# Scaling Carbon Removal

with Enhanced Rock Weathering + Precision MRV

The world needs carbon removal that's verifiable, affordable, and ready to scale. **That's what we do.**

## Our Mission

- Conduct high-integrity carbon removal through Enhanced Rock Weathering (ERW)
- Transform underused mining byproducts into powerful climate tools
- Combine proven science with innovative monitoring systems
- Deliver carbon drawdown that is:

✓ Measurable ✓ Scalable ✓ Nature-aligned

## Why ZeroEx Is Different

- First ERW company to deploy a verified, field-tested Monitoring, Reporting, and Verification (MRV) system using SIAs
- Our MRV protocol is verified under the Isometric Standard, aligned with EU regulatory frameworks
- Demonstrated success across multiple continents and climate zones
- Offers full-stack scientific support, MRV-as-a-Service, and project development partnerships

## Ways to Work With Us

1 **Purchase Permanent Removal Certificate**
Secure high-integrity carbon removal credits verified by independent registries

2 **MRV-as-a-Service**
Let our scientific team manage MRV— from setup to credit-ready reporting.

3 **Co-Develop ERW Projects**
Bring your land or resources, and we'll partner to deploy, monitor, and scale verified carbon removal.

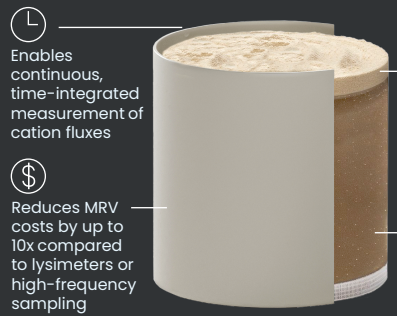
## Built to Scale

- Basalt byproduct chosen after screening more than 100+ quarries
- Logistics handled through subcontractors with 300,000t transport capacity
- Soil sampling capacity: 10,000–15,000 cores in 2 weeks
- SGS labs process up to 100,000 samples/year for full traceability

## The Science

### SIA
Self-Integrating Accumulator

**SIAs are purpose-built for ERW,** balancing simplicity with the accuracy required for carbon crediting



Enables continuous, time-integrated measurement of cation fluxes

Reduces MRV costs by up to 10x compared to lysimeters or high-frequency sampling

Developed with Dr. Wolf-Anno Bischoff, inventor of the method with 25+ years of research

Requires no power, minimal maintenance, and operates passively in-field

## Field-Tested in Germany, the United States, and Brazil

- MRV-tech validated across mesocosm, lab-scale, and deployment sites
- 30,000+ tonnes of rock fines applied across Germany (2023–2024)
- Field deployment of SIAs in collaboration with Yale University (2025–2026)
- Commercial pilots in Brazil, Ukraine, and India

**Technology readiness achieved. Operational infrastructure established. Scaling activities underway.**

## Validated by World-Class Institutions

Our science is transparent, peer-reviewed, and designed for global benchmarking

| ISOMETRIC | University of Cambridge · TUM · novonesis | University of Sheffield | Cascade Climate | Frontier |
|---|---|---|---|---|
| Verified with a 10-year crediting schedule and lifecycle monitoring | Ongoing R&D collaborations | Controlled mesocosm testing of SIA devices | Funded partnerships to develop open-access MRV standards | Awarded the first research grant |

## Traction & Market Opportunity

The EU Carbon Removal Certification Framework (CRCF) and Green Claims Directive are creating a new market for verified removal

**ZeroEx is built for it**

- Projects operating under Germany's strictest agricultural and fertilizer regulations
- Achieved full-scale 2024 deployment: 22,854 tonnes of basalt proving readiness for large-scale ERW.
- Fully integrated MRV tech stack deployed across Europe and LATAM

# ZeroEx

zeroex.com
info@zeroex.com
+49 151 58705699

**Acess our website**
Explore project partnerships, MRV services, or technology licensing opportunities

# SIA: Self-Integrating Accumulators

## Enabling Verifiable Carbon Removal at Scale

## The Challenge

Measurement is now the main bottleneck for scaling carbon removal

1. Carbon removal markets are growing fast, but trusted, field-scale monitoring remains insufficient
2. New regulations like the EU Carbon Removal Certification Framework (CRCF) and Green Claims Directive are shifting focus:
   from Volume → to Verifiability
3. Without robust Monitoring, Reporting, and Verification (MRV) carbon removal methods:
   - ⊗ Can't be certified
   - ⊗ Struggle to secure financing
   - ⊗ Lack market trust

→ SIAs help **transform carbon removal** from a theory into a certifiable, financeable asset class

## What Are SIAs?

**Self Integrating Accumulator**

Developed and deployed by ZeroEx, they are tailored to meet the demands of rigorous MRV systems in Enhanced Rock Weathering projects

- Passive ion-exchange devices
- Measure base cation fluxes from ERW reactions — a direct proxy for $CO_2$ drawdown
- Capture cumulative weathering signals in soil water, eliminating the need for model-based assumptions
- Designed for continuous, time-integrated measurement in the field

**Why do they matter?**

- Monitor rock dissolution to enable accurate ERW performance evaluation.
- Provide field-based, time-resolved evidence of weathering impact
- Require no power supply, minimal maintenance, and are easy to deploy
- Enable affordable MRV at scale — up to 10x cheaper than traditional lysimeters or high-frequency soil sampling

## Deployment & Validation

**Field-tested across multiple regions:**

- **Germany:** 30,000+ tonnes of rock fines applied (2023–2024)
- **Brazil, India & Ukraine** Active commercial pilots under diverse climate conditions
- **United States** Ongoing SIA deployment (2025–2026)

**Validated by:**

- Yale — MRV tool benchmarking
- University of Sheffield — Mesocosm testing
- ISOMETRIC — Verified under the Isometric Standard as part of ZeroEx's broader MRV protocol
- University of Cambridge, LMU, TUM, novonesis — Field and lab research

## Hardware That Scales

- No electricity or internet connection needed
- Modular and low-cost, ideal for large-scale deployment
- Deployed as part of an integrated stack with soil and lab sampling tools
- Designed to align with both EU and international MRV frameworks

→ **SIAs make verified MRV achievable even in remote or low-resource environments**

## Built for the Future of Carbon Markets

Supports high-integrity MRV frameworks demanded by buyers and regulators

- Scalable across diverse agricultural and mining landscapes
- Deployed by ZeroEx already in operation across Europe and LATAM

→ **SIAs are the MRV component that helps Enhanced Rock Weathering reach commercial scalability**

## For Investors & Partners

The market is moving to measurable carbon removal. SIAs are how we get there.

→ SIAs offer:

- Proprietary hardware validation enables market leadership in carbon trading
- Clear cost advantage vs. other monitoring solutions
- Compatibility with leading certification protocols

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