

ekodama

ENGINEERING // CONSULTING // RESEARCH

Independent Scientific Consulting for Soils, Carbon, and Agroforestry

Growing decisions rooted in science.

www.ekodama.pro

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An independent scientific practice, founder-led.

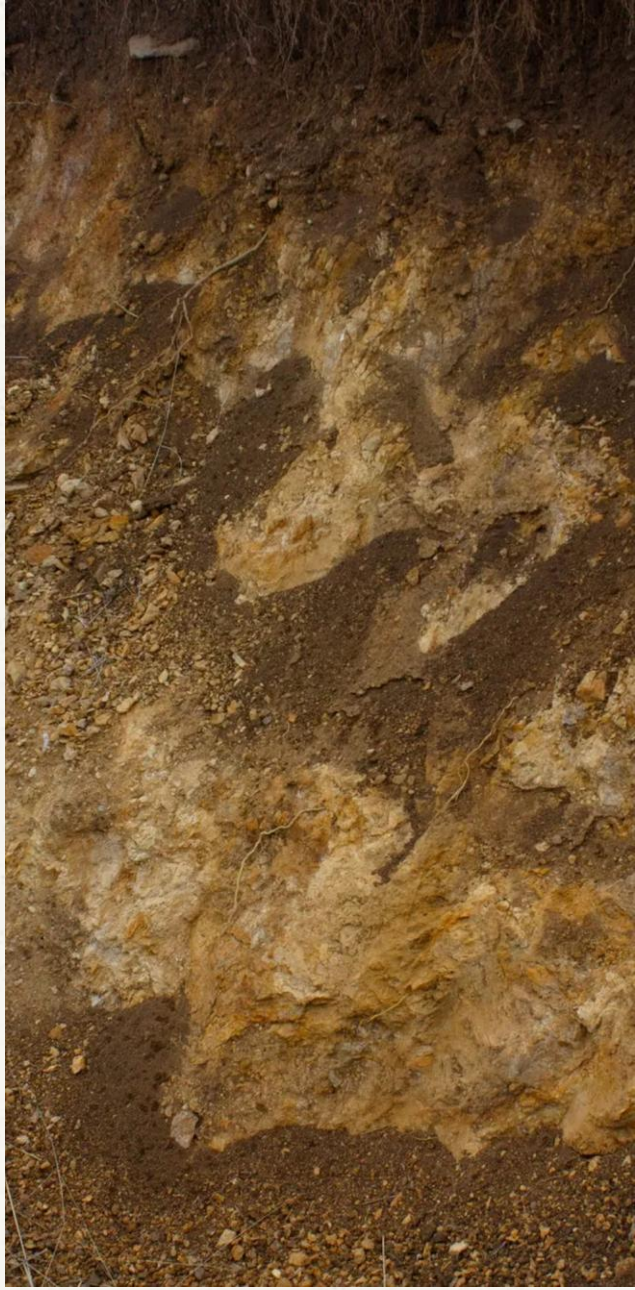
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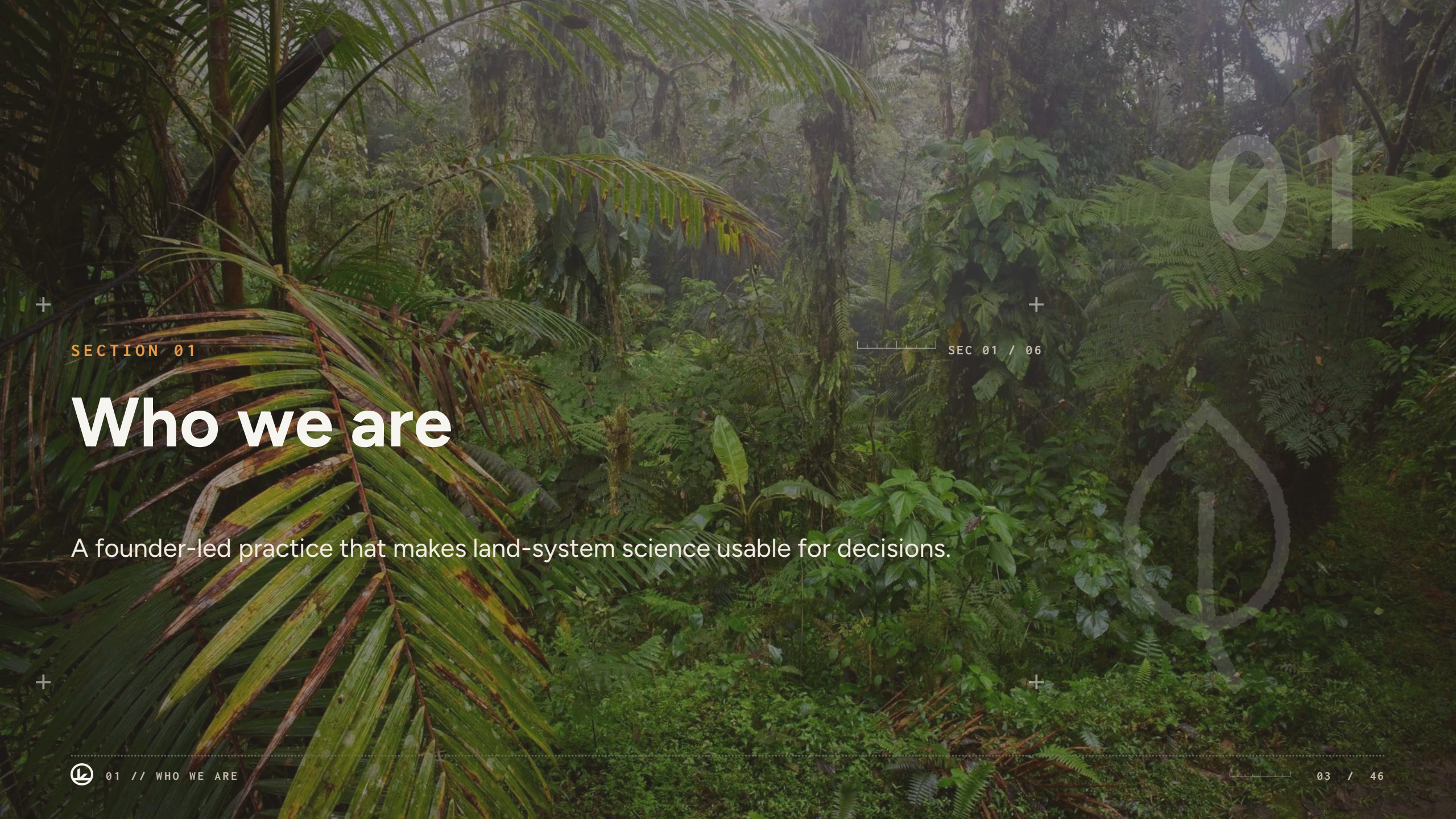
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01

SEC 01 / 06

SECTION 01

Who we are

A founder-led practice that makes land-system science usable for decisions.

An independent scientific practice for soils, carbon, and agroforestry

We help clients design study approaches, generate credible evidence, and translate land-system questions into decisions.

We combine field methods, research-grade analysis, and farm-system modeling into work that survives an auditor's scrutiny.

INDEPENDENT BY DESIGN

We sell no carbon credits and are tied to no methodology, registry, or platform. We build each model for your context, never as a black box.



THE NAME

EKODAMA

"Eco" for ecology, economy, and ecosystems, joined to "Kodama," the forest spirits of Japanese folklore. Underneath: adama (soil) and code.

France // Remote-first // Global engagements

FOUNDER // DR. THOMAS FUNGENZI

One person designs the protocol, reads the data, and writes the model



7
COUNTRIES OF FIELDWORK

PhD
SOIL CARBON, CRANFIELD

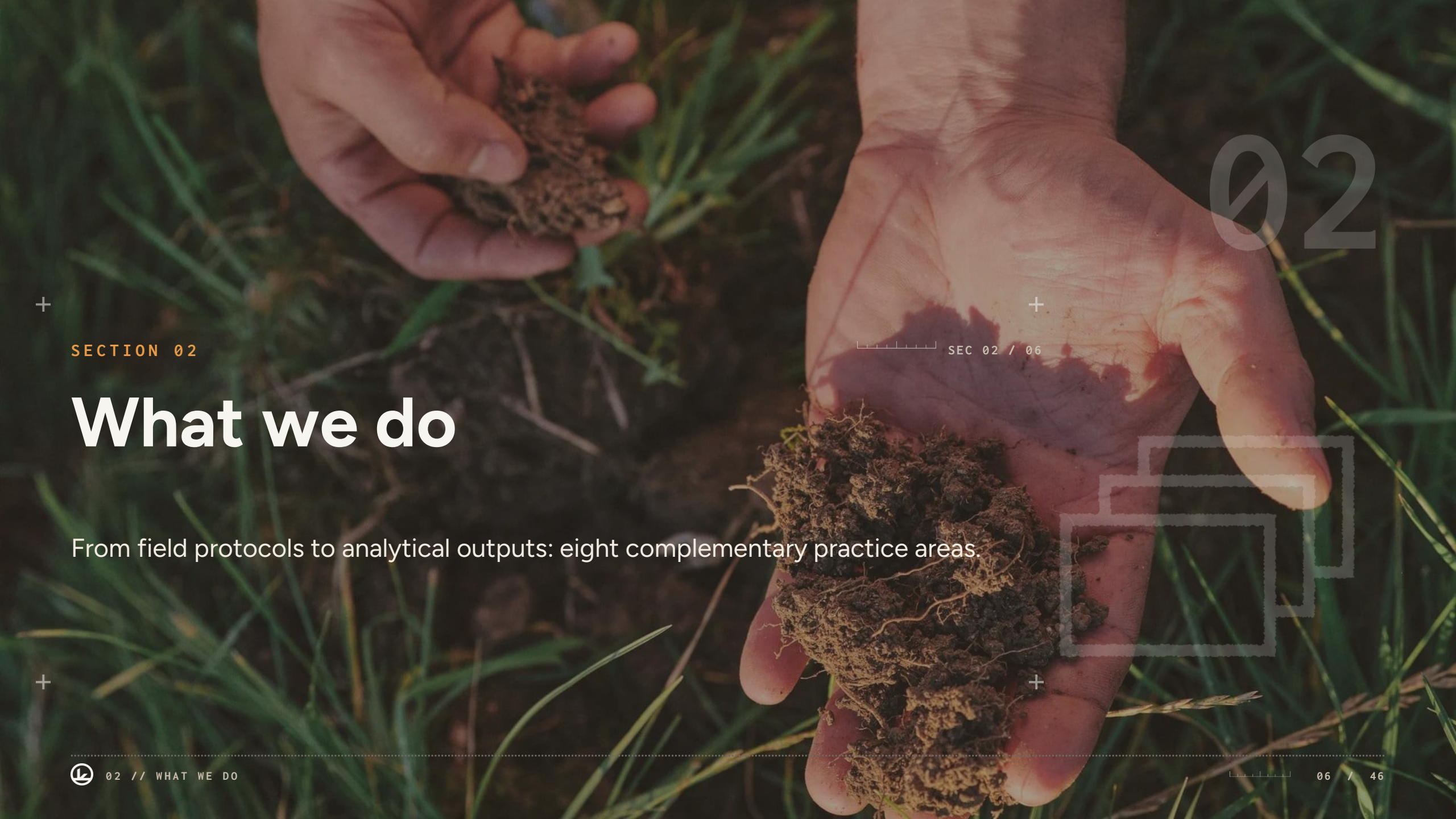
EN / FR
WORKING LANGUAGES
LEARNING ES // PT // ID

DOCTORATE
PhD, Soil carbon dynamics
Cranfield University (UK)

ENGINEERING DEGREE
Agricultural engineering
UniLaSalle (France)

MASTER'S DEGREE
MSc, Land restoration and rehabilitation
Cranfield University (UK)

SPECIALTY	Carbon modeling // Agroforestry systems // Soil carbon // Soil health // Systems modeling // Systems thinking // Statistics // Programming
FIELDWORK	Brazil // Cameroon // Colombia // Ecuador // France // Indonesia // Togo



02

SEC 02 / 06

SECTION 02

What we do

From field protocols to analytical outputs: eight complementary practice areas.

Eight practice areas, delivered directly or as your scientific advisor

Field research, analytical methods, strategic consulting, and science communication. Tap any area to jump to it.

01 Soil Health Evaluation →

02 Soil Carbon & Biomass Assessment →

03 Farm & System Analysis →

04 Experimental & Sampling Design →

05 Bespoke Tools & Technical Communication →

06 Scientific & Technical Training →

07 Scientific Literature Review & Decision Briefs →

ALONGSIDE THE CONSULTING

08 Science Communication & Design →

PRACTICE AREA 01 / 08

Soil Health Evaluation

We design and interpret soil health studies, broad or focused, with field, laboratory, and research-grade methods.

HOW WE APPROACH IT

We choose indicators that fit your situation, such as the Biofunc-tool framework, and monitoring that shows whether soil health improves or declines.

EXAMPLES

Soil Health Across Plantation Ages

Fifty sampling points across five plantation ages on a large cocoa farm, with twelve soil health indicators and nutrient probes.

Farm Advisory Council

Soil specialist for large cocoa farms in South America: soil pH, cover crops, soil health, and carbon monitoring, 2021 to 2024.

Indicator Menu for a New Program

A soil health indicator menu for a supply-chain program starting in Southeast Asia.



PRACTICE AREA 02 / 08

Soil Carbon & Biomass Assessment

We support soil carbon baselines and tree or plant biomass estimates aligned with the GHG Protocol Land Sector and Removals Standard and supplier-program realities.

HOW WE APPROACH IT

We also review soil and tree sampling campaigns, existing or planned, against carbon-accounting requirements for design, depth, bulk density, and uncertainty.

EXAMPLES

Trial Soil Carbon Baseline

One hundred samples over four plots, with bulk density, to set the soil carbon baseline of an agroforestry trial.

Monitoring Plan Review

A partner's carbon monitoring plan over 1,767 ha reviewed: 60 biomass plots, 10 transects, and 175 soil points.

Pasture Baseline Review

Feedback on a 75-module soil carbon baseline for cattle pastures in Brazil, with a two-phase design proposed.



PRACTICE AREA 03 / 08

Farm & System Analysis

We build short- and long-term farm-system models that show how management choices change emissions, removals, yields, and trade-offs.

HOW WE APPROACH IT

The model gives agronomists and sustainability leads a shared language. We can build it, or review and stress-test your provider's model.

EXAMPLES

Cocoa Farm Carbon Footprint

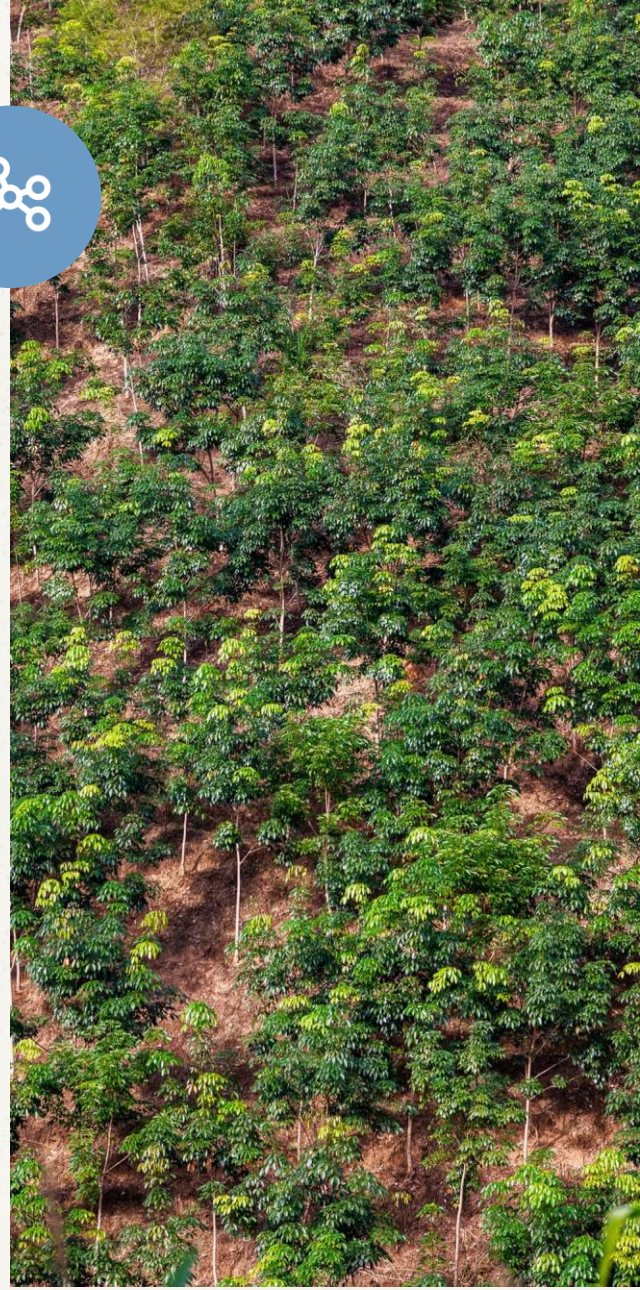
A footprint of a 477-ha cocoa farm with the Cool Farm Tool: 1.86 t CO2e per tonne of dry beans.

Residue Handling Scenarios

Four ways of handling cocoa pod husks, compared under three parameter sets: 7.7 to 614 kg CO2e per tonne.

Fifty-Year Cocoa Farm Model

An emissions and removals model for cocoa farms over fifty years, built in 2024 and now our Carbon Farm Simulator.



PRACTICE AREA 04 / 08

Experimental & Sampling Design

Statistically designed field experiments and sampling plans, plus independent review of plans from your team or another provider.

HOW WE APPROACH IT

How many samples do you need? Can the design detect change? Is the treatment comparison fair? We answer from first principles or as a second opinion.

EXAMPLES

Fertigation and Soil Organic Matter

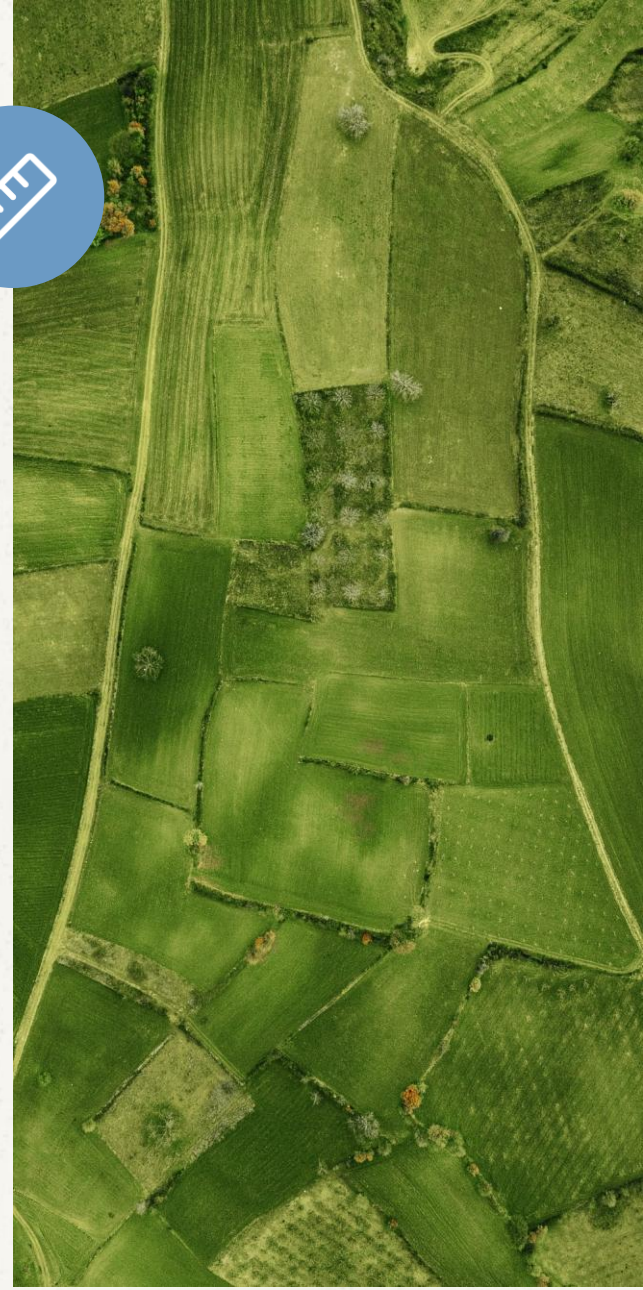
A 48-plot trial on how fertigation changes soil organic matter on an irrigated farm, designed and ready to start.

Soil Carbon Sampling Guide

A soil carbon sampling guide for programs working under the GHG Protocol Land Sector and Removals Standard. In draft.

Wheat Monitoring Plan Review

An independent review of a soil monitoring plan for a regenerative wheat program in China.



PRACTICE AREA 05 / 08

Bespoke Tools & Technical Communication

We turn complex analysis into everyday tools: dashboards, decision-support apps, hand-drawn system diagrams, maps, and technical syntheses.

HOW WE APPROACH IT

Visual synthesis is our main way to explain a complex system simply. Program managers, agronomists, and sustainability leads can all use the result.

EXAMPLES

Knowledge Platform Prototype

A 24-page prototype and an onboarding package for a learned soil society's platform, across 12 thematic communities.

Sample-Size Calculators

Browser calculators that size soil carbon sampling campaigns, built for a supply-chain program.



PRACTICE AREA 06 / 08

Scientific & Technical Training

Training in the working knowledge your teams need for the job. We do not issue professional certifications.

HOW WE APPROACH IT

We teach how to think about soils, agroforestry, and carbon, from protocol design to sampling and interpretation, so teams gain independence.

EXAMPLES

Agroforestry Train-the-Trainer Course

Five short online modules on cocoa agroforestry, written and presented by our founder. The first modules are recorded.

Farmer Training Programs

Online and live courses on soil and conservation agriculture, designed with scientists and farmers, 2017 to 2018.

Soil Carbon Modeling Talks

Talks on soil carbon modeling at the IUSS centennial congress and a Cool Farm Alliance meeting, 2024.



PRACTICE AREA 07 / 08

Scientific Literature Review & Decision Briefs

When a decision is due and the literature is vast or contradictory, we condense the relevant science into a clear, sourced, opinionated brief.

HOW WE APPROACH IT

We go from what the research says to what it suggests for your situation. Useful before you fix a methodology, target, claim, or program design.

EXAMPLES

Cocoa Allometric Equations Review

Fifteen published cocoa biomass equations from seven countries, reviewed for reliability and fit to site.

Removals Interpretation Memos

Eight memos and a gap analysis of about 25 removals questions under the GHG Protocol Land Sector and Removals Standard.



PRACTICE AREA 08 / 08

Science Communication & Design

We design websites, illustrations, learning games, and materials for events and courses that carry soil science to a wider audience.

ALONGSIDE THE CONSULTING

Most of this work is for the French Soil Science Society (AFES), but not all of it.

EXAMPLES

e-Sol Platform Support

Since 2025, we have supported AFES on e-Sol, a collaborative platform for people working on soils in France.

Soil Quest and the Map of Soil Science

Games and interactive maps that teach by exploring, both in the Ekodama Lab.



SECTION 03

SEC 03 / 06

How we work

Method you can inspect at every step, from first question to final output.

We deliver the project, or we act as your scientific advisor

DIRECT DELIVERY

We deliver the project at our scale

A focused review, a sampling design, a literature synthesis, a custom dashboard. We scope it, do the work, and deliver a decision-grade output.

SCIENTIFIC ADVISOR

We are the scientific eye on your program

On a larger program run with other providers, we help select indicators, evaluate proposals, supervise the work, and interpret results, with no new headcount.

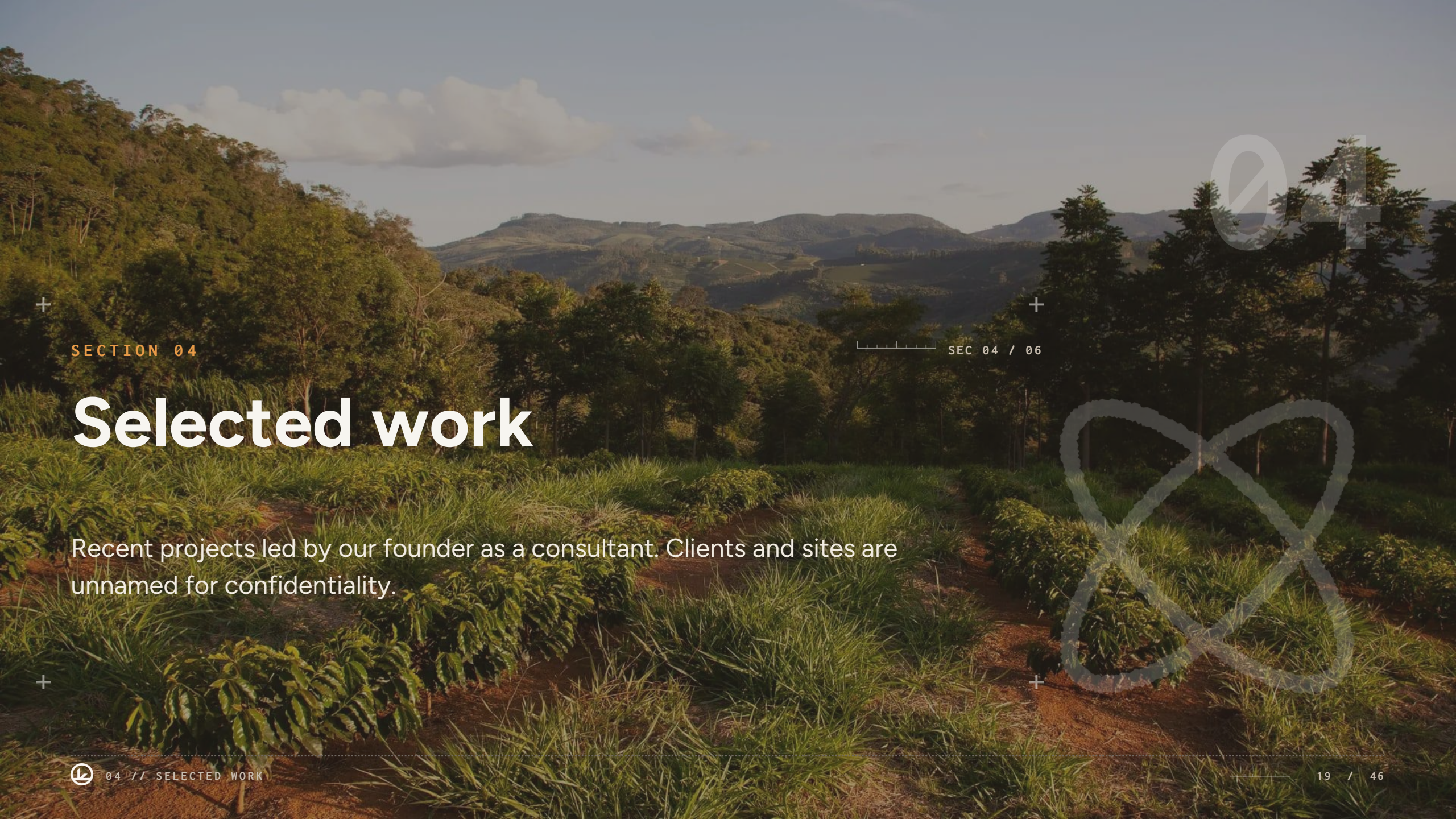
A COMMON ENTRY POINT

Reviewing a soil or tree sampling protocol before the campaign against carbon-accounting requirements, not only agronomic ones.

Twelve deliverables you can commission alone

Individual deliverables, not packages. Commission one alone, or combine several into an engagement.

01	Sampling design + protocol review	02	Soil characterization report	03	Soil carbon baseline
04	Biomass & allometry assessment	05	Statistical model or scenario analysis	06	Decision-support dashboard or app
07	Hand-drawn diagram or spatial map	08	Literature review or decision brief	09	Training workshop or curriculum
10	Independent peer review	11	Custom MRV or methodology document	12	Bespoke scientific tool or web build



SECTION 04

Selected work

Recent projects led by our founder as a consultant. Clients and sites are unnamed for confidentiality.

SYSTEMATIC REVIEW // GLOBAL

An ongoing systematic review of what drives cocoa yield variability

THE CHALLENGE

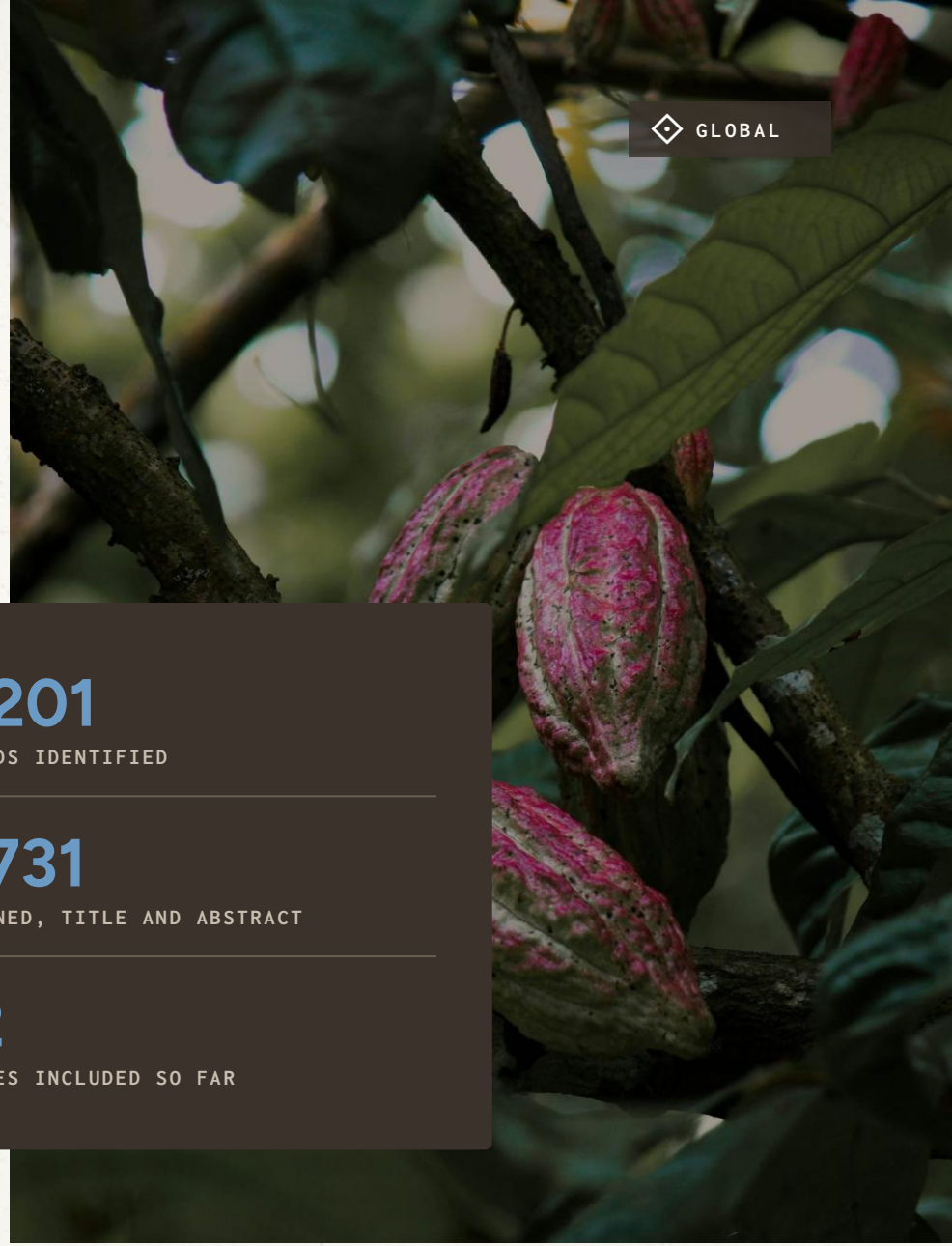
A cocoa research team wanted the published evidence on why cocoa yields vary so widely, gathered in one base it could review.

PROGRESS SO FAR

A written review protocol and a literature search

Abstract screening done, and a blind re-check of a sample comes next

Full-text review and data extraction underway: 87 papers assessed



4,201
RECORDS IDENTIFIED

2,731
SCREENED, TITLE AND ABSTRACT

62
STUDIES INCLUDED SO FAR

MRV ADVISORY // MULTI-COUNTRY

Choosing a soil carbon monitoring provider for a five-country program

THE CHALLENGE

A multinational agri-food company needed a provider to monitor soil carbon in five countries from 2026 to 2031, and a choice it could defend.

DELIVERED

- **A long list, RFI, and RFP that took 31 candidates down to two finalists**
- **A technical evaluation and decision rationale, scored by a panel of four**
- **A pre-signature review of the contract and scope of work**



31
PROVIDERS ON THE LONG LIST

9
TECHNICAL AND COMMERCIAL CRITERIA

2
CONTRACT GAPS CLOSED BEFORE SIGNING

FIELD EXPERIMENT // SOUTH AMERICA

A shade-by-genotype cocoa trial, designed and planted in 2026

THE CHALLENGE

An irrigated cocoa farm wanted to know which shade level suits which planting material, measured in the field rather than assumed.

DONE SO FAR

- **A block design: 5 blocks × 4 shade levels × 3 genotypes, over 169 rows**
- **Field protocols in two languages**
- **Planted in April 2026, and the first monitoring round comes next**



4 × 3
SHADE LEVELS × GENOTYPES, 5 BLOCKS

~24,000
TREES PLANTED, APRIL 2026

~95%
SURVIVAL AFTER PLANTING

INDEPENDENT REVIEW // WEST AFRICA

A second look at the precision of a tree carbon estimate

THE CHALLENGE

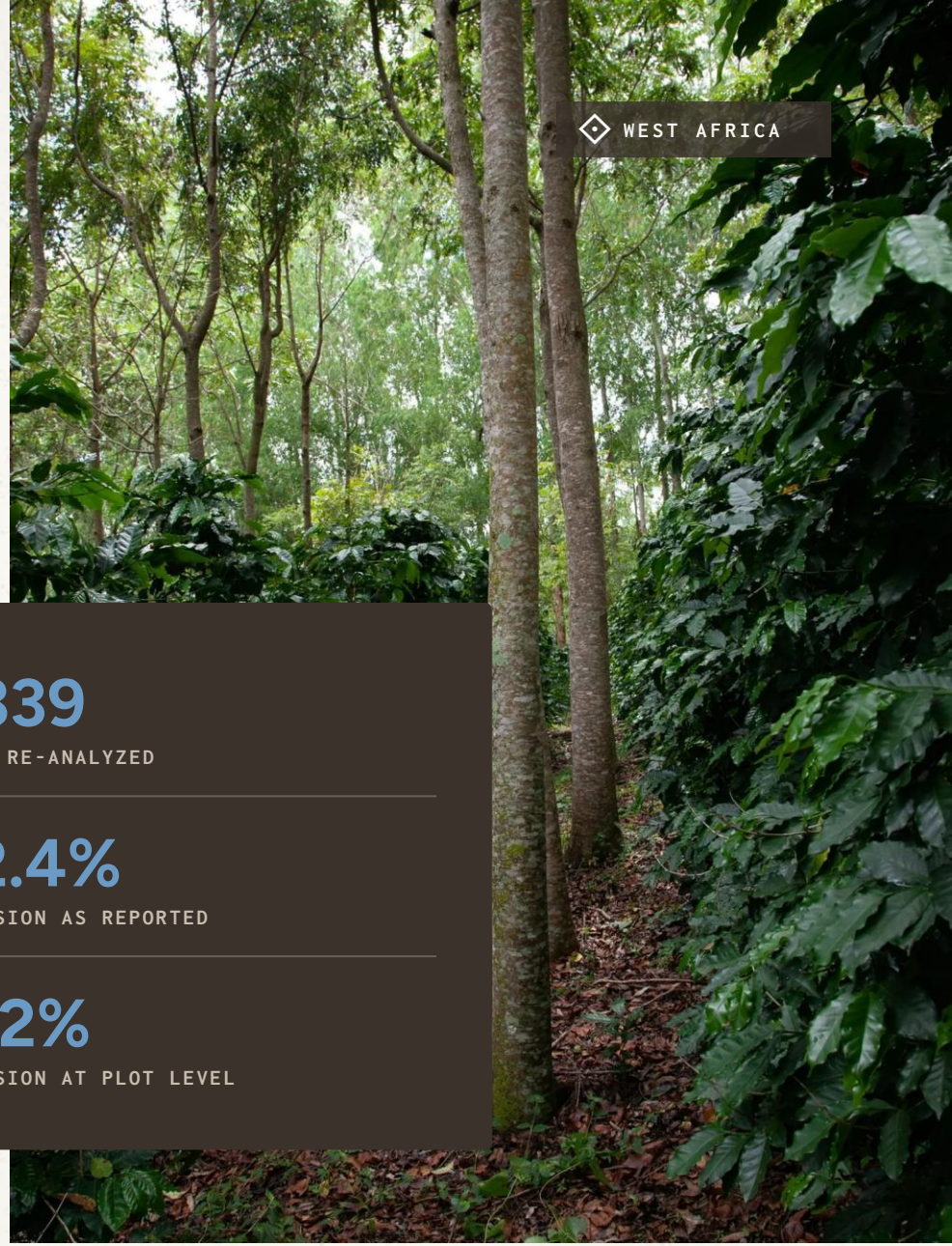
A cocoa agroforestry program received a tree carbon estimate stated at ±2.4% precision, a figure that looked tight for the sampling behind it.

DELIVERED

A reproducible re-analysis of 1,339 measured trees in 23 subplots

Precision recomputed at plot level, where the sampling unit sits

A written report of the method and the corrected figure



1,339
TREES RE-ANALYZED

±2.4%
PRECISION AS REPORTED

±12%
PRECISION AT PLOT LEVEL

ALLOMETRY // SOUTHEAST ASIA

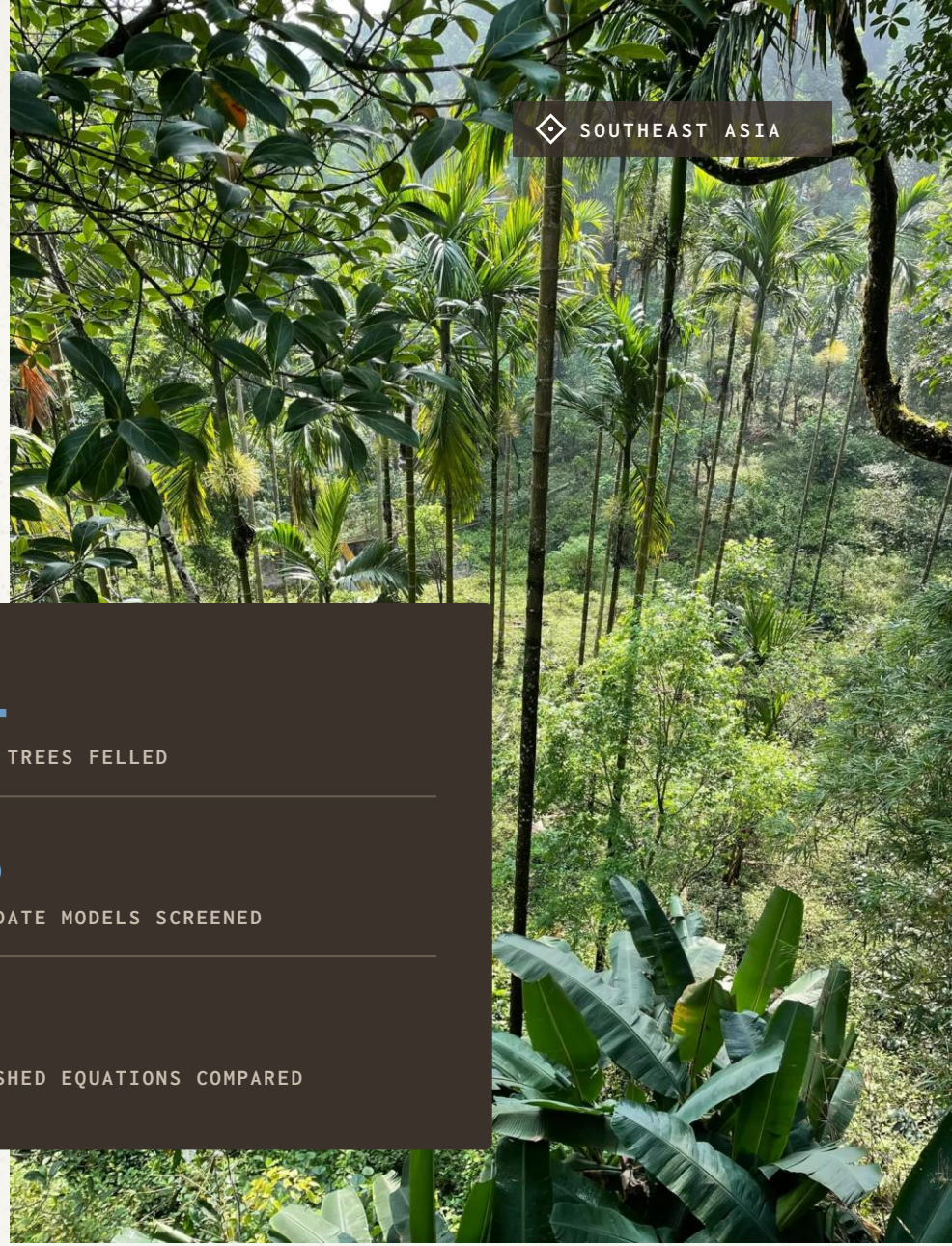
A site-specific cocoa biomass equation from destructive sampling

THE CHALLENGE

A long-running cocoa trial needed tree carbon estimates fitted to its own trees, rather than borrowed from equations built elsewhere.

DELIVERED

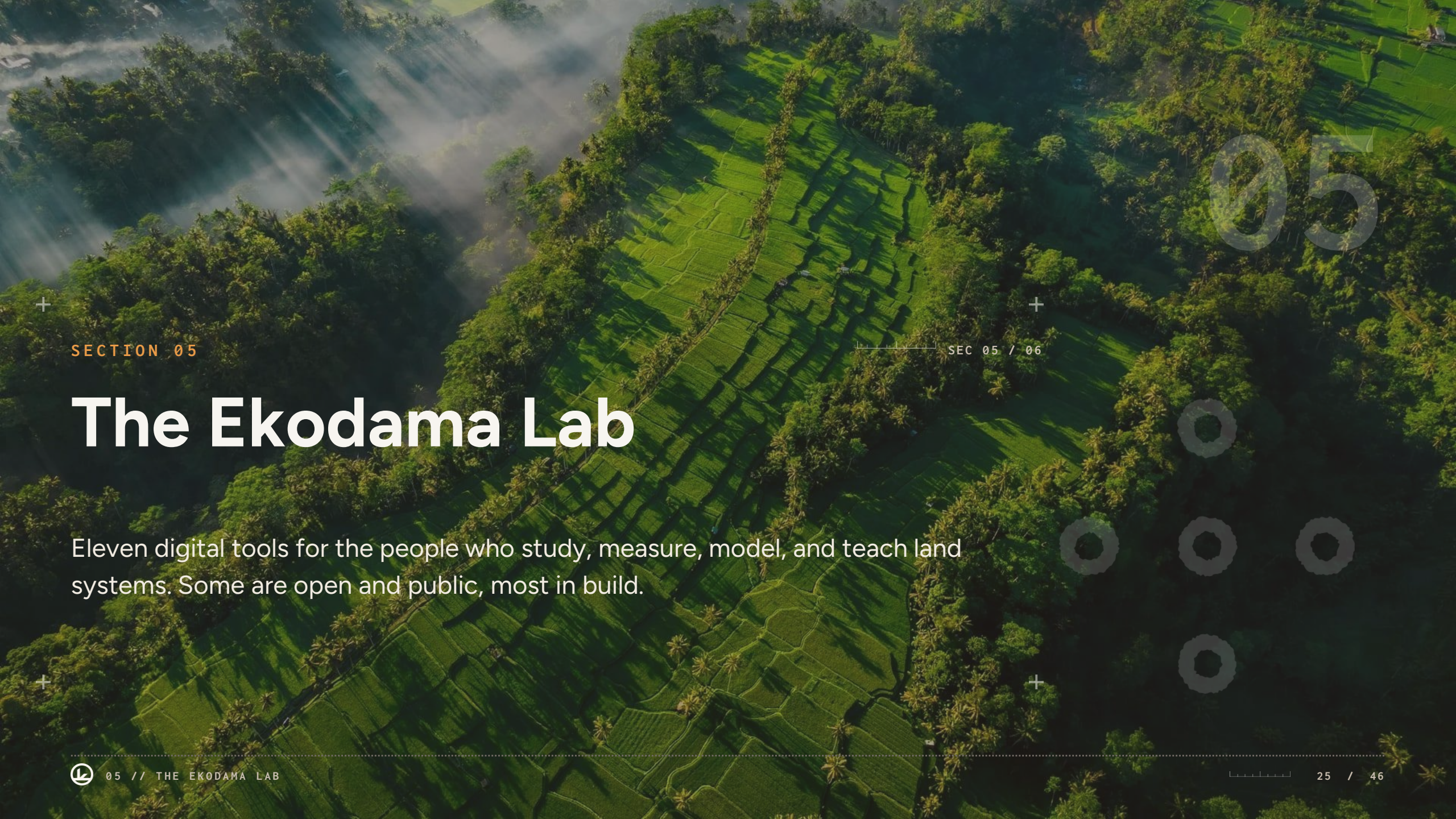
- **Destructive sampling of 24 cocoa trees in a long-term trial**
- **A site equation chosen from 36 candidates and tested against eight published ones**
- **System carbon stocks reported in 2024, the manuscript in internal review**



24
COCOA TREES FELLED

36
CANDIDATE MODELS SCREENED

8
PUBLISHED EQUATIONS COMPARED



SECTION 05

SEC 05 / 06

The Ekodama Lab

Eleven digital tools for the people who study, measure, model, and teach land systems. Some are open and public, most in build.

A constellation of eleven tools, two of them live today

Badges show each tool's status. Tap a tool to jump to it.

REFERENCE & IDENTIFICATION

Soil Photo Library
LIVE

Solum
PRIVATE BETA

TreeLine
IN BUILD

MODEL & COMPUTE

Soil Carbon Multitool
IN BUILD

Square Root
IN BUILD

Carbon Farm Simulator
IN BUILD

Arbor Lab
IN BUILD

LEARNING

Map of Soil Science
LIVE

Soil Quest
OPEN PROTOTYPE

Ekodama Academy
IN BUILD

Cocoa Farm Game
IN BUILD

TOOL // REFERENCE & IDENTIFICATION

LIVE

Soil Photo Library

A documented photo library of soil profiles, horizons, and field features, in six languages.

Real, well-described soils for courses, talks, and papers. Photos are classified in WRB and the Référentiel Pédologique, mapped, and carry a clear license. A built-in studio turns profile photos into publication-ready diagrams.



FIG 03 OPEN // phototheque-afes.lovable.app

AFES
WITH THE FRENCH SOIL SOCIETY

6
LANGUAGES, FR EN ES DE IT NL

68
SOIL TYPES, WRB 32 AND RP 36

Solum

A guided companion to the French soil classification, the Référentiel Pédologique (RP 2008).

Solum links soil-pit observations to the formal classification. A determination key leads to a named reference, asks the most decisive tests first, and explains the order. For students and practicing pedologists.



FIG 04 PRIVATE TEST CIRCLE // NOT PUBLICLY AVAILABLE

58
REFERENCES, 14 SOIL FAMILIES

29
DIAGNOSTIC HORIZONS, 12 FAMILIES

38
SOILS THE KEY CAN NAME

TreeLine

One searchable tree carbon library, with the source, method, and uncertainty of every value.

Tree carbon data is scattered across papers, spreadsheets, and institutional memory. TreeLine gathers carbon stocks, growth rates, wood density, dimensions, and allometric equations in one place. Designed to be free to browse, with no account.

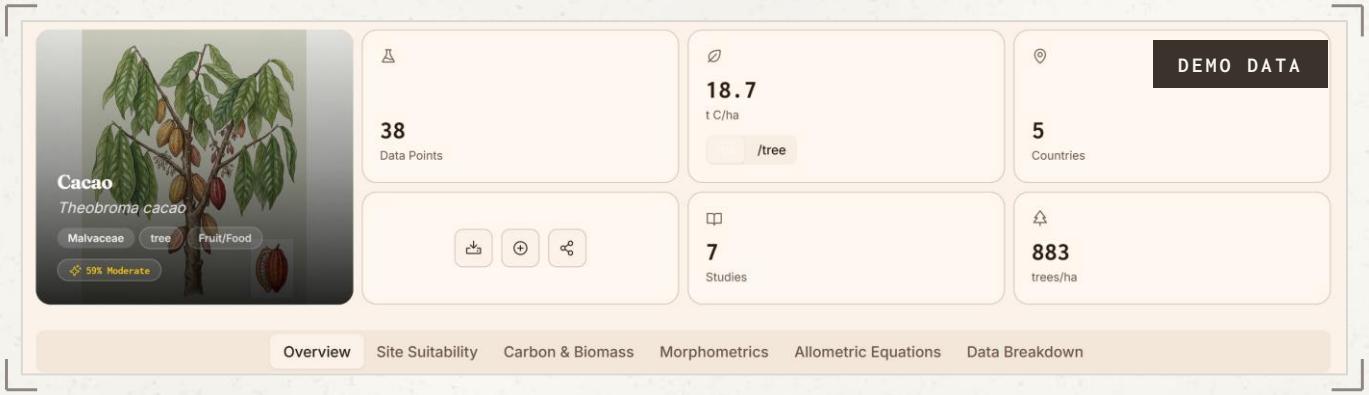


FIG 05 DEMO DATA // SEARCHABLE LIBRARY BUILT // CORPUS IN ASSEMBLY

15
MEASUREMENT TYPES, 5 DOMAINS

9
TREE SYSTEM TYPES COVERED

10
CLIMATE ZONES, TROPICS TO BOREAL

Everything known about a tree species, on one page

One page per species

Carbon stocks, growth and sequestration rates, wood density, dimensions, and allometric equations, filterable by family and function.

Equations you can judge

Each shows its DBH and age range, sample size, R-squared, country, climate zone, and system type, so you can check its fit to your site first.

Built for agroforestry

Nine tree system types, from silvopasture and woodlots to home gardens and windbreaks, across ten climate zones from the tropics to boreal.

Values in their context

Each value records the management behind it, such as fertilization, pruning, thinning, or shade, and repeat measurements show change over time.

IN BUILD

Soil Carbon Multitool

Defensible soil carbon sampling, from field design to audit.

A guided planner covers eligibility, stratification, compositing, lab method, baseline, and resampling. Twenty-two live soil, terrain, climate, land-cover, and vegetation layers help place points anywhere, with no API key to set up.

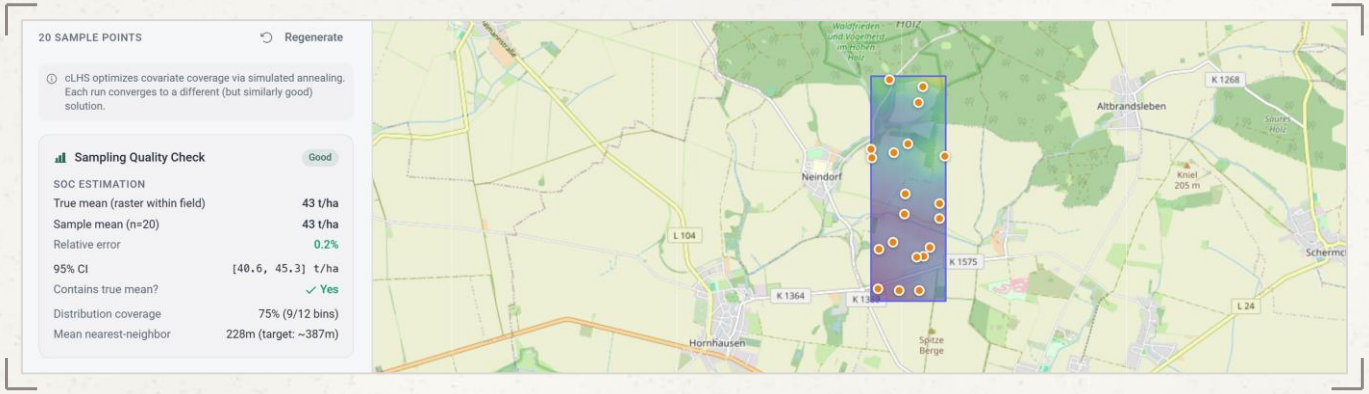


FIG 06 ALIGNED WITH GHG PROTOCOL LAND SECTOR AND REMOVALS

6
STANDALONE CALCULATORS

4
SPATIAL SAMPLING DESIGNS

22
LIVE GLOBAL DATA LAYERS

From a field boundary to a sampling plan a reviewer can check

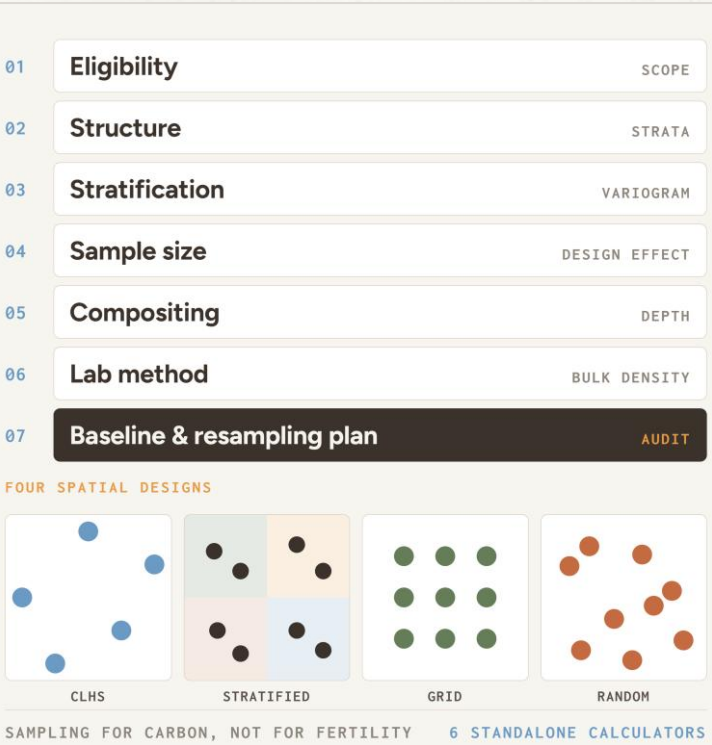


FIG 07 MULTITOOL // CAMPAIGN WORKFLOW

Four sampling designs

Conditioned Latin hypercube, stratified, regular grid, or simple random, with strata drawn from the field's own soil and terrain data.

Sample size that accounts for space

Sample size is corrected for spatial autocorrelation, so a campaign is not under-sized and the reported interval stays honest.

Global data, no setup

Twenty-two soil, terrain, climate, land-cover, and vegetation layers, down to 10 m, anywhere. Any layer that fails to load is flagged.

Exports for field and audit

Sampling points as CSV, GeoJSON, KML, or shapefile, and the plan itself as PDF, Excel, or Word.

IN BUILD

Square Root

Tests what a management change would do to soil carbon over decades, with three published models, not one.

RothC, AMG, and ICBM on one platform, at published parameter values. Compare up to five scenarios in tonnes of carbon or CO2 equivalent, per hectare or whole farm. The app states its limitations up front.



FIG 08 ROTHC // AMG // ICBM // AT PUBLISHED PARAMETER VALUES

3
PUBLISHED CARBON MODELS

5
SCENARIOS COMPARED AT ONCE

8
PEER-REVIEWED SOURCES IN APP

Test a management change on soil carbon before you commit to it

Three models, side by side

RothC, AMG, and ICBM run on the same site. When three independently published models agree on a direction, the answer is harder to dispute than one number.

Results in your reporting units

Tonnes of carbon or CO2 equivalent, per hectare or for the whole farm, from one run with nothing to re-enter.

Scenario comparison

Up to five completed runs on one chart, across models and projects, to weigh a proposed change against current practice.

Limitations stated up front

Each model comes with plain documentation of its data needs, sources, and limits, so a result can be explained to a reviewer.

Carbon Farm Simulator

Where a planting or management decision would take a cocoa agroforestry farm, decade by decade.

Planting density, shade and timber mix, rotation length, replanting delay, and land-use change evolve together over fifty years, and the carbon balance follows. Test a decision before you make it on the ground.

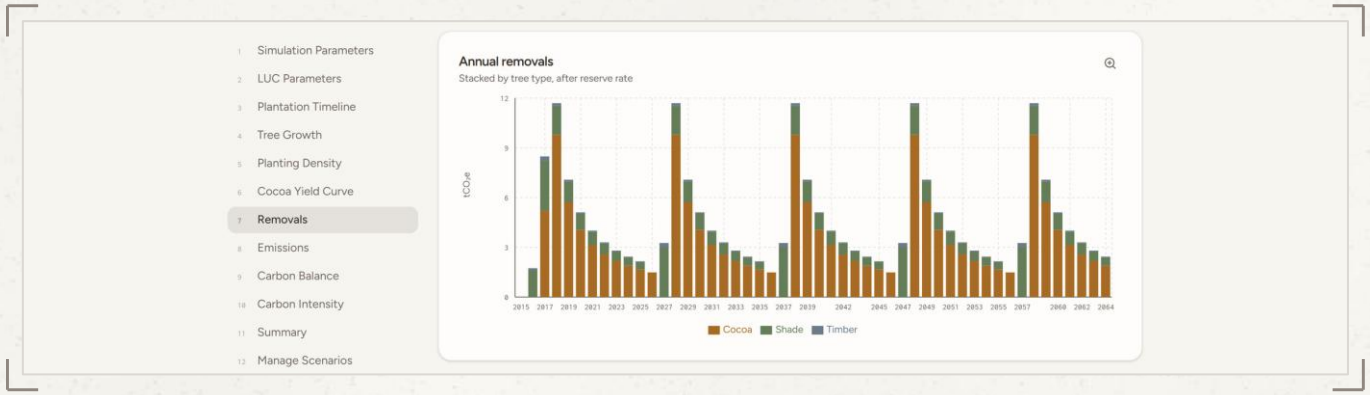


FIG 09 COCOA AGROFORESTRY // TREE CARBON // 50-YEAR HORIZON

50YR

DEFAULT HORIZON, UP TO 100

11

MANAGEMENT LEVERS TO TEST

7

EMISSION SOURCES, ONE LEDGER

A footprint shows where you stand. This shows where a decision leads.

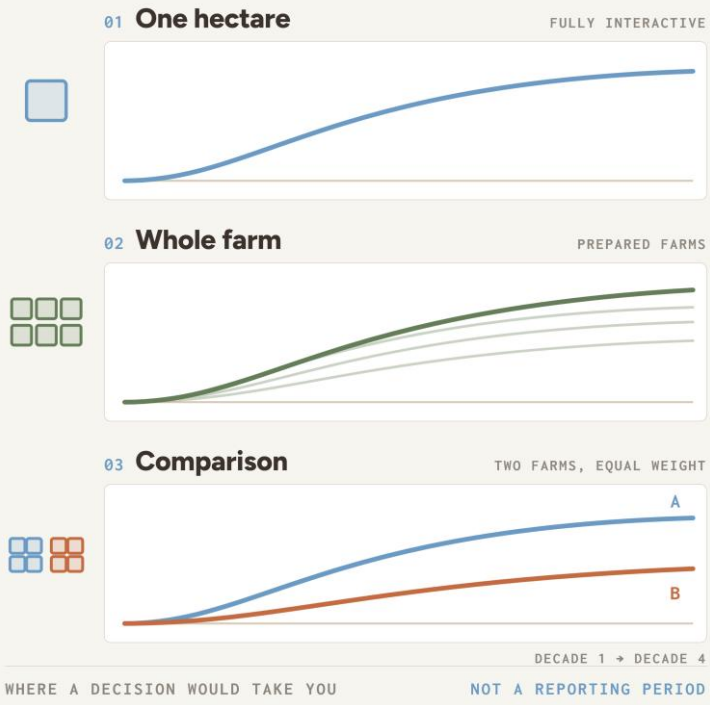


FIG 10 SIMULATOR // HECTARE TO FARM

Trajectories, not reporting periods

See how tree growth, maturing cohorts, and land-use change play out over fifty years, not a single season.

Land-use change, three ways

Amortize it evenly, discount it on a declining twenty-year schedule, or take it as a lump sum at clearance or at planting. Then compare the balance.

Options weighed, not judged

Two farms run side by side on every chart as neutral peers, so the tool compares options without ranking them.

Yield in the same picture

Cocoa yield and carbon intensity per tonne of cocoa follow the same decisions, so carbon results sit next to what the farm produces.

Arbor Lab

Shade and tree carbon in cocoa agroforestry, species by species, as the trees grow.

Sixteen species grow in 3D, by age or from field measurements, and up to three canopy layers share one plot. Shade maps cover one day or the annual mean, at any height up to 8 m. Carbon per hectare comes from published biomass equations applied to the modeled trees.



FIG 11 COCOA UNDER PORÓ SHADE TREES // A 60 X 30 M PLOT, MODELED IN 3D

16

SPECIES, 12 USED IN COCOA SYSTEMS

3

CANOPY LAYERS ON ONE PLOT

9

PUBLISHED BIOMASS EQUATIONS

LIVE

Map of Soil Science

The whole discipline on one canvas you can pan, zoom, and search, in French and English.

Every entry has a plain-language definition, most link to further reading, and eight thematic paths cross the ten domains. Open under CC BY-SA, it grew from an AFES brainstorm and Ekodama maintains it.

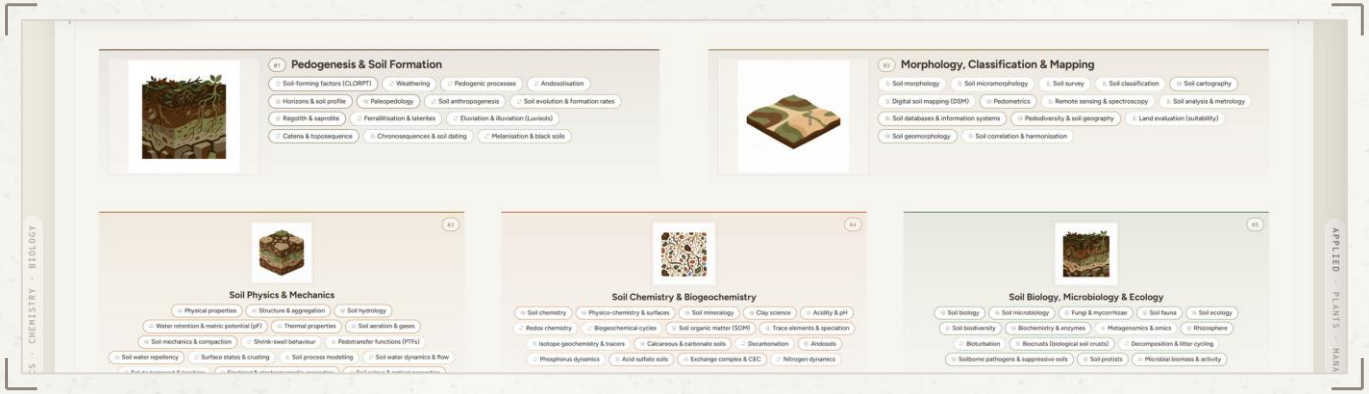


FIG 12 OPEN // ekodama-consulting.github.io/map-of-soil-science

10
DOMAINS, ORIGINS TO FRONTIERS

765
TOPICS AND SUB-BRANCHES

423
WIKIPEDIA LINKS, FR AND EN

Soil Quest

An online learning game in WRB 2022 soil classification, playable in English and French.

Each case file is a site and its soil. Players describe the pit, gather the clues, and work down the WRB key to the Reference Soil Group. A mentor comments on every wrong call without giving the answer away. Playing needs no sign-up.

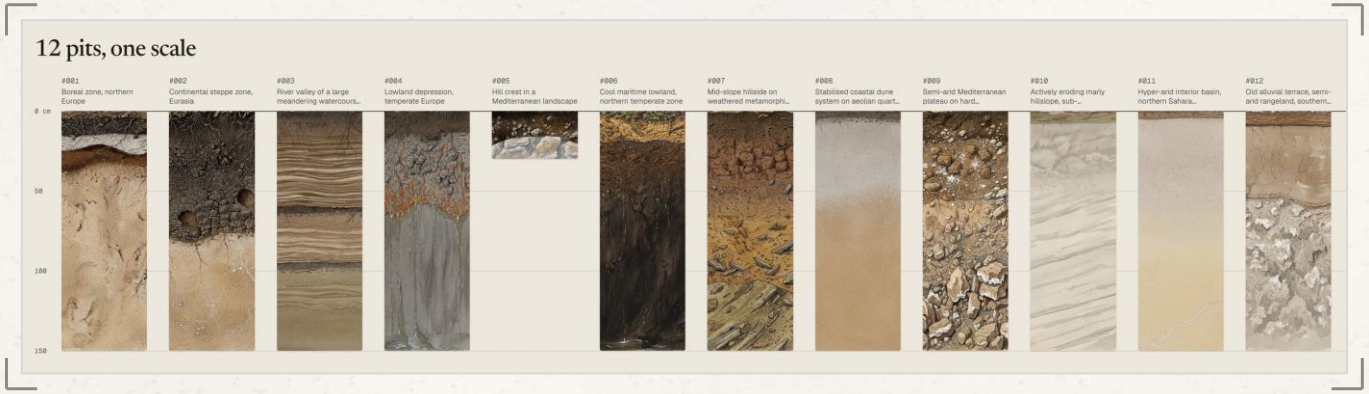


FIG 13 OPEN // soilquestgame.com

32

CASE FILES, ONE PER SOIL GROUP

12

OPEN TO PLAY, 20 MORE IN BUILD

0

WAYS TO LOSE A CASE

Ekodama Academy

A learning platform built from what the consulting work keeps teaching us.

Ten courses on soils, carbon, forestry, and regenerative agriculture, with scored exercises to pass in every lesson and a capstone exam in every course. Over 60,000 words and over 450 literature citations, in production before public launch.

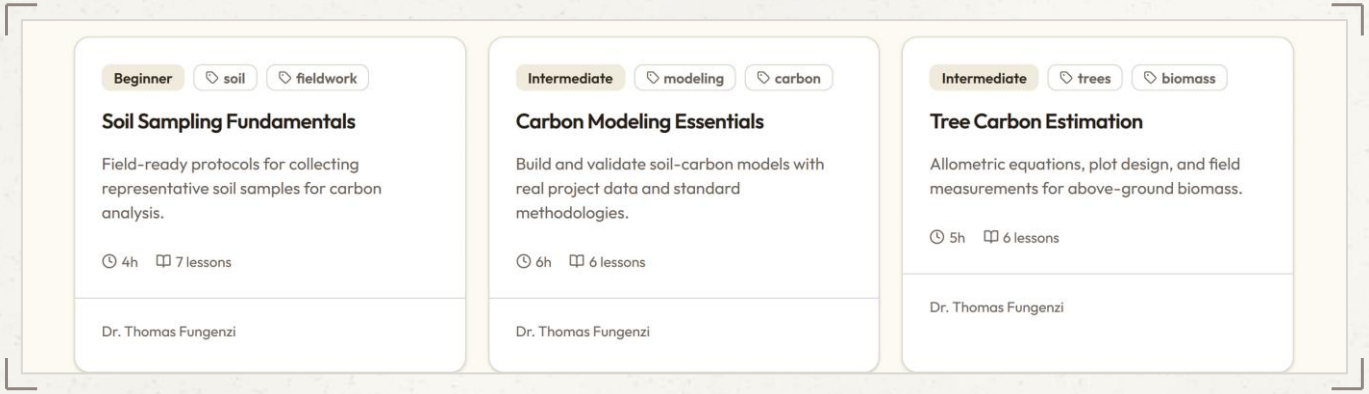


FIG 14 2 BEGINNER // 4 INTERMEDIATE // 4 ADVANCED

10
COURSES

65
LESSONS, ALL WRITTEN

45+
HOURS OF GUIDED CONTENT

Built to prove a learner did the work

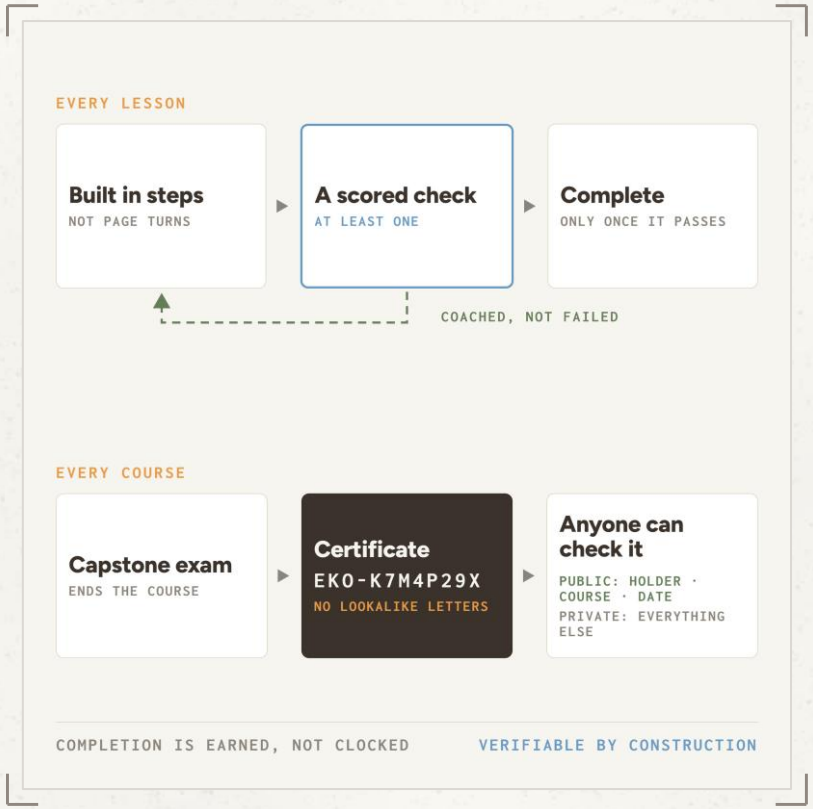


FIG 15 ACADEMY // EARNED, THEN VERIFIED

Scored checks, not page turns

274 scored exercises across the catalog. A lesson counts as complete only once its checks pass, and every course ends with a capstone exam.

Certificates that verify

Issued automatically on completion, each with a short serial that is easy to read aloud and to check.

Public check, private record

Anyone can verify a serial and see the holder, course, and date. Nothing else in a learner's record is shown.

A free lesson in every course

The first lesson of every course opens without an account, so a prospective learner can judge the depth before enrolling.

IN BUILD

Cocoa Farm Game

Run a modern cocoa farm in the browser, and see why productivity, profit, and sustainability pull apart.

Players plan blocks in full sun or agroforestry, set irrigation, pruning, and harvest rules, and trace every result to its causes. Built for courses and industry teams. The simulation core is being built now, and the playable game comes next.

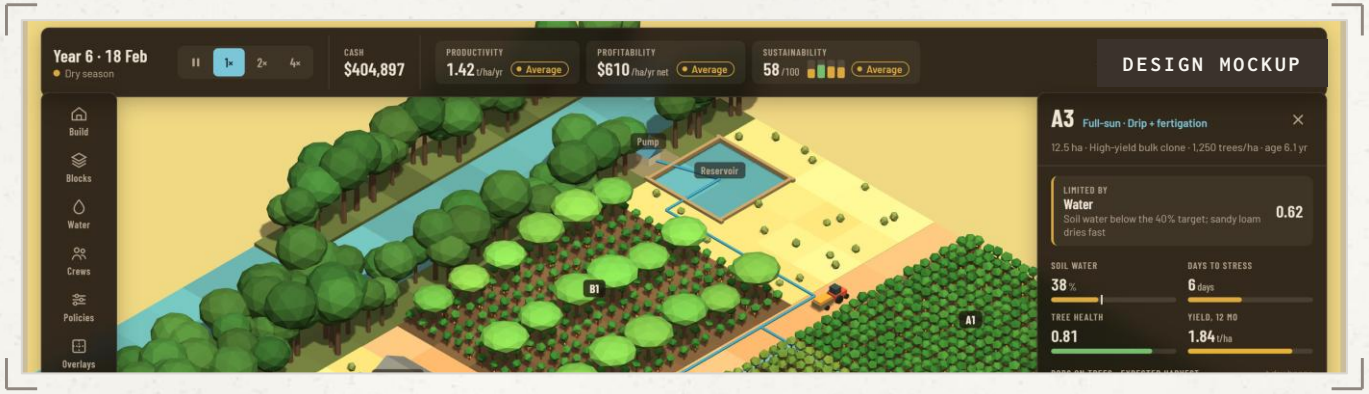


FIG 16 DESIGN MOCKUP // SAMPLE DATA // THE MAIN SCREEN AS SPECIFIED

3
GAUGES, NEVER ONE SCORE

~200 ha
ESTATE, PLANNED BLOCK BY BLOCK

10 yrs
OF FARMING IN ONE CLASS SESSION

Tools that grow out of real work, held to an auditor's standard

01

From real work

Most began as a gap in client or research work: a calculation we needed, a missing dataset, or a method we had to explain twice.

02

One quality bar

Each is built to our clients' audit standard: sourced, explicit about uncertainty, and honest about what is and is not finished.

03

Open where it can be

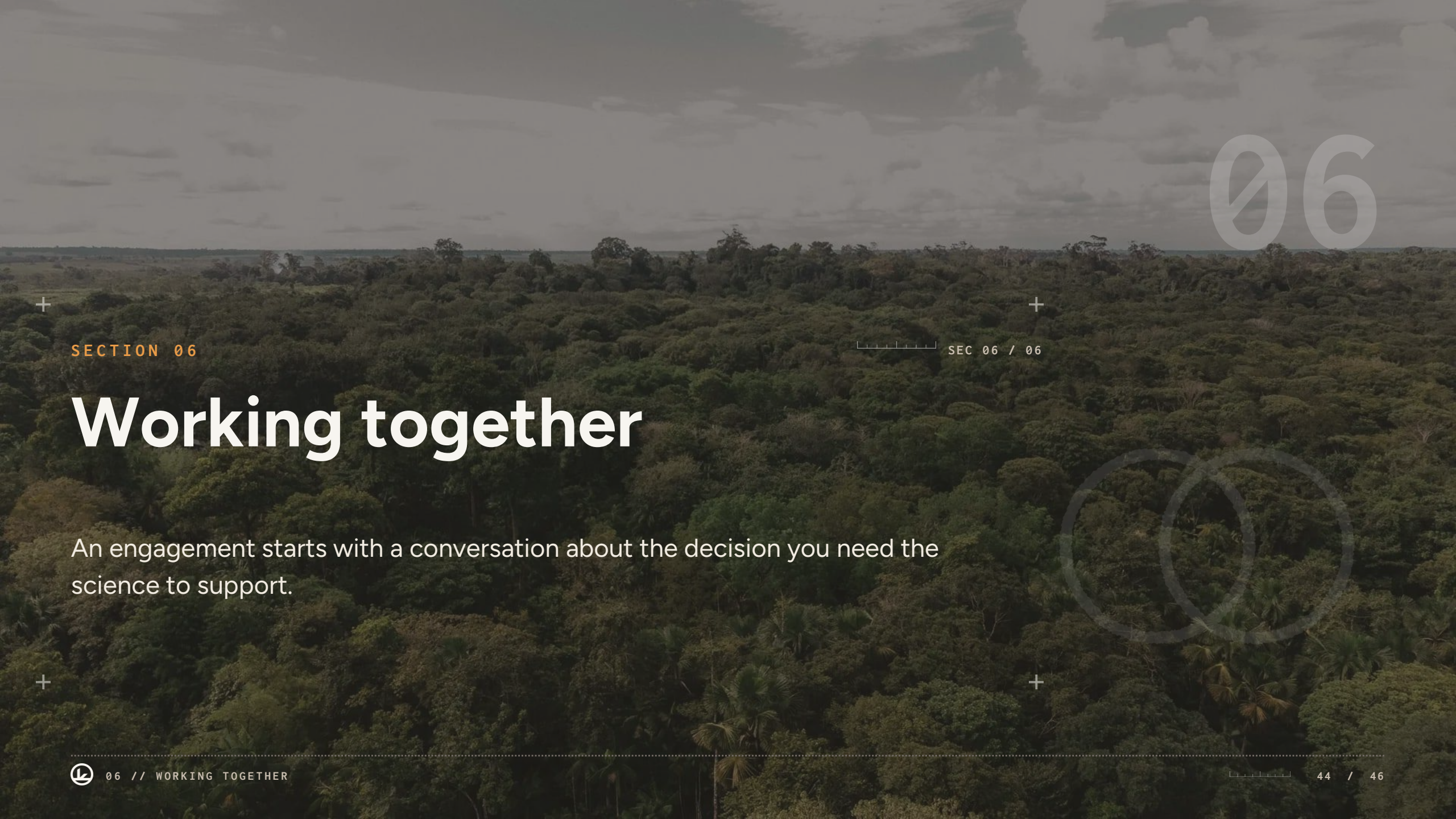
The Map of Soil Science is open under CC BY-SA. The Photo Library was built with the AFES. Every model names the published sources behind it.

04

Room for partners

Data sponsors, early testers, and institutional partners shape what gets built first. Several tools would move faster with the right collaborator.

If one of these would solve a live problem for your team, or you want to help build it, contact us.



06

SECTION 06

SEC 06 / 06

Working together

An engagement starts with a conversation about the decision you need the science to support.

Four steps from a first conversation to a decision-grade output

01

Problem framing

We clarify the decision the data must support, and the budget, geography, and deadlines that shape how much rigor is possible.

02

Proposal & methodology

A tailored written proposal: defensible method, clear deliverables, assumptions, and an uncertainty budget.

03

Collaborative execution

We work with your team and field partners, and test, adjust, and document protocols as we go.

04

Delivery & next steps

A reviewable, decision-grade output: report, dataset, tool, or methodology, with follow-up and audit defense.

HOW WE WORK

We accept a small number of engagements each year and reply to every serious inquiry. The first conversation about your question is free.

ekodama

EKODAMA // FIELD PRACTICE REF 2026-10

GROWING DECISIONS ROOTED IN SCIENCE

Let's have a conversation

Tell us what you are working on. Details on site, scale, deadlines, and the decision at stake make our first response more useful.

contact@ekodama.pro // www.ekodama.pro // linkedin.com/company/ekodama

Soil // Carbon // Agroforestry