Reviving Mehrauli: Integrating Landscape Design for Ecological Restoration and Heritage Renewal

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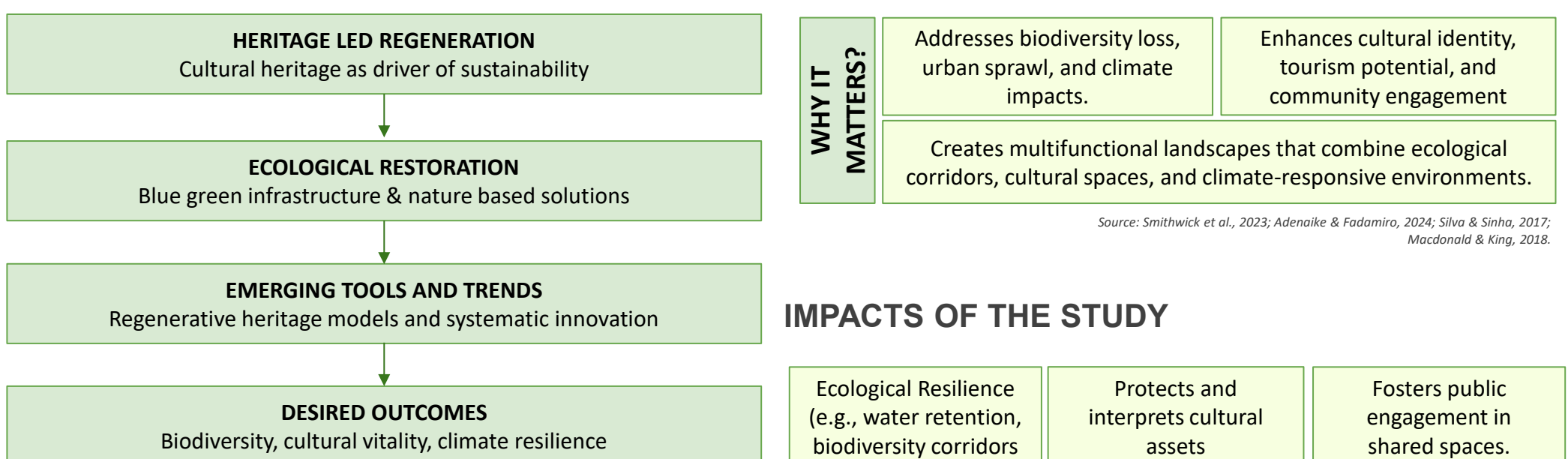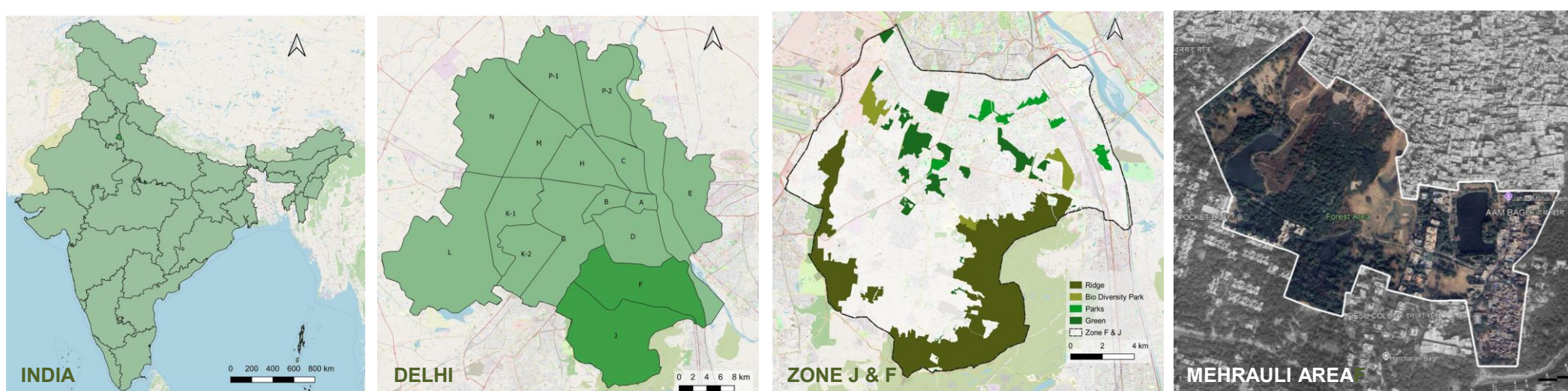2.Department of Landscape Architecture, School of Planning and Architecture, New Delhi
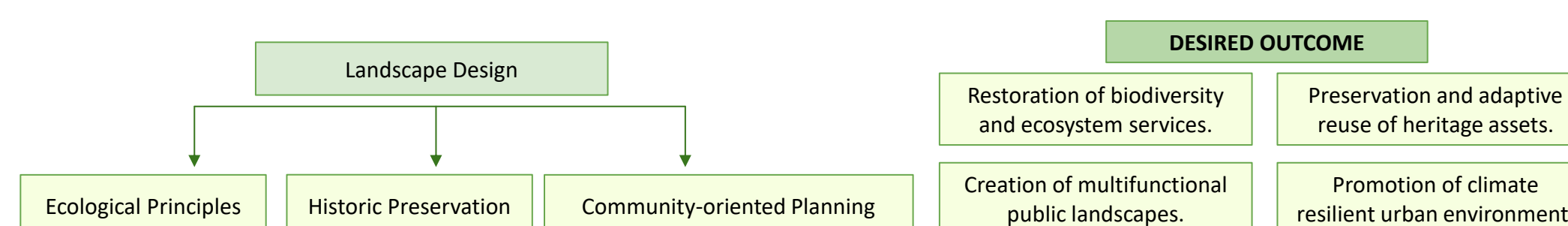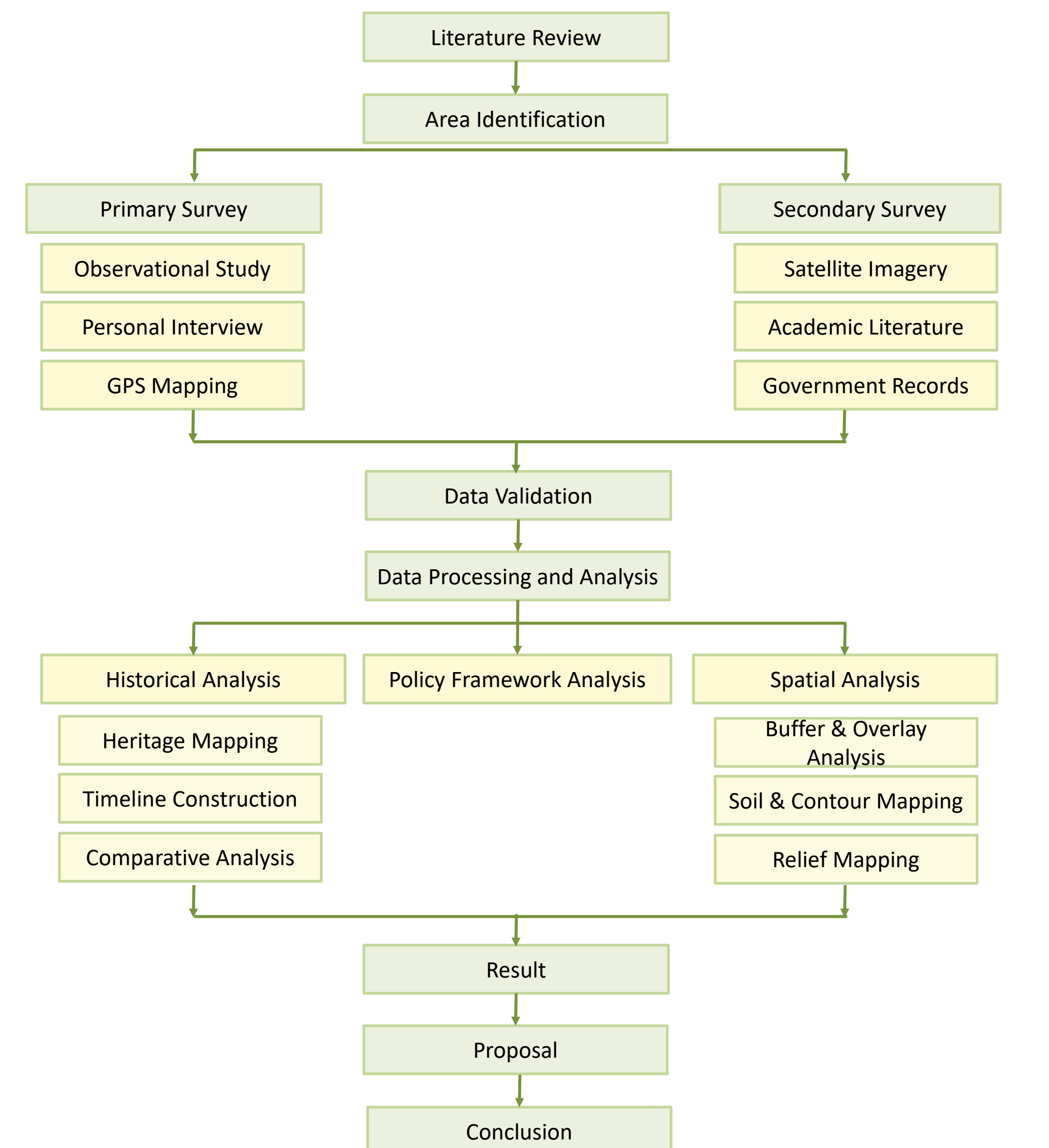
INTRODUCTION & AIM

AIM : To revive Mehrauli's ecological and cultural landscape through sustainable design
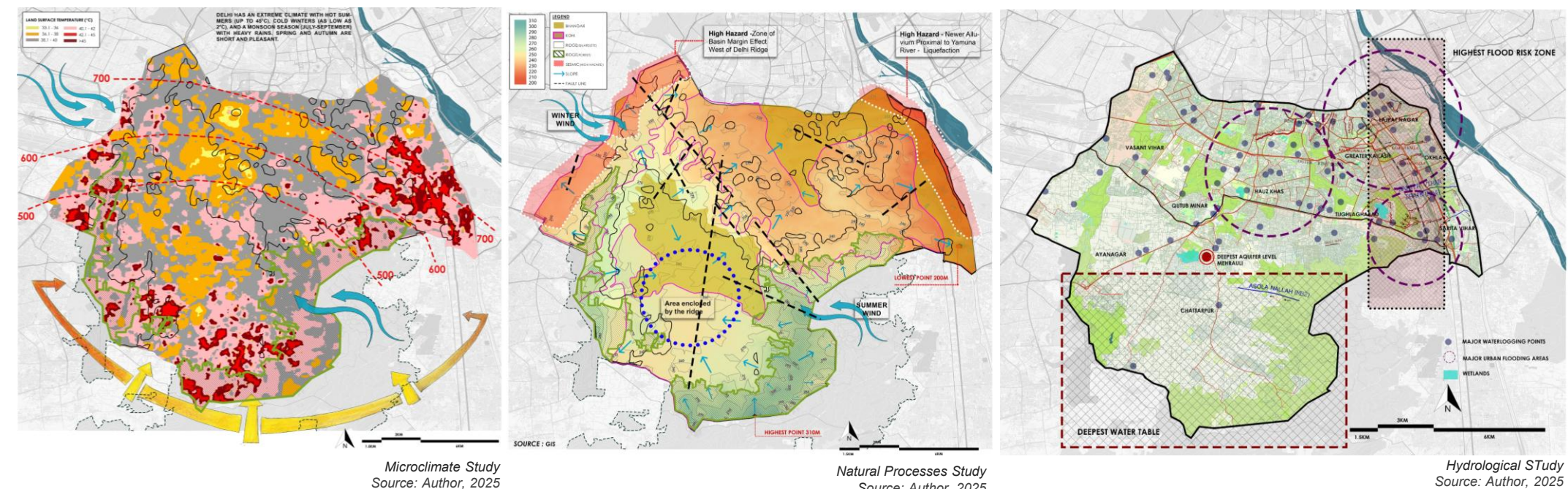
OBJECTIVE :
- **Ecological Restoration & Climate Resilience,**
- **Heritage Renewal & Cultural Preservation,**
- **Sustainable Urban Development,**
- **Community, Engagement & Awareness**

INDIA | DELHI | ZONE J & F | MERRAULI AREA

HERITAGE LED REGENERATION
Cultural heritage as driver of sustainability

ECOLOGICAL RESTORATION
Blue green infrastructure & nature based solutions

EMERGING TOOLS AND TRENDS
Regenerative heritage models and systematic innovation

DESIRED OUTCOMES
Biodiversity, cultural vitality, climate resilience

WHY IT MATTERS?

Addresses biodiversity loss, urban sprawl, and climate impacts.

Enhances cultural identity, tourism potential, and community engagement

Creates multifunctional landscapes that combine ecological corridors, cultural spaces, and climate-responsive environments.

Source: Smithwick et al., 2023; Adenaike & Fadamiro, 2024; Silva & Sinha; 2017; Macdonald & King, 2018.

IMPACTS OF THE STUDY

Ecological Resilience (e.g., water retention, biodiversity corridors

Protects and interprets cultural assets

Fosters public engagement in shared spaces.

METHOD

- Literature Review
- Area Identification
- Primary Survey
  - Observational Study
  - Personal Interview
  - GPS Mapping
- Secondary Survey
  - Satellite Imagery
  - Academic Literature
  - Government Records
- Data Validation
- Data Processing and Analysis
- Historical Analysis
  - Heritage Mapping
  - Timeline Construction
  - Comparative Analysis
- Policy Framework Analysis
- Spatial Analysis
  - Buffer & Overlay Analysis
  - Soil & Contour Mapping
  - Relief Mapping
- Result
- Proposal
- Conclusion

- Landscape Design
  - Ecological Principles
  - Historic Preservation
  - Community-oriented Planning

DESIRED OUTCOME
- Restoration of biodiversity and ecosystem services.
- Preservation and adaptive reuse of heritage assets.
- Creation of multifunctional public landscapes.
- Promotion of climate resilient urban environment.

RESULTS & DISCUSSION

Microclimate Study Source: Author, 2025
Natural Processes Study Source: Author, 2025
*Hydrological STudy Source: Author, 2025*

The microclimate analysis reveals that the Ridge areas with Kohi soils have lower water-holding capacity, higher runoff & erosion. Temperature variation is strongly influenced by the urban heat island, where built-up areas register higher temperatures compared to vegetated areas.

The topographical analysis highlights a distinct, soil-geology-vegetation relationship, with higher water retention in Bangar soils of South Delhi and reduced capacity in the Kohi soil. The region exhibits zones of high seismic hazard, especially along the basin margins and near the Yamuna.

The hydrological assessment indicates that water availability in the region. Groundwater levels vary greatly, with deeper aquifers located in the south and southeast, while the Yamuna basin area is prone to flooding and urban waterlogging. Delhi Police has identified 96 flood-prone points in Zone J & F and recorded 250+ flooding incidents in the last five years.


ZONAL POLICY
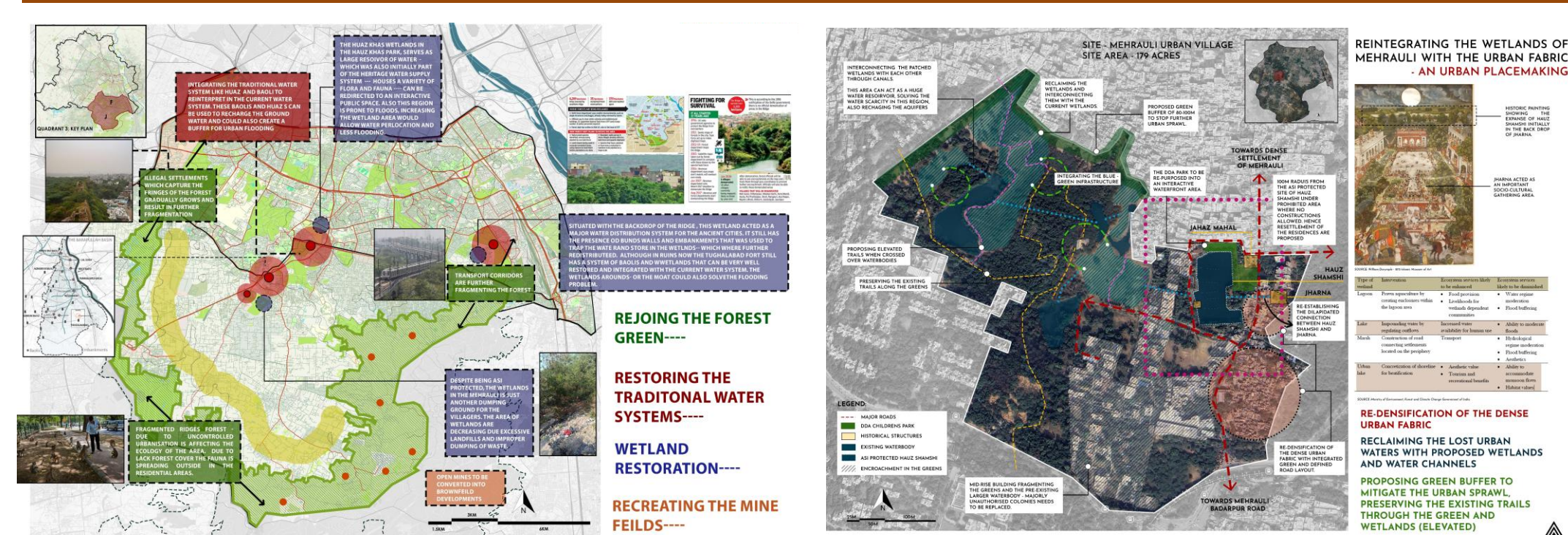
FOCUS AREA – MEHRAULI POLICY
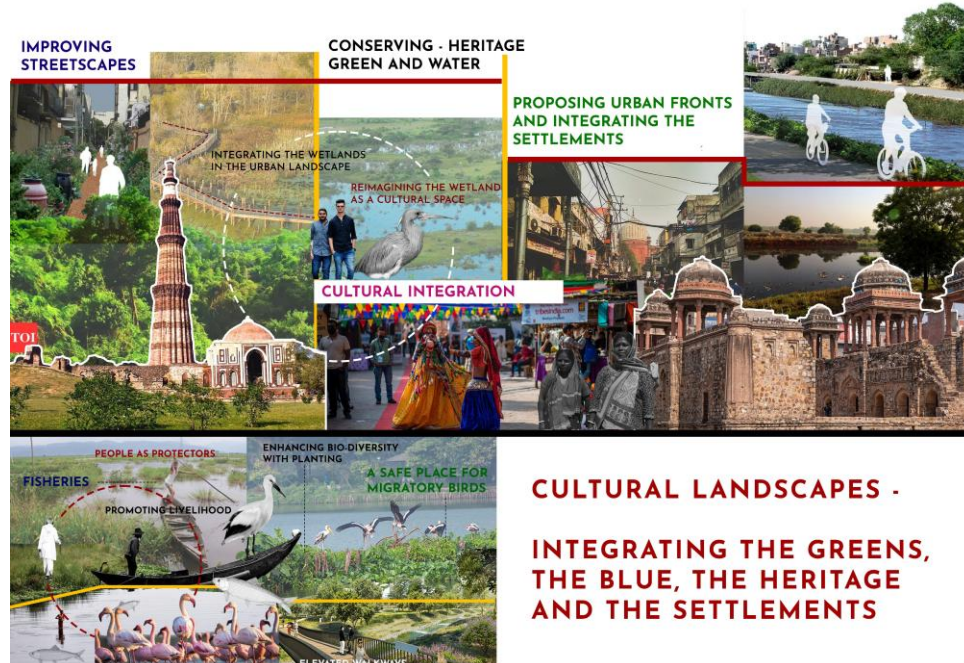
ECOLOGICAL CULTURAL & HERITAGE INTEGRATION

Ecological and cultural integration in Mehrauli's design policy emphasizes the revival of historical water systems, native vegetation, and ridge ecology alongside heritage conservation. Landscape interventions prioritize Baoli's, Hauz, and green corridors as multifunctional assets. By aligning ecological restoration with cultural continuity, the policy fosters resilient urbanism while reinforcing Mehrauli's historical identity as an ecologically adaptive settlement.
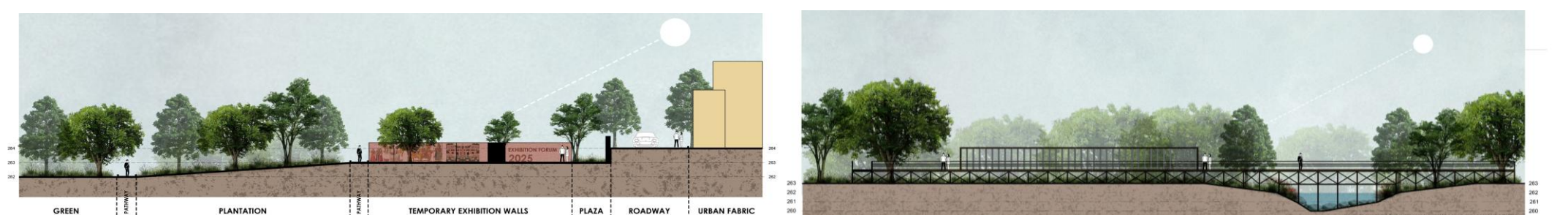
CONCLUSION

The integration of wetlands, ridge forests, and heritage systems in Mehrauli reflects a holistic strategy for sustainable urbanism. Wetlands enhance groundwater recharge and mitigate flooding, while ridge forests provide biodiversity support, soil stability, and climatic regulation. Simultaneously, historic waterworks and cultural landscapes preserve collective memory and identity. Together, these interconnected systems exemplify a resilient urban framework, where ecological restoration and heritage conservation operate synergistically to secure sustainability and reinforce Mehrauli's significance as an adaptive cultural-ecological landscape.

FUTURE WORK / REFERENCES

MacDonald, E., & King, E. G. (2018). Novel ecosystems: A bridging concept for the consilience of cultural landscape conservation and ecological restoration. Landscape and Urban Planning, 177, 148–159. https://doi.org/10.1016/j.landurbplan.2018.04.015 ([Academia][1], [King Lab][2])Smithwick, E. A. H., Baka, J., Bird, D., Blaszscak-Boxe, C., Cole, C. A., Fuentes, J. D., Gergel, S. E., Glenna, L. L., Grady, C., Hunt, C. A., Iulo, L. D., Kaye, J., & Keller, K. (2023). Regenerative landscape design: An integrative framework to enhance sustainability planning. Ecology and Society, 28(4).

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