

INTEGRATED LANDSCAPE MANAGEMENT PLAN

GREATER PANNA LANDSCAPE

AT A GLANCE

Plan Period: 10 Years
2022/23 - 2032/33

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Contact Address

Dr. S. P. Yadav
Director & Team Leader
Wildlife Institute of India
Chandrabani, Dehradun 248001
Uttarakhand
Email: dwii@wii.gov.in

Dr. K. Ramesh
Scientist-E & Principal Investigator
Department of Landscape Level Planning and Management
Wildlife Institute of India
Chandrabani, Dehradun 248001
Uttarakhand
Email: ramesh@wii.gov.in

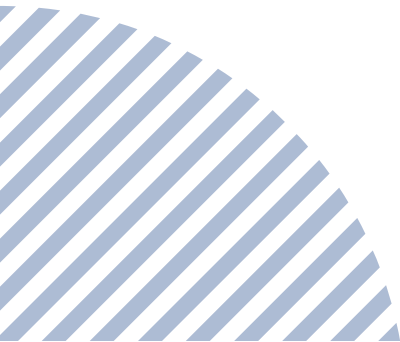
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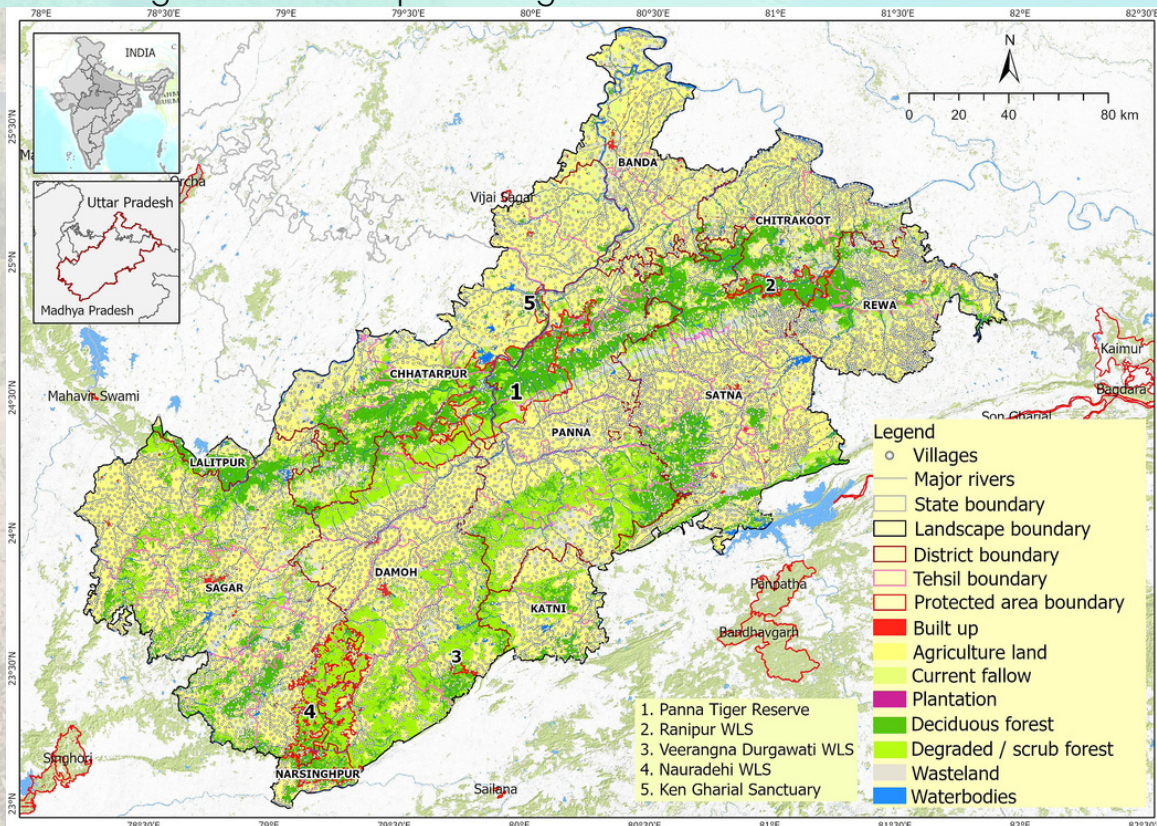
SALIENT

BACKGROUND

An integrated landscape management approach is imperative to understand the importance of conservation, sustainable use of biodiversity, and fair and inclusive benefit sharing. The Greater Panna Landscape (GPL), with Panna Tiger Reserve (PTR) as the central focus, offers significant biodiversity, historic, cultural, and ecosystem service values. With the local extinction and successful reintroduction of tigers and the presence of other diverse wildlife, PTR has earned global recognition. However, this region is also known for water scarcity, poverty and health deficit, which pose huge livelihood challenges and constrain development. The proposed Ken-Betwa Link Project (KBLP), therefore, aims to alleviate the recurring water stress and contribute to the overall development of the region. However, the livelihood and development aspirations will come at a cost of wildlife habitats and species populations, requiring options that will enable win-win outcomes. Integrated Landscape Management can be a key option!

CONTEXT

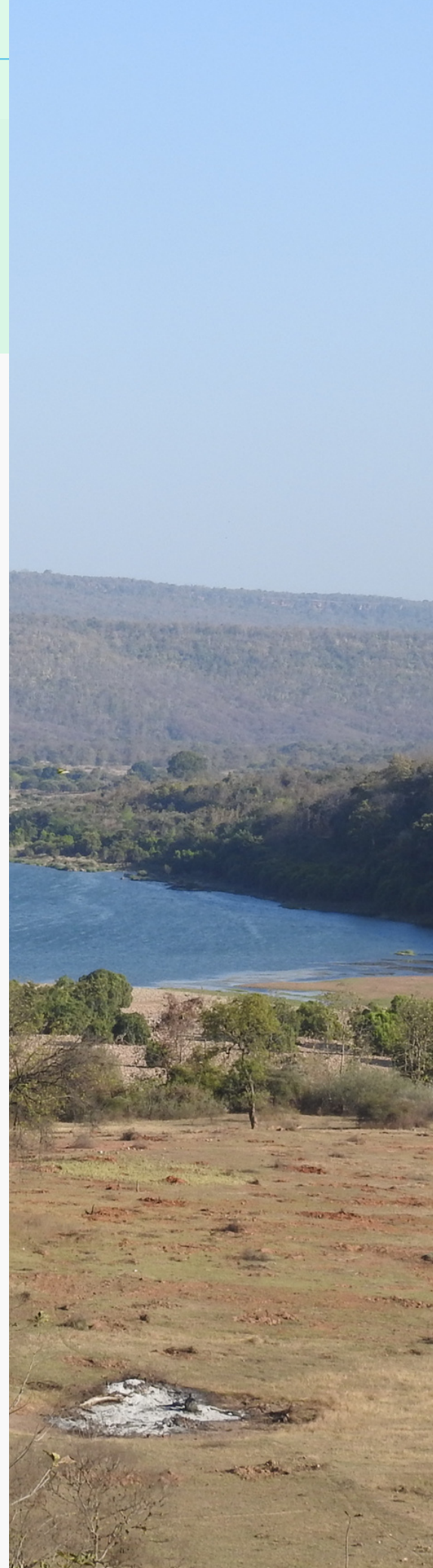
Despite its noble intentions and much-needed expected outcomes, KBLP will have negative impacts on three key species i.e. tiger, vulture and gharial. These concerns include disrupting connectivity, submerging nesting habitat and reducing flow requirements respectively for these species. There are also other concerns and conditions that have been laid down by various government agencies. One such condition is the need to develop and implement an Integrated Landscape Management Plan.



FEATURES

HIGHLIGHTS

- Although the primary focus is on the three key species (tiger, vulture and gharial), adequate importance has also been given to other biodiversity components and community engagement.
- First of its kind, Central-State coordination in the planning and implementation process.
- Establishment of 'Integrated Research and Learning Centre (IRLC)' to support implementation, with scientific and capacity building priorities for adaptive management.
- Aims to ensure a "win-win" situation and a model for a balanced approach to conservation and development.
- The interventions will lead to the betterment of habitat, protection, and overall management of biodiversity components.
- The outcomes would consolidate natural areas and improve protection status based on spatial prioritizations and address people-forest interface issues.
- Provides species-specific and site-specific strategies with options for adaptive management.



VISION

Strengthening the conservation value of GPL, through a “win-win” situation, balancing conservation and development

OBJECTIVES

01

To enable betterment of habitat, protection, and management for flagship species (tiger, vultures, and gharial) in the landscape

02

To consolidate the landscape for overall biodiversity conservation through spatial prioritization and well-being of forest dependent communities

03

To provide species-specific and site-specific strategies under the integrated landscape management context with options for adaptive management



PLANNING PROCESS

Identification of Thematic Context

Delineation of Landscape Boundary

Consultation with the Government Stakeholders

Deployment of Technical Manpower

Desk Review and Reconnaissance

Primary and Secondary Data Collection

Aspatial and Spatial Analyses

Categorization and Prioritization

Stakeholder Consultations

Mid-term Review and Course Correction

Preparation of the Draft Plan

Incorporation of Shared Vision & Negotiation

Legitimization and Convergence

Review and Finalisation of the Plan

TIGER CONSERVATION

SITUATION

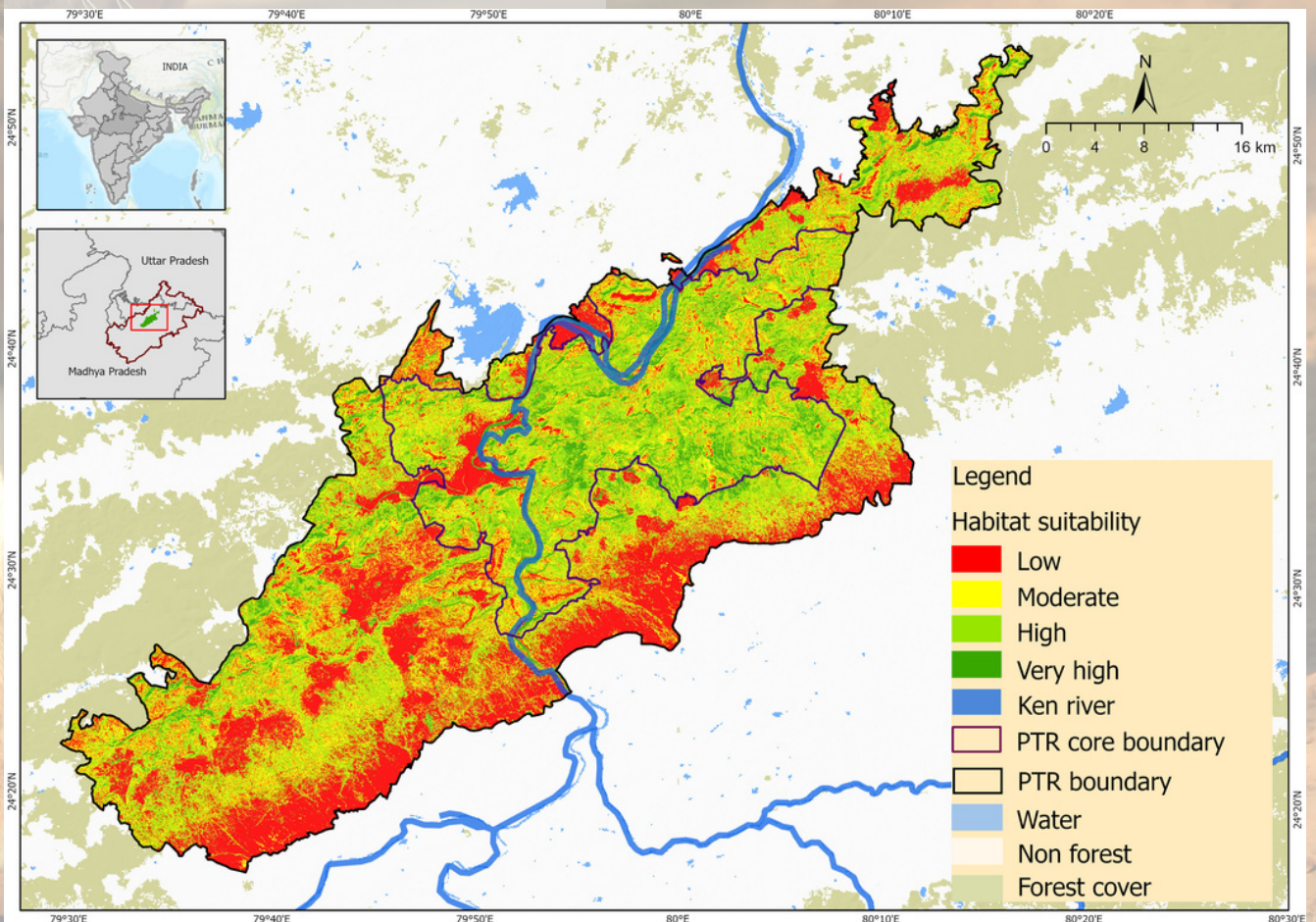
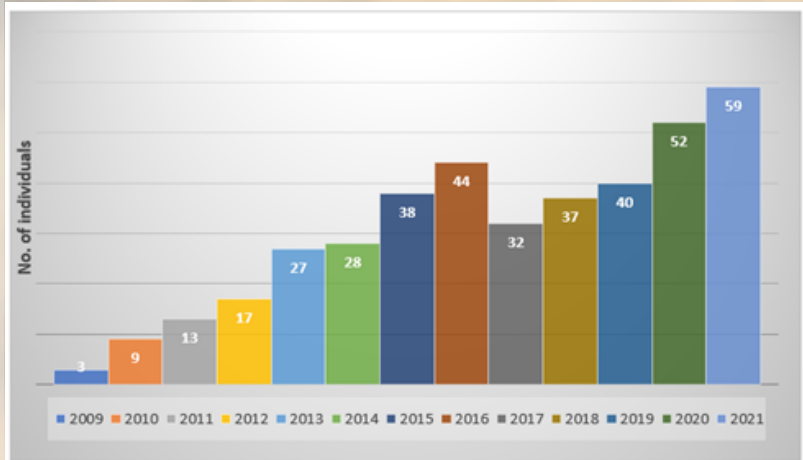
There are over 60 tigers in PTR, with an annual growth rate of 31%

Over 60% of PTR is suitable for tigers and there are still unoccupied areas

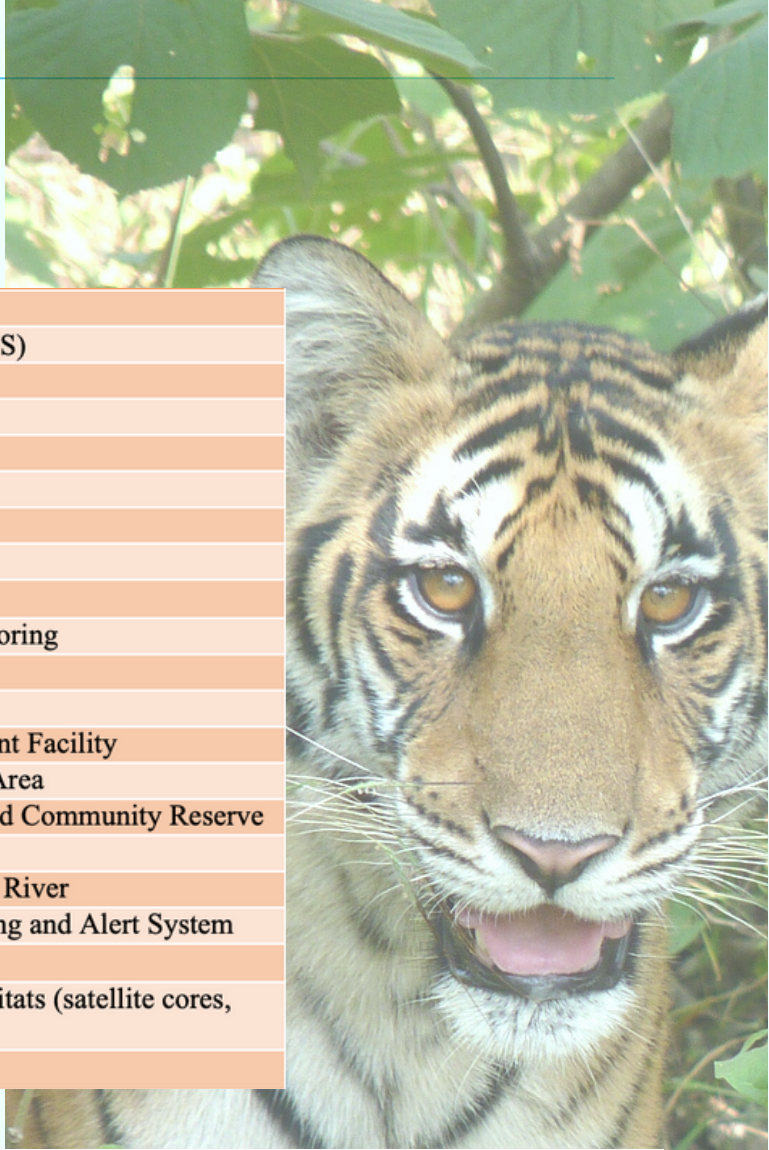
Carrying capacity of tigers in PTR can be around 130 individuals

37 adults/sub-adults have dispersed in the landscape between 2013 and 2021

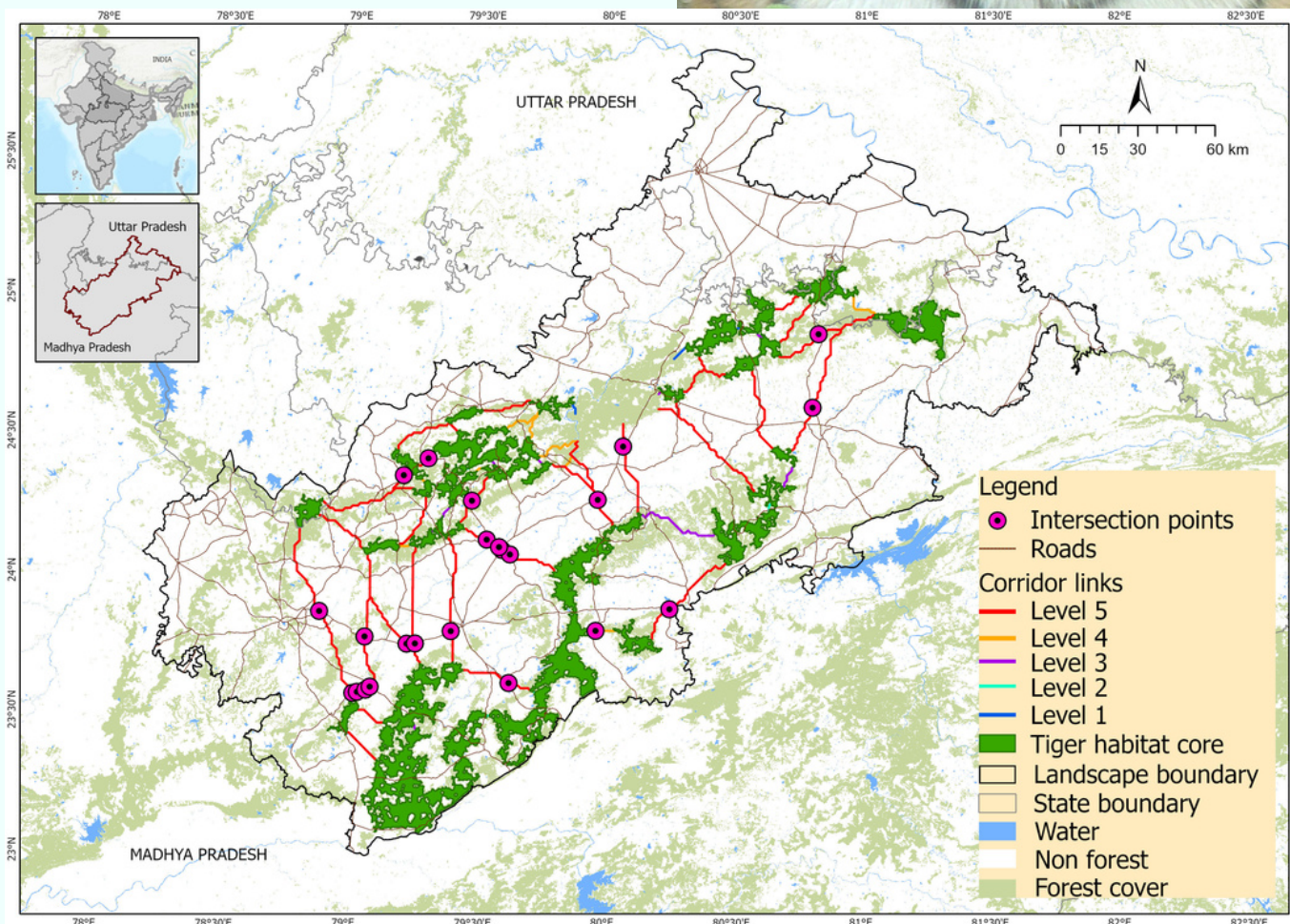
28 habitat cores and 67 potential corridor links have been identified



PRESCRIPTIONS



1	Special Performance Unit (SPU)
2	Continuous Camera-trap Monitoring System (CCMS)
3	Crime Deduction and Alert System (CDAS)
4	Intelligence Network and Incentives
5	Un-manned Aerial System (UAV)
6	Strengthening Staff Infrastructure and Logistics
7	Virtual Fence Network
8	Social Fencing Network (SFN)
9	Fine-scale Distribution Mapping and Monitoring
10	Spatially Explicit Population Estimation and Monitoring
11	Demographic Management
12	Genetic Management
13	Establishment of Controlled Population Management Facility
14	Landownership-transfer of Compensatory Village Area
15	Landownership-transfer of Revenue Open Areas and Community Reserve
16	Restoration of Consolidated Village Areas
17	Construction of Structural Connectivity across Ken River
18	Diversion of Road Traffic Volume, Strategic Fencing and Alert System
19	Retrofitting of Under-passes and Over-passes
20	Recognition and Protection of Important Tiger Habitats (satellite cores, steppingstones and corridors)
21	Research, Monitoring and Capacity Building



VULTURE CONSERVATION

7 vulture species are present in PTR and GPL

Of the ~3000 vultures in GPL, PTR alone accounts for 34%

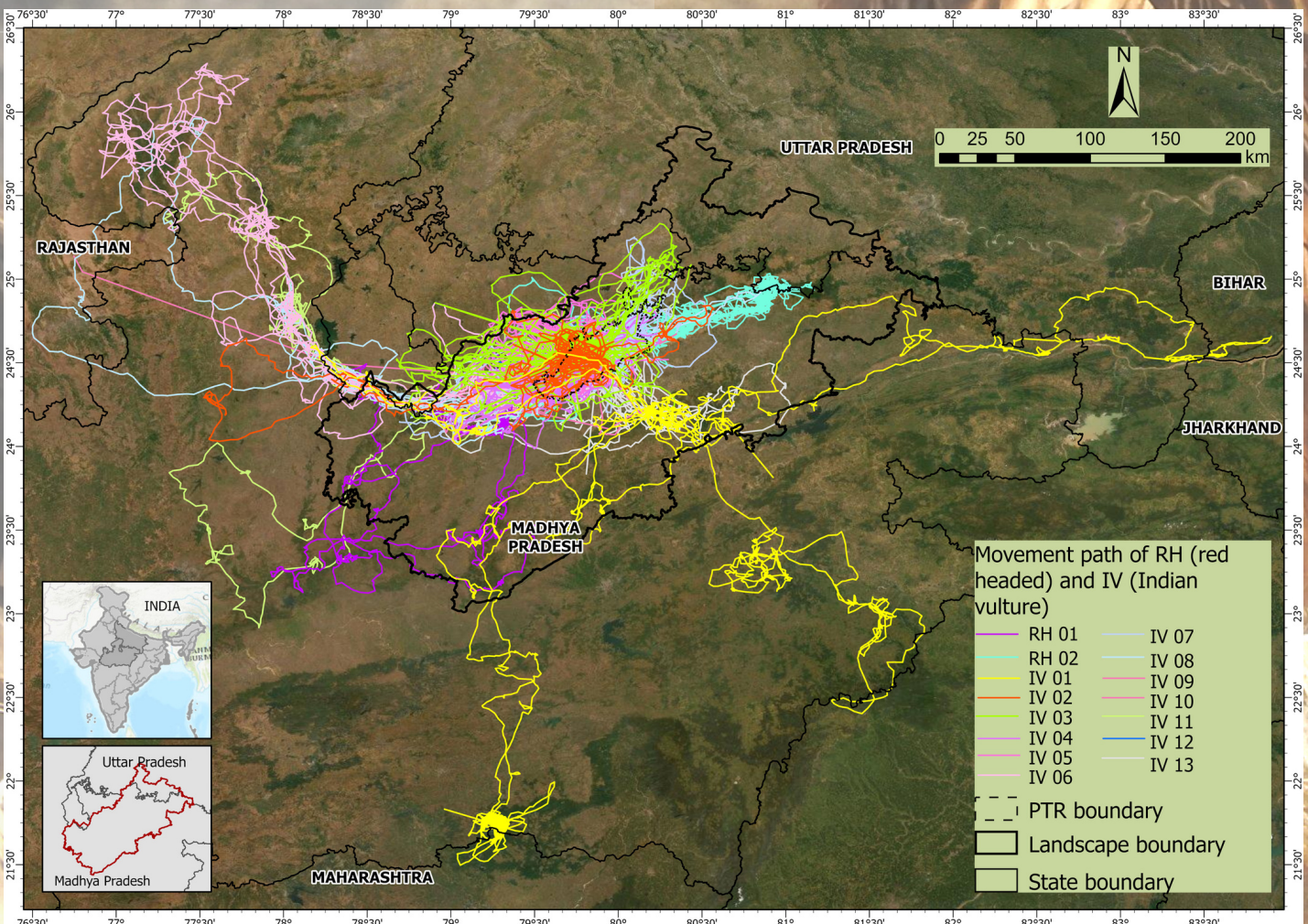
PTR also accounts for 14% of highly suitable cliff-nesting habitats in GPL

Elevated areas and ravines offer tree-nesting habitats in PTR

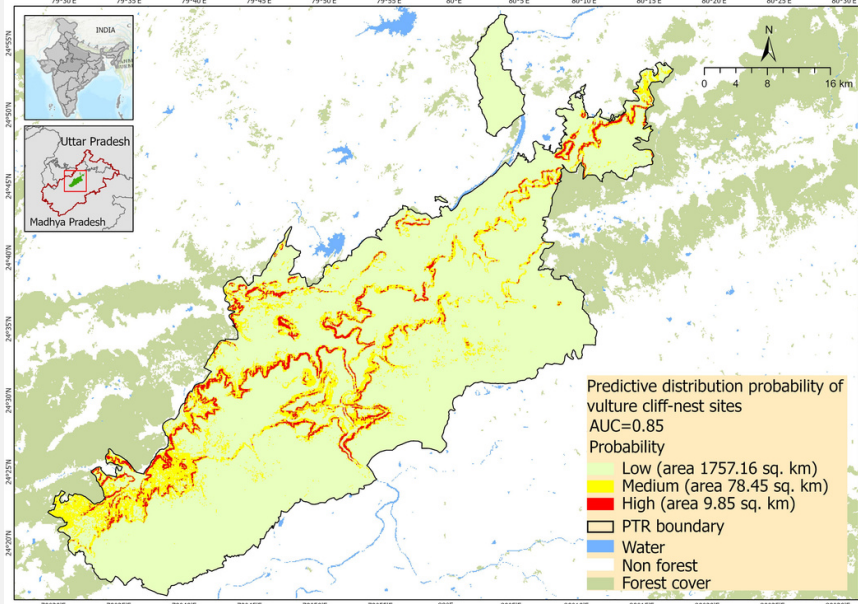
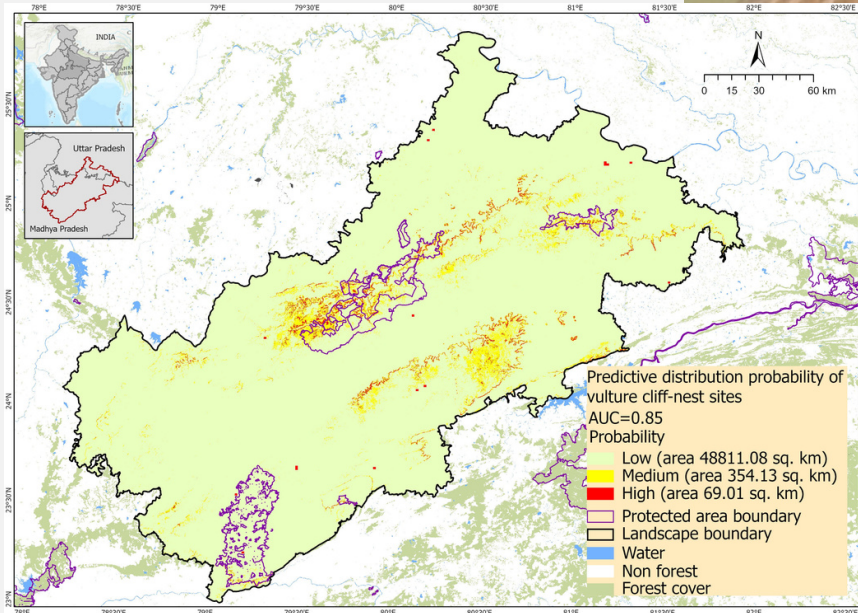
GPS-tagged (n=25) vultures offer new insights for conservation

Vultures use the entire landscape for feeding

SITUATION



- 1 Establishment of Electronic Surveillance System
- 2 Fencing of Carcass Dump Sites
- 3 Deployment of Alert System
- 4 Aerial Surveillance of Fire and Prevention
- 5 Establishment of Network of Vulture Champions
- 6 Gaushala Coordination Committee
- 7 Robust Population Estimation and Monitoring
- 8 Demographic and Genetic Structure Profiling
- 9 Roosting Site and Nest-site Monitoring
- 10 Biochemical Analyses and Monitoring
- 11 Establishment of Vulture Rehabilitation Centres (VRC)
- 12 Awareness and Engagement of People and Veterinary Professionals
- 13 Implementation of Flyway Action Plan
- 14 Disease Surveillance and Monitoring
- 15 Augmentation of Riparian Tree Species
- 16 Management of Dumping Site/ Feeding Point
- 17 Developing Community/ Conservation Reserve
- 18 Vulture-based Tourism
- 19 Research, Monitoring and Capacity Building



CROCODILIANS CONSERVATION

SITUATION

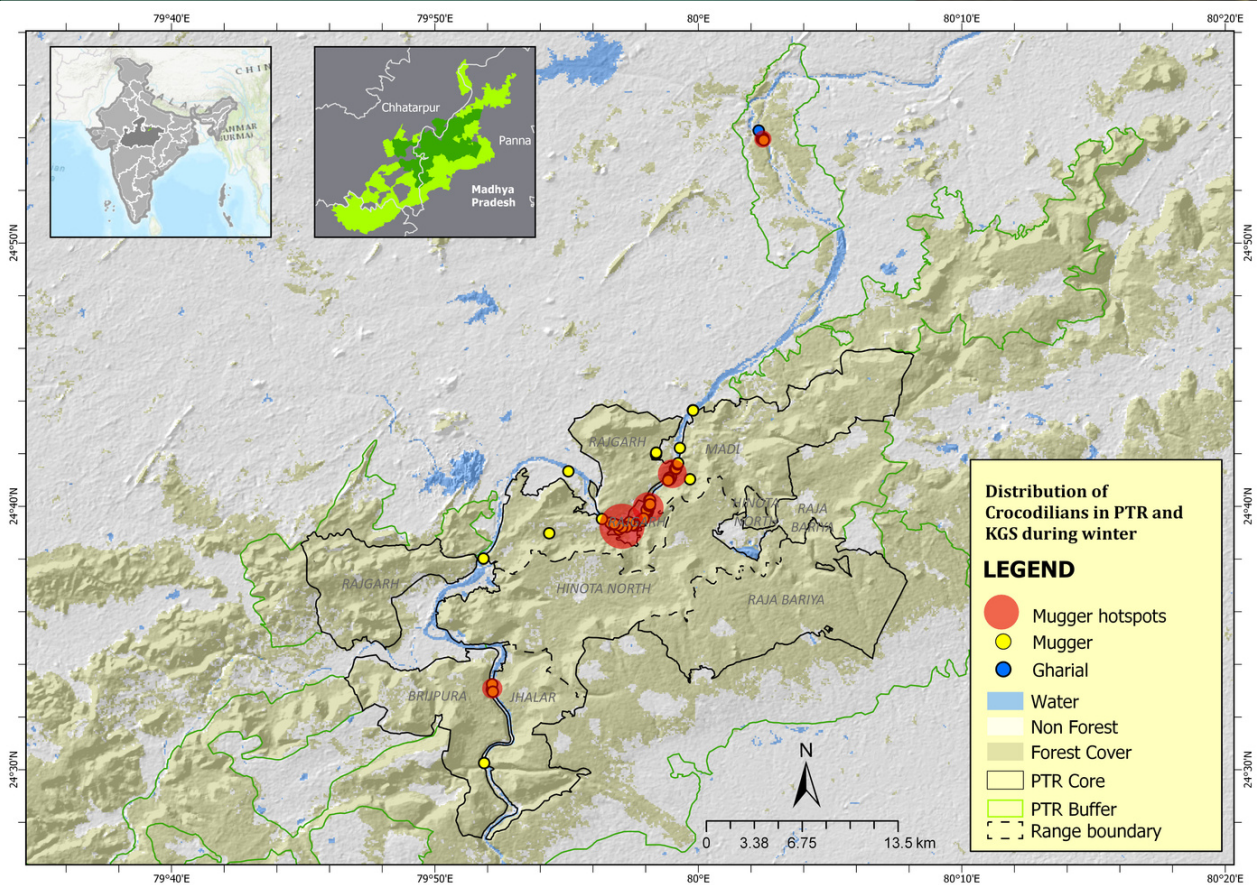
Low population size of gharials in Ken River

Restocking efforts ongoing since 1983: 167 individuals released

Low retention of released individuals

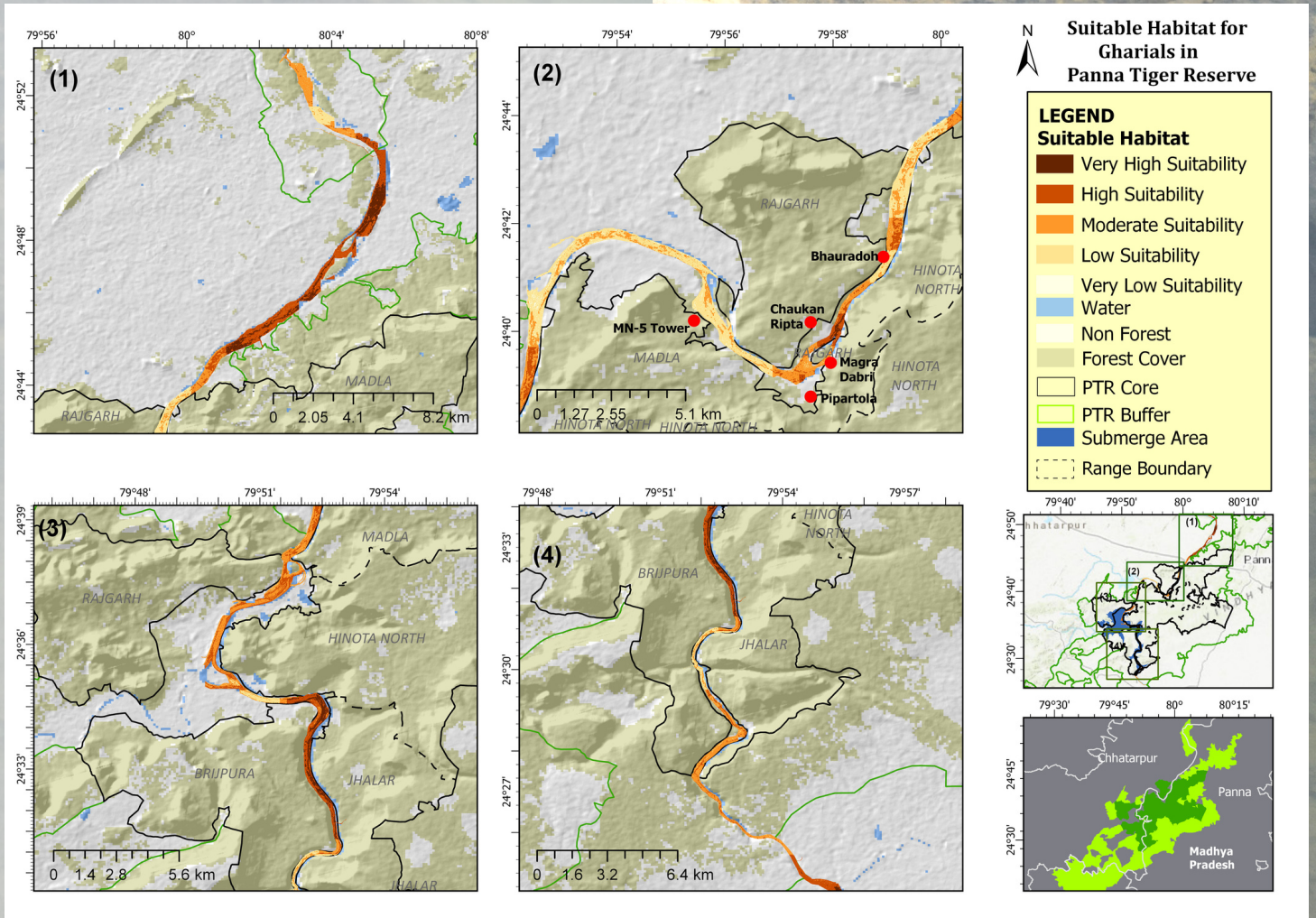
Suitable habitat for gharials in PTR: ~13 sq. km

Muggers are relatively abundant in PTR and KGS: 38–62 individuals



PRESCRIPTIONS

1	Protection of Crocodile Priority and Restricted Zones
2	Enforcement of Ban or Strategic Regulation on Fishing
3	Protection and Co-Management of River Habitats
4	Deployment of Unmanned Aerial System
5	Population Estimation and Monitoring
6	Demographic and Genetic Management
7	Coordinated Gharial Recovery Program
8	Crocodile Rehabilitation Centre
9	Management of Environment Flow and Sediments
10	Prey Population Management
11	Management of Artificial Sandbanks
12	Alternative Livelihood Opportunities
13	Awareness, Training and Stakeholder Workshop
14	Research, Monitoring and Capacity Building



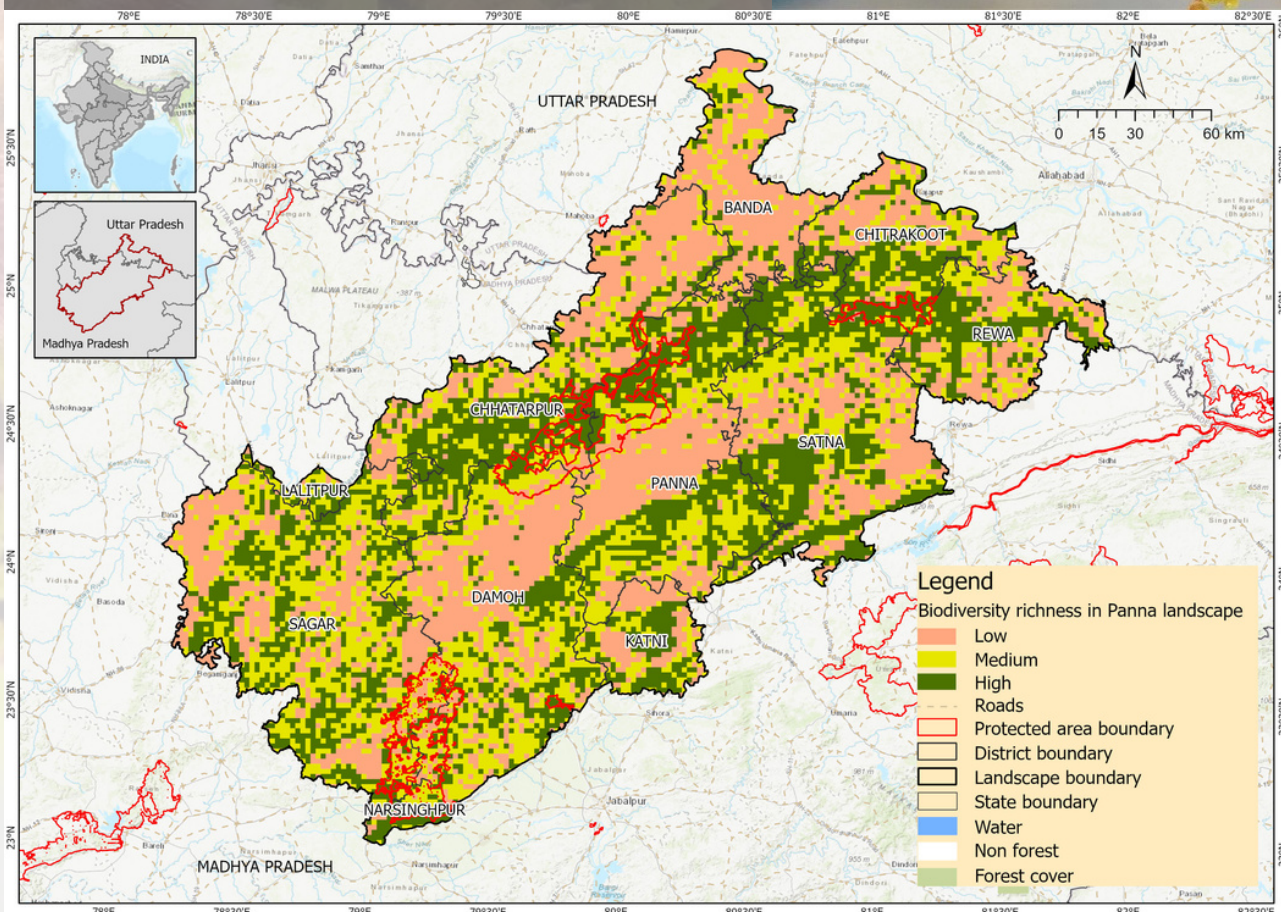
BIODIVERSITY CONSERVATION

SITUATION

GPL has wide habitat diversity and species richness, along with distinct biodiversity-rich riparian habitats.

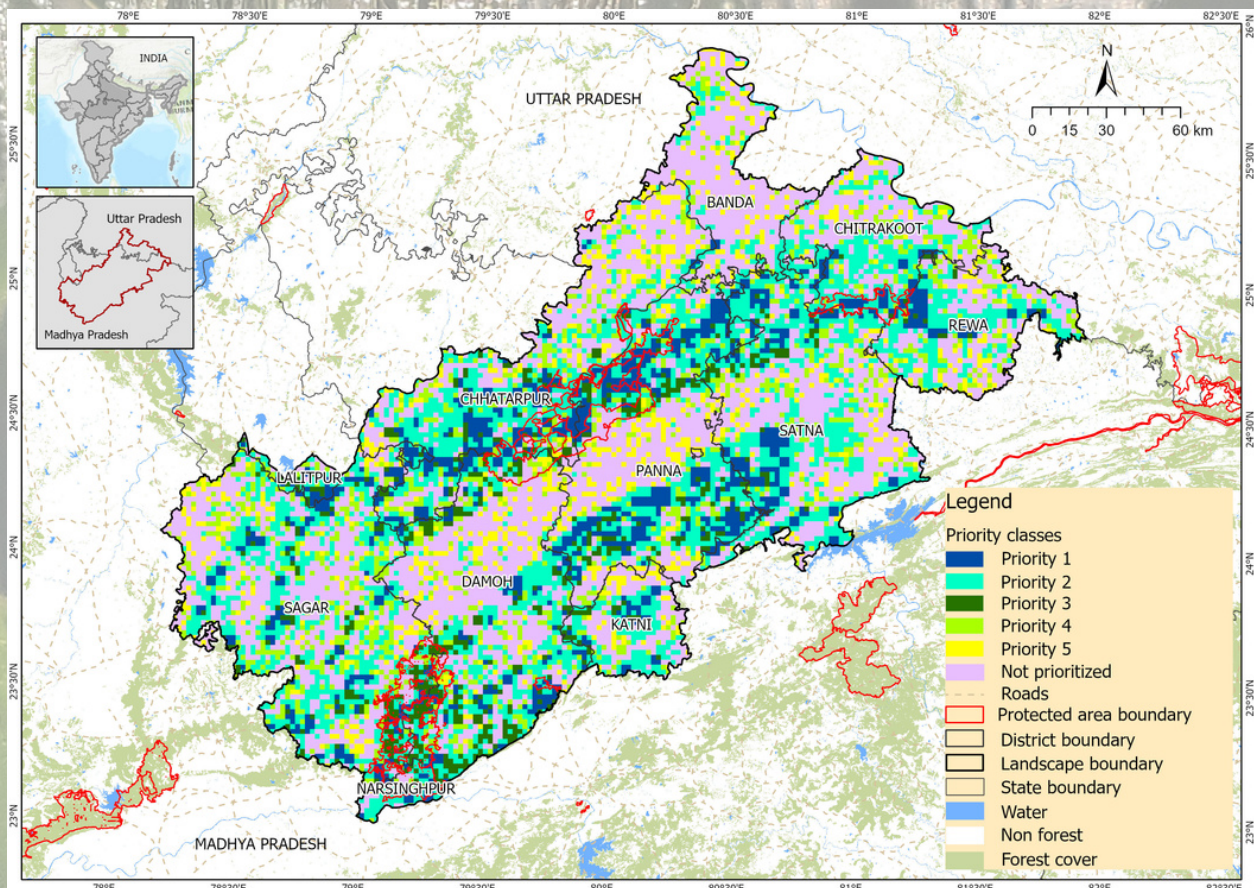
PTR alone has over
360 species of plants
30 species of mammals
210 species of birds
50 species of herpetofauna
50 species of fishes

Several other taxa to be explored in PTR and GPL



PRESCRIPTIONS

1	Management of Lantana and Van Tulsi in PTR
2	Management of Lantana and Van Tulsi in GPL
3	Grassland Management in PTR in Core and Buffer
4	Management and Augmentation of Existing Ponds/Water Bodies
5	Augmentation/Restoration of Riparian Habitats inside PTR
6	Establishment of Riparian Conservation Zone / Community Reserve
7	Conservation Measures for Vegetation Species
8	Conservation Measures for Mammal Species
9	Conservation Measures for Bird Species
10	Conservation Measures for Herpetofauna Species
11	Spatial Delineation of Freshwater Fish Safe Zone
12	Conservation Awareness and Species Recovery Plan for Mahseer
13	Research, Monitoring and Capacity Building



COMMUNITY ENGAGEMENT

SITUATION

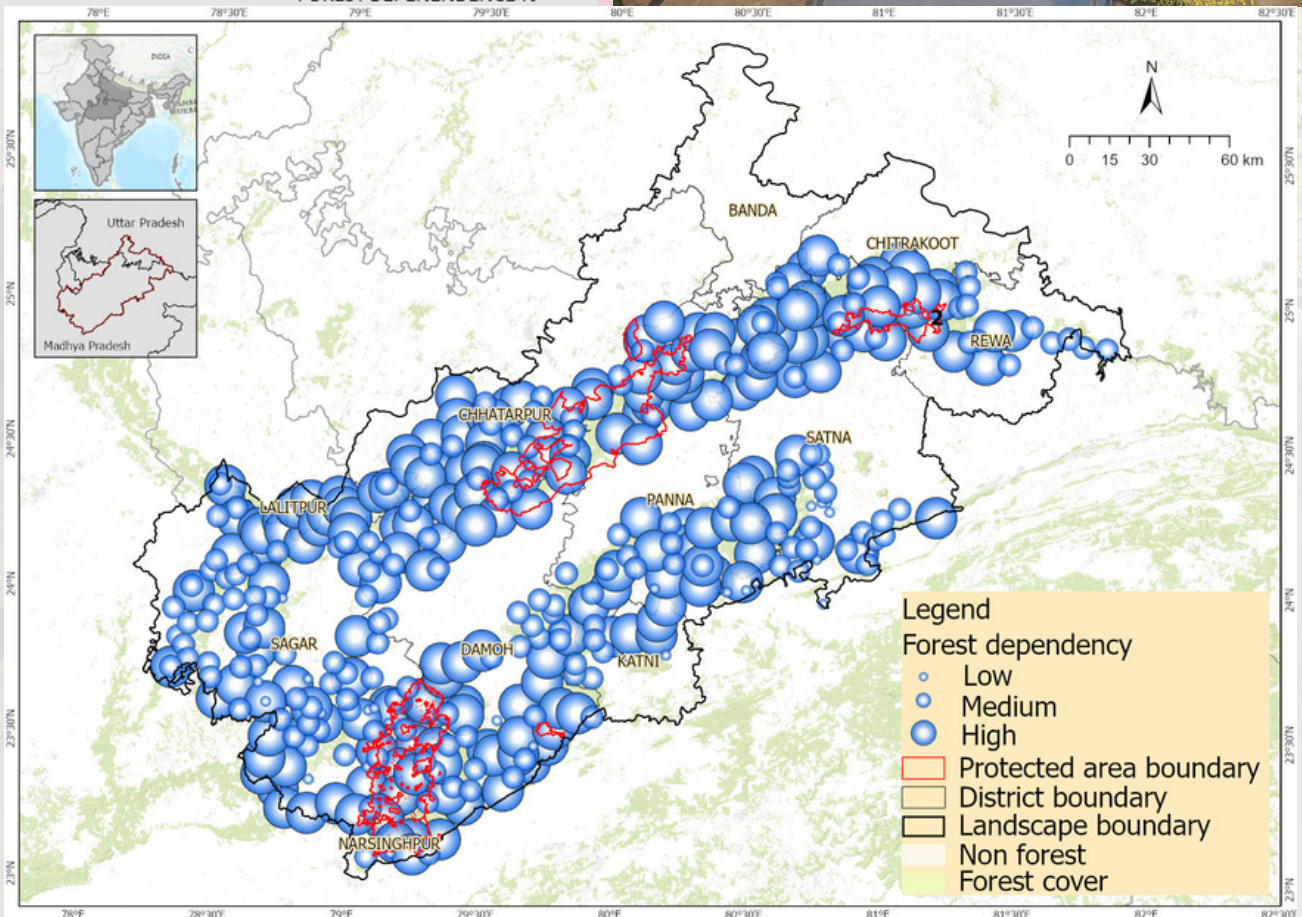
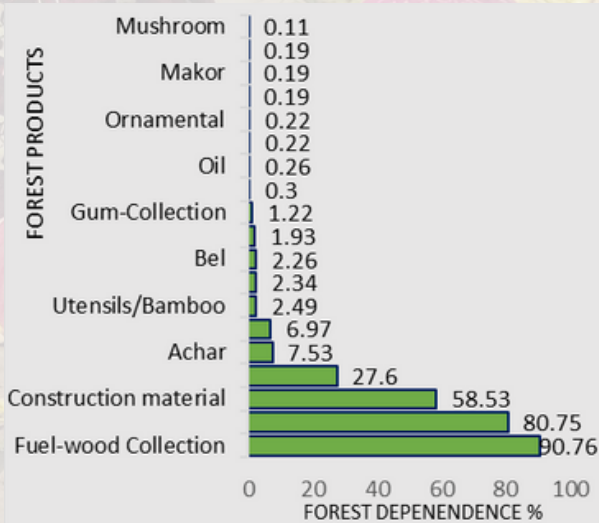
People are mostly engaged in farming and manual labour

High level of forest dependency

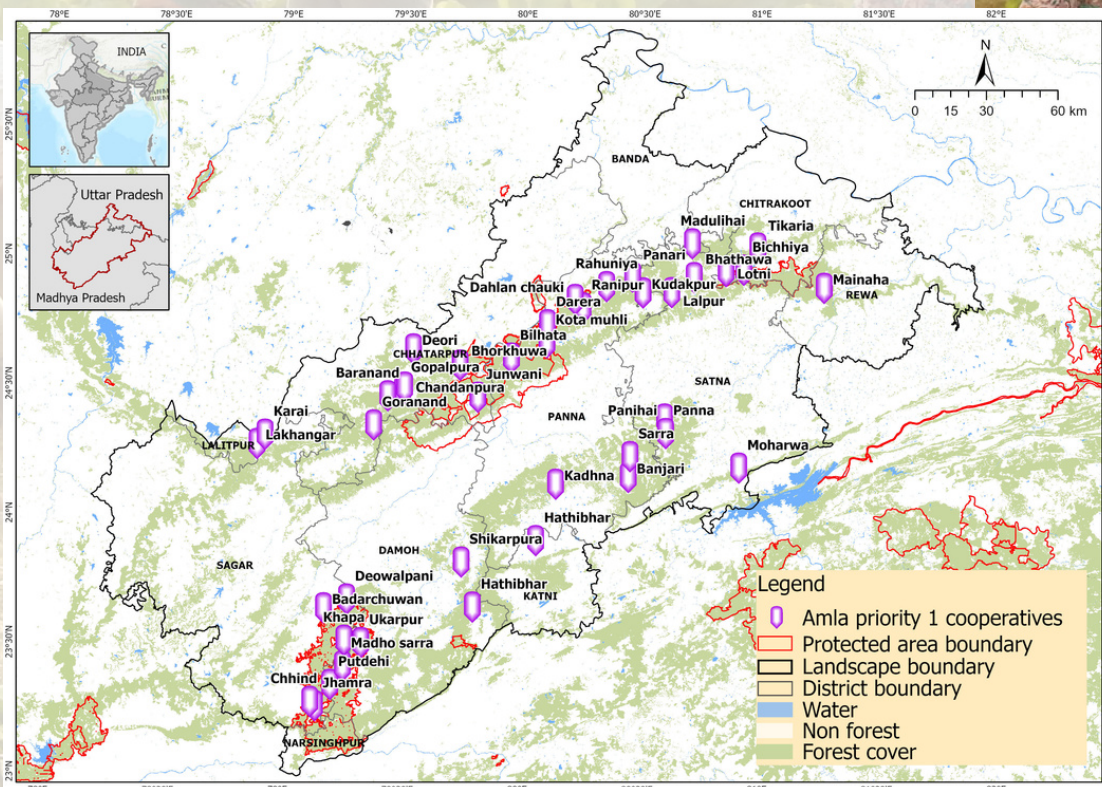
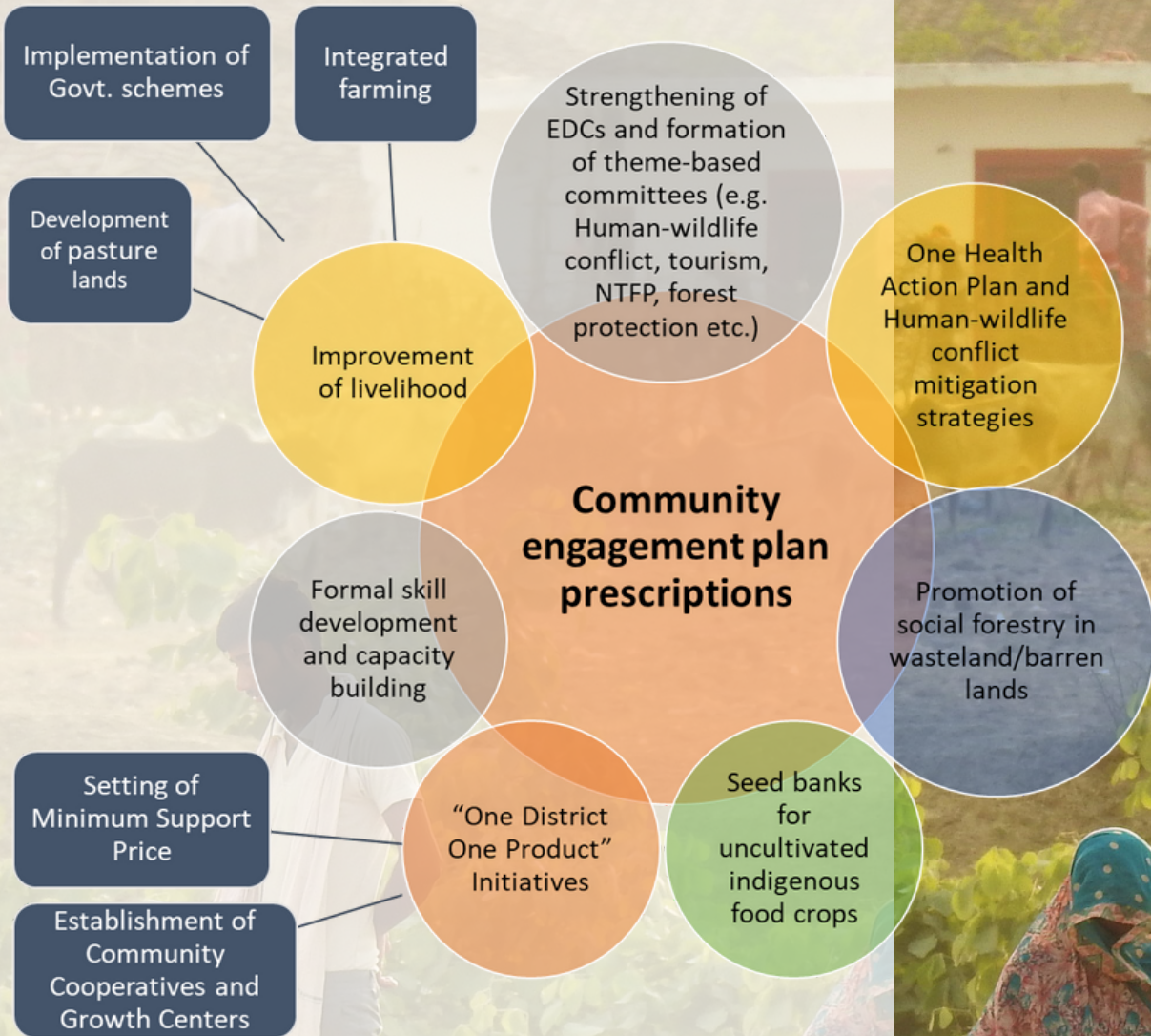
Low level of socio-economic development

Prevalence of issues concerning water, health, NTFP and human-wildlife conflict

Non-functional community institutions



PRESCRIPTIONS



INTEGRATED MANAGEMENT

SITUATION

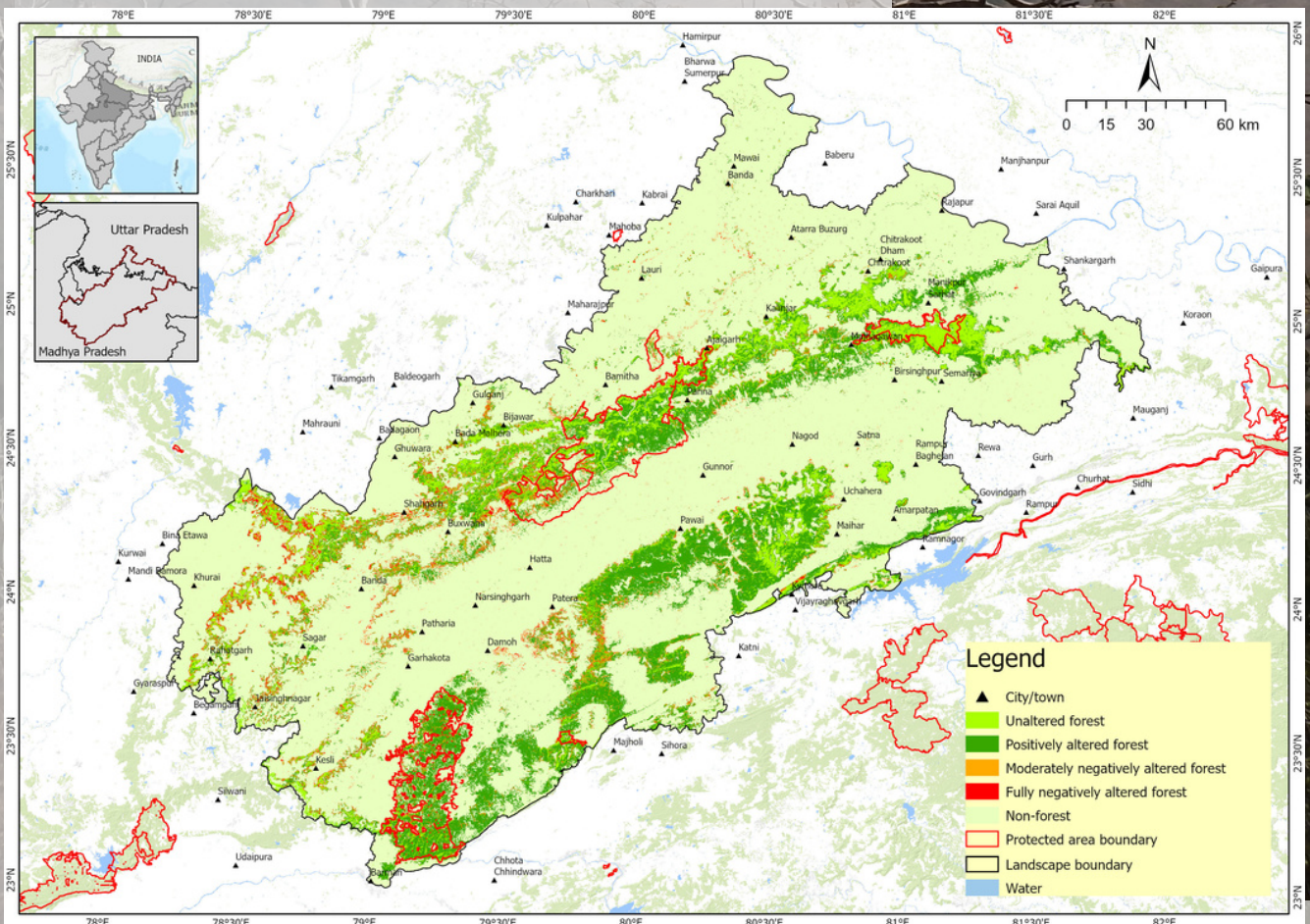
Forested landscapes are generally intact, with a mosaic of large patches of dense and degraded forests

There are more forests now than before in PAs, while substantial restoration options are available outside PAs and human-dominated areas

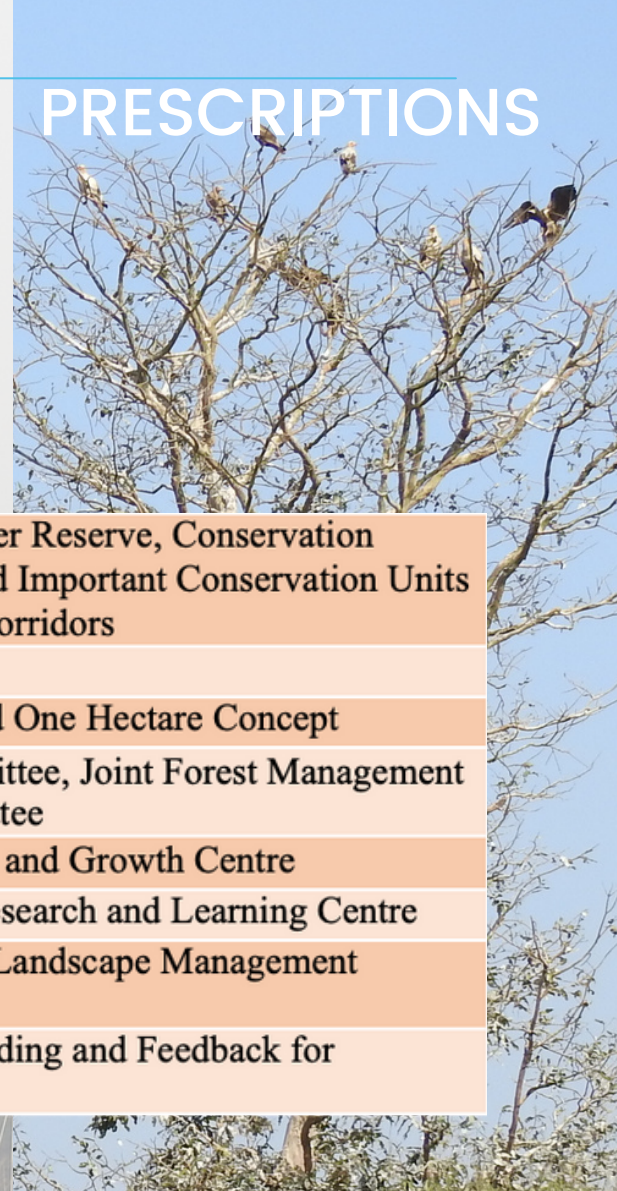
The landscape harbours a wide variety of wildlife species, with tiger, vulture and gharial being umbrella species, representing terrestrial, arboreal and aquatic systems, respectively

Among the least developed regions in the country (with high poverty, malnutrition and infant mortalities)

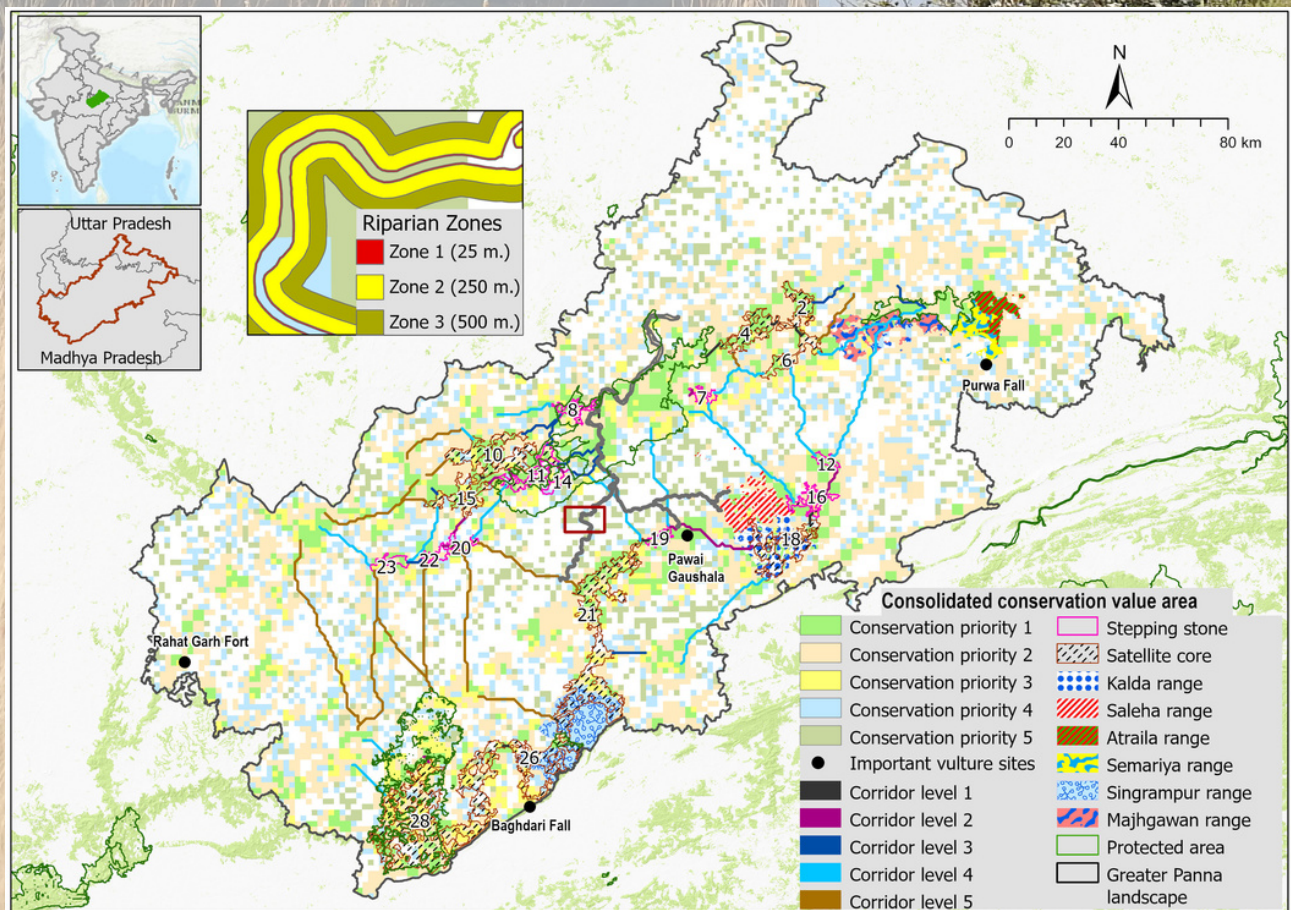
Livelihood comes from multiple sources, the major being agriculture-based and forest-based economies, thus, significant human-wildlife interface issues



PRESCRIPTIONS



- 1** Establishment and Declaration of Interstate Tiger Reserve, Conservation Reserves, Community Reserves, River-zone and Important Conservation Units including Satellite Cores, Steppingstones and Corridors
- 2** Structural Interventions
- 3** Restoration Programs based on One Village and One Hectare Concept
- 4** Engagement of Biodiversity Monitoring Committee, Joint Forest Management Committee and Gaushala Coordination Committee
- 5** Establishment of Green Economy Cooperatives and Growth Centre
- 6** Establishment and Functioning of Integrated Research and Learning Centre
- 7** Notification and Functioning of Greater Panna Landscape Management Council under the Special Purpose Vehicle
- 8** Integrated Research, Monitoring, Capacity Building and Feedback for Adaptive Management



QUANTITATIVE



TIGER CONSERVATION

Number of tiger reserves to be increased:	03
Total area to be consolidated:	7380 sq. km
Area Occupied by tiger in PTR to be increased:	22% (from current 41% to 63%)
Tiger population to be increased:	150-200

VULTURE CONSERVATION

Additional Important vulture sites to be protected:	04
Nesting and roosting area to be protected:	106 sq. km
Number of feeding sites to be protected:	129
Vulture rehabilitation centres to be established:	11



CROCODILIANS CONSERVATION

Habitat protection area to be increased:	22.8 sq. km
Number of gharial sites to be increased:	03
Gharial reintroduction area to be increased:	2.12 sq. km
Reduction in hatchling mortality to be accomplished:	50%
Number of gharial to be increased:	80



OUTCOMES

BIODIVERSITY CONSERVATION

Restoration through weed removal in PTR:	390 sq. km
Restoration through weed removal in GPL:	3800 sq. km
Restoration of vacated village area:	60 sq. km
Conservation inputs in river zone:	258.51 sq. km
High biodiversity area to be consolidated:	15548 sq. km
Conservation Reserve to be established:	01
Community Reserves to established:	02



COMMUNITY ENGAGEMENT

Villages to be focused:	500
Cooperatives/growth centres to be set up:	103
Model village tourism centres to be developed:	08

INTEGRATED MANAGEMENT

Number of SDG goals to be addressed:	11
Number of technical and problem-solving facilities to be established:	03
Number of model research and learning centre to be established:	01
Number of capacity building units/centres to be strengthened:	80
Total additional fund flow for the landscape:	3000 crores



ADMINISTRATIVE AND

Special Purpose Vehicle

Greater Panna Landscape Council (GPLC)

Integrated Research and Learning Centre (IRLC)

Greater Panna Technical Advisory Committee (GPTAC)

District Landscape Committee (DLC)

Mandates of GPLC

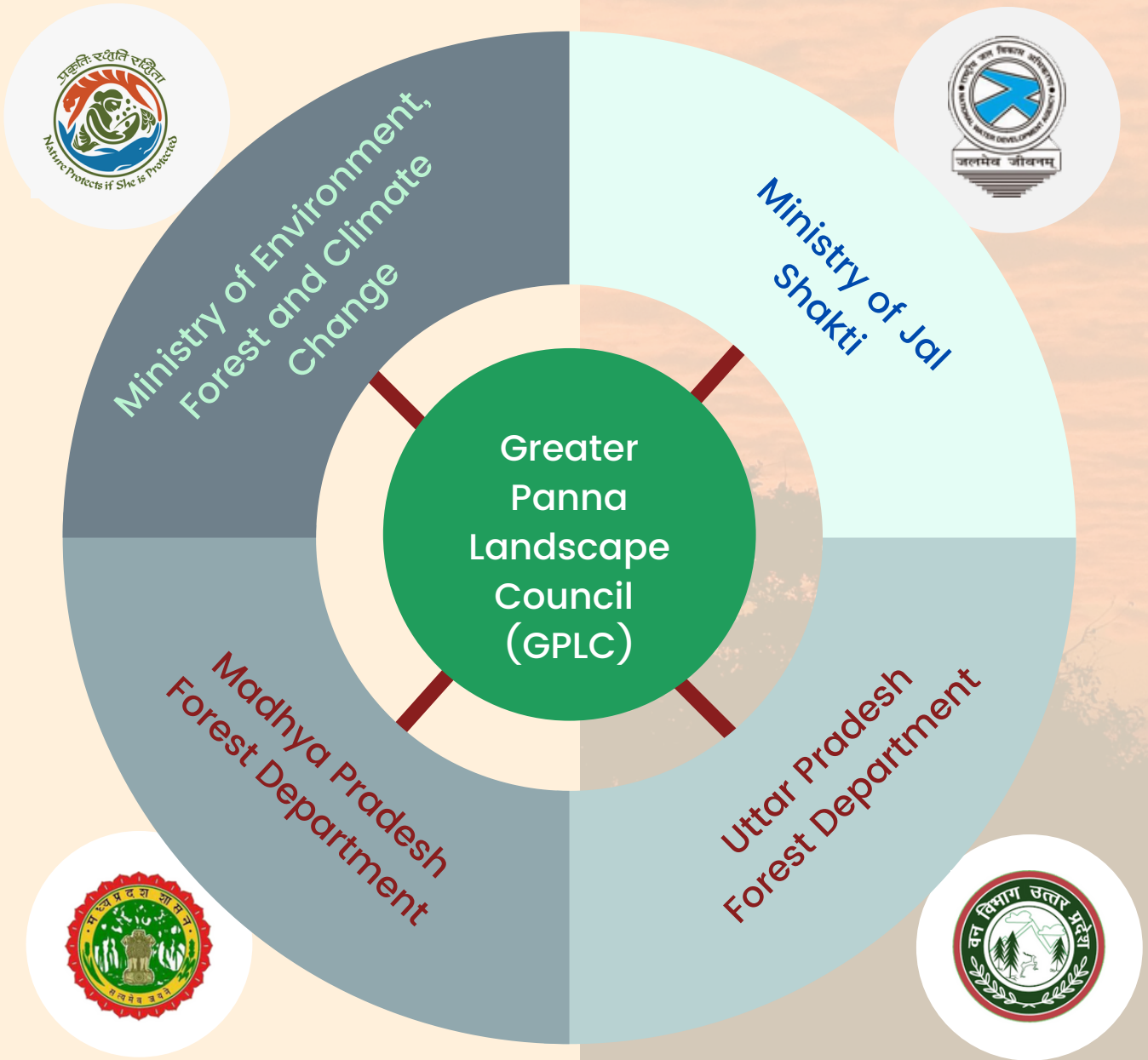
- Implementation of Integrated Landscape Management Plan
- Overseeing and monitoring the EMP activities
- Overseeing and monitoring the CAMPA activities for which the fund has been transferred by NWDA to MP Government

Mandates of IRLC

- Research and Monitoring
- Training and Capacity Development
- Advocacy and Outreach
- Technical Support to GPLC

IMPLEMENTATION STRATEGIES

Special Purpose Vehicle



Integrated Learning and Research Centre



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COMPONENTS AND BUDGET

S.No.	Components/ Themes	Total Cost (INR Crore)	Panna Tiger Reserve (INR Crore)	Other Protected Areas (INR Crore)	Forest Division (INR Crore)	District Administration (INR Crore)	Greater Panna Landscape Council & IRLC (INR Crore)
1	Tiger	826	390.58	70.80	94.40	123.90	146.32
2	Vulture	354	20.06	18.88	67.26	107.38	140.42
3	Crocodile	236	146.32	0	0	2.36	87.32
4	Biodiversity	354	97.94	70.80	80.24	29.50	75.52
5	Community	826	94.40	23.60	35.40	481.44	191.16
6	ILM	590	17.70	11.80	64.90	123.90	371.70
	Total	3186	767	195.88	342.20	868.48	1012.44

*Amount includes admissible taxes.

Other organizations will be engaged by GPLC through IRLC

TIMELINE

NSL (Now-Soon-Later/Long-term) Principle

Now: 2022/23 to 2023/24

Soon: 2023/24 to 2026/27

Later: 2023/24 to 2031/32

PROJECT TEAM

Advisors

Dr. V.B. Mathur, Dr. Dhananjai Mohan and Dr. S.P. Yadav

Name	Role	Responsibilities
Dr. K. Ramesh	Principal Investigator	Overall In-charge & Plan Development
Dr. J. A. Johnson	Co-Investigator	Aquatic Biodiversity Conservation Strategies
Dr. Bindu Raghavan	Collaborator	Veterinary Support & One Health Plan
Dr. Satyam Verma	Project Scientist	Field Coordination & Landscape Management Strategies
Ms. Manjari Malviya	Project Scientist	Office Coordination & Human-Wildlife Interface Management Strategies
Mr. R. Rajasekar	Senior Project Fellow	Tiger Conservation Strategies
Mr. Sankarshan Chaudhuri	Senior Project Fellow	Tiger Conservation Strategies
Mr. Dibyendu Biswas	Project Fellow	Vulture Conservation Strategies
Mr. Ajay Singh	Project Fellow	Terrestrial Biodiversity Conservation Strategies
Mr. Amit Kaushik	Project Fellow	Community Engagement Strategies
Mr. Vishal Prasad	Project Fellow	Herpetofauna Data Collection & Crocodile Conservation Strategies
Ms. Pallabi Mitra	Project Fellow	Aquatic Biodiversity Conservation Strategies
Ms. Nazrukh Sherwani	Project Fellow	Data Collection for Tiger & Terrestrial Biodiversity conservation strategies
Ms. Susmita Khan	Project Fellow	Avian Data Collection
Mr. Babu Lakhan	Project Fellow	Spatial Database Development
Ms. Priyanka Das	Project Fellow	Spatial Database Development
Mr. Supratim Dutta	Project Associate	Tiger Conservation Strategies
Ms. Kamna Pokhariya	Project Associate	Spatial Database and Modelling
Ms. Srishti Manna	Project Associate	Community Engagement Strategies
Ms. Zainab Khan	Project Associate	Avian Data Collection
Mr. Niket Alashi	Project Assistant	Crocodile Conservation Strategies
Mr. Shri Lak	Project Assistant	One Health Plan
Mr. Manu Mohan	Project Assistant	Tiger Telemetry & Plan finalisation
Ms. Vandana Tomar	Project Assistant	Spatial Database & Mapping
Mr. Ashish Kumar	Project Assistant	Project Management Unit
Mr. Rahul Gandhi	Project Manager	Project Management Unit
Ms. Priyanka Kumari	Technical Assistant	Project Management Unit

RESOURCE PERSONS

Name	Affiliation	Contribution
Dr. Rajesh Gopal	Former Member Secretary NTCA & Secretary General, Global Tiger Forum	Tiger & Integrated Landscape Management
Dr. V.K. Melkani	Former PCCF and HoFF, Tamil Nadu	Community & Integrated Landscape Management
Dr. K.K. Jha	Former PCCF, Uttar Pradesh and Professor, IIFM, Bhopal	Vulture Conservation
Dr. Justus Joshua	Director and Principal Scientist, Green Future Foundation, New Delhi	Biodiversity, Vulture & Integrated Landscape Management
Dr. Venkatesh Dutta	Associate Professor, Babasaheb Bhimrao Ambedkar University, Lucknow	Integrated Landscape Management
Dr. Ambika Aiyadurai	Assistant Professor, Indian Institute of Technology, Gandhinagar	Community Engagement
Dr. Aishwarya Maheshwari	Assistant Professor, Banda University of Agriculture and Technology, Uttar Pradesh	Integrated Landscape Management
Dr. Sujata Upgupta	Former Project Scientist at WII & Independent Researcher	Spatial Analyses
Dr. Neetika Mehta	Visiting Faculty, University of Petroleum and Energy Studies, Dehradun	Capacity Development
Dr. Ankita Sinha	Project Scientist, National Mission on Himalayan Studies, GBPNiHE, Almora	Biodiversity Analyses





*Paryavaran se Vikas
Vikas bhi Paryavaran bhi*





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