

GEIDA - The IsDB Geoinformatics Data Platform



Mainstreaming Earth Observation and geospatial intelligence across the Bank's operations

Sajid Pareeth, PhD

Director, Water & Climate Solutions
Expo City Dubai

Terra, Expo City Dubai

Terra, The Sustainability Pavilion, was the centrepiece of Expo 2020 Dubai. Today it lives on as part of the **Expo City Dubai legacy** — a permanent institution for conservation, ecological education and nature-based solutions.

Terra has evolved into a regional leader delivering measurable, mission-aligned environmental programmes — with a dedicated team building replicable models for nature-positive living in arid regions.



2020

Expo 2020 Dubai — Sustainability Pavilion

Legacy

Expo City Dubai — permanent institution

Today

Science, education & impact programmes



Terra Today



How we Work

Our Vision – A world where humans and nature thrive in harmony — especially in arid, urban environments.

Our Mission - To inspire action for our planet by bridging science, culture, and community.



Capacity Building Through Communities of Practice

We grow people-powered movements — from youth climate leaders to fungi enthusiasts — through partnerships, events, and networks.



Applied Science & Field Research

We use science to drive impact, through initiatives like species assessments, field monitoring, building digital platforms supporting conservation and efficiency and citizen science campaigns.



Resilience Building

We co-create, design and deliver nature-based solutions that support ecological health, climate change adaptation and human wellbeing in cities.

Digital Innovation for the Environment

Data from multiple sources feeds evidence-based strategies for resource optimisation, sustainability, investment prioritisation and climate adaptation.

Satellites	Earth Observation at basin, national and field scale
Drones & IoT sensors	High-resolution and in-situ ground truth
AI & analytics	Predictive models, anomaly detection, forecasting
Citizen science	People-powered campaigns and communities of practice

APPLIED ACROSS THREE THEMES

- Biodiversity & Nature Assets**

Satellite bio-health checks, vegetation and green-cover mapping, urban greening
- Water Resources & Management**

Water stress and use monitoring, evapotranspiration, irrigation optimisation
- Climate Resilience**

Urban heat islands, carbon sequestration, flood & drought preparedness



Terra Botanic Garden

Transforming Terra's native landscape into the UAE's first BGCI-certified botanic garden. The focus of the garden is on public education, conservation and plant research. Stewarded by Terra's Green Team.

Terra Impact offers research opportunities for academic institutions.





Terra Botanic Garden Wadi Conservation Program

Terra's 150sqm freshwater wadi is a testbed ecosystem to model, monitor, and replicate native freshwater habitats of the UAE's mountain wadis.

It serves three functions simultaneously:
as a local ecological "ark", an education experience and
a replicable model.

Terra Impact offers End-to-End delivery
of constructed freshwater wadis as urban infrastructure.

Our Team



Marjan Faraidooni

Chief , Strategy

Marjan Faraidooni is a UAE national with over 20 years' experience in strategy, human-centred development, and public engagement. At Expo 2020 Dubai, she led the legacy strategy, transforming it into Expo City Dubai. Today, she stewards the Education and Culture Division, focusing on Terra as a centre for urbanism, biodiversity, and environmental learning. Through education and impact programs, she is helping turn Terra into a platform that connects people to planetary challenges and solutions.



João Falcato

Senior VP
Aquatic Systems

João Falcato is Senior Vice President of Education and Culture at Expo City Dubai, overseeing strategy, visitation, marcomms, sales, operations, and education programs for Terra, Alif, and Vision. Former CEO of Oceanário de Lisboa (2006–2023), João now serves as Special Advisor to the Oceano Azul Foundation.



Dr. Sajid Pareeth

Director of water & climate
solutions

Leads the research & development on land & water resource monitoring & optimization at Terra. Expert in mainstreaming digital platforms for prioritizing investments in land and water resources, climate change adaptation and disaster risk assessments leveraging satellite-based estimation of land & water use. He has a PhD in Natural Sciences and Marie Curie fellow.



Sheena Khan

Environmental Programs

Sheena Khan is Head of Environmental Programs at Terra, where she designs and leads nature-focused programs across themes of urban biodiversity, citizen science, fungi, nature therapy, and environmental leadership. Passionate about weaving nature into daily life, Sheena builds collaborative ecosystems inspired by Mother Nature herself—connecting people, ideas, and places to spark lasting impact.



Phillip Dunn

Sustainability head

A landscape architect and sustainability leader with over 25 years of experience advancing urban biodiversity and regenerative design in the MENA region. With a background in landscape architecture and systems thinking, Phil focuses on turning urban spaces into biodiverse, climate-resilient environments that connect people to nature and foster long-term ecological and human health. Phil Looks after all things living in the Terra landscape and understand how to design, build, and deliver impactful rewilding projects.

Our Team



Susanne Fischer

Education & Impact

With a background in environmental education, sustainability, and ecology, Susanne develops and leads impactful learning experiences that connect people with the natural world. As Education and Impact Manager at Terra, she oversees the design and delivery of environmental education programmes, strategic partnerships, educator professional development, and public engagement initiatives that support Terra's mission to inspire positive environmental action. Drawing on experience in curriculum innovation, experiential learning, and ecosystem-focused education, Susanne works across schools, organisations, and corporate sectors to create meaningful programmes that strengthen environmental literacy, biodiversity awareness, and long-term ecological stewardship.



Stuart Hardy

Nature Education

With over 20 years of experience as an educator overseas, Stuart now develops and implements high quality sustainability focused content, oversees quality control, curates and delivers impact events, and builds strategic partnerships with schools, organisations and corporate stakeholders to extend Terra's environmental reach and measurable impact.



Georgina Pereira

Fungi and Urban Ecology

Georgina is a desert ecologist specializing in mycology and the Species Survival Manager at the IUCN SSC Centre for Species Survival Fungi hosted at Terra. With expertise in environmental law, understanding biodiversity and science communication, Georgina works at the intersection of research, education, and conservation to spotlight fungi's critical yet often overlooked ecological roles.



Dr Meriem Hammal

Pollinator Expert

Leads the Pollinators Program at Terra, Dr. Meriem is a veterinarian with a PhD in bee genetics, a professional beekeeper, and an educator. She combines her expertise in animal health and apiculture with a strong commitment to teaching, research, and environmental stewardship. Through her work, she promotes pollinator conservation, sustainable beekeeping practices, and ecological awareness while contributing to the advancement of veterinary science and the education of future professionals.



Zainab Alkhajeh

Ethnobotany

Zainab works at the intersection of ethnobotany, storytelling, and visitor experience. With a background in exhibition design and interpretive visitor journeys, she focuses on connecting people to the UAE's native plants and landscapes. At Terra, she leads ethnobotanical research and documentation, translating plant knowledge and cultural stories into experiences that deepen visitors' understanding of nature, culture, and place.

GEIDA

The IsDB Geoinformatics Data Platform

Mainstreaming Earth Observation and geospatial intelligence across the Bank's operations — from the eToolkit foundation to an operational platform, certified staff, and an institutional home.

Dr. Sajid Pareeth — Director, Water & Climate Solutions

Terra, Expo City Dubai

The eToolkit — Phase I Foundation

The eToolkit was the first successful effort to integrate Earth Observation directly into IsDB project workflows — launched in **November 2025** by IsDB with Terra, Expo City Dubai and ICBA.

57

Member Countries with consolidated EO datasets

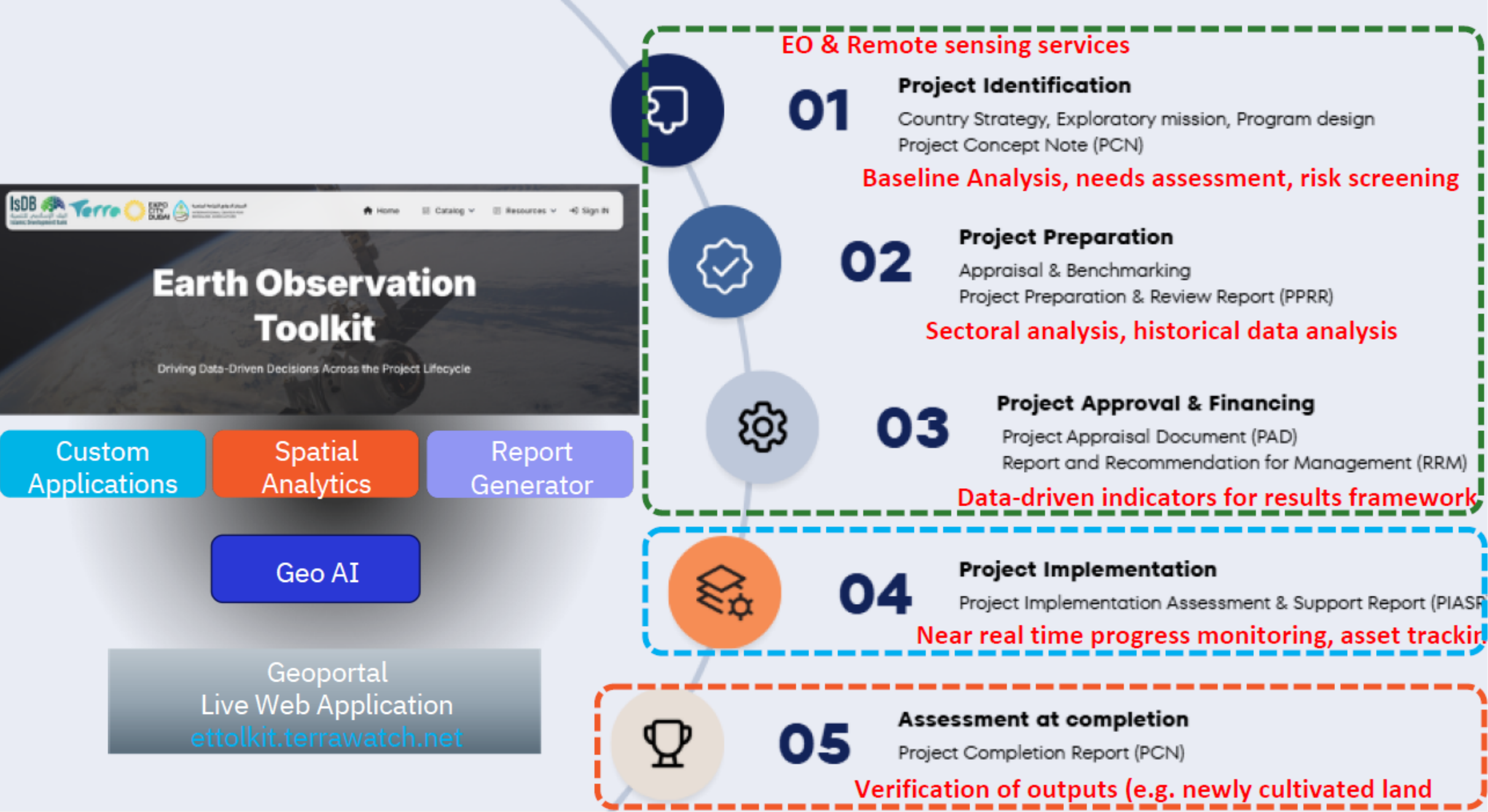
Live

Web platform in active use since launch

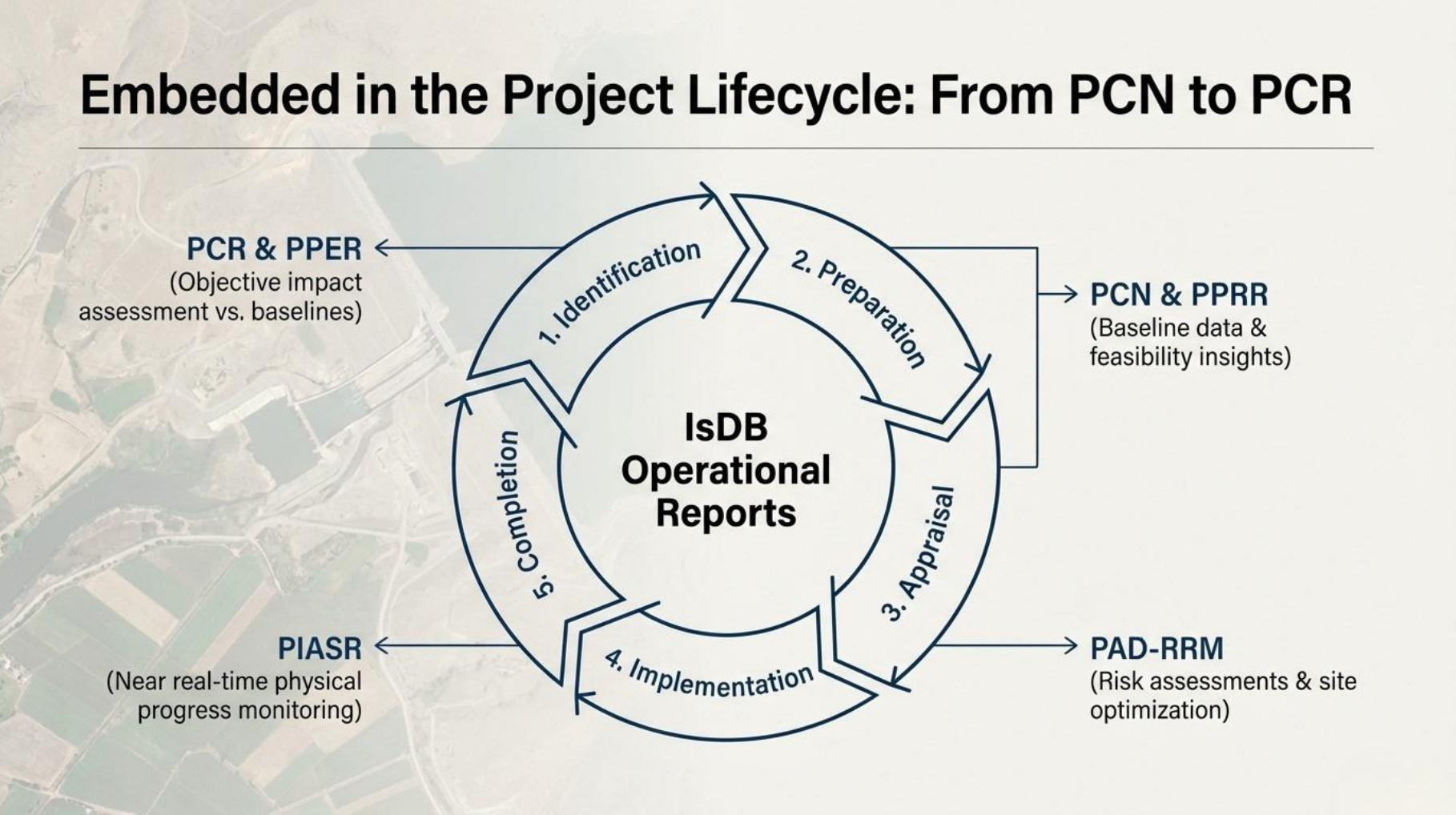
It proved the value: clear demand and tangible benefit from EO data for project insight — geoportal, spatial analytics, Geo-AI, report generator and custom applications.



The eToolkit journey — from ideation to a live platform

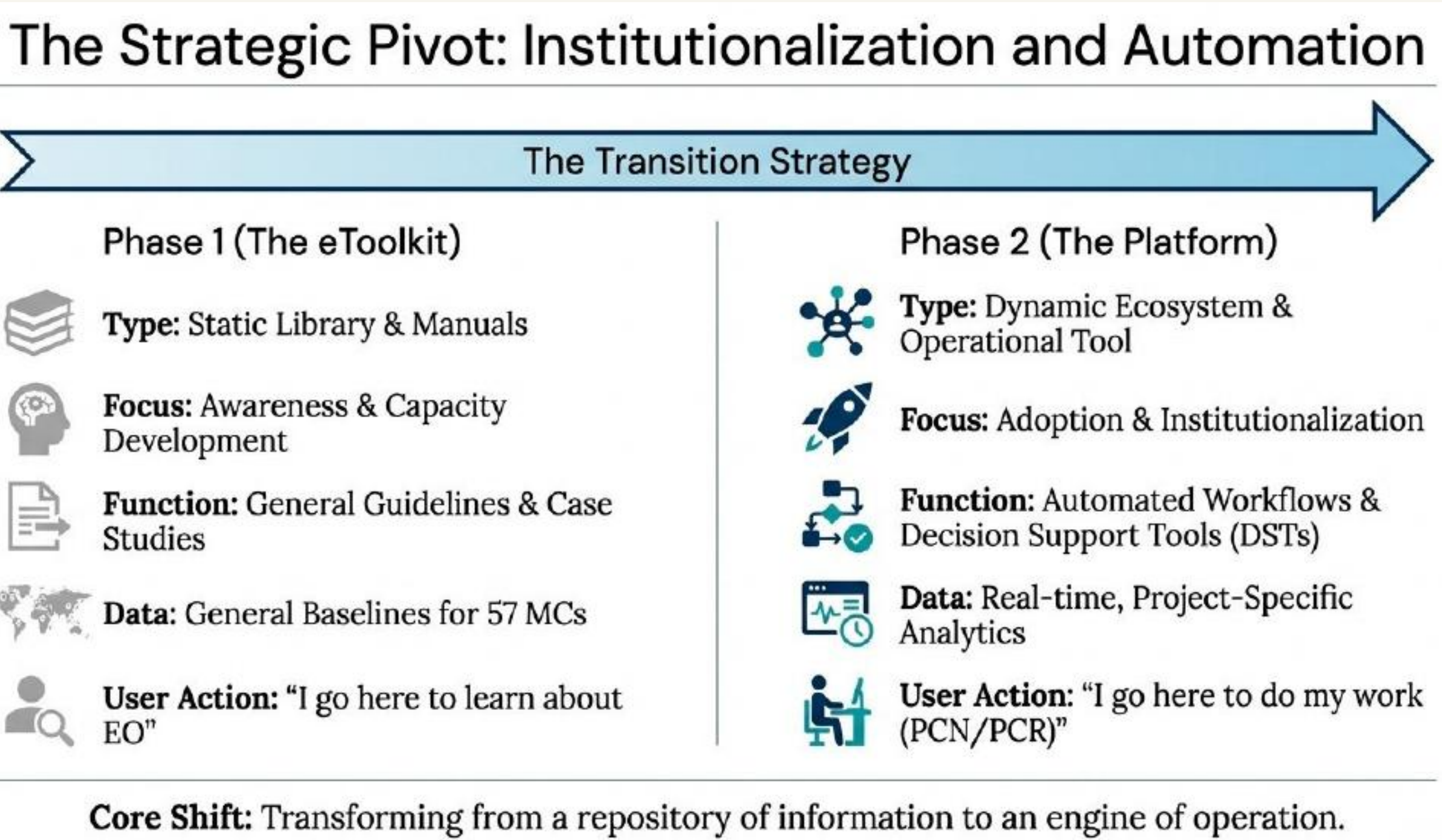


Earth Observation Across the IsDB Project Cycle

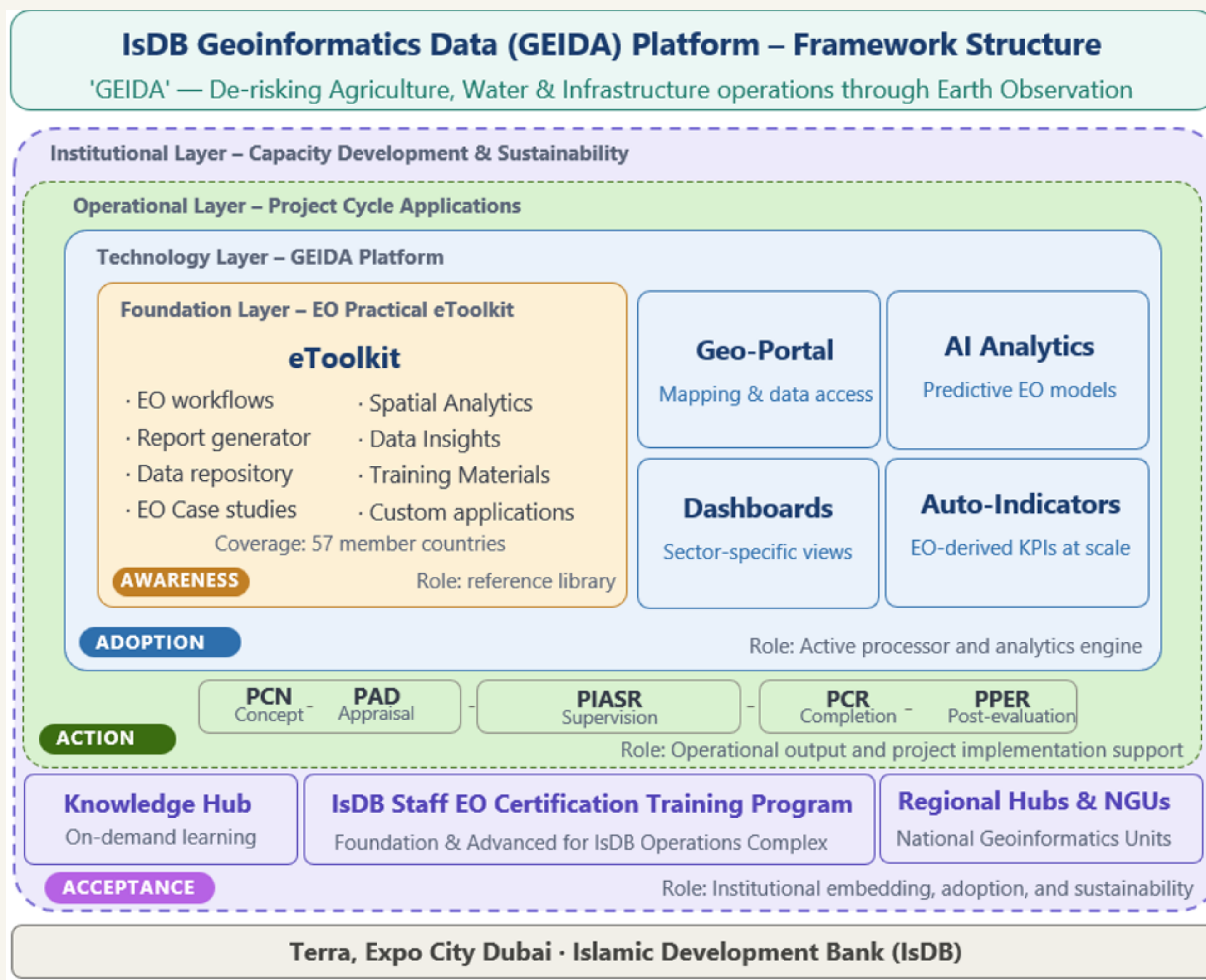


PCN · PPRR	Site screening, baselines & feasibility at identification and preparation
PAD-RRM	Climate-risk screening and site optimisation at appraisal
PIASR	Near real-time physical progress monitoring during implementation
PCR · PPER	Objective impact assessment against satellite baselines

The Transformation — eToolkit to GEIDA



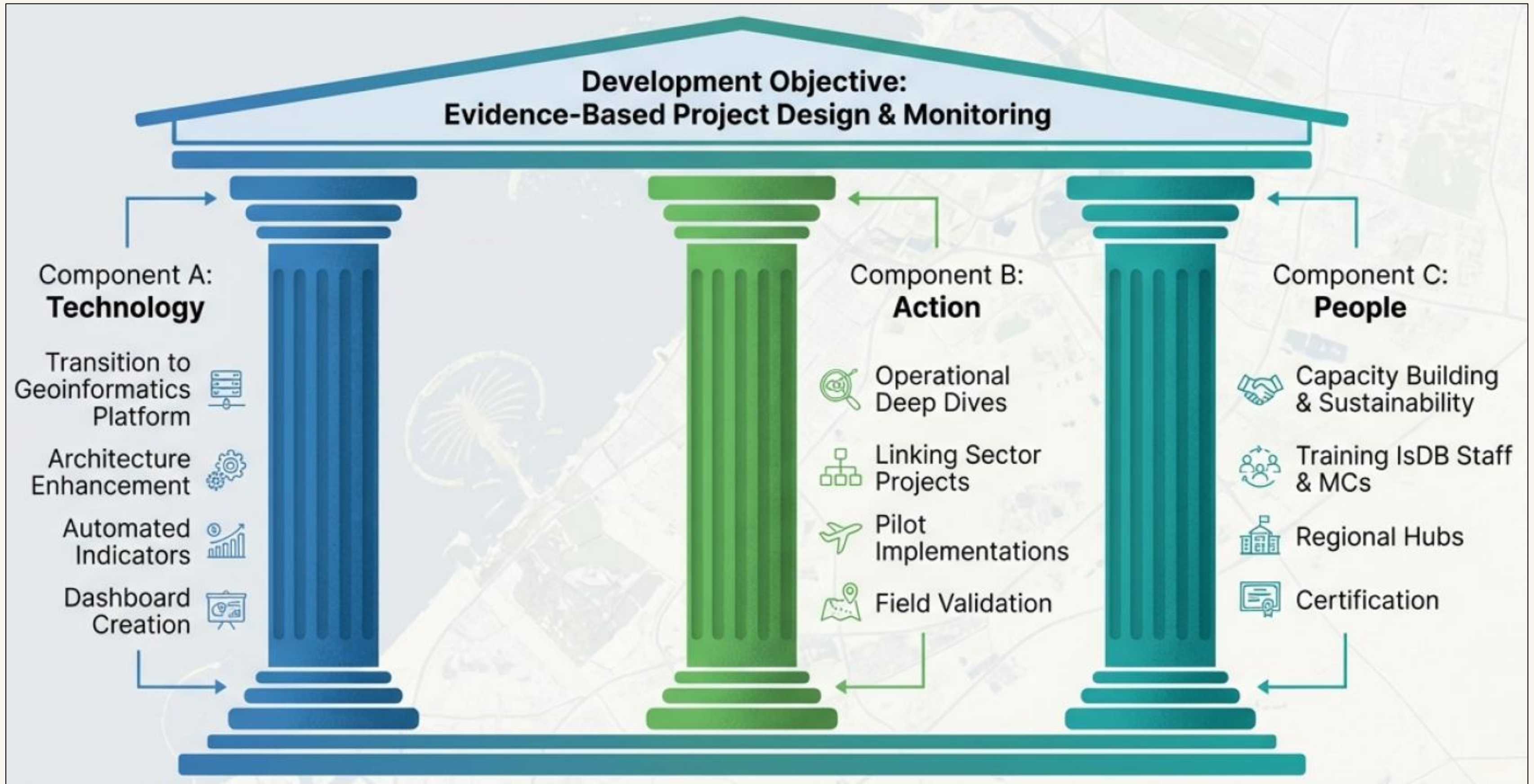
The GEIDA Framework



Pathway to Maturity of GEIDA platform

Dimension	EO Practical eToolkit launched	GEIDA Platform Certification	Platform Maturity
Platform & Technology	EO Practical eToolkit launched	GEIDA Platform operationalized	GEIDA integrated in IsDB systems & business processes
Operational Mainstreaming	Methodology and use cases established	10–15 projects integrated into GEIDA	Expanded portfolio across sectors and regions
Capacity Development	Awareness and sensitization workshops	100 staff certified (Foundation)	50 staff certified (Advanced GEIDA)
Country Applications & Partnerships	eToolkit available for 57 MCs	Scale-up in AZE, UGA, and MLI	Institutionalize & Sustain the GIDA Platform at IsDB / IMDT O&M

GEIDA Platform — Major Components



Component A — Platform Development & Operational Integration

The core build of Phase II: a scalable, secure and interoperable platform that turns the eToolkit's knowledge base into an operational engine for the Bank's day-to-day work.

- Outputs aligned to IsDB reporting instruments — PCN to PPER
- Role-based access and interoperability with IsDB enterprise systems (ePIASR, with IMDT)
- Anchors the Inception milestone, culminating at mid-assignment

Geo-Portal

Web-based spatial data access for departments, Regional Hubs and Member Countries

AI-Powered Analytics

Predictive models for agriculture, water and infrastructure sectors

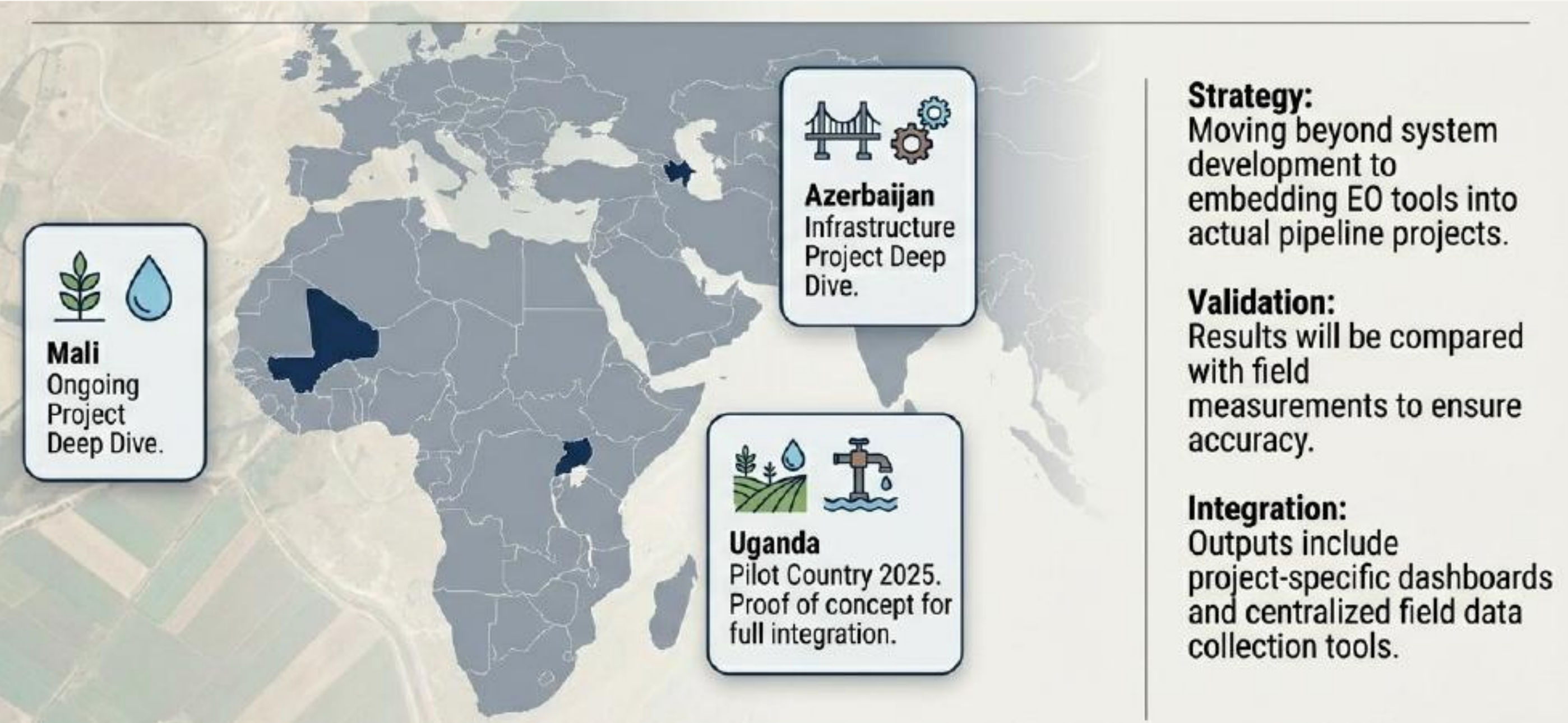
Sector Dashboards

Tailored to each project type and lifecycle stage

Automated EO Indicators

Indicator pipelines and report generation cutting manual monitoring effort

Use Cases & Project Data



ANCHOR PROJECTS

10–15

sector projects onboarded through geospatial deep-dives in Phase II

Staff Certification Programme

FOUNDATION LEVEL

Core EO and GIS-RS concepts, applied to the IsDB project cycle — from spatialising a project to generating automated reports in the eToolkit and onboarding projects into GEIDA.

5

modules

~100

staff targeted

Hybrid

online + in-person at IsDB HQ

ADVANCED LEVEL

Mastery of the GEIDA platform, automated analytics and applied case-based learning — built around the live anchor-project deep-dives.

5

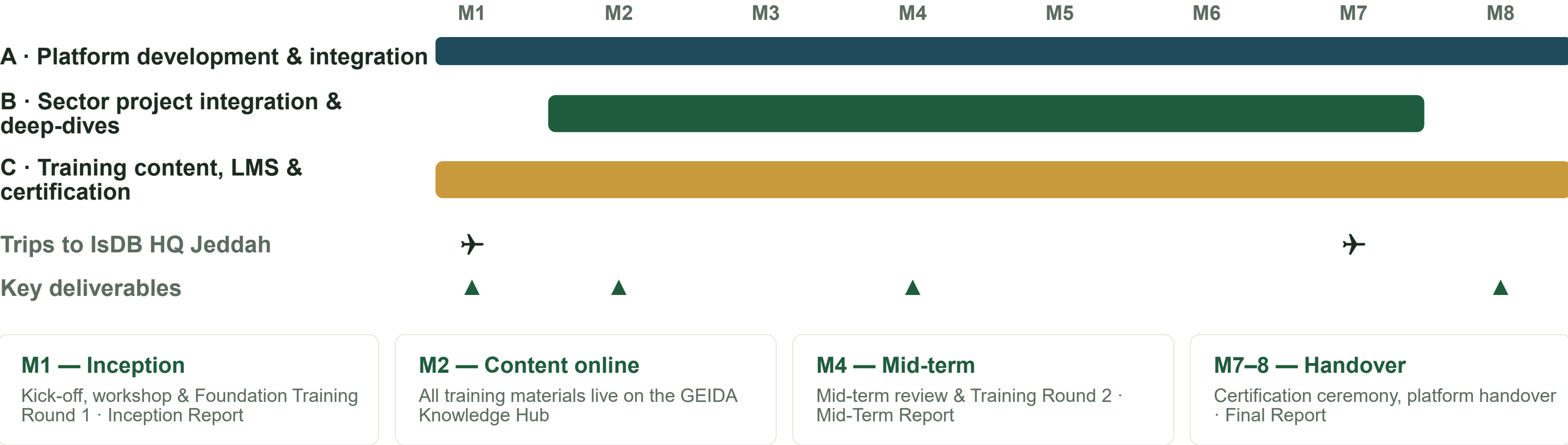
modules

~50

staff incl. Regional Hubs

Eight Months, Three Streams

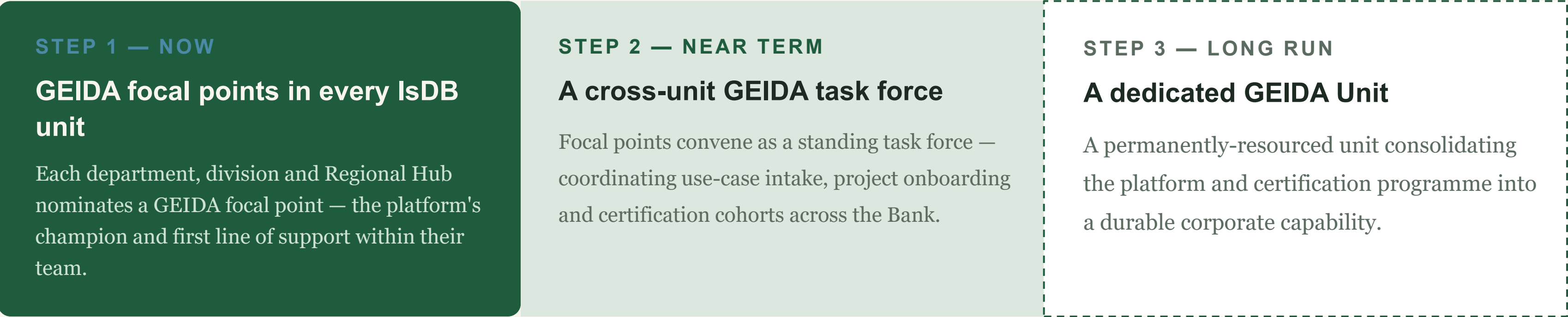
July 2026– January 2027



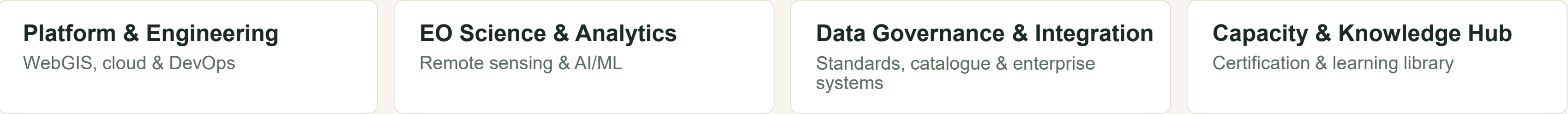
GEIDA team from Terra

Project Lead & Lead Trainer Platform strategy, stakeholder liaison, certification delivery A · B · C Sajid Pareeth	Program Manager Work plan, milestones, KPIs, IsDB reporting, partner liaison A · B · C Sheena Khan	EO & RS Specialist (Co-Trainer) EO data pipelines, indicators, deep-dives, co-training A · B Narasimha Murthy Alle	Data Scientist AI/ML models, spatial analytics, automated reporting pipelines A Ahmed Khodir
Full Stack Developer (WebGIS) Platform architecture, WebGIS front-end, RBAC, cloud deployment A Aman Choudhary	Designer & Media Content Developer UX/UI, dashboards, infographics, training multimedia A · C Areej Alhammadi	Training Manager Certification programme, LMS & Knowledge Hub, delivery oversight C Sussanne Fischer	Training Assistant Logistics, scheduling, participant records, LMS content support C Zainab Alkhajeh

A Dedicated GEIDA Unit — The Pathway

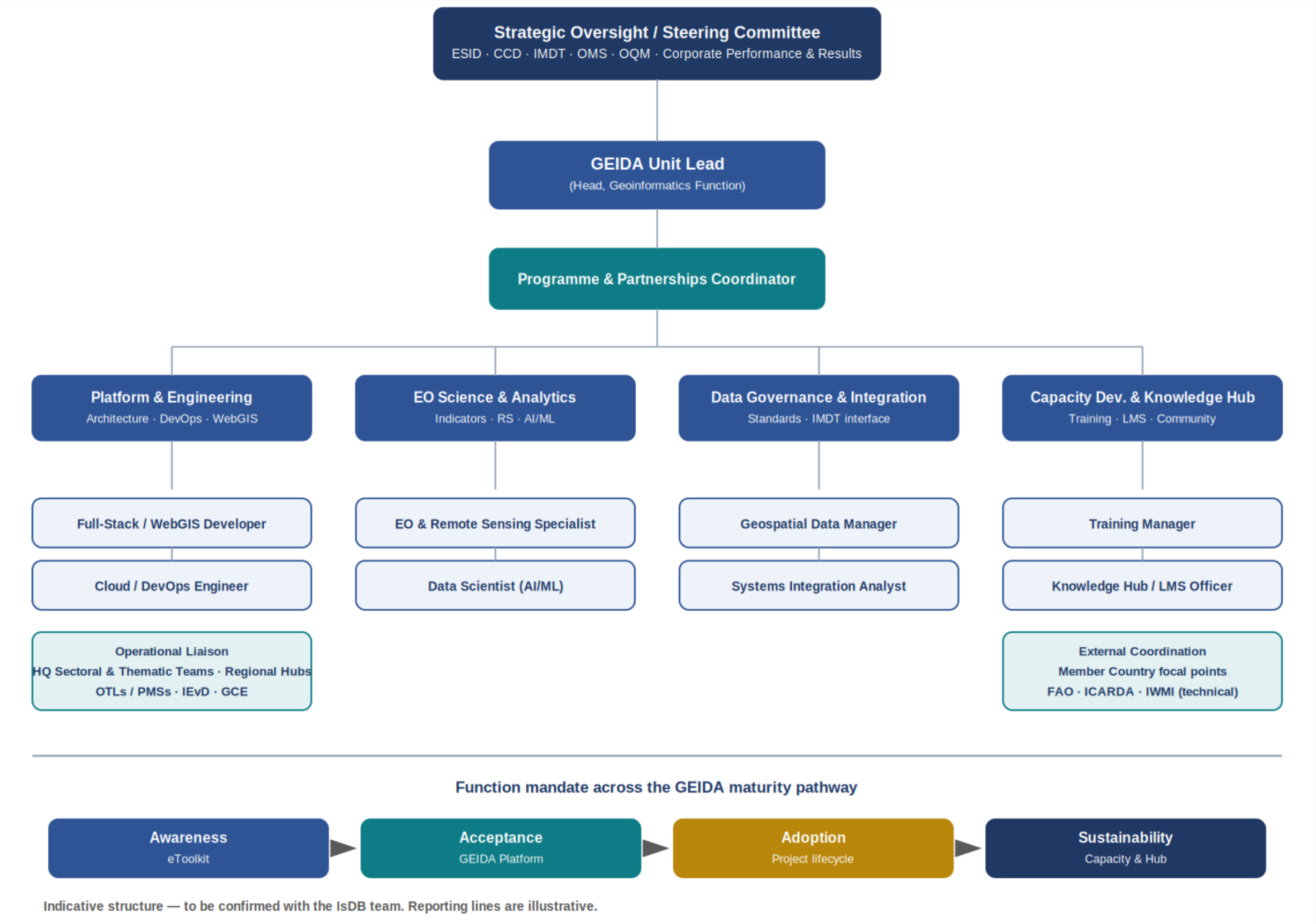


INDICATIVE UNIT STRUCTURE — FOUR FUNCTIONAL PILLARS



Peer precedent: the World Bank sustains its geospatial capability through a standing unit (GOST) paired with an embedded capacity & M&E programme (GEMS).

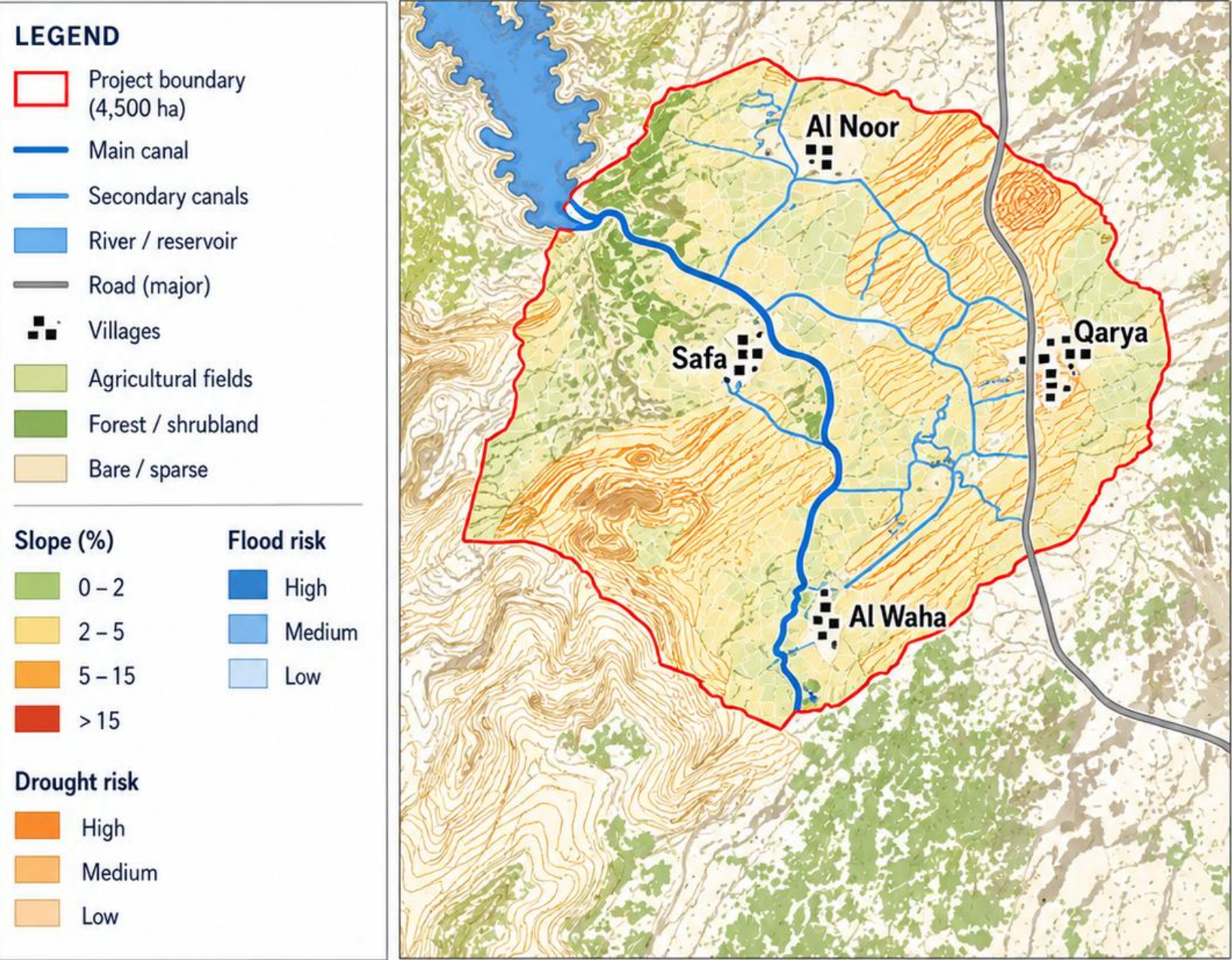
A Dedicated GEIDA Unit — Tentative structure



Spatialising an Irrigation Modernization Project

Example project: irrigation rehabilitation / modernization, approx. 4,500 ha command area

1 PCN – Identification



EO / geoinformatics contribution

Candidate site screening; land-cover context; slope / topography; flood & drought exposure; proximity to roads, settlements and water; preliminary baseline.



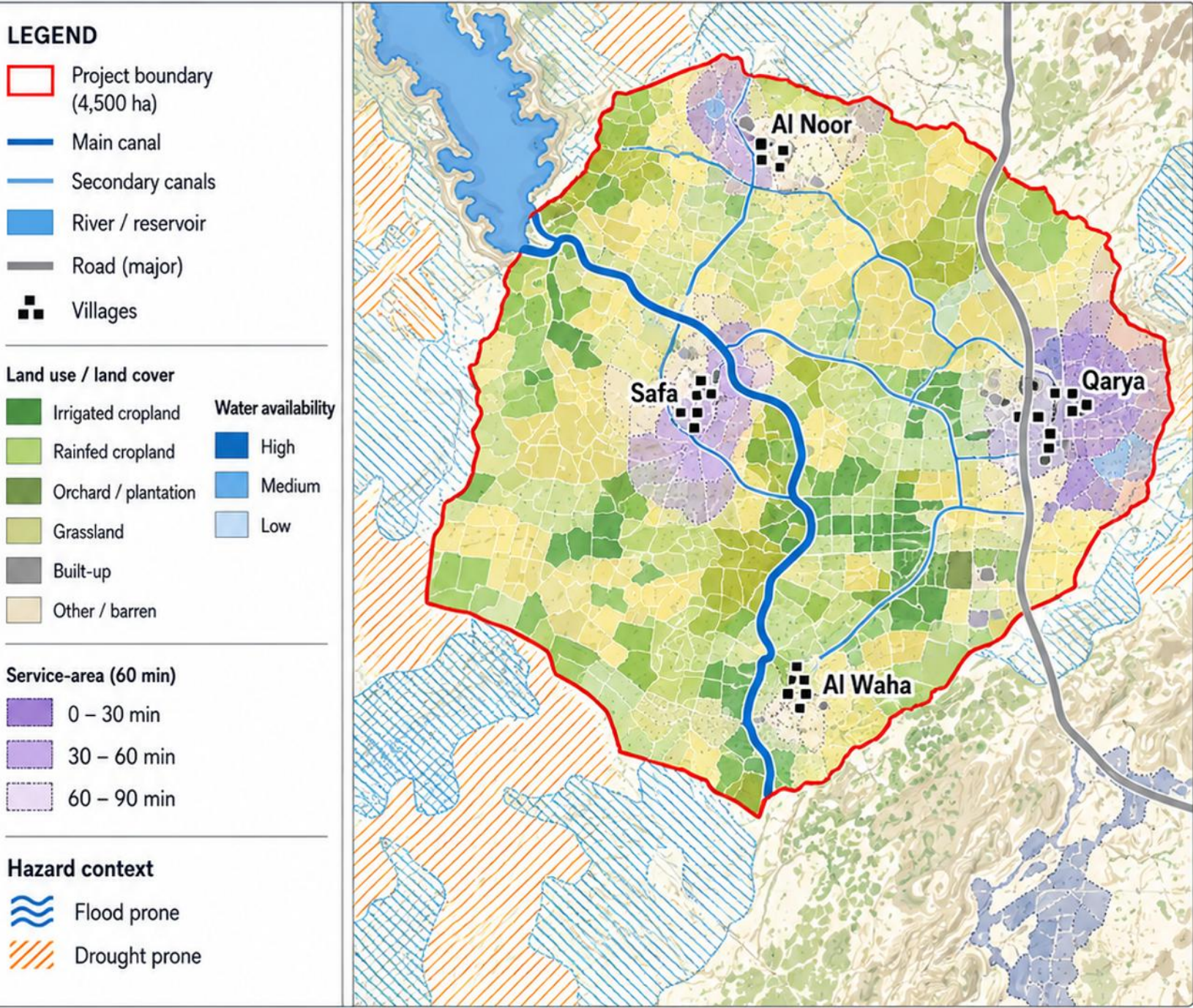
Operational value

Better project identification; fewer unsuitable sites; stronger concept note; better-prepared field missions.

Spatialising an Irrigation Modernization Project

Example project: irrigation rehabilitation / modernization, approx. 4,500 ha command area

2 PPRR – Preparation



EO / geoinformatics contribution

Spatial appraisal context; benchmark environmental and socio-economic conditions; accessibility and service-area mapping; climate and hazard context; land-use baseline; identification of data gaps.



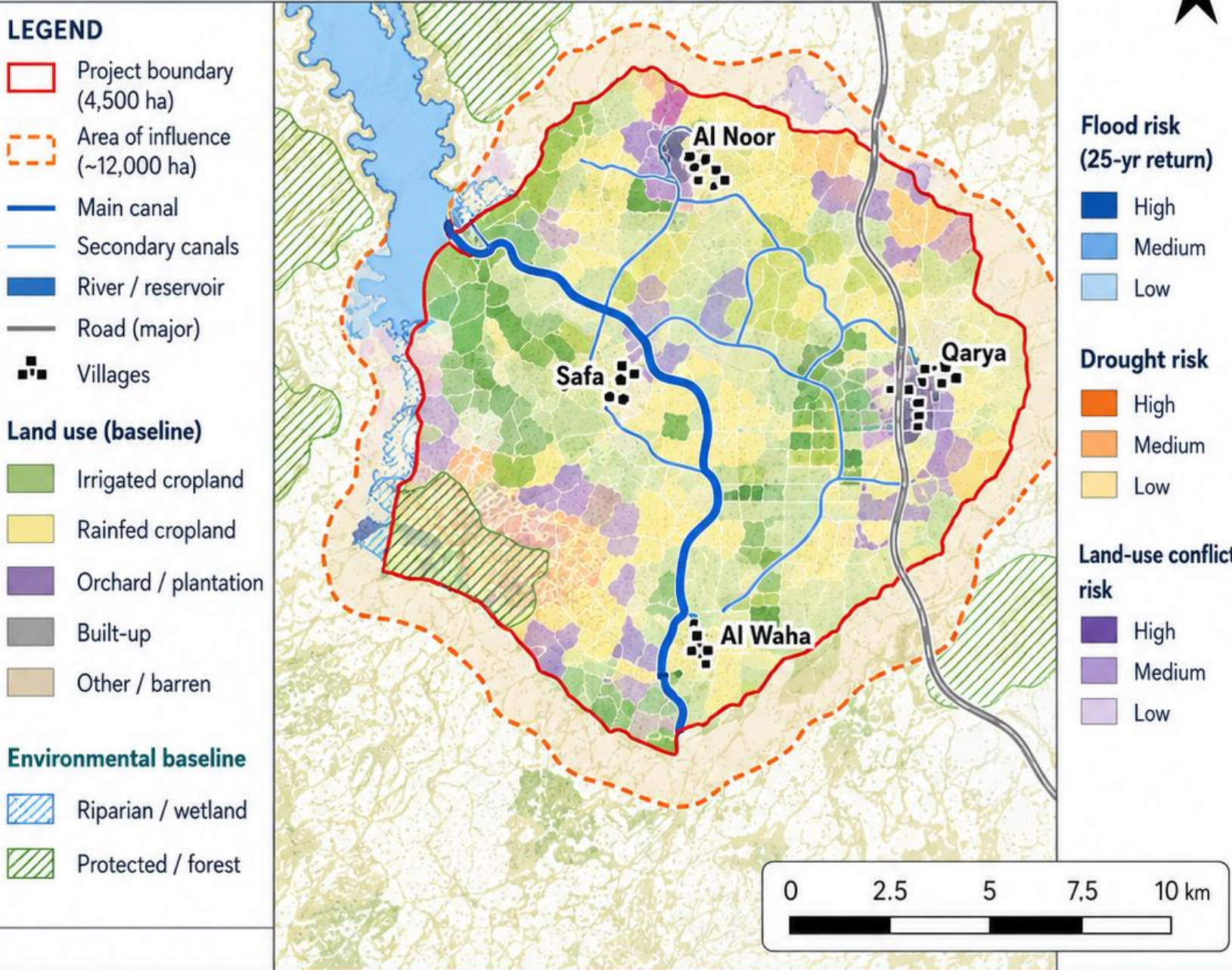
Operational value

More evidence-based preparation; clearer project-area definition; stronger justification of need.

Spatialising an Irrigation Modernization Project

Example project: irrigation rehabilitation / modernization, approx. 4,500 ha command area

3 PAD / RRM – Appraisal & Design



EO / geoinformatics contribution

Standardized project maps; project boundary and area of influence; environmental baseline; land-use conflict screening; flood, drought and climate-risk layers; preliminary indicators for the results framework.



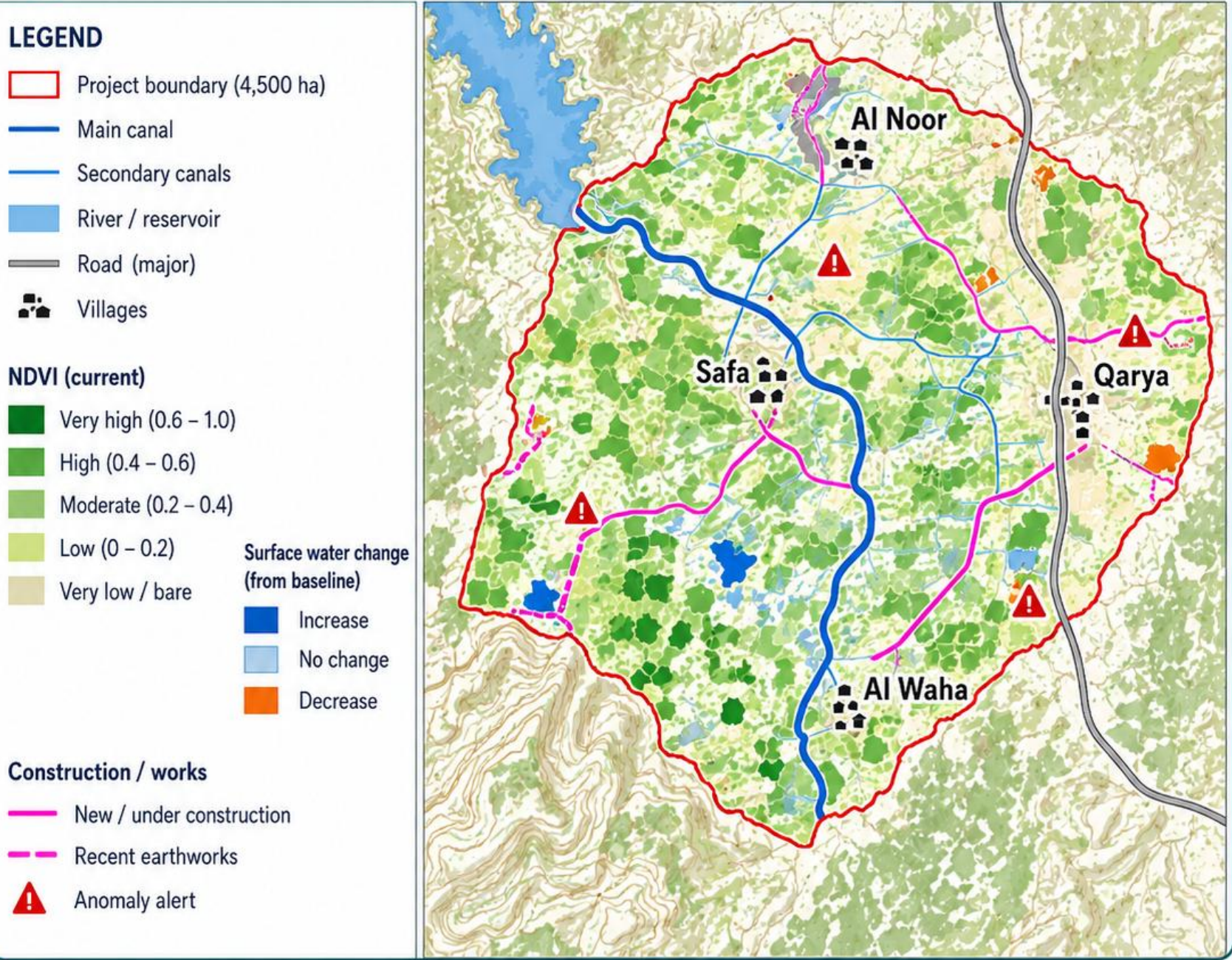
Operational value

Better design decisions; stronger approval documentation; baseline preserved for future PCR / PPER.

Spatialising an Irrigation Modernization Project

Example project: irrigation rehabilitation / modernization, approx. 4,500 ha command area

4 PIASR – Supervision



EO / geoinformatics contribution

Vegetation-response monitoring; surface-water change; construction-footprint detection; land-cover change; anomaly alerts; dashboard snapshots; independent evidence before supervision missions.



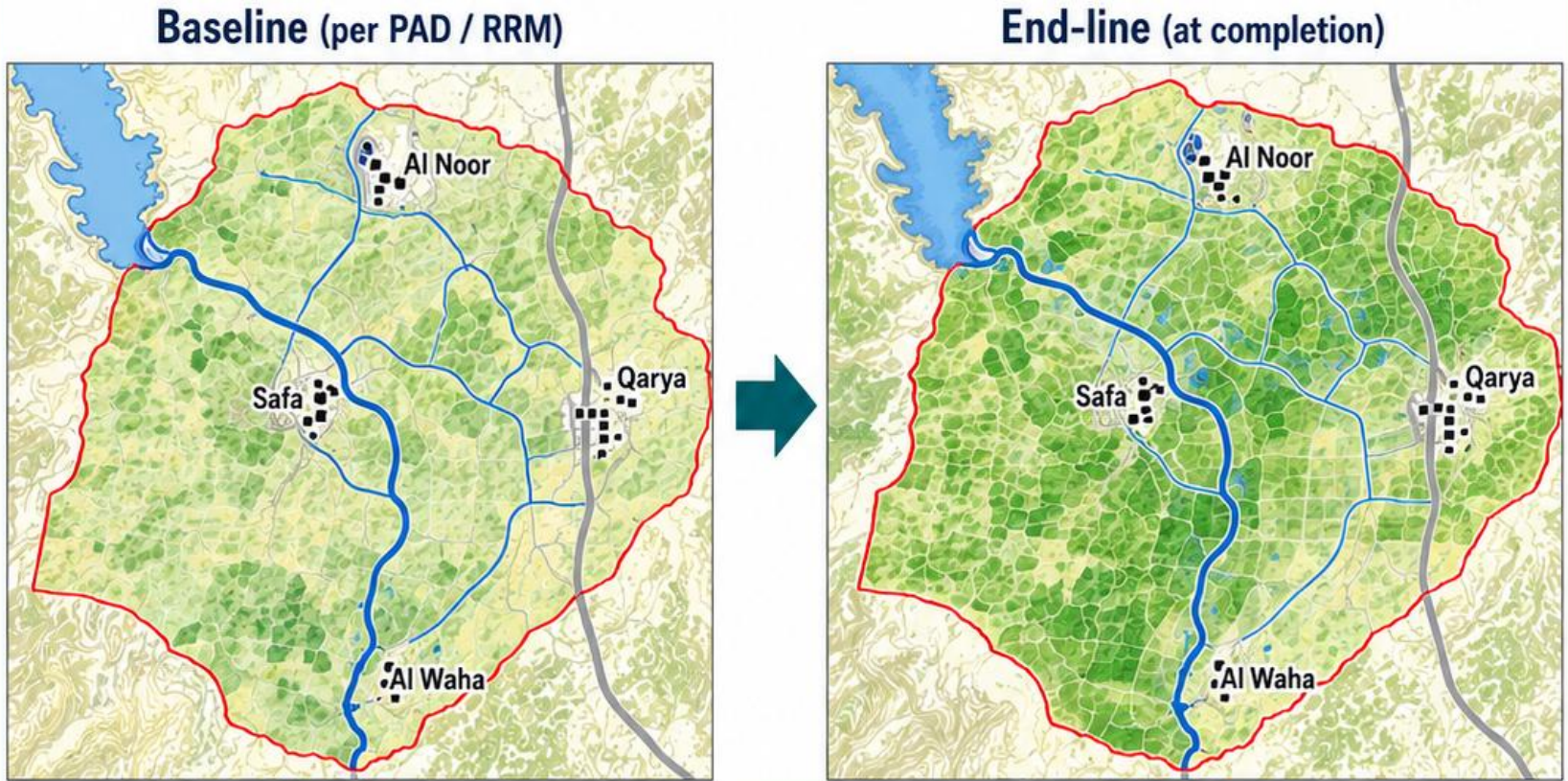
Operational value

Better-targeted field missions; earlier detection of implementation issues; stronger supervision reporting.

Spatialising an Irrigation Modernization Project

Example project: irrigation rehabilitation / modernization, approx. 4,500 ha command area

5 PCR – Completion



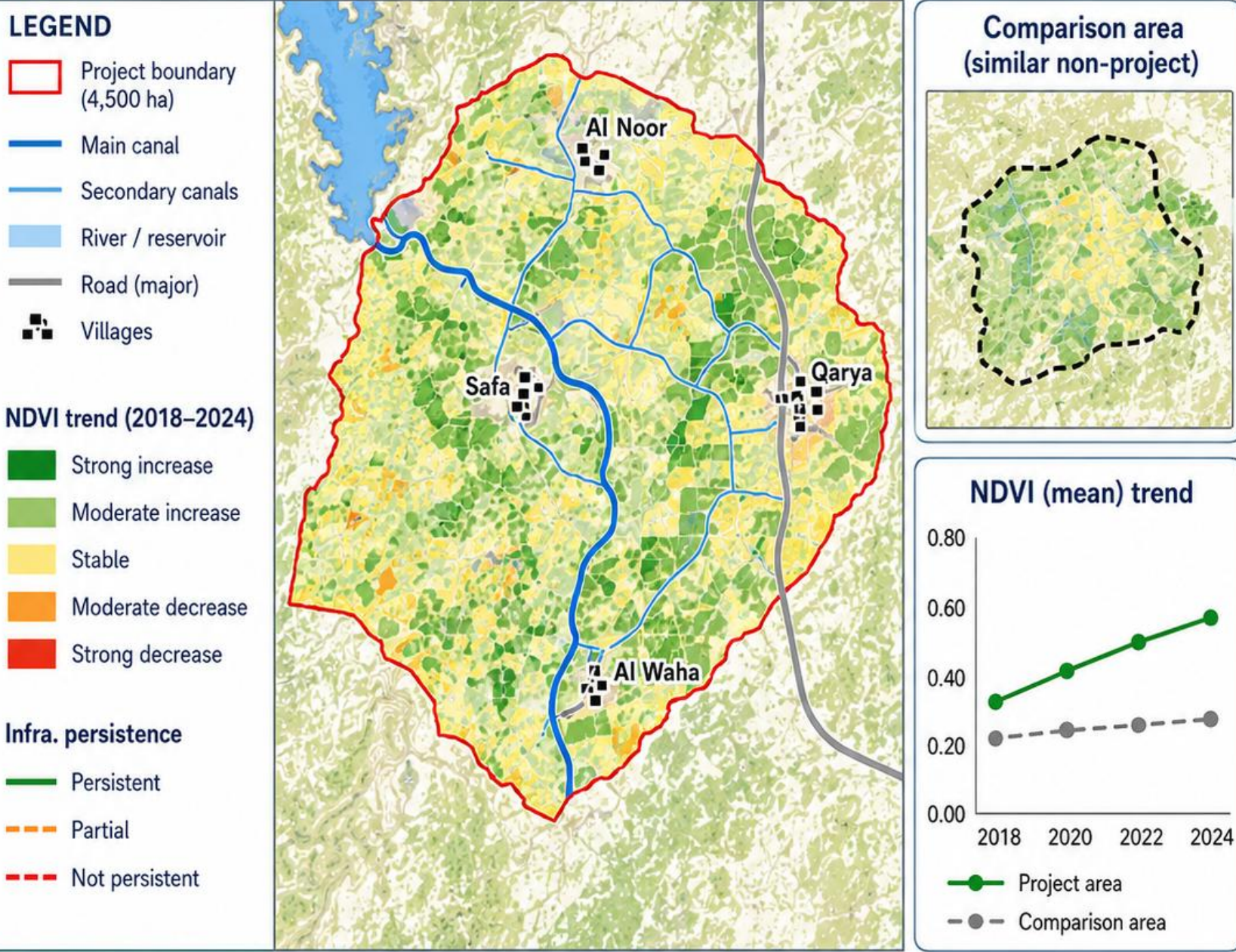
 NDVI (mean)	 Irrigated area	 Surface water extent	 Canal / infra. length (km)
0.32 → 0.53	2,900 ha → 3,950 ha	146 ha → 218 ha	78 km → 102 km
+66%	+36%	+49%	+31%

EO / geoinformatics contribution Before/after NDVI; irrigated-area expansion; water-extent change; infrastructure footprint; land-cover change; spatial output documentation; end-line comparison against the PAD / RRM baseline.	Operational value Evidence-based completion reporting; more objective output verification; clearer impact narrative.
--	--

Spatialising an Irrigation Modernization Project

Example project: irrigation rehabilitation / modernization, approx. 4,500 ha command area

6 PPER – Post-Evaluation



EO / geoinformatics contribution

Long-term vegetation / land-cover trends;
sustainability of irrigation outcomes;
persistence of infrastructure-related change;
comparison with similar non-project areas;
support for counterfactual analysis.



Operational value

Stronger independent evaluation;
long-term learning;
better future project design.

Spatialising an Irrigation Modernization Project Across the Project Cycle

Example project: irrigation rehabilitation / modernization, approx. 4,500 ha command area

1 PCN – Identification

LEGEND



EO / geoinformatics contribution

Candidate site screening; land-cover context; slope / topography; flood & drought exposure; proximity to roads, settlements and water; preliminary baseline.

Operational value

Better project identification; fewer unsuitable sites; stronger concept note; better-prepared field missions.

2 PPRR – Preparation

LEGEND



EO / geoinformatics contribution

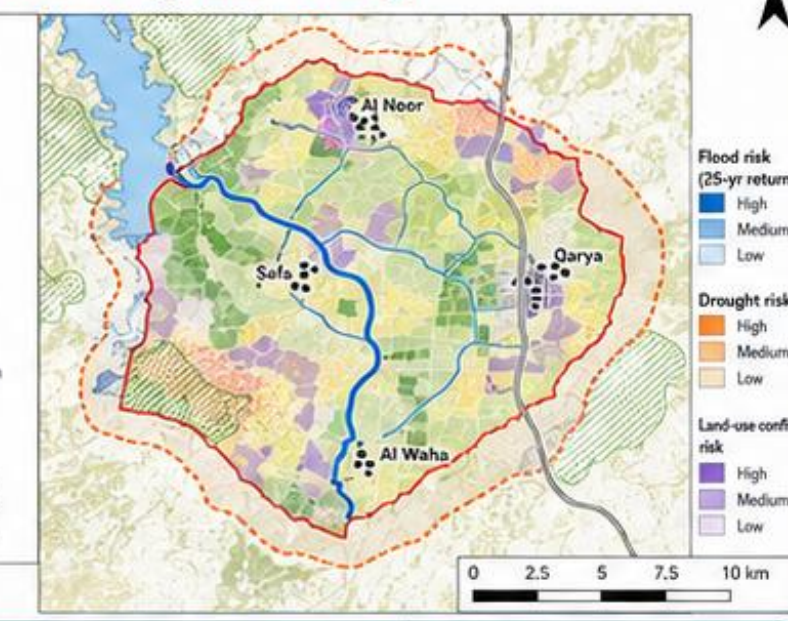
Spatial appraisal context; benchmark environmental and socio-economic conditions; accessibility and service-area mapping; climate and hazard context; land-use baseline; identification of data gaps.

Operational value

More evidence-based preparation; clearer project-area definition; stronger justification of need.

3 PAD / RRM – Appraisal & Design

LEGEND



EO / geoinformatics contribution

Standardized project maps; project boundary and area of influence; environmental baseline; land-use conflict screening; flood, drought and climate-risk layers; preliminary indicators for the results framework.

Operational value

Better design decisions; stronger approval documentation; baseline preserved for future PCR / PPER.

4 PIASR – Supervision

LEGEND



EO / geoinformatics contribution

Vegetation-response monitoring; surface-water change; construction-footprint detection; land-cover change; anomaly alerts; dashboard snapshots; independent evidence before supervision missions.

Operational value

Better-targeted field missions; earlier detection of implementation issues; stronger supervision reporting.

5 PCR – Completion

Baseline (per PAD / RRM)



End-line (at completion)



EO / geoinformatics contribution

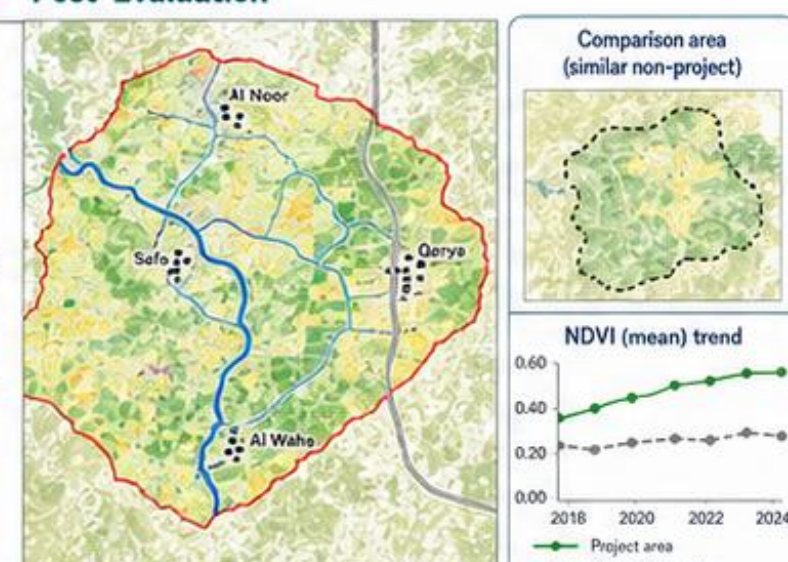
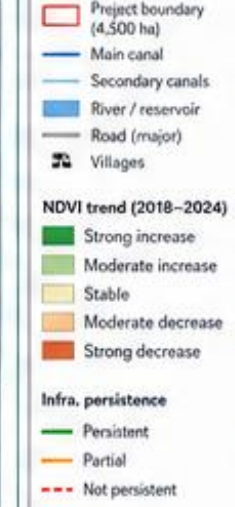
Before/after NDVI; irrigated-area expansion; water-extent change; infrastructure footprint; land-cover change; spatial output documentation; end-line comparison against the PAD / RRM baseline.

Operational value

Evidence-based completion reporting; more objective output verification; clearer impact narrative.

6 PPER – Post-Evaluation

LEGEND



EO / geoinformatics contribution

Long-term vegetation / land-cover trends; sustainability of irrigation outcomes; persistence of infrastructure-related change; comparison with similar non-project areas; support for counterfactual analysis.

Operational value

Stronger independent evaluation; long-term learning; better future project design.



NOTE: Maps are illustrative and based on a hypothetical project area. Data sources include multi-spectral satellite imagery (e.g., Sentinel-2, Landsat), DEM, global datasets and national data.

Towards Evidence-Based Development Finance

From reactive to proactive. From episodic to continuous. From opinion-based to evidence-based — in line with the IsDB Group 10-Year Strategic Framework 2026–2035.