up areas increased by 292% and arable land by 37%  
Wetlands decreased by 53% and forest-woodland by 43%
- **unsustainable harvesting practices leading to decline in species diversity**
  - to catch 1 tiger prawn seed collectors destroy 161 juveniles of other prawns, 7 fishes, 30 crabs, 1 mollusc, 8 unidentified meroplanktons
  - hammerheads, *Chandana ilish*, *Indian salmon* are missing from daily catches
- **wealthy but undervalued ecosystem**
  - cost of environmental damage associated with ecosystem degradation and biodiversity loss is ` 6.7billion/year

# case study – himachal pradesh

## species level



# the problem and possibility

- **problem** – continued poverty of small farmers and loss of indigenous biodiversity (land races)
- **possibility** – livelihood security and incremental incomes by harmonizing biodiversity conservation and agricultural intensification through integration of plant, animal and fish genetic resources

approach is to focus on local agro-biodiversity species (landraces) and improve agronomic practices

maize (*Hachhi, Lal & Chitku kukdi*), kidney bean (*rajmash*), red rice (*karad, sukara dhan, begmi, desi*), goats (*Gaddi*), fish (rainbow trouts)

# achievements and outcomes

- pure lines, crop diversification, organic farming, value addition
- higher economic returns
  - approx 30% in maize and kidney bean; approx 50% in paddy

|                            | Maize<br>(Salooni) | Paddy<br>(Bhatiyat) | Rajmash<br>(Bharmour) |
|----------------------------|--------------------|---------------------|-----------------------|
| <b>Farmers (No)</b>        | <b>79</b>          | <b>65</b>           | <b>27</b>             |
| <b>Productivity (q/ha)</b> |                    |                     |                       |
| <b>Before</b>              | <b>21</b>          | <b>22</b>           | <b>9</b>              |
| <b>After</b>               | <b>27</b>          | <b>28</b>           | <b>11</b>             |
| <b>Income (Rs/ha)</b>      |                    |                     |                       |
| <b>Before</b>              | <b>21000</b>       | <b>61600</b>        | <b>60000</b>          |
| <b>After</b>               | <b>27000</b>       | <b>98000</b>        | <b>88000</b>          |
| <b>Increase (Rs/ha)</b>    | <b>6000</b>        | <b>36400</b>        | <b>28000</b>          |

# land races



# biodiversity seed fair



**what do the case studies tells us?**

# **biodiversity for poverty eradication**

- **biodiversity centric investment approaches for sustainable livelihoods (and ecosystem resilience)**
  - expanding natural ecosystems/habitats through plantation programs for boosting productive and protection services
  - introducing co-management approaches to increase stakeholder ownership of biodiversity resources
- **building economic incentives through new/innovative revenue streams and property rights**
  - market based instruments like ecotourism (live tiger worth more than a dead tiger); capacity building for alternative livelihoods
  - regulation based instruments by redesigning permit system (tradable permits/property rights allocation); land use
  - payment based instruments such as REDD+/Wildlife Premium Markets/PES/CIF; convergence with national schemes (MNREGA for mangroves)

# world bank's current engagement

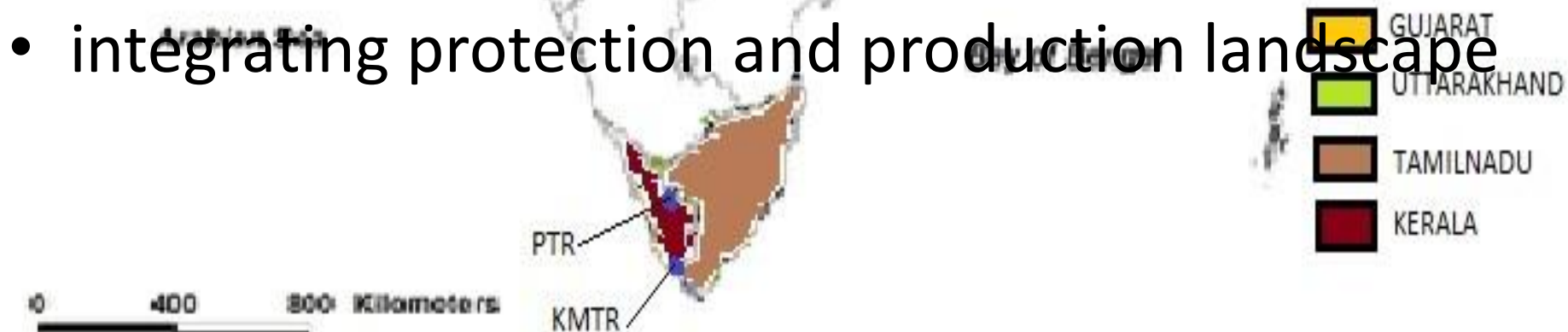
- paradigm shift in conservation planning and management
- institutionalizing and strengthening the livelihood - conservation linkage
- building convergence and synergy amongst stakeholders

# **biodiversity conservation and rural livelihoods improvement project (BCRLIP)**

- the objective
  - conserving biodiversity, while improving rural livelihoods through testing and establishing decentralized participatory approaches across a range of globally and nationally important landscapes under different management regimes
- the components
  1. demonstration of landscape conservation approaches in select pilot sites
  2. strengthening knowledge management and national capacity for landscape conservation
  3. scaling up and replicating successful models of conservation in additional landscape sites
  4. national coordination for landscape conservation

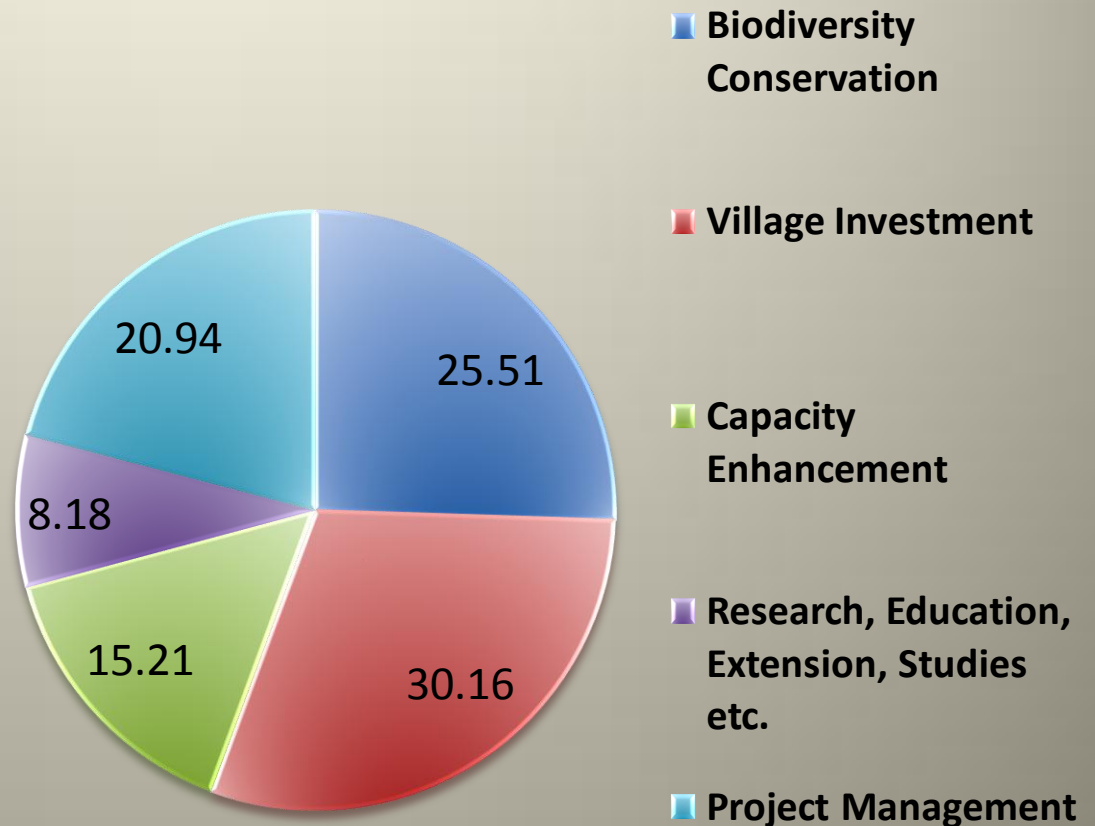
# project at a glance

- covers > 11500 sq km of protected areas in larger landscapes
- approx 38,500 households
- scope for adding two more sites (?)
- introducing new inter-agency landscape level institutional models
- integrating protection and production landscape



# funding sources and pattern

| SOURCE        | US \$ (mill) |
|---------------|--------------|
| GEF           | 8.14         |
| IDA           | 15.36        |
| GOI           | 0.42         |
| STATES        | 5.64         |
| Beneficiaries | 0.96         |
| Total:        | 30.52        |



# Conclusion !

- **Adopt the PURSE approach**
  - **P**rotect: increase protection of remaining natural habitats
  - **U**pgrade: legal status of existing and potential reserves
  - **R**estore: degraded habitats
  - **S**ustain: resources through improved extraction practices
  - **E**nhance: economic incentives by capturing public goods associated with biodiversity

