

1. Geospatial Analysis for Renewable Energy Site Selection(ADITYA)

Focus: Role of GIS & satellite imagery in identifying optimal solar/wind sites.

Key Points:

- Remote sensing (Landsat/Sentinel) for land suitability analysis.
- Machine learning (CNNs) for classifying urban renewable potential.
- Case studies from other megacities (e.g., Berlin, Tokyo).

Gap: Limited real-time weather integration in Delhi-specific studies.

2. Weather Data Integration for Energy Yield Prediction (SAMYAK)

Focus: Solar irradiance/wind speed data to improve feasibility assessments.

Key Points:

- NASA POWER/IMD datasets for Delhi's renewable potential.
- AI models (LSTMs) for forecasting energy generation.
- Pollution's impact on solar efficiency (e.g., smog-induced dimming).

Gap: High-resolution weather APIs rarely combined with geospatial tools.

3. Policy & Environmental Impact of Renewable Transitions (ATHARVA)

Focus: Delhi's policies, emission reduction, and stakeholder challenges.

Key Points:

- India's Solar Mission vs. land acquisition barriers in Delhi.
- Health/CO₂ benefits of replacing coal plants (IIT-Kanpur studies).
- Public-private partnerships (e.g., SECI, discoms).

Gap: Few quantify health gains from retiring thermal plants.

4. Non-Renewable Energy's Role & Transition Challenges(YASH)

Focus: Delhi's coal/gas dependence and phase-out hurdles.

Key Points:

- Badarpur plant closure (2018) and stranded asset risks.
 - Air pollution links (PM2.5 from coal plants).
 - Battery storage/gas peakers as transition aids.
- Gap:** Lack of just transition models for Delhi's coal workers.