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GEO-INTEL LAB

Agriculture

ENHANCED ROCK WEATHERING (ERW) – NATURE-BASED CARBON REMOVAL

Pilot District
Washim, Maharashtra

Geospatial Innovation Accelerator
SINE, IIT Bombay

Technology Summary

Enhanced Rock Weathering (ERW) involves applying finely ground basalt rock dust to farmlands. Through natural chemical reactions with atmospheric CO₂ and soil moisture, basalt accelerates the conversion of CO₂ into stable carbonates and bicarbonates, which are permanently stored in soils and water bodies. EELAB CARBON's model integrates geospatial data, soil analytics, and farmer network engagement to implement ERW at scale across Indian smallholder farms.

Technology
Readiness Level:

6

Value Proposition

- For Farmers: Improved soil fertility and yield through mineral enrichment, and hence improved income.
- For Climate: Verified long-term CO₂ removal.
- For Buyers / Partners: High-integrity, nature-based carbon credits aligned with Puro.earth and verified registries.
- For Government / CSR: Scalable model for rural carbon economy and regenerative agriculture.

Market Potential / Deployment Plan

India has over 100 million hectares of cultivable land suitable for ERW. The initial deployment targets 10,000 hectares across Maharashtra and Madhya Pradesh by 2027, scaling to a higher number of hectares by 2030.

Revenue sources include carbon credits, mineral suppliers, and data-driven soil improvement partnerships.

Applications

- Climate-smart agriculture.
- Carbon credit generation under Puro.earth.
- Soil remineralization and fertility improvement.
- Water retention enhancement in semi-arid zones.
- Integration with digital MRV (Monitoring, Reporting, Verification) systems.

Environmental / Social Impact

- Permanent atmospheric CO₂ removal through natural mineral weathering.
- Improved soil pH, micronutrient balance, and crop productivity.
- Additional rural income streams via carbon farming.
- Empowerment of smallholder farmers and local communities.
- Reduced dependency on chemical fertilizers.

Contribution to Sustainable Development Goals (SDGs)

SDG 2, 7, 12, 13 & 15

Product / Application Image

Application Images:



Laboratory Testing:

