QATUAN SUSTAINABLE DEVELOPMENT NETWORKS

QAT SDN

LIVING intelligence

QAIB

QAIB

Regenerative Systems Architecture

Systems Logic Behind the Field

Presented by Jamie Conway

EcoRestoration Alliance 2026

Bridging Cosmos, Intelligence, and Regeneration

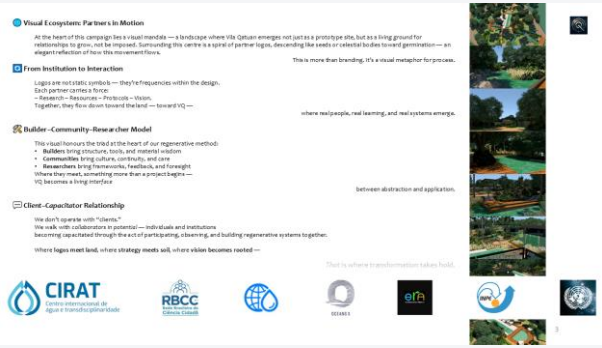
WHY WE BUILT IT — THE STRUCTURAL PROBLEM

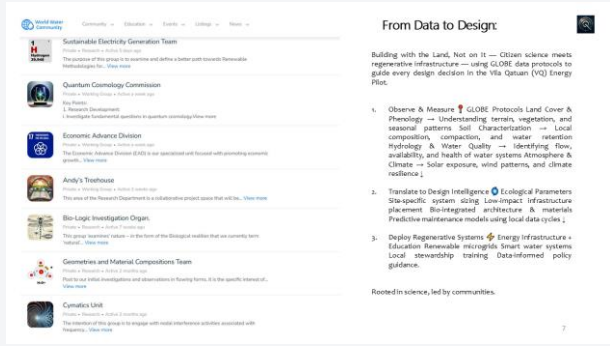
Regeneration fails when governance is poorly defined.

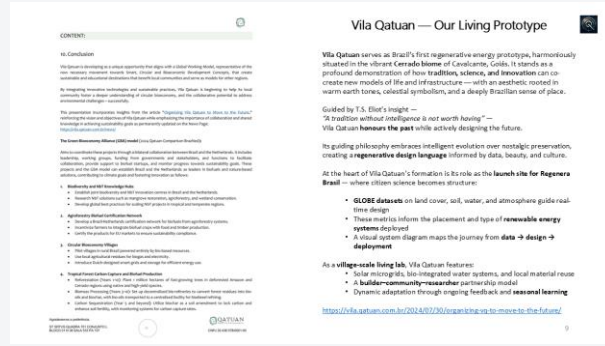
1. Fragmented Responsibility
   Flows cross actors, but no actor owns the whole system.
2. Technical Fixes Without Integration
   Devices are installed; metabolism remains broken.
3. Measurement as Reporting, Not Design
   MRV appears after failure, not before intervention.
4. Scaling Without Feedback
   Projects expand before stabilizing their cycles.

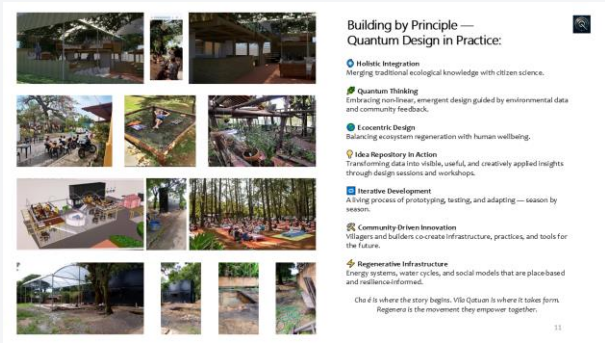
This work began as a systems analysis into why regenerative efforts collapse — and what governance architecture is required for them to endure.

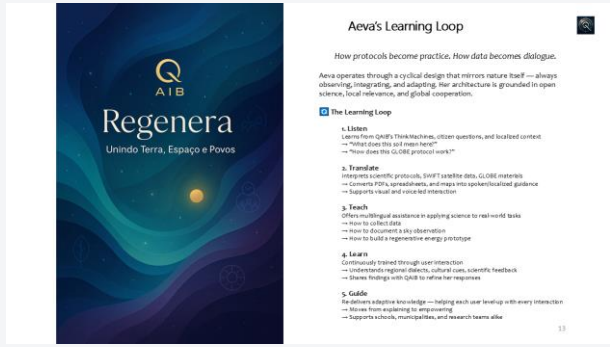
A WORKING GOVERNANCE PATTERN

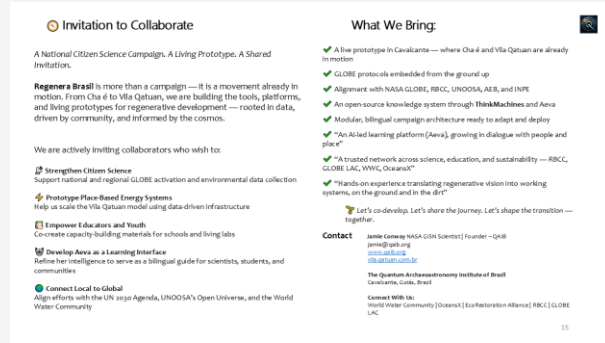






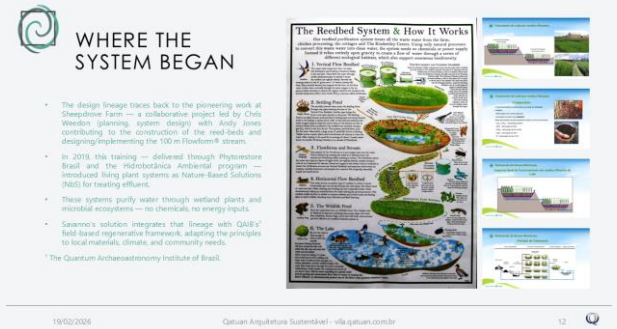


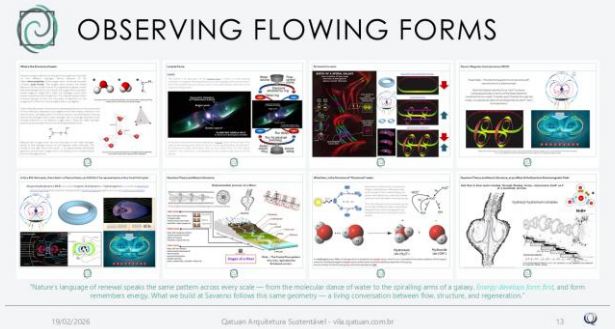


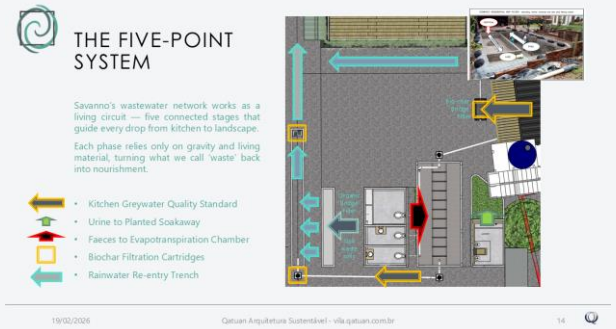


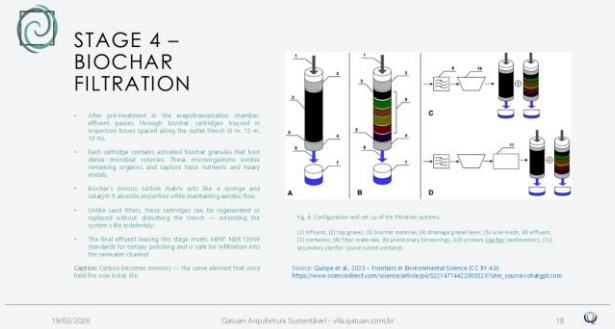
"What began as a campaign now functions as a governance discipline — structured, measurable, and field-tested."

FROM SHIT TO SPACESHIP — STRUCTURAL LOGIC IN PRACTICE



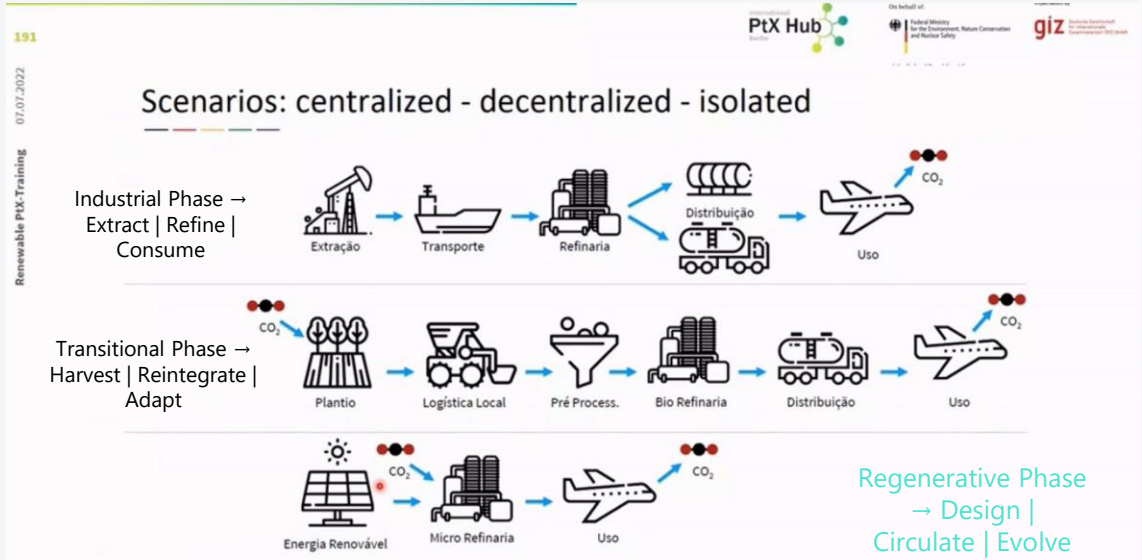






"Nature's language of renewal speaks the same pattern across every scale — from the molecular dance of water to the spiralling arms of a galaxy. *Energy develops form first*, and form remembers energy. What we build at Savanno follows this same geometry — a living conversation between flow, structure, and regeneration."

FROM PATTERN TO MEASURABLE PRACTICE



Matter → Energy → Intelligence → Matter → ...

Sources:

Diagrammatic logic adapted from PtX system analysis and circular-economy frameworks. Re-expressed for QAIB / Qatuan field architecture.

Qatuan Operational Translation Layer

1. Observe the Field ~ Map flows, constraints, actors, and leakage points.
2. Define the Boundary ~ Clarify scale, responsibility, and system limits.
3. Identify Metabolic Breaks ~ Where value, nutrients, energy, or trust are lost.
4. Re-link Flows ~ Convert waste streams into usable cycles.
5. Stage the Intervention ~ Implement in sequenced, testable phases.
6. Embed Feedback Loops ~ Monitoring before scaling.
7. Quantify Outputs ~ Nutrients recovered, emissions reduced, costs avoided.
8. Stabilize the System ~ Adjust based on measured performance.
9. Communicate Transparently ~ Make the process partner and community legible.
10. Replicate with Context ~ Transfer principles, not templates.

Operational scaffold used to translate industrial systems into regenerative field infrastructure.

MEASURABLE RESPONSES — THE CYCLE IN ACTION

Governance becomes visible when flows are measured.

Left: Field Observation Plate → behavioural discipline.

Right: Savanno Sheet → financial + operational accountability.

QATUAN · QAIB · GLOBE — Field Observation Plate

SYSTEM INFO
Notes: _____

Site ID: _____
Date: _____ Time: _____
Observer(s): _____

AIR & RAIN
Notes: _____

☐ Air Temp: _____ °C
☐ Rain (last 24h): _____ mm
☐ Sky: ☐ Clear ☐ Cloudy
☐ Rain ☐ Storm

WATER
Notes: _____

☐ pH: _____
☐ Transparency: _____ cm
☐ Mosquito Larvae Present?
☐ Yes ☐ No

SOIL
Notes: _____

☐ Moisture: ☐ Dry ☐ Moist ☐ Wet
☐ Smell: _____

SOUND + WILDLIFE
15–30 sec Sound Log Notes: _____

Wildlife Seen/Heard: _____

VISITORS + LITTER
Type(s): _____

☐ Visitors Today: _____
☐ Litter Count: _____ pieces

NOTES / INSIGHTS

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Savanno_Operational_Baseline_Log

File Edit View Insert Format Data Tools Extensions Help

A1:K1 QAIB / QATUAN – SAVANNO ORGANIC & SERVICE LOAD LOG

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	QAIB / QATUAN – SAVANNO ORGANIC & SERVICE LOAD LOG												
2	7-Day Operational Baseline Study												
3													
4	Location:	Savanno											
5	Week Starting:	09/02/2026	15/02/2026	Semana: 09/02/2026 – 15/02/2026							WEEKLY FOOD SNAPSHOT		
6	Supervisor:												
7													
8	Total Waste (kg) – Week		24.22										
9	Total People Fed – Week		709.9								Food Revenue:	R$15,621.60	
10	Avg Waste per Person – Week		0.03	ON TARGET									
11	Target Waste per Person (kg)		0.2								Target Waste %:	8.00%	
12	People per Cover (est.)		2.3								Waste % (by weight):	12.40%	
13	Estimated Paid People		650.9										
14													
15	Retail Value per kg (R$)		80		0.5	Food-cover rate	0.6	kg	Avg drinks/head: 2 × R$15		Food Waste (Retail Value):	R$1,937.60	
16	Ingredient Cost %		0.35										
17	Cost Lost (R$)		R$678.16								Ingredient Cost Lost:	R$678.16	
18													
19	Date	Day Type	Covers Paid	Friends / Family	Staff Fed	Total Fed	Baseline Menu	Kitchen Waste (kg)	Wash Basket Solids (kg)	Grease Trap Cleaned	Notes	Waste per Person (kg)	
20	09/02/2026					0				no			
21	10/02/2026					0				no			
22	11/02/2026					0				no			
23	12/02/2026					0				no			
24	13/02/2026	Event	50	4	14	133	Regul...	8.22		no		0.06	
25	14/02/2026	Peak	103	4	14	254.9	Regul...	4		yes	CaixadeGorduras rebuilt correctly	0.02	
26	15/02/2026	Peak	130	6	17	322	Regul...	12		no	Weight not taken. Fine = 12kg	0.04	
27	16/02/2026	Peak	125	6	15	308.5	Regul...	13		no		0.04	
28	17/02/2026	Peak	94	6	8	230.2	Regul...	12		no	Weight not taken. Fine = 12kg	0.05	
29	18/02/2026					0							
30	19/02/2026					0							
31	20/02/2026					0							
32	21/02/2026					0							
33	22/02/2026					0							
34	23/02/2026					0							

Sheet1

QAIB

PART II
Tools of Regeneration

How Qatuan and QAIB Turn Theory into Practice

Full open-source documentation available via the Qatuan / QAIB Regenerative Resource Library (RRL).
https://vila.qatuan.com.br/regenerative-resource-library/

COMPETENCE BASE — EAWAG SANITATION MOOC SERIES

World-standard technical training

for regenerative water systems

To design regenerative water systems, practitioners need a shared foundation.

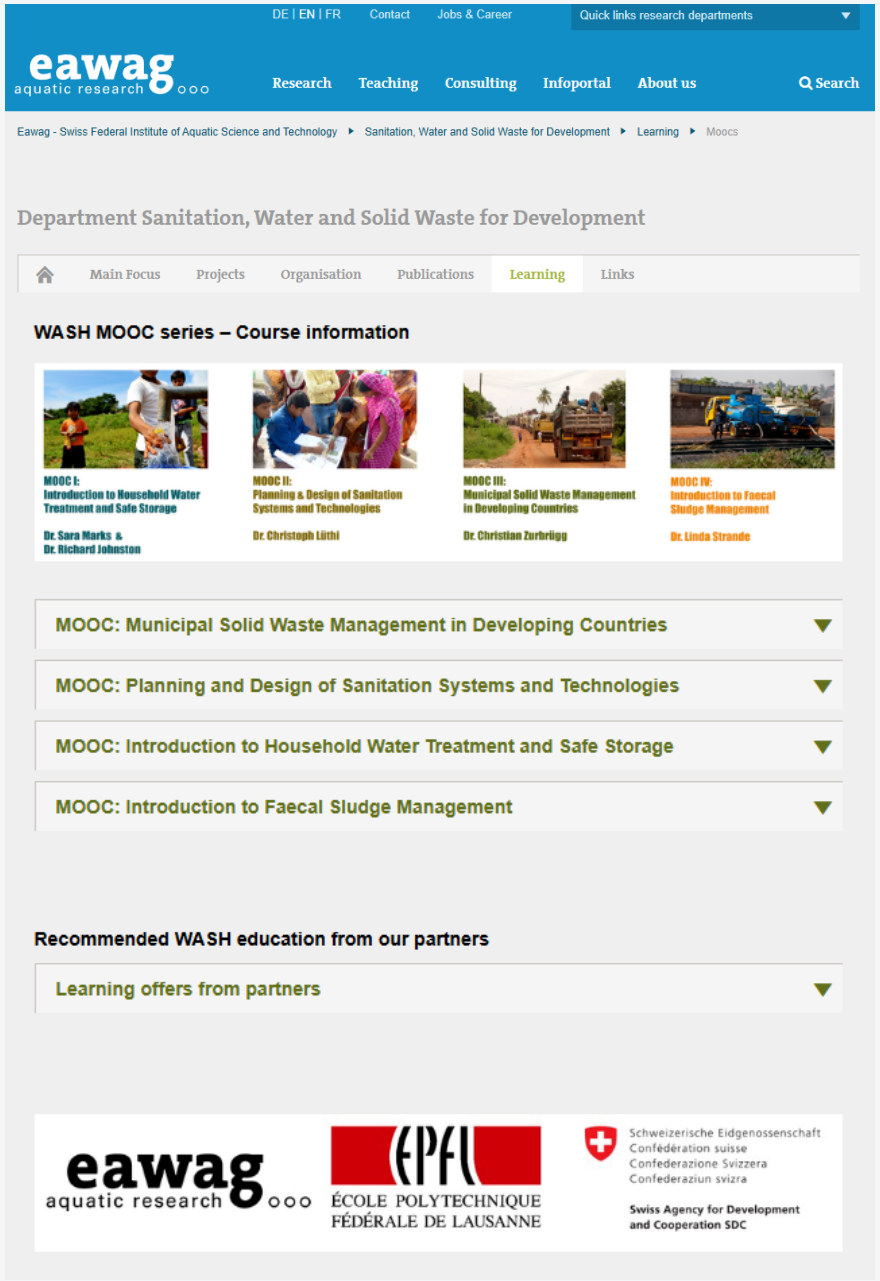
Eawag's open-access sanitation courses (ETH Zürich) form the global benchmark for Nature-Based Solutions, integrating engineering, ecology, and public health into one competence layer.

We use it because:

- It provides globally validated technical training
- It aligns practitioners with real-world sanitation logic
- It forms the literacy base for Savanno, VQ, and QAIB field labs

COURSE:
https://www.eawag.ch/en/department/sandec/digital-learning/moocs/

BOOK (Free):
https://www.eawag.ch/fileadmin/Domain1/Abteilungen/sandec/publikationen/EWM/Book/fsm_book.pdf



ENVIRONMENTAL INTELLIGENCE —

NASA GLOBE PROTOCOLS

To regenerate a system, we must first learn to read it.

The NASA GLOBE Program provides the world's most widely used environmental measurement protocols — a behavioural framework that trains observation, accuracy, and scientific memory.

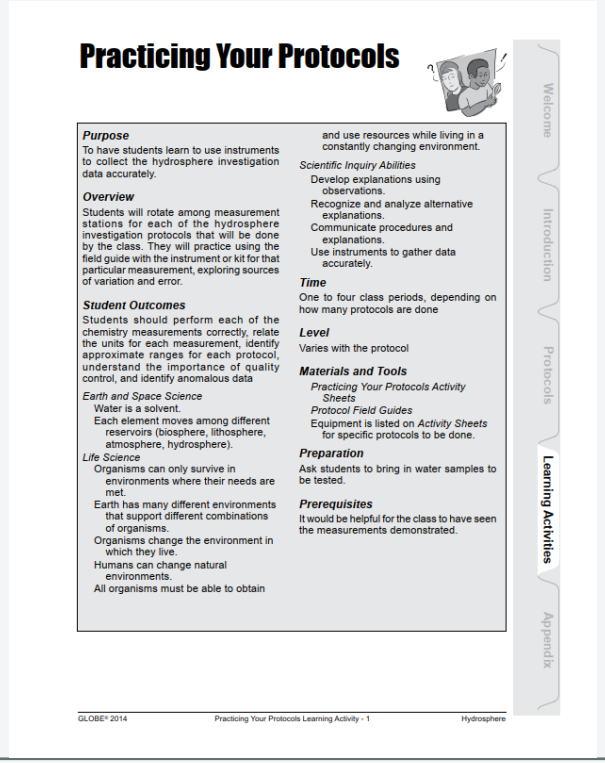
Why we use it:

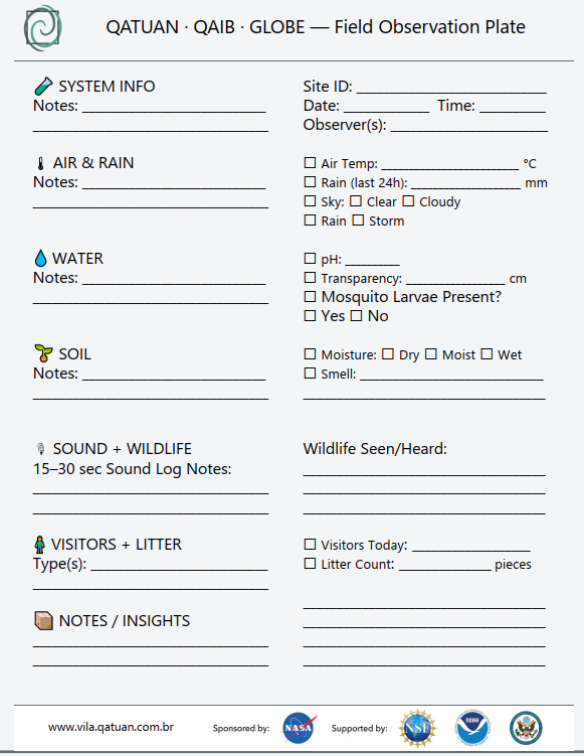
- Standardised air, water, soil, and phenology measurements
- Global scientific credibility and open data
- A behavioural discipline that communities can learn together
- The basis for our Qatuan Field Plate and Arduino monitoring station

Qatuan and QAIB complete the NASA framework by adding the Anthroposphere—the human behavioural sphere that turns measurement into culture.

GLOBE turns measurement into literacy, and literacy into regenerative practice.

Reference: NASA GLOBE "Practicing Your Protocols" Activities (Atmosphere, Biosphere, Hydrosphere, Pedosphere)





COMMUNITY LITERACY —

QATUAN FIELD OBSERVATION PLATE

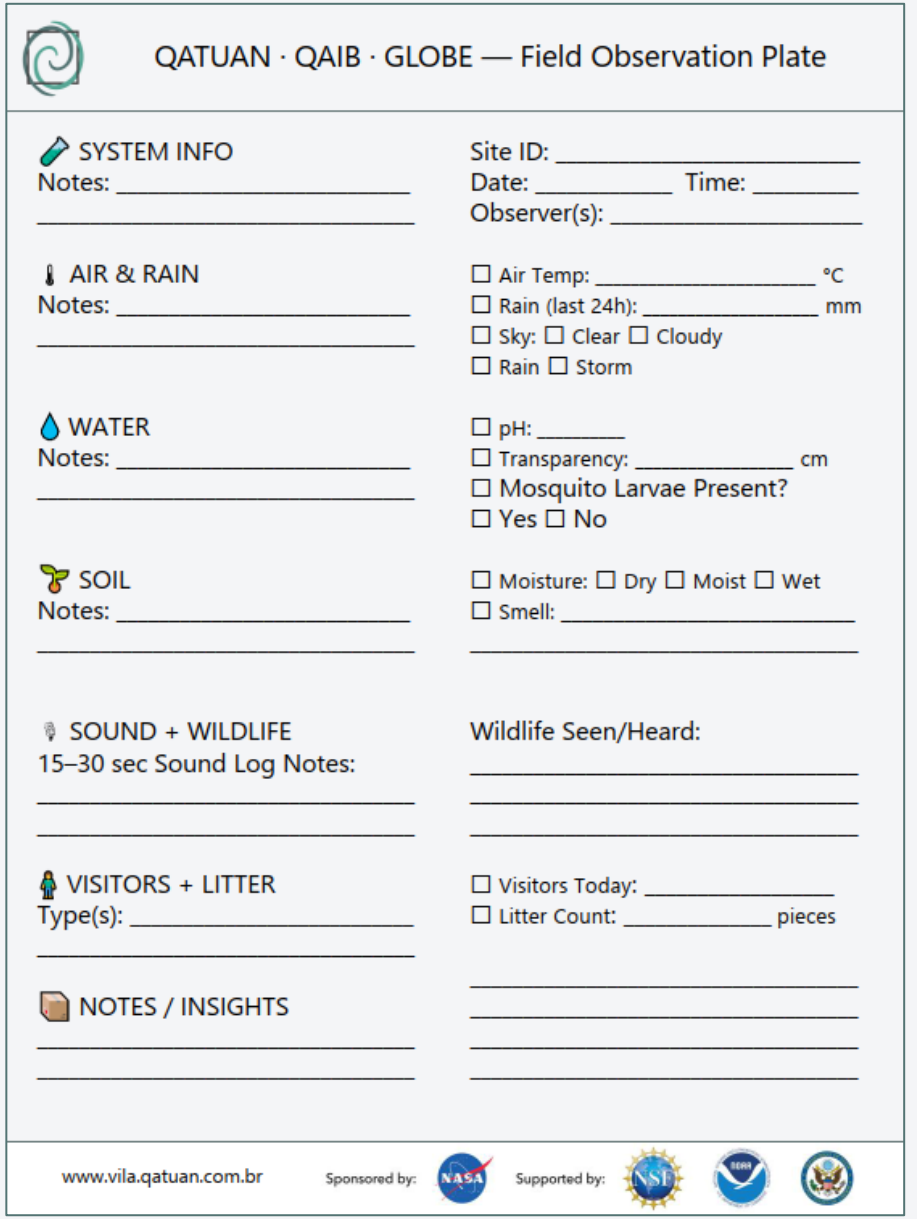
Regeneration begins with literacy.

This simple, durable A5 plate is used weekly at Savanno and VQ, helping communities build the habit of observing their environment through the same categories used by NASA GLOBE.

Why it works:

- It transforms scientific protocols into a daily practice
- It builds shared language across youth, visitors, and field teams
- It strengthens memory, attention, and environmental awareness
- It supports long-term environmental monitoring in our field-lab system

Designed to be laminated, pocketable, bilingual, and usable by any school, kitchen, garden, or field-lab team.



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WATER
Notes: _____
☐ pH: _____
☐ Transparency: _____ cm
☐ Mosquito Larvae Present?
☐ Yes ☐ No

SOIL
Notes: _____
☐ Moisture: ☐ Dry ☐ Moist ☐ Wet
☐ Smell: _____

SOUND + WILDLIFE
15–30 sec Sound Log Notes:
Wildlife Seen/Heard:

VISITORS + LITTER
Type(s): _____
☐ Visitors Today: _____
☐ Litter Count: _____ pieces

NOTES / INSIGHTS

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FIELD MONITORING —

ARDUINO ENVIRONMENTAL STATION

To understand long-term regenerative cycles, we need instruments that can sense and remember the field over time.

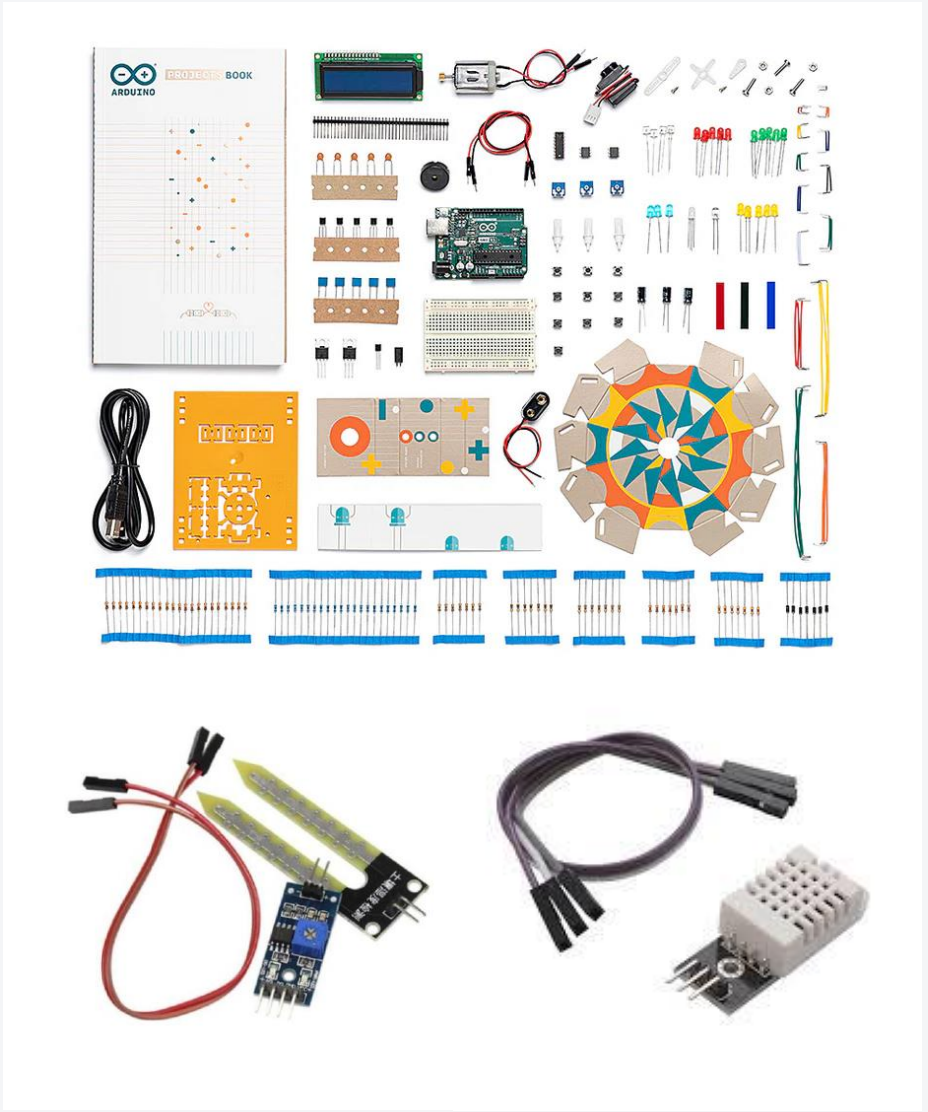
Our Arduino-based station measures temperature, humidity, light, soil moisture and other variables — forming the first layer of our long-term environmental archive.

Why we use it:

- Affordable, open-source, and replicable in any community.
- Helps youth and field teams connect design to real data.
- Supports continuous monitoring of patterns and seasonal rhythms.
- Forms the technical foundation of our environmental time model — the Harmonic Sextant (informally, the Jamie Clock).

The station grows with the site:

starting with a basic kit and evolving into a full multi-sensor field node integrated with Aeva and the Qatuan observation system.



Sensors for the Savanno Field Lab:
These low-cost modules form the starting point for environmental memory at VQ — connecting field data to the wider institutional system.

INSTITUTIONAL INTEGRATION — THE FIELD AS A SYSTEM

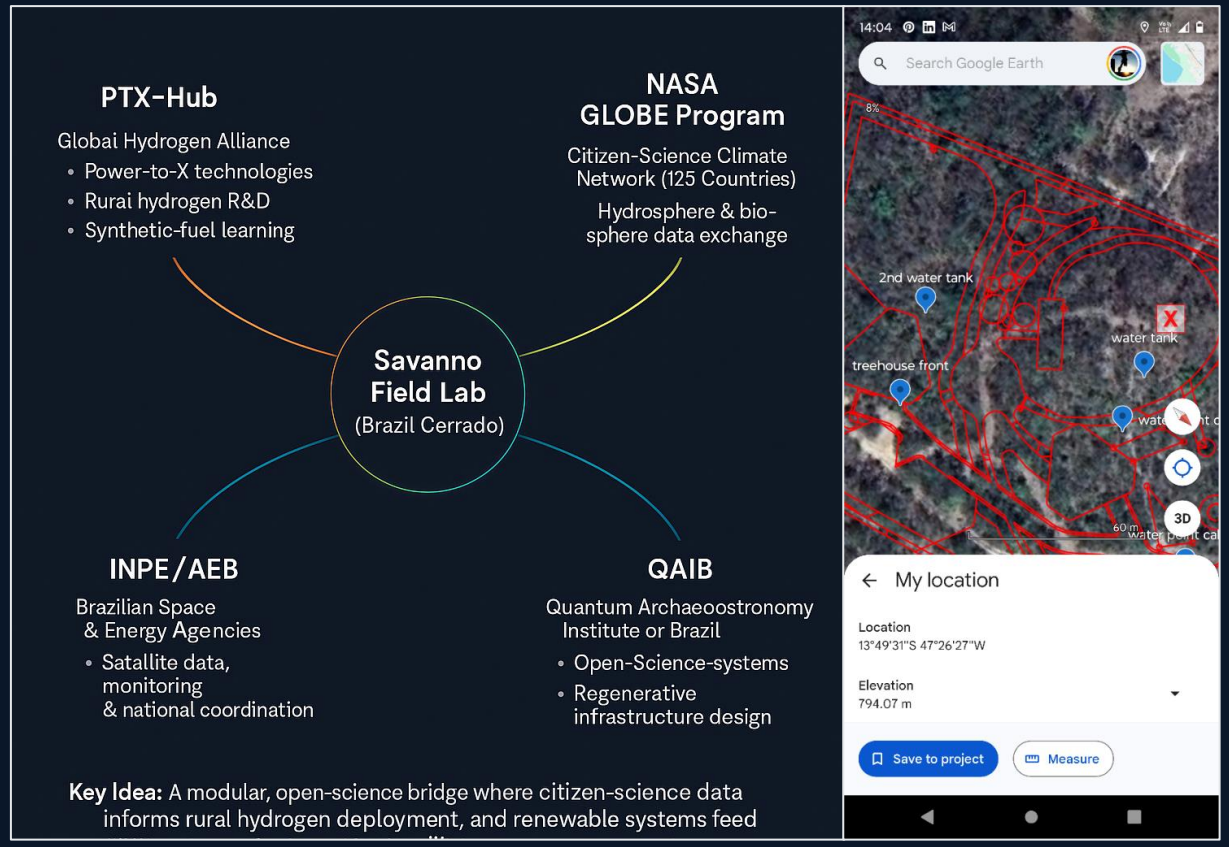
Aligning scientific, civic, technological, and community intelligence around the landscape.

Regeneration does not happen through one institution acting alone. It emerges when multiple layers of intelligence — scientific, civic, technological, and community — align around the same landscape.

QAIB provides the architecture that connects them:

- NASA GLOBE — environmental measurement & open science.
- INPE / AEB — satellite data, monitoring & national coordination.
- PtX Hub — rural hydrogen & renewable-energy systems.
- Qatuan — field literacy, community practice & system design.
- QAIB — integrative methodology, cognition & regenerative governance.

Together, they form the Savanno–VQ Field Network — where institutions learn from the land, and the land learns from the institutions.



FROM SHIT TO SPACESHIP —

A COMMUNITY SYSTEM IN ONE LESSON

A composting toilet is where most people begin.

It's tangible, familiar, and solves a very real problem for a single household. But the moment we start thinking together — as a community — the problem changes shape.

Regenerative design is not about toilets. It's about flows.

In nature, water only becomes healthy when it moves through patterns that oxygenate, structure, and renew it — like in a mountain stream or a flowform. Human systems work the same way. When waste, water, nutrients, and energy move through connected loops, the whole system becomes alive and self-supporting.

Spaceships already work this way — nothing leaves, nothing comes in. Earth is no different. The technology exists. The knowledge exists. What's missing is the collective shift:

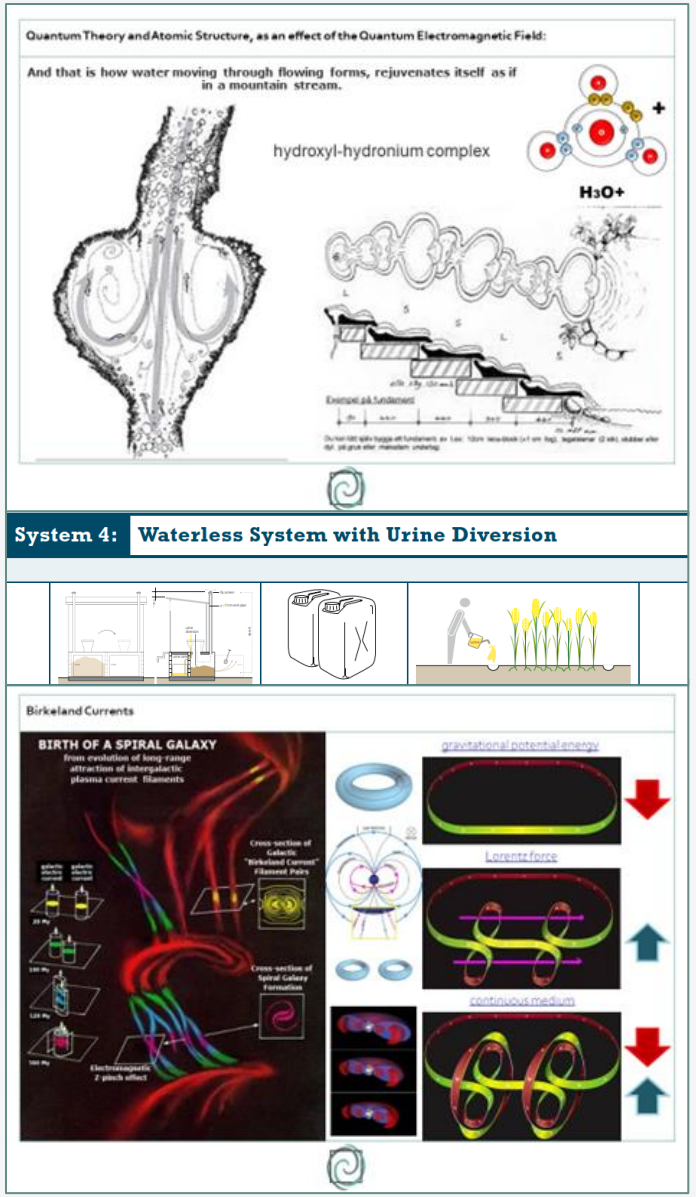
From individual solutions to shared systems, from objects to flows, from "me" to "we."

This is the leap from shit… to spaceship.

A community that understands its flows can regenerate itself — indefinitely.

https://www.eawag.ch/en/department/sandec/digital-learning/ecompendium/

INDIVIDUAL → COMMUNITY → PLANETARY



QAIB is an official partner of the NASA GLOBE Program and the UNOOSA Open Universe initiative, advancing citizen science and regenerative design through field-based intelligence and open data collaboration.

O QAIB é parceiro oficial do Programa NASA GLOBE e da iniciativa Open Universe da UNOOSA, promovendo ciência cidadã e design regenerativo por meio de inteligência de campo e colaboração em dados abertos.

QAIB GLOBE Portal
Jamie Conway – GLOBE Scientist Profile
(Portais oficiais QAIB / NASA GLOBE)

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QUANTUM ARCHAEOASTRONOMY INSTITUTE OF BRAZIL

Bridging Cosmos, Intelligence, and Regeneration

OBRIGADO / THANK YOU
(for your time and the opportunity to collaborate)

Contato / Contact
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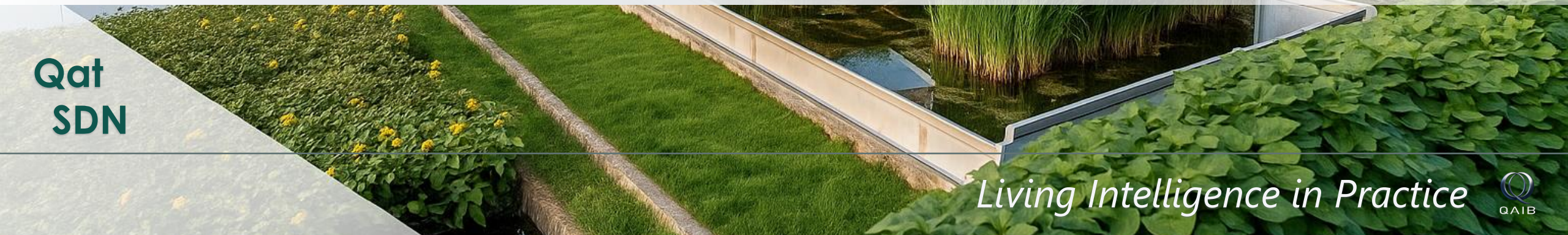
vila.qatuan.com.br
Qatuan Arquitetura Sustentável
(in partnership with the Quantum Archaeoastronomy Institute of Brazil – QAIB)

Nota / Note:
Todos os projetos são acompanhados pela nossa assistente virtual Aeva,
que organiza comunicação, arquivos e prazos.
(All projects are coordinated through our virtual assistant Aeva,
who helps manage communication, documentation, and scheduling.)

When you're ready to move forward,
Aeva will guide you through the next stage of concept development.



Qat
SDN

Living Intelligence in Practice

QAIB