Increasing Resilience Using Geospatial Infrastructure, a Digital Twin, and a Geographic Approach

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Building a More Resilient and Sustainable Future

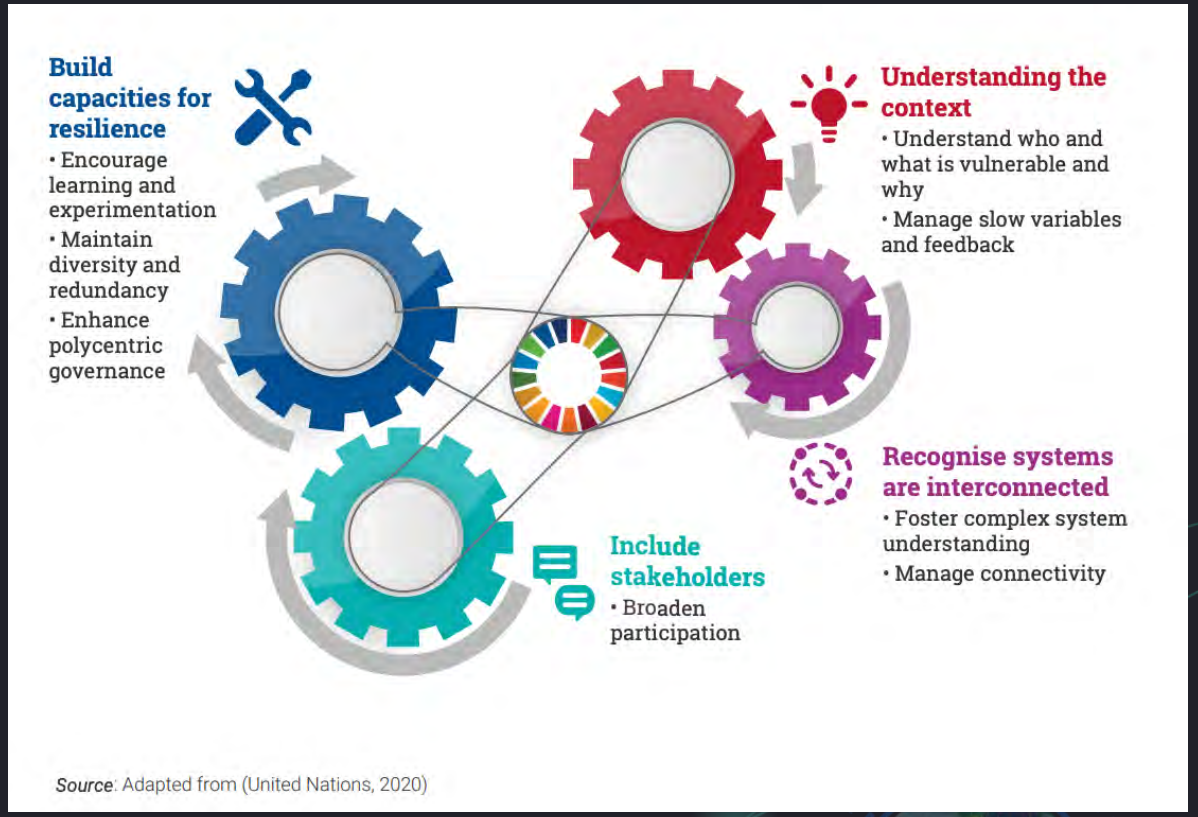
Requires Urgent and Collective Action

"…Measuring what is valued reflects societal priorities and provides the basis for the policies to follow. This is why it has never been more important that we understand how to measure and achieve resilience. "

– Mami Mizutori, UNDRR

GAR Special Report 2023

Mapping Resilience for the Sustainable Development Goals



Source: Adapted from (United Nations, 2020)

Image: World Economic Forum, Global Risks Perception Survey 2022-2023

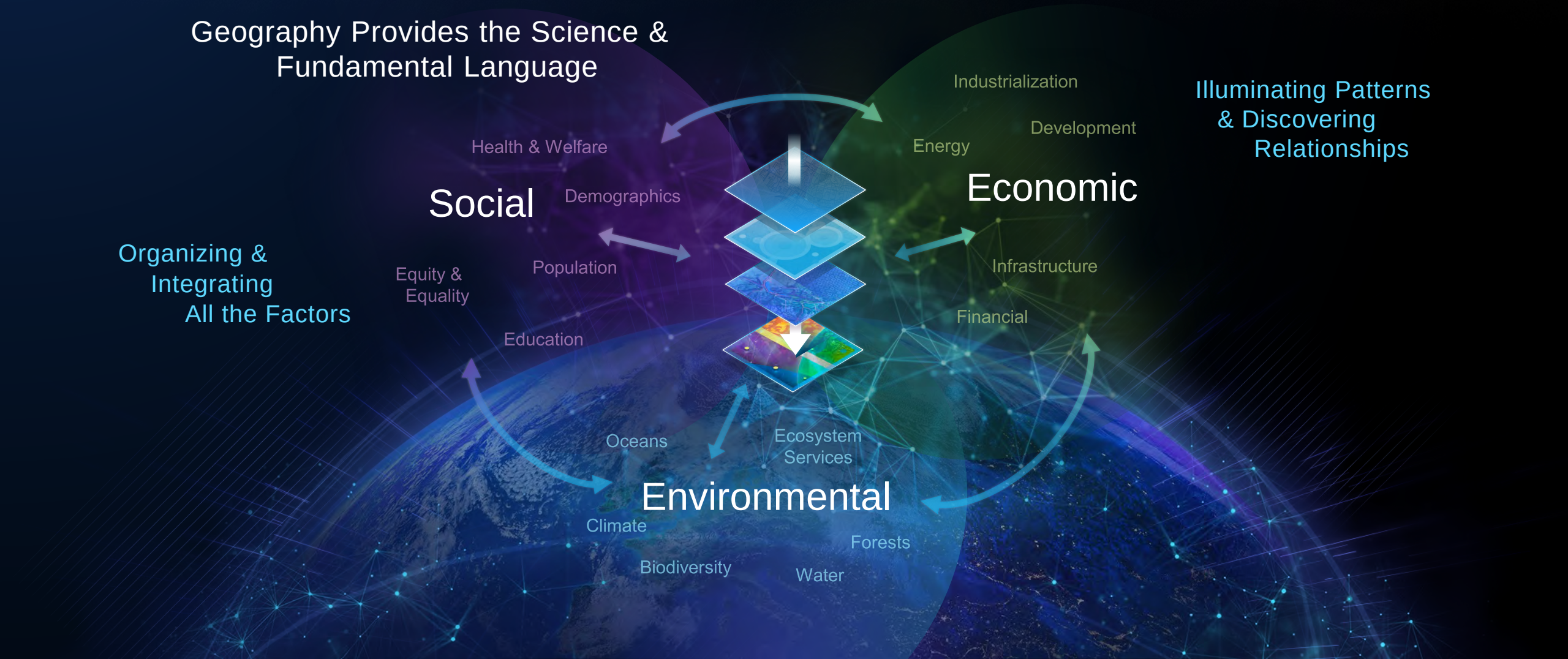
Resilience Starts with Geography . . .

Understanding the Systemic Nature of Risk

Geography Provides the Science & Fundamental Language

Organizing & Integrating All the Factors

Illuminating Patterns & Discovering Relationships



It Requires an Integrated Geospatial Infrastructure

Enabling a Next-Gen National Spatial Data Infrastructure…



Enterprise GIS



Geospatial Infrastructure



Geospatial ecosystems

Single Organization → National GIS

Knowledge

Understanding

Action

Which Enables a Living Digital Twin

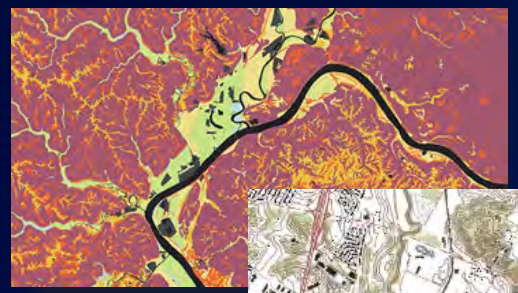
Supporting Disaster Risk Reduction

Buildings (BIM)

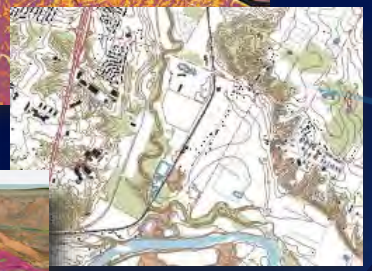
Networks (NIM)

Landscapes (LIM)

Cities (CIM)



Environment



Topographic

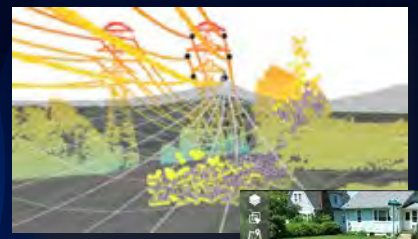


Facilities / Indoors





Plants / Structures



Utilities / Telecom



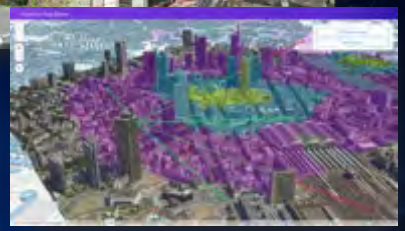
Pipelines



Roads and Highways



Smart City



Planning



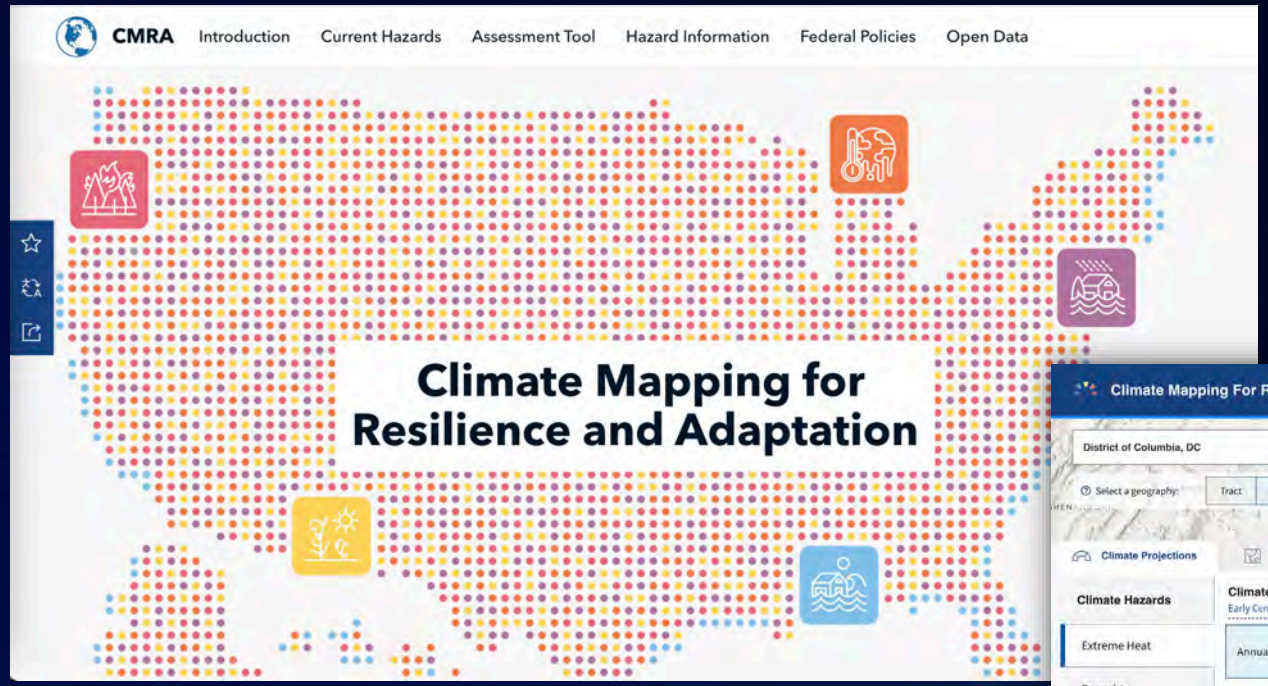
Digital Twin

National GIS

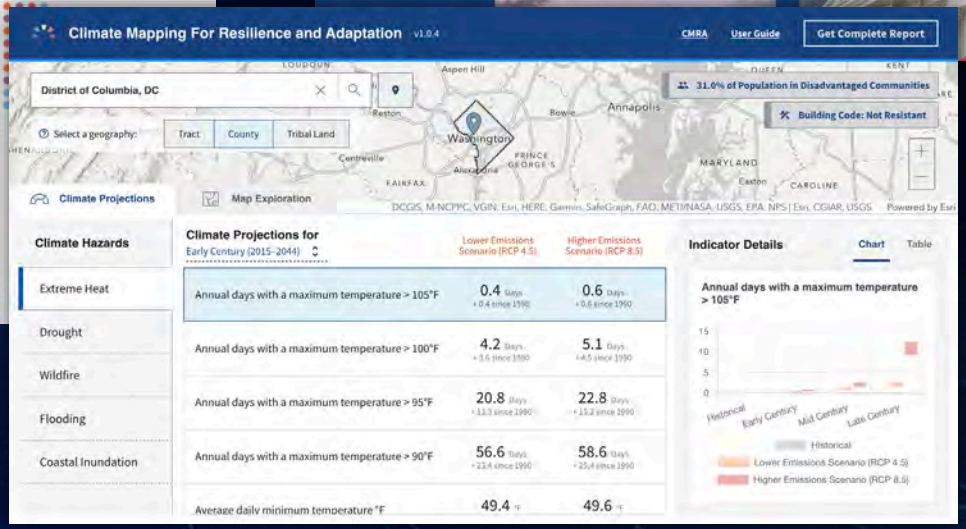
GIS is the Foundation for . . .
. . . Creating & Integrating Digital Twins

Moving from Data to Action

Climate Mapping for Resilience and Adaptation (CMRA)



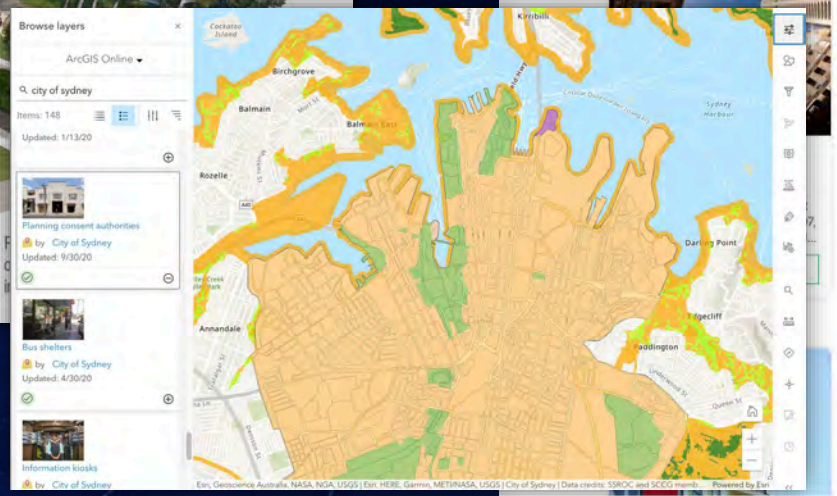


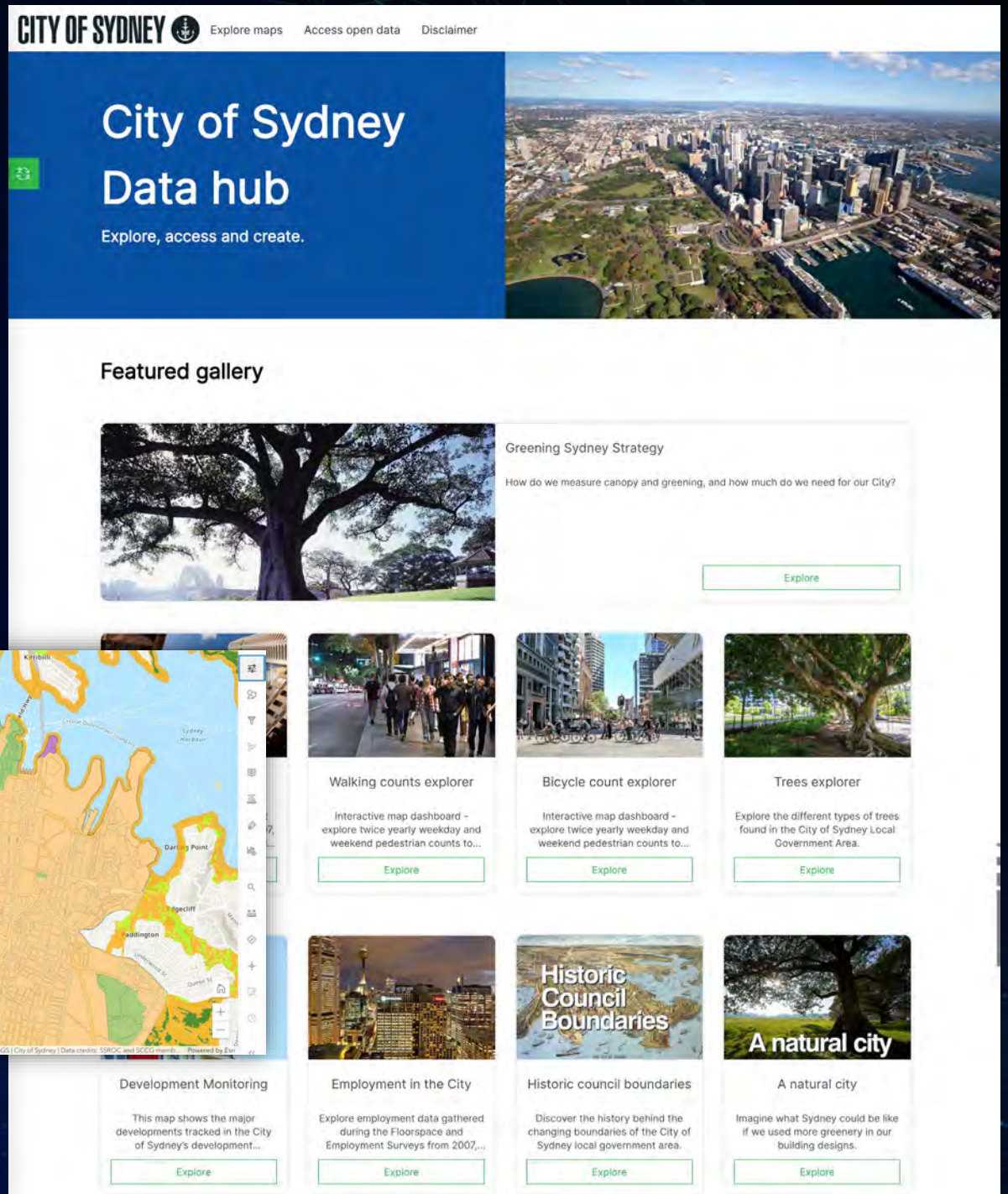


Engaging the Community

City of Sydney, Australia

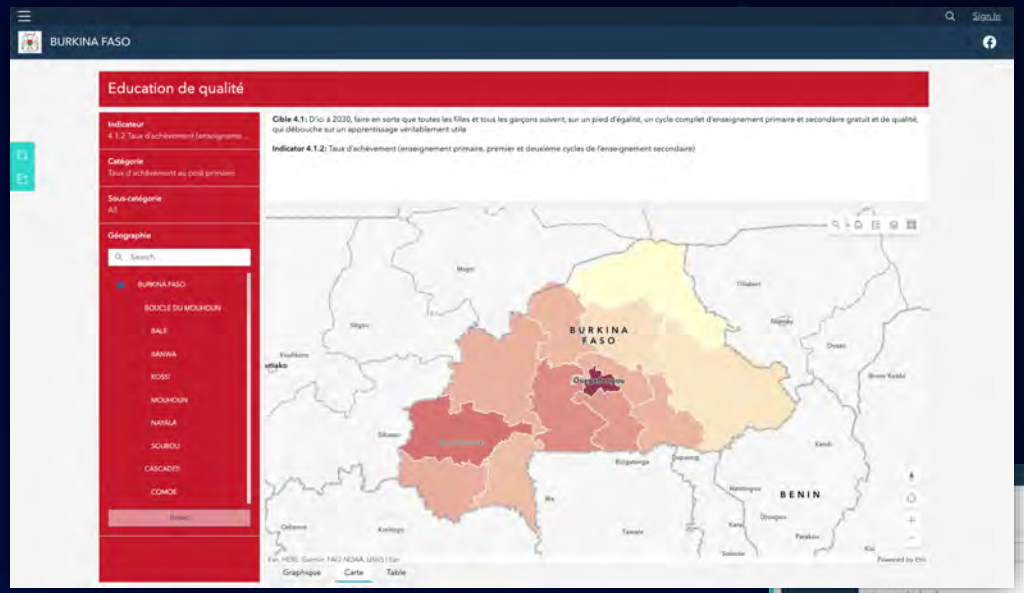


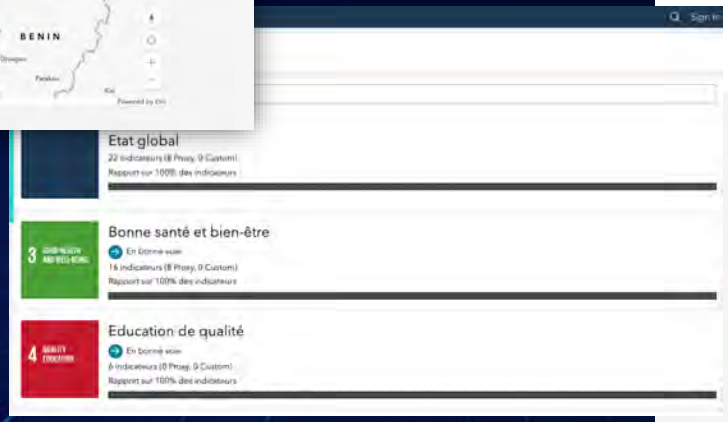




Reporting on Progress

Burkina Faso SDGs Hub







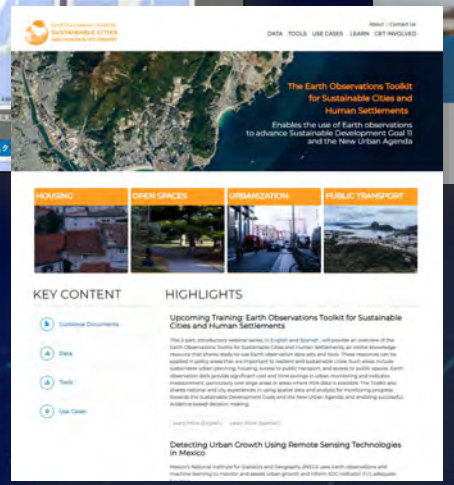


Geospatial Infrastructure Is Connecting Organizations

Creating a Whole Community of Organizations Focused on Resilience. . .



NIED



UN-Habitat



FAO



FEMA



American Red Cross

…Connecting Organizations Within Sectors and Across Boundaries

Building a More Resilient and Sustainable Future

- Collaborate Through a National GIS
- Build a Living Digital Twin
- Move from Data to Action



THANK YOU

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