

Building a Framework for Comprehensive Assessment of Social-Ecological Systems



What It Is

This project seeks to change the status quo of how we evaluate and handle various landscapes including farms, forests, and grasslands with the help of modern data and technology. It is focused on developing digital solutions which assist rural populations, as well as government and organizational actors in the effective monitoring and recuperation of the landscapes.

The Problem It Solves

Traditional landscape management often only focuses on one matrix, i.e., carbon sequestration, without considering other factors like biodiversity inclusivity, water availability, and other social and economic factors. Due to this limited consideration, unintended disruptions may often happen. In this project, we will adopt a broader holistic framework to ensure these interdependencies are modeled, enabling better risk identification, decision-making, and sustainability practices.

The Technology It Uses

- Data Modeling: Combines satellite data and local insights to track year-on-year changes in variables such as forest cover, cropping intensity, surface water availability, and groundwater stress.
- Machine Learning & Causal Modeling: Applies techniques like structural equation modeling to identify causal relationships between different landscape features and predict potential risks.
- Interactive Tools:
 - > Commons Connect: A participatory platform enabling communities to learn about their environment, report observations, and propose sustainable practices.

- Know Your Landscape: A dashboard designed for government agencies and NGOs to analyze landscapes and plan interventions tailored to local challenges.
- **Digital Public Infrastructure CoRE Stack:** A shared ecosystem of datasets, algorithms, and tools that:
 - > Provides geospatial layers on cropping patterns, water tables, and forest health.
 - > Highlights fairness in resource distribution through analytics.
 - Facilitates the integration of community demands into government and market-driven programs.
 - > Simplifies ecosystem service payments, including carbon and water credits.





Key Goals

- Assist communities in comprehending their environments with the help of available tools and information.
- Generate useful information in a bid to manage resources effectively.
- Lower the barriers to entry to ecosystem services like carbon and water credits.
- Establish a system intensive enough to measure the sustainable impact of landscapes and their resilience.

Collaborators

A diverse network of academic institutions, environmental organizations, and tech partners supports the project. Key collaborators include:

- IIT Delhi
- Magasool
- FES (Foundation for Ecological Security)
- GIZ
- Say Trees
- Rainmatter Foundation
- CommonsTech Foundation
- Gram Vaani
- PRADAN
- TRIF
- WASSAN



THANK YOU!

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