Stakeholder Roundtable for the Launch of Policy Brief and Technical Report on Enhanced Rock Weathering in India

Key takeaways and summary

April, 2026

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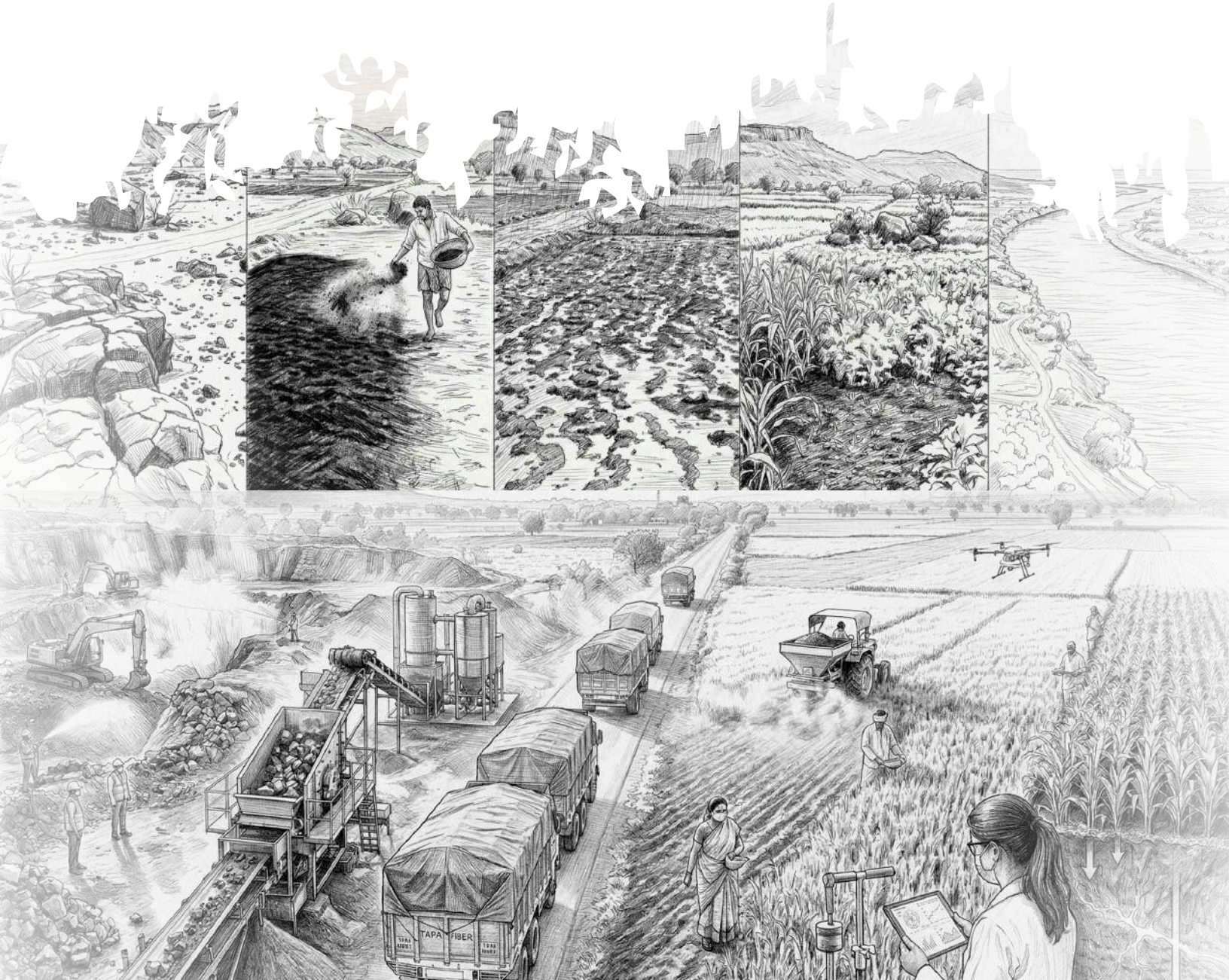

From Launch to Landscape: Establishing the Context for ERW Scale-Up

The inaugural session of the roundtable positioned enhanced rock weathering (ERW) within the broader carbon dioxide removal (CDR) landscape and India's net-zero goals, marking the event as a clear starting point for future action. The report and policy brief signaled a shift toward actionable pathways. ERW was framed as part of a diversified decarbonization strategy, with the convening serving as an inflection point to align stakeholders and guide research, policy, and scalable deployment. Speakers consistently emphasized that this convening marks a starting point rather than a conclusion.

L-R: Rakesh Kumar (NABARD), Asitava Sen (CRIA), Dr. Neelima Alam (DST), Ramanshu Ganguly (Energiva Ventures), Dr. Nirmalya Mukherjee (MANT)

L-R: Rakesh Kumar (NABARD), Srishti Singh (CRIA), Asitava Sen (CRIA), Dr. Neelima Alam (DST), Dr. Nirmalya Mukherjee (MANT)

Key Takeaways:

- ERW is positioned as a science-based, high-potential CDR pathway, critical for achieving net-negative emissions alongside reduction and avoidance efforts like CCUS
- The report adopts a balanced approach, emphasizing both opportunity and risks, and reinforcing the need for discipline in measurement, safety, and governance
- The event marks the beginning of a coordinated effort, with the report serving as a foundation to catalyze continued research, dialogue, and implementation
- ERW must be approached as a system-level intervention, requiring alignment across science, policy, markets, and community engagement
- Beyond carbon removal, ERW offers co-benefits for soil health, agricultural productivity, and climate resilience, strengthening its case for integrated sustainable development
- Responsible deployment must account for equity, farmer awareness, and fair distribution of benefits and risks, ensuring integrity in emerging carbon markets

Grounding the Science: Evidence, Integrity, and On-Ground Realities of ERW

The discussion highlighted ERW's scientific validity but dependence on site-specific conditions, long-term MRV, and India-specific evidence. Adoption hinges on economic viability, farmer trust, and agronomic benefits, while high MRV costs and weak standardization persist, requiring coordinated policy and market development.

L-R: Meenakshi Sinha (BEE), Pankaj Kalyani (BEE) Tanishq Thorat (Varaha), Subhankar Pandey (InQube), Arnob Sen (Prana Climatech)

L-R: Dr. Arti Bhatia (IARI), Dr. Vedanta Adak (MANT), Vaibhav Tiwari (Terrasols), Souvik Dhar (ISAP Foundation), Aravind Srinivasachari (CEEW), Devashree Ghosh (Energiva Ventures), Dr. Anjali Jain (NITI Aayog), Rakesh Kumar (NABARD), Srishti Singh (CRIA), Asitava Sen (CRIA)

Key Takeaways

- The scientific foundation of ERW is long-established, grounded in well-understood principles of mineral weathering and thermodynamics
- India is well-positioned to lead ERW globally, given its natural advantages and emerging ecosystem, if scaled through evidence-backed implementation
- ERW impacts are non-linear, requiring long-term India-specific systematic evidence-building, across diverse agro-climatic zones and feedstock types; "copy-paste" of global studies fail, with MRV gaps remaining
- There is a need for "lab-to-land" policy support, including accessible, ERW-compliant soil testing infrastructure and standardized protocols
- On-ground deployment requires site-specific suitability assessments – soil and feedstock "matchmaking" is critical, with basalt often emerging as a strong candidate
- Leveraging trusted intermediaries (e.g., KVKs) for improving adoption and providing risk mitigation through crop insurance were identified as essential
- ERW presents strong co-benefits for agriculture, including potential yield improvements, climate resilient agriculture and soil health
- There is emerging potential for ERW to partially substitute urea and other inputs, with implications for reducing India's fertilizer import burden
- ERW project impacts are time-distributed, with a significant share of carbon removal occurring in the initial years, which has implications for MRV design and crediting frameworks
- Demand-side uncertainty is a key barrier—developers need clear market signals to justify scaling investments

Public Finance and Policy Design for ERW: Building Trust, Scaling Pilots, and Enabling Market Readiness

The discussion on policy making and financing of ERW in the Indian context acknowledged that it is an emerging CDR solution relevant to India. But it needs stronger science, MRV systems, and pilot-based validation with inter-ministerial coordination to get into India's policy framework. The stakeholders suggested that ERW scale-up depends on phased finance, farmer integration, and ecosystem building, while offering significant co-benefits across agriculture, soil health, and nutrition.

L-R: Dr. Kanu Murmu (BCKV), Rakesh Kumar (NABARD), Srishti Singh (CRIA)

L-R: Aali Sinha (Intellicap), Meenakshi Sinha (BEE), Pankaj Kalyani (BEE)

Key Takeaways

- Integrated carbon, health, and agricultural benefits strengthen ERW's market value, attracting broader blended and development finance
- The carbon market framework emphasizes permanence, additionality, robust MRV, and alignment with UN SDGs as foundational to ensure credibility of ERW-based carbon credits
- A collaborative approach between relevant government institutions is essential to deliver policy clarity, market alignment, and scientific direction – ultimately leading to a national ERW research and deployment roadmap
- Stage-wise financing and support approach:
  - Early stage: Grant-based support for field trials, baseline assessments, credibility building
  - Pilot stage: Blended finance to support demonstration projects and carbon linked financing
  - Scaling stage: Larger financing mechanisms to expand validated models
- The role of development finance institutions such as NABARD should be catalytic, focusing on credibility creation and risk reduction rather than immediate scale
- Enabling smallholder farmer participation through aggregator-based models (e.g., FPOs, cooperatives) are critical
- A hybrid top-down and bottom-up approach enables ERW methodology design, balancing regulation and developer innovation
- There is a strong need to develop domestic ERW methodologies, aligned with international standards but grounded in India-specific scientific research and field data
- The primary gap at early stages is uncertainty – scientific, operational, and MRV-related – which can be effectively addressed through targeted grant funding and early-stage capital support

Positioning ERW in India's Long-Term Carbon Removal and Development Strategy

The closing session underscored aligning enhanced rock weathering with India's development and climate priorities, integrating field research into national pathways, and scaling early to meet long-term CDR needs. Participants stressed clear policy definitions, phased ecosystem development, farmer-centric and affordable deployment, strong local capacity, private sector engagement, and leveraging ERW for agricultural, rural, and broader economic co-benefits.

L-R: Dr. Kanu Murmu (BCKV), Dr. Anjali Jain (NITI Aayog), Rakesh Kumar (NABARD)

L-R: Subhankar Pandey (InQube), Arnob Sen (Prana Climatech, Anjani Anand (CRIA), Dr. Madhuparna Paul (MANT), Ramanshu Ganguly (Energiva Ventures)

Key Takeaways

- India's climate strategy is inherently development-centric, requiring solutions like ERW to align with economic growth, rural development, and energy access priorities
- Even under net-zero pathways, ~1.4Gt of residual emissions are expected to remain, necessitating the deployment of both CCUS and CDR solutions
- While CCUS will play a critical role in industrial decarbonisation, it cannot address emissions from all sectors (e.g., aviation), making CDR approaches like ERW essential
- In the near term, voluntary carbon markets and international demand can support project viability until costs decline and large-scale deployment becomes feasible.
- There is strong potential to align with existing schemes (e.g., soil health initiatives, sustainable agriculture missions) to build early momentum and mainstream adoption.
- Scaling ERW will require active private sector participation, particularly through circular economy models (e.g., leveraging industrial by-products such as from steel sector)
- Building farmer trust is a foundational prerequisite that needs sustained engagement, participatory trials, insurance access, and safeguards to protect vulnerable smallholders farmers across varied agroecological and social contexts.

Annexure

List of Speakers and Attendees

Government Stakeholders

- **Dr. Neelima Alam (Keynote Speaker) -** Associate Head, Climate Energy and Sustainable Technology (CEST) Division, Department of Science and Technology (DST), Government of India
- **Dr. Anjali Jain** - Consultant Grade-II (Energy), NITI Aayog
- **Dr. Arti Bhatia** - Principal Scientist, Division of Environmental Sciences, Indian Agricultural Research Institute (IARI)
- **Meenakshi Sinha** - Project Engineer, Bureau of Energy Efficiency (BEE)
- **Rakesh Kumar** - Director General Manager, National Bank for Agriculture and Rural Development (NABARD)

Other Stakeholders

- **Aali Sinha** - Principal, Business Consulting and Research, Intellecap
- **Aravind Srinivasachari** - Research Analyst, Council on Energy, Environment and Water (CEEW)
- **Arnob Sen** - Director, Prana Climatech Private Limited
- **Asitava Sen** - Co-Founder & CEO, Carbon Removal India Alliance (CRIA)
- **Prof. David Manning** - Professor of Soil Science, School of Natural and Environmental Sciences, Newcastle University
- **Dr. Kanu Murmu** - Assistant Professor in Agronomy, Bidhan Chandra Krishi Viswavidyalaya (BCKV), West Bengal, India
- **Kashish Manchanda** - Founder's Office, Mati Carbon
- **Dr. Madhuparna Paul** - Geologist, Centre for Public Health Research -Manbhum Ananda Ashram Nityananda Trust (CPHR-MANT)
- **Dr. Nirmalya Mukherjee** - Chief Executive, Centre for Public Health Research - Manbhum Ananda Ashram Nityananda Trust (CPHR-MANT)
- **Pankaj Kalyani** - Principal Consultant/ Manager, PwC India (Bureau of Energy Efficiency, PMU)
- **Ramanshu Ganguly** - Partner & Lead: Resilience & Adaptation, Energiva Ventures

- **Souvik Dhar** - Program Manager, ISAP India Foundation
- **Subhankar Pandey** - Co-founder & Chief Technology Officer (CTO), InQube
- **Tanishq Thorat** - Associate Manager (Strategic Alliances and Projects), Varaha
- **Vaibhav Tiwari** - Co-Founder, Terrasols
- **Dr. Vedanta Adak** - Geologist, Centre for Public Health Research - Manbhum Ananda Ashram Nityananda Trust (CPHR-MANT)

Organising Team

- **Anirban Roy** - Director (Administration & Projects), Centre for Public Health Research - Manbhum Ananda Ashram Nityananda Trust (CPHR-MANT)
- **Anjani Anand** - Lead (Partnerships & Outreach), Carbon Removal India Alliance (CRIA)
- **Devashree Ghosh** - Program Associate (Adaptation and Resilience), Energiva Ventures
- **Jit Chattopadhyay** - Community Media Producer, Centre for Public Health Research - Manbhum Ananda Ashram Nityananda Trust (CPHR-MANT)
- **Soumya Chandra** - Research Coordinator, Centre for Public Health Research - Manbhum Ananda Ashram Nityananda Trust (CPHR-MANT)
- **Srishti Singh** - Lead (Policy & Research), Carbon Removal India Alliance (CRIA)

Organised by

Manbhum Ananda Ashram Nityananda Trust (MANT)

MANT is a non-profit, non-political, non-religious, and non-racial organisation working since 1960 to support marginalized communities in eastern and north-eastern India. Its work focuses on livelihood promotion, research, community action for local ecology, community media (including radio), and health service delivery with behaviour change interventions. With a team of 121 trained staff and 12 volunteers, MANT reaches nearly 1.5 million people—primarily from tribal communities—every year. MANT established the Centre for Public Health Research, recognised as a Scientific and Industrial Research Organisation (SIRO) by the DSIR, Government of India. In February 2023, it became the world's first JBI Affiliated Centre focused on evidence synthesis and implementation for Indigenous health, as well as the first in India dedicated to evidence implementation, the first in Eastern India, and the fifth JBI affiliate in the country. The Centre is also a doctoral training hub in collaboration with the Manipal Academy of Higher Education and partnered with the University of Adelaide, Australia, to manage the Australia Awards Fellowship 2024–25.

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Energiva is a global catalyst working to build a green, climate resilient, inclusive, and prosperous Global South. It operates at the intersection of evidence, innovation, partnerships, and capacity building, driving climate action at both scale and speed. Its work spans mitigation, adaptation, and climate finance across India and emerging economies. It is a delivery-focused organization that works hand in hand with governments, research and academia, industry, financial institutions, and communities to turn climate ambition into measurable outcomes.

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Carbon Removal India Alliance (CRIA)

Carbon Removal India Alliance (CRIA) is the only non-partisan industry-led coalition and ecosystem organisation dedicated to catalysing and supporting the growth of a thriving durable carbon dioxide removal sector in India. It exists to accelerate the development, commercialisation, deployment, and co-benefits of CDR technologies in India. Through research, advocacy, dialogues and partnerships, and ecosystem-building, CRIA works at the intersection of climate action and innovation. Most of the leading Indian CDR industry players are CRIA members.

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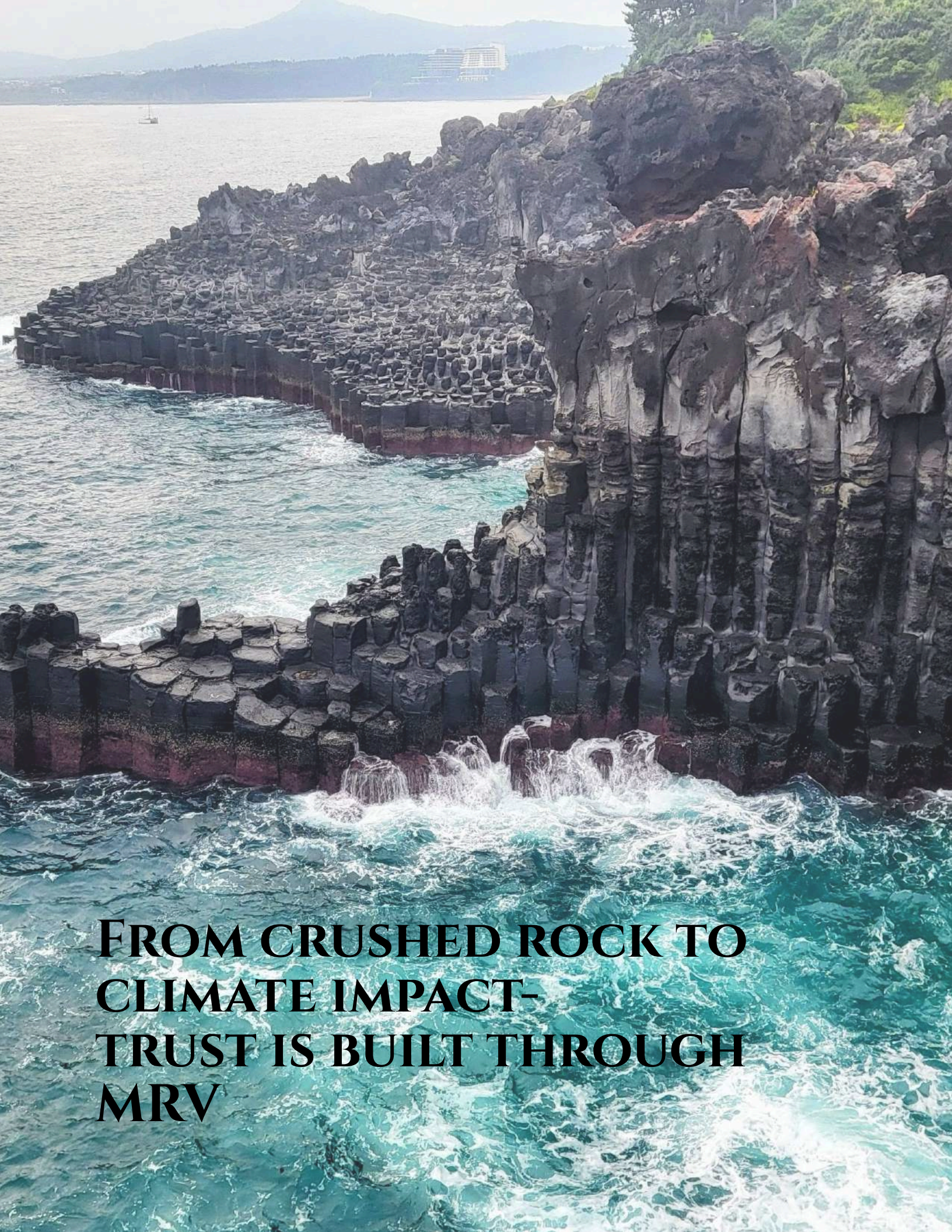

From crushed rock to climate impact- trust is built through MRV