

Strategic Plan for the Center for Integrated Earth System Information (CIESIN)

September 2024

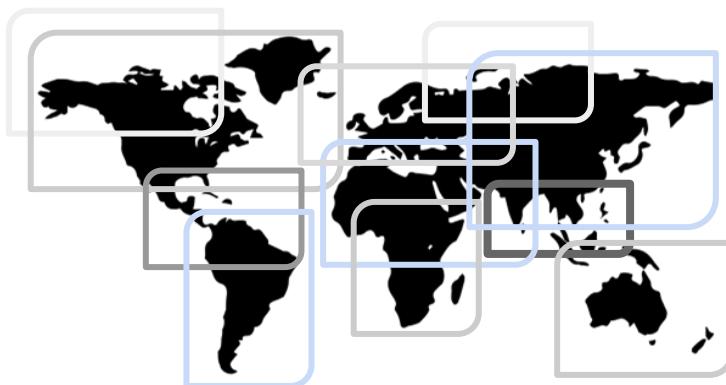
The Center for Integrated Earth System Information (CIESIN), formerly known as the Center for International Earth Science Information Network, is a center within the Columbia Climate School at Columbia University. Established as an independent non-profit in 1989 in Michigan, CIESIN moved to Columbia's Earth Institute in 1998, and became a part of the Columbia Climate School in 2022. This strategic plan extends from 2024-2027.

Mission, Values, Purpose, and Vision

CIESIN's **mission** is to harness cutting edge geospatial technologies to **support integrated analysis of the human-environment system** and to **empower decision-making** through collaborative research, teaching, and data production, stewardship and dissemination.

CIESIN **values** inclusive, impactful, and interdisciplinary teamwork.

Our **purpose** is to **build bridges** among academics, practitioners, decision-makers, and communities globally to **co-produce trustworthy geospatial data and analyses** about interactions between humans and the environment.



CIESIN's **vision** is to contribute to a world with **equitable societal benefits and sustainable environmental outcomes** through data, research, and teaching.

CIESIN's Core Strengths

- World class reputation for data development and data management
- Deep knowledge of geospatial data and analysis
- Strong capabilities in research on human-environment interactions through integrated data analysis
- Collaborative leadership & diverse staff
- A healthy workplace and strong reputation that attracts high quality staff and top visiting scholars and student interns
- Leadership in open data, citizen science, and data co-production processes

Focal Areas

Disasters

Natural hazards mapping
 Collaboration with humanitarian organizations
 Research on disaster risk and displacement

Climate Mobility

Research and teaching on climate-related migration
 Research on climate-induced displacement
 Statistical modeling of migration determinants
 Projections of future climate mobility
 Focal point for the Global Knowledge Hub of Global Centre for Climate Mobility

Population & Poverty

Gridding of demographic and socioeconomic data
 Development and public health interventions
 Spatial analysis of demographic trends
 Spatial population projections
 Poverty mapping
 Population-environment research
 Teaching population for sustainable development

Infrastructure

Roads data development
 Mapping of critical infrastructure
 Siting of climate-smart infrastructure

Climate Vulnerability & Adaptation

Climate vulnerability and risk mapping
 Climate vulnerability and adaptation assessments
 Research on urban climate risk and resilience
 Development of social vulnerability indices

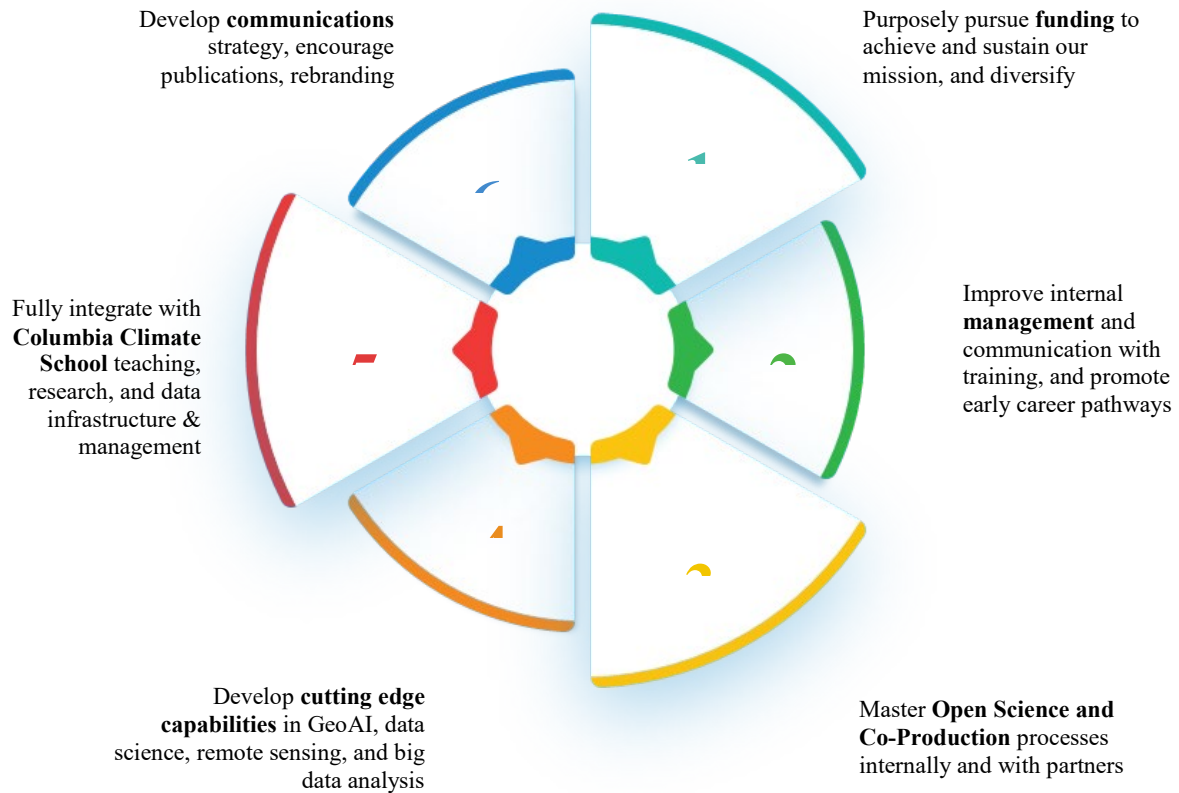
Human - Environment Systems

Data & research on environmental health
 Data, research and teaching on environmental / climate justice
 Development of decision-support tools
 Research on land use and land cover change
 Remote sensing applications
 Experience with field research methods
 Expertise in data integration and co-creation

Data Science & Info Management

Teaching in GIS programs across the university
 Maintenance of high-end computing infrastructure
 Management of data center activities
 Expertise in data policy
 Leadership in open and participatory data science
 Leadership in Group on Earth Observations (GEO), CODATA, World Data System, CoreTrustSeal, and Research Data Alliance

Strategic Initiatives



CIESIN will pursue these initiatives through the following approaches (clockwise from top right):

1. Purposefully pursue funding

- a. Motivation: Blend opportunistic approaches as new calls for proposals emerge with strategically focused project development
- b. Plan:
 - i. Run each funding opportunity through a set of criteria:
 1. Does it align with our strategy?
 2. Does it diversify our funding base?
 3. Does it contribute meaningfully to overhead?
 4. Does it contribute to early career staff development?
 - ii. Continue to diversify funding sources
 - iii. Submit 2-3 larger (>\$250k) proposals per year

2. Promote good management and internal career pathways

- a. Motivation: Continue to create a healthy work environment by improved management and working with more junior staff to identify career pathways
- b. Plan:
 - i. Management: Encourage CIESIN managers to take management training; increase communication on priority setting on staff work.
 - ii. Career progression: Collegiate relationships, the work is meaningful, diversity of tasks, and there are opportunities for growth

3. Master open science and co-production processes

- a. Motivation: Build on CIESIN's leadership in open and participatory science that ensures that scientific results are meaningful, equitable and impactful for society
- b. Plan:
 - i. Internally - for integrated data / solutions: Grow our expertise in the integration of data infrastructure (IT), open spatial technologies (Geospatial Applications), and engagement processes (Science Applications)
 - ii. Local external partners - for integrated, relevant, and just data / solutions: Co-develop feedback mechanisms for data validation and co-production with local communities and decision-makers. Create Integrated platform/ process for data validation and co-production. Contribute to the Environmental & Climate Justice at Columbia initiative by working with local EJ partners.
 - iii. Global external partners - for impactful, integrated, relevant, and just data / solutions at scale: Foster long-term strategic partnerships with complementary institutions and networks (e.g., via Columbia Global Centers, IDEAMAPS Network, JRC, GEO, CODATA/WDS, UN GCCM, and IPCC).

4. Conduct cutting edge data analysis

- a. Motivation: Maintain leadership in cutting edge geospatial and complex data analysis, data integration, statistics, and mapping
- b. Plan:
 - i. Develop capabilities in GeoAI and data science (through training and hiring) to produce higher quality, more detailed data more quickly and efficiently
 - ii. Identify new opportunities in big data analysis (e.g., remote sensing, social media, new sources of migration data) and modeling work

5. Integrate into Columbia Climate School

- a. Motivation: Demonstrate CIESIN's value proposition to the Climate School and the larger Columbia community
- b. Plan:
 - i. Grow the portfolio of courses taught by CIESIN staff at the Climate School, especially through the certificate program in Climate Systems and Analytics
 - ii. Continue to collaborate with Climate School colleagues and external partners on cutting edge research related to climate risk, vulnerability, and mobility
 - iii. Identify opportunities to increasingly integrate CIESIN's work into the Climate School strategic framework
 - iv. Contribute to committees (e.g., program development, CS Fellows Program, the Environmental and Climate Justice @ Columbia)
 - v. Position CIESIN as a leader within the Climate School data infrastructure and management plan

6. Increase institutional presence

- a. Motivation: Communicate CIESIN's strengths in order to raise awareness and develop new partnerships
- b. Plan:
 - i. Develop a communications plan and implement it
 - ii. Identify junior staff with passion for external outreach and make communications part of their portfolio of activities
 - iii. Regularly maintain website and social media presence
 - iv. Promote data / research publications in peer reviewed journals to raise CIESIN external profile, building on existing data documentation
 - v. Attend and present work at academic and applied research conferences
 - vi. Rebrand CIESIN but retain its acronym