Climate-Resilient and Low-Carbon Development Pathways for Bihar

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Outline

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- Project Partners
- Adaptation
  - Approach to developing Strategy
  - Methods Used
  - Insights and Priority Recommendations
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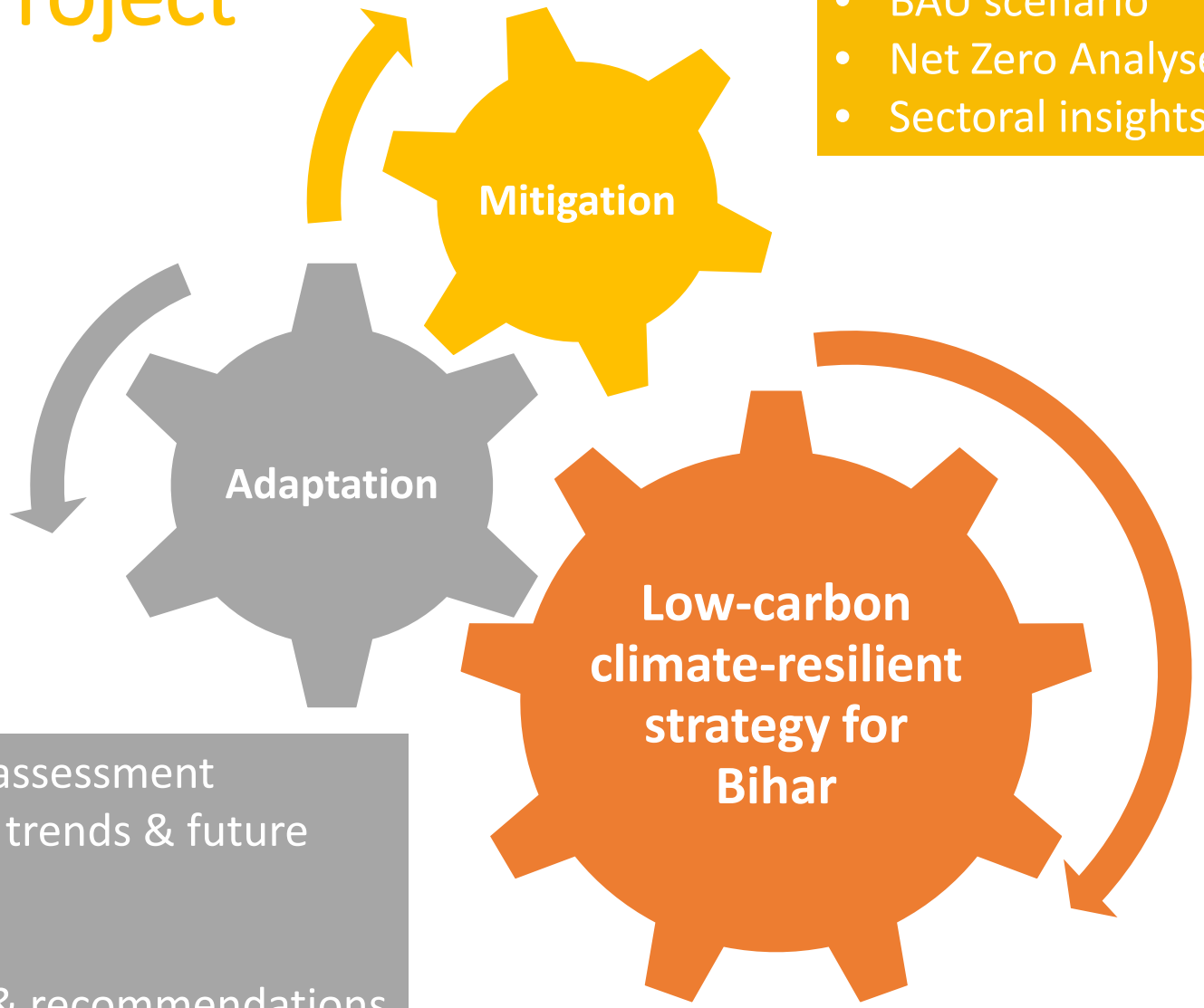
  - Methodology
  - Net Zero Bihar: Insights and Priority Recommendations

About the Project

- GHG Baseline
- BAU scenario
- Net Zero Analyses (2040 – 2070)
- Sectoral insights & recommendations



- Power
- Transport
- Buildings
- Industry
- Waste
- AFOLU

- Agriculture
- Water
- Forest & Biodiversity
- Disaster Management
- Health

- Policy landscape assessment
- Historical climate trends & future projections
- Risk Assessment
- Sectoral insights & recommendations

State-wide strategy including sectoral transitions, finance & governance mechanisms

Key Objectives

- Preparation of GHG emission inventory and carbon footprint analyses of relevant sectors.
- Development of climate impact scenarios and vulnerability assessments.
- Preparation of a strategy for climate resilient and low-carbon development pathways for 2070.

Project Partners

MoU b/w Government of Bihar through BSPCB, and UNEP

WRI India (Adaptation sectors and overall project coordination)

CEEW (Mitigation sectors)

Shakti Sustainable Energy Foundation

WRI India (Transport)

RTI International (Energy)

ICLEI South Asia (Waste)

CII (Buildings and Infrastructure)

Development Alternatives (Brick Kilns and Industries)

PMU supported by Shakti Foundation

(Based at BSPCB, Patna)

Adaptation

Approach to developing strategy

Short-term

- Current climate risks (climate "normal")

- Current practices (e.g. crops) – increase productivity/efficiency, best practices
- Current infrastructure (e.g. health) – augment
- Current limitations (e.g. capacity, information)

- Current maladaptation (e.g. overuse of groundwater)

- Build resilience & coping capacity

Medium-term

- New climate risks (e.g. higher temperature, more heavy rainfall days)

- New technologies, varieties
- Climate resilient practices, value addition, income diversification
- Climate proof infrastructure, Eco-DRR, NBS

- Reducing maladaptive trends
- Enhancing adaptive capacity

Long-term

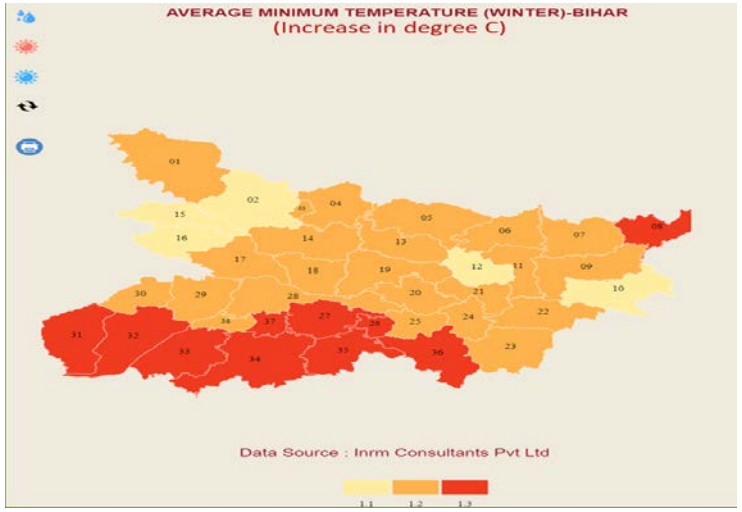
- Greater climate uncertainty, more extreme events

- Adaptive governance for an erratic climate future
  - Horizontal & vertical coordination
  - Decentralized decision-making
  - Social safety nets

Mainstream in domestic finance
Access international finance

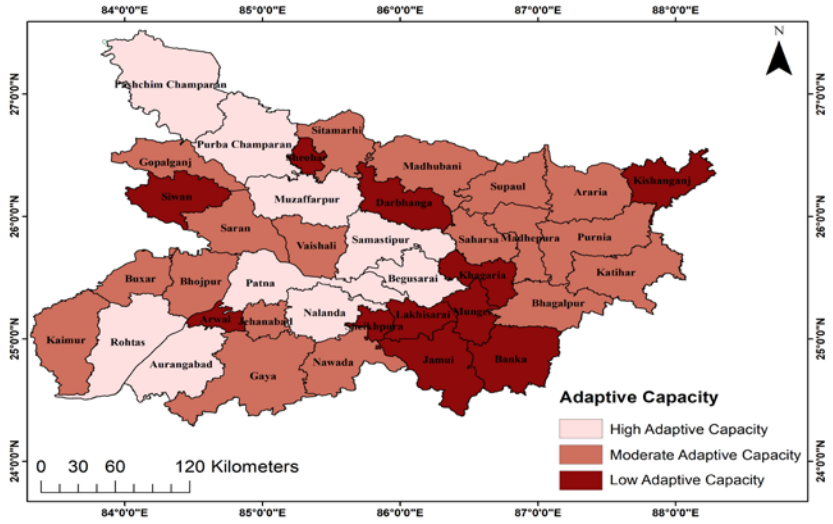
Methods used

Climate model projections



Remote sensing analysis

Adaptive capacity indicators



Policy review

Field visits in 38 districts

Prioritization of actions

Insights & Priority recommendations

- **Enhancing Capacity and Skill Development:**
  - Regular training on climate change & water resources management for elected representatives, department officials, PRIs, ULBs, community women leaders, etc
  - Centre for excellence for capacity building of forest officials
  - Skill development and market linkages for forest-based value-addition enterprises
- **Future-ready Infrastructure:**
  - Cold storage and warehousing for securing post-harvest value chains (e.g. increase packhouses from ~30 to ~2000)
  - Climate proofing infrastructure – electricity, water, hospitals, etc
- **Including the Excluded:**
  - Implement heat early-warning systems with communication targeted at the most vulnerable groups (farmers, construction workers, pregnant/lactating women, elderly, children)
  - Gender-sensitive disaster relief camps and cooling shelters
- **Finance:**
  - Investment in research in climate-resilient crop varieties and practices
- **Policy Action:**
  - Policy for integrated management of surface water & groundwater and prevention of groundwater overuse

Mitigation

Methodology

Growth and Development Strategy

Key areas of focus for Bihar's economic growth, development, and job creation
- Strategic growth sectors
- Energy intensive sectors
- Role of state's fiscal policy

Scenario Modeling

Modelling future pathways and scenarios
- Socio economics
- Energy demand and supply pathways
- Prices
- Emission pathways

Stakeholder Engagement

Continuous inputs to the modelling results, assessment of just transition, winners and losers, and potential policies that will need to be tested

Deep Dive Studies

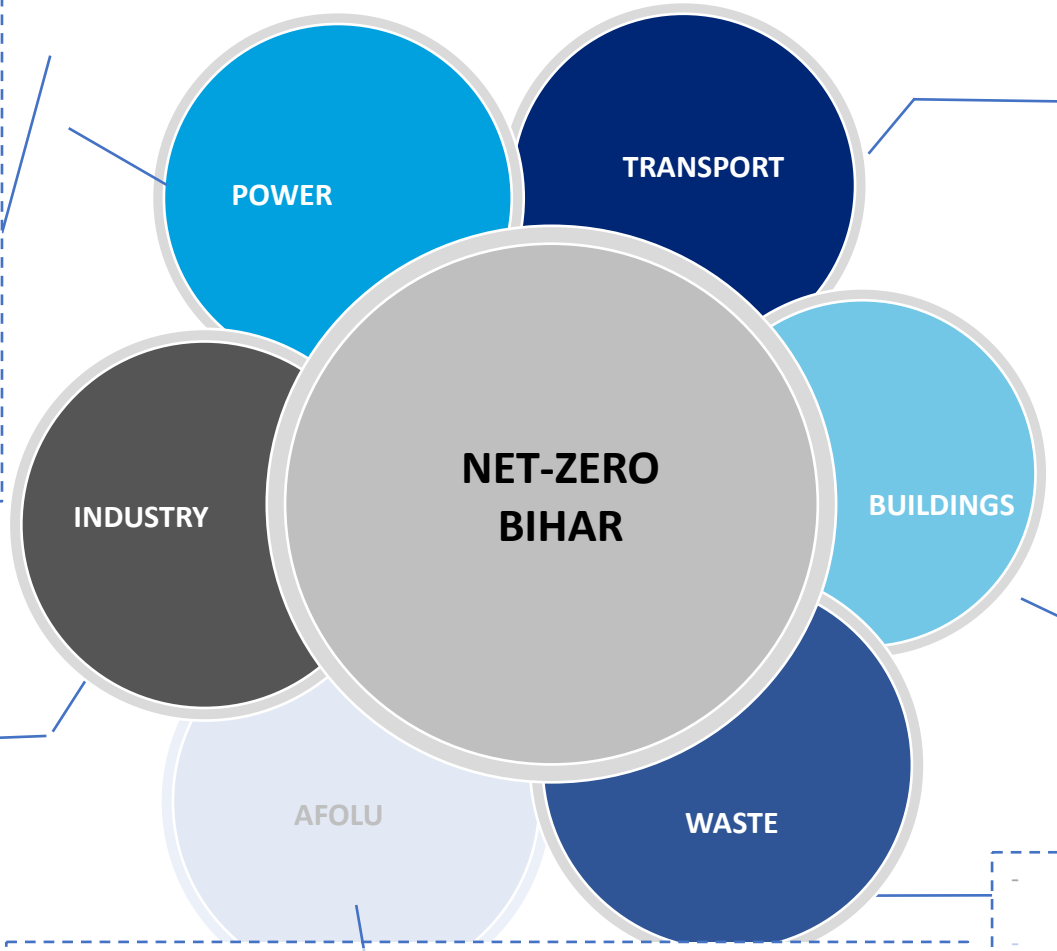
Detailed analysis of key emitting sectors with sectoral recommendations to bend the emissions curve, ensuring ground truthing of the macro level modelling

Net-Zero Bihar: Insights and Recommendations

- Electricity net-importer under net-zero scenario
- 30% lesser jobs in construction and 50% lesser jobs in O&M
- Enhance solar based electricity generation
  Target: 5 + 2.5 GW by 2030 and 25 GW by 2050
- Domestic manufacturing of solar modules imperative
  Target: 2 GW module manufacturing capacity
- Explore potential of SMRs
- Intervention: Create task force to engage with DAE and NPCIL, guide feasibility assessment, etc.
- Intervention: Pilot 'Greening the district programme'
- Geothermal potential of 50 MW in initial phase
- Institutional structure: SPV on the lines of TNGCC

- The current role and future outlook for public transport is limited without dedicated intervention
- Future growth of passenger four wheeler ownership would rise due to income increase
- 80% of survey respondents mention that they will buy EVs if capital cost is cheaper and charging infra is dependable
- Dedicated assessment of freight emission and interventions needed

Targets
- 25 public buses per lakh population in cities with 2 Lakh+ population, increasing to 40 by 2050 and 60 by 2070
- 100 electric buses per year addition to the fleet
- 30% annual EV registration by 2030, 100% by 2055
- 5000 fast chargers by 2030, 20000 by 2050
- Institutional structure: Create a State Transport Undertaking (STU) to achieve targets
- Establish State Urban Transport Fund (SUTF)



- Low manufacturing base
- Absence of integrated steel manufacturing and integrated cement plants
- Brick kiln, rolling mills, and sugar production other major industries in the state
- Tech related interventions are critical: zig-zag technology, RE based power generation by rolling mills, processing press mud by sugar mills to generate green energy
- Rooftop solar promotion for manufacturing sector
  Target
- 100% conversion of existing FCBTK technology to cleaner technologies
- Phasing out of burnt clay brick kilns in and around the districts having thermal power plants

- Retrofitting of buildings is costly and challenging, focus on enhancing appliance efficiency in existing buildings
- Move from ECBC compliant to green buildings to low carbon buildings and ultimately to net-zero buildings
- Have a target for per sq mt carbon footprint
- Smart meters are effective tools
- Target: Have at least one commercial net-zero building in each of the top 10 districts

- Livestock leads to two-third of AFLOU emissions followed by rice related methane emissions
- Harit Dhara by ICAR a potential solution, feed supply chain survey is needed
- SRI has significant potential gains, but highly labour intensive
- DSR a useful approach being undertaken
- Focus on organic farming for the next decade, then explore natural farming and learn from the AP experience
- Short duration agroforestry crops important

- Domestic wastewater accounts for over 80% of waste sector's emissions (2020 baseline year)

Targets
- 100% toilet access by 2025 (both urban and rural)
- 60% of urban domestic wastewater collected and treated by 2030
- 100% processing of urban solid waste by 2030 and 80% in rural areas
- 100% source segregation, collection and transport in urban areas by 2025 (80% in rural)

Next steps

- Draft report– 30 May
- Adoption of an institutional mechanism to implement the strategy and oversee the implementation of lighthouse projects
- Public dissemination workshops in Bihar
  - Plain language summary for communities
  - Outreach events

THANKS !