May 24, 2023

Supervisory Body
United Nations Framework Convention on Climate Change (UNFCCC)
By Email: Supervisory-Body@unfccc.int
RE: Input to SB005 2022 Annotated Agenda and Related Annexes

Dear Supervisory Body:

Thank you for your continuing efforts to ensure that the UNFCCC considers carbon dioxide removal (CDR) as an essential component for a just energy transition and to limit warming to 1.5 °C. Mati Carbon Removals appreciate your invitation to respond to the call for input that you issued. Specifically, we would like to share some thoughts here in response to the Information Note entitled “Removal activities under the Article 6.4 mechanism” (A6.4-SB005-AA-A09 version 0.40).

Mati Carbon Removals is a project of the Swaniti Initiative, a US 501-C3 non-profit organization.. We are working to expand a carbon removal program alongside sustenance farmers who typically farm 0.5 to 5 acres of farmland in countries such as India of the Global South. The majority of the farmers we engage depend solely on rain as a water source as they have no means for irrigation. Moreover, many of these farmers cannot afford to fertilize their soils. Therefore, crop productivity in regions such as the Mahanadi river basin of India, where we currently operate, are among the lowest in the world. Meanwhile, regions like the Mahanadi river basin remain constantly vulnerable to vagaries of rain, or worse yet, drought. We provide silicate rock powders that are useful as farm supplements for field health on such small, vulnerable farms. Minerals abundant in silicate rocks have been shown to improve crop productivity and reduce pestilence in agronomic settings (citation).

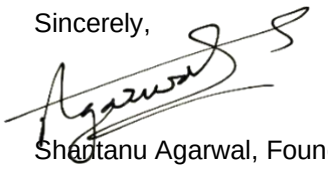
Silicate rock crop amendments provide micro-nutrients that improve soil health, thereby allowing for higher crop yields. In low crop-yield settings, the marginal benefit of applying silicate crop amendments can be considerable. The silicate crop amendments that we provide to farmers pass a comprehensive compositional testing protocol. In this way, we are able to quantify the potential agronomic benefit of the amendment and monitor potential contaminants for safety prior to application at farms. In addition to agronomic benefits, the silicates we provide chemically break down very quickly and undergo a process called "silicate rock weathering." Silicate rock weathering is known to draw CO_2 down from the atmosphere and sequester carbon for tens of thousands of years. When silicate rock weathering is engineered and deployed with the goal of carbon drawdown, it is often referred to as "Enhanced Rock Weathering,” or ERW for short. We fund our operations through carbon removal economics and deploy crop amendments to

partnered farmers at no cost. This incentivizes the farmers to participate in–and benefit from–the burgeoning climate-tech economy

We have already deployed our enhanced rock weathering program with about 400 farmers in the region. We have plans to expand our program to include more than 4,000 farmers by 2024. We seek to aid in climate justice for the Global South by transferring value from large buyers of carbon removal credits, such as multinational corporations to climate-vulnerable subsistence farmers. We believe that Mati is a model example of how sustainable development can be achieved with enhanced rock weathering. With the right policies and support, we believe that the Mati non-profit business model can be utilized to remove carbon at the gigaton scale in the coming decade. Additionally, our model can potentially benefit over 100 million farmers across the Global South. The Mati model will help provide both food and economic security to a region that is particularly vulnerable to the coming climate challenges.

In light of the above, we would like the Supervisory Body to reconsider the assertions listed below from the A6.4-SB005-AA-A09 version 0.40 Note. We would be pleased to discuss this further with the Supervisory Body, and very much appreciate your continued work to achieve a safe and equitable climate future. Thank you for the opportunity to submit our input for your consideration.

Sincerely,



Shantanu Agarwal, Founder
Mati Carbon Removals

Assertions in the Note that we request to be re-considered:

On p. 18 of the Information Note that Engineered CDR like ERW does not "contribute to sustainable development,"

MATI Response: As explained above we do not agree with this assertion as for Mati Carbon removals, ERW is a tool for large scale sustainable development. Mati's program demonstrably does promote sustainable development which is particularly important in developing countries such as India. We have already proven our ERW strategy at the field scale and we are actively up-scaling it for the benefit of some of the most vulnerable working populations in the world. We have already deployed 1,000 tonnes in December 2022 and are in process of deploying 10,000 tonnes in June 2023. We are seeing tangible co-benefits for farmers in our deployments for improved crop productivity, reduced pestilence and soil enhancement.

On p. 18 of the Information Note asserts that ERW is "unproven"

MATI Response: There is scientific consensus that silicate rock weathering is immutable and draws carbon down from the atmosphere, eventually sequestering the carbon in the oceans. At Mati we are attempting to speed up the rate of silicate weathering by exposing silicate minerals in the form of high surface area, reactive dust. This human component of intervention in the natural rock weathering process is why the application of rock dust to fields is often termed Enhanced Rock Weathering. There is a growing literature of peer reviewed research papers that demonstrate the efficacy of basalt in carbon dioxide removal. See examples here and here.

At Mati, we have taken onerous steps to ensure the Monitoring Reporting and Verification (MRV) of CO_2 removal is robust so that ERW can be measured and quantified on a scientific basis. We have successfully demonstrated our methodologies in the field, laboratory and through modeling exercises. A brief overview of our process is as follows:

Firstly, we have established robust methods of monitoring, reporting and verification (MRV) for ERW in collaboration with the Yale Center for Natural Carbon Capture (YCNCC). We are continuing the development of MRV methodology with our colleagues at YCNCC (See the following study). This partnership allows us to employ state-of-the-art techniques and expertise to accurately measure the effectiveness of ERW and its contribution to carbon dioxide removal from the atmosphere.

Secondly, Project Mati has undertaken comprehensive studies on the environmental and social impacts of ERW. We believe that a thorough understanding of these impacts is crucial to the responsible deployment of any climate mitigation strategy. These studies are geared toward identifying any potential adverse effects, devising strategies to mitigate them, and exploring the potential co-benefits of ERW for soil health, agriculture, and local communities.

We are committed to advancing this promising carbon dioxide removal strategy in a manner that is environmentally sound, socially responsible, and scientifically rigorous. Our efforts at Project Mati in conjunction with our collaborators demonstrate that ERW should not be considered as “unproven” and deserves a thoughtful discussion and consideration in any comprehensive approach to mitigating climate change.

On p. 92, Clause 2.11 Status makes number of claims

MATI Response: At Mati, we have done large scale experiments and we have deployed more than 1,000 tonnes of rock dust in agriculture fields with measured tangible evidence of co-benefits to farmers in terms of increasing crop productivity.

We have an accurate, scientific methodology developed with our partners at Yale for measuring the dissolution rate of silicates applied to farmlands (see expanded discussion on this point below). Additionally, we empirically measure and model the downstream effects of our silicate crop amendment. Therefore, we can assess the effectiveness of the carbon drawdown process we initiate with confidence. We have also done impact assessments of our operation on the environment and measured impact on the vegetation through standard agronomic tests. We believe that like any other new technology, ERW can benefit from more research and development. However, we have proof beyond doubt that ERW can be deployed as a carbon dioxide removal strategy that is beneficial to farmers. Crucially, it has been shown that in addition to other benefits, enhanced rock weathering can reach the gigaton scale for carbon dioxide removal.

On p.57 Clause 225 states that there is no known basis to monitor ERW

MATI Response: While it is true that the field of enhanced rock weathering (ERW) is still evolving and needs further development, the claim that ERW has no known method(s) of Monitoring Reporting and Verification (MRV) is not accurate. Multiple studies[1] have outlined methods for empirical monitoring of ERW.

In collaboration with YCNCC and scientists at Georgia Tech and Texas A&M Universities, Mati has developed a multi-faceted approach to monitoring and quantification of carbon dioxide drawdown in farmlands. Additionally we meticulously model and empirically track the downstream transport and long term storage of the carbon. We begin by taking in-situ field samples to quantify the portion of silicate rock material that was dissolved after application. Using these direct measurements as input, we commence detailed modeling exercises for mineral dissolution, the reactive transport of carbon through the soil column and the fate of the carbon in the rivers and oceans (for example, see study1, study2, study3). At Mati, we emphasize the use of tools that have been vetted by peer review and the scientific community. We make it a point to collaborate with the authors of the modeling studies. This allows us to tailor the necessary

numerical modeling to the geological specifics of the region where we operate to ensure accurate, faithful use of the quantitative tools that we use.

All of our model results are ultimately built upon empirical measurements and compared with yet more empirical measurements of soil and water chemistry. Frequent measurements of soil and water chemistry allow us to ground truth model results, quantify model and measurement uncertainties and train future models for better performance. **Contrary to the notion that there is no basis for monitoring the effects of enhanced rock weathering, we have engaged in building a clear scientific framework for quantifying carbon removal by ERW.** This scientific framework will improve with the incorporation of additional field data, thereby reducing the uncertainties associated with carbon removal calculations in the future. Our process has been developed such that MRV costs are within economic viability and allow for EW to be scalable and measurable. Other researchers have similarly found ERW to be competitive with other large-scale carbon dioxide removal strategies in terms of energy and water demands. [23]