Response of The HBAR Foundation to the Supervisory Body's "Call for input on matters of providing functionality for the treatment of financial security interests in Article 6.4 emissions reductions (A6.4ERs) within the mechanism registry"[1]

Sustainable Impact Fund
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INTRODUCTION

The HBAR Foundation Sustainable Impact Fund (THF-SIF) welcomes this opportunity to assist the Article 6.4 Supervisory Body (SB) with respect to issues surrounding the treatment of financial security interests in Article 6.4 emissions reductions (A6.4ERs) within the mechanism registry, pursuant to the secretariat's 3 May 2024 call for public input on this matter (see A6.4-SB011, para. 30).

We are a US$100+ million climate-tech focused grant fund operating within the Hedera Hashgraph distributed ledger technology (DLT) ecosystem. Hedera is an environmentally responsible proof-of-stake network capable of high speed and best-in-class security, the attributes necessary to address the real-world climate data infrastructure challenges. As a fund, our mission is to drive pro-climate and nature-positive behaviors that fight climate change, protect biodiversity, and achieve the UN Sustainable Development Goals (SDGs) by catalyzing transformative, open-source carbon accounting and climate finance solutions – ultimately bringing the balance sheet of the planet to the public ledger.

To this end, we have allocated tens of millions of dollars in grant funds to accelerate digitization within climate markets, from registry digitization, to digital standards improvement, to project developer tech readiness and stakeholder education, as well as supporting the creation of powerful new digital infrastructure tools to increase transparency, auditability, and equity across environmental projects. We believe these investments will net a range of salutary effects. They will: strengthen trust and ambition in climate negotiations; improve the credibility and integrity of existing decarbonization mechanisms; provide real-time visibility into the effectiveness of new emissions reduction and sequestration approaches; help to redirect private capital to environmental preservation and regeneration through carbon project development; and democratize ownership of the resulting natural capital, reallocating economic power to precisely those local and indigenous communities in the Global South least responsible for, yet most vulnerable to rising climate impacts.

COMMENTS

Since its launch, the THF-SIF has chosen to organize its investment thesis primarily around the voluntary carbon markets, setting five interrelated goals tied to systematic frictions often blamed for keeping trade in carbon offsets from scaling:

(1) making climate finance auditable;

(2) digitizing and open sourcing environmental methodologies;

(3) scaling validation and verification capabilities;

(4) discovering a global carbon price; and

(5) improving the credibility of climate-related ESG reporting.

Standing alone, the carbon markets are not, of course, a panacea. But a growing literature suggests that market-based mechanisms can efficiently reduce GHG emissions. See, e.g., Vrolijk, K. and Sato, M., "Quasi-Experimental Evidence on Carbon Pricing," The World Bank Research Observer (Oxford University Press, March 2023), available at https://doi.org/10.1093/wbro/lkad001 (using empirical data from the compliance markets to show that introducing carbon trading unambiguously leads to emission reductions, by as much as 20% in the EU ETS context). Unlike Internationally Transferred Mitigation Outcomes (ITMOs) under Article 6.2, however, credits issued under Article 6.4 (A6.4ERs) may not be traded until the SB finalizes the Mechanism registry.

With numerous authorities finding climate breakdown already well underway, we fear that the SB will be tempted to bring 6.4's registry online more quickly by defaulting to obsolete, last-generation data management solutions that may be relatively straightforward to purchase from legacy software providers eager to supply and support them, but whose capabilities will be structurally limited at the architecture level, hamstringing the Mechanism registry's ability to ensure fair and equitable distribution of revenues by fully opening its books.

Specifically, we call the SB's attention to A6.4-SB011-AA-A11, Section 4.2, para. 9(a)-(c), which provides that "the mechanism registry shall: [t]ake the form of a standardized electronic database" with which the registry "shall track A6.4ERs and CERs." THF-SIF urges the SB to reconsider tying the Mechanism registry's success to aging database tools unable to deliver the sharp improvements in transparency, accessibility, auditability, discoverability, interoperability, immutability, and equity that climate markets require. The governance rules and technology infrastructure requirements we select today will shape the Mechanism registry's operational parameters for years to come. A reliance on databases could inadvertently recapitulate the same weaknesses and structural limitations of existing registries in the VCM and CDM, which have eroded trust and consumer confidence in the VCM for decades. We believe it is critical to "bake in" the principles of transparency and accessibility, auditability and discoverability of data, interconnectedness and interoperability, and immutability from Day 1. This goal can only be readily achieved by embracing modern distributed ledger technologies (DLT) and related digital infrastructure tools that are sustainable, secure, scalable, and, critically, ready to deploy today.

There is simply no justification – at least based on technological or economic feasibility constraints – to vest A6.4ER and CER tracking within a centralized database. With modern, feature-complete public ledgers such as Hedera Hashgraph, the Mechanism registry can be designed so as to give members of the public themselves the native ability to verify the process from project genesis under a specific methodology, to the current ownership of every A6.4 ER; to verify each ER's project-level origins down to the metric tonne of CO_2e, its environmental attributes, its local community benefits; to verify its complete and up-to-date transaction history, with rich pricing data and sufficient granularity to reveal the offset purpose for which every individual A6.4 ER was acquired and confirm the absence of double sale, as well as determine quickly and straightforwardly if the underlying mitigation outcome was ever previously claimed by a host country towards satisfaction of its NDC. Adopting DLT-enabled solutions like Hedera's Guardian will enable the SB to guarantee availability of this kind of high-resolution data. And given the stakes for the planet if Article 6 fails, or fails to financially enable and empower communities adequately, we see direct public access to underlying data as indispensable.

Realistically, members of the public are unlikely to take the environmental integrity of A6.4 ERs on faith. Skepticism of market-based approaches is still too pervasive; memories of scandal in the voluntary markets too fresh. The complexity of analog environmental methodologies also remains stubbornly high, while the lack of clear, market-spanning data collection approaches at the project level means that the SB faces systematic risks of error it may be able fully to avoid. We believe that giving individual stakeholders all of the tools necessary to verify/validate integrity for themselves is the best solution. Errors may still occur, but if we enable and democratize confirmatory verification that is

- accessible and affordable;
- occurs in real time;
- spans fragmented regulatory landscapes;
- encompasses the full range of stakeholders;
- unlimited by data-format or environmental methodological choices made by project developers; and
- amplified by the availability of discoverable data about A6.4ER project participants (e.g., which actors benefited financially;

then over time, faster than many expect, we believe "fear, uncertainty, and doubt" will decline, consumer confidence will grow, and carbon-market participation will rise.

To our knowledge, our modern DLT networks such as Hedera can fully enable such features. Central databases will invariably fall short. It is by virtue of DLT adoption that Article 6 market participants stand to gain secure digital identity and project-related data attestation via accounts on public networks – accounts which can also receive and hold value in the form of digital environmental assets. Without DLT and related digital infrastructure tools, it is far more difficult – arguably impossible in real-world practice – to ascertain who precisely benefits financially from A6.4ERs projects across their value chains. Yet equity goals are precarious without enabling this level of visibility; without directly linking market roles and the actors who fulfill them to attested data on public networks.

The consequences of a misstep here are higher than they may first appear. We risk stifling ambition from Day 1 while hamstringing communities' ability to communicate beyond minimum standards. In contrast, with the benefit of DLT-enabled accounts and published rulesets, it is possible to exceed base methodological standards, create novel market attributes (e.g., financial equity metrics), and raise ambitions. This is occurring today across a growing number of VCM and A6.2 projects around the world. We urge the SB to embrace the same innovations for A6.4. To be clear, doing so would be entirely compatible with the Mechanism registry being hosted and maintained by the secretariat pursuant to para. 9(c) (via use of permissioned ledgers); with tracking A6.4ERs and CERs as full, indivisible units pursuant to para. 10 (via use of serialized digital assets); and with the unique identifier requirements listed in para. 11 and para. 12, the account types specified in para. 14, the operational irregularity detection and resulting suspension actions contemplated by para. 25, and the equity goals inherent in para. 29's transfer requirements (via the Hedera Guardian). The Guardian is an open-source multi-party policy workflow (i.e., business process management) engine built specifically to address these kinds of tracing and audiability needs. It allows complex multi-party workflows or rules (that change and update over time) to be written and executed in an immutable operating system that can be used as a working application in UI and API formats.

Fully open source, the Guardian on Hedera would allow the secretariat to define calculations, parameters, and dynamic data collection systems across specified roles, yielding quantitative outcomes in what has historically been a low-trust environment. This in turn could be leveraged to transfer data. Yet, calculations using that data or its sourcing may present an opacity issue. Through the Guardian, all workflows can follow schemas and dynamic rules. This includes mathematical calculations, but also steps that are pre-defined, allowing the Mechanism registry as well as other stakeholders to see precisely where a project is in its lifecycle. Issues can then be isolated where and when they arise, with little lag, and with visibility into other workflows that may be at similar points. To date, the most common Guardian application has been calculating carbon credits or carbon emissions following standards-based methodologies. However, it can easily be used to bring consistency and comparability to rules, data, and processes that previously could not be shown to be credible without jeopardizing privacy. Due to our common data format, data management across parties, visualization or analytics, and consistent information sharing with common views to understand dependencies all become easier than any database could manage. Likewise, the use of open source technologies and public ledgers gives countries – in particular those without prior experience operating carbon market standards or registries – a common, highly adaptable framework as well as a library from which to draw and deploy best practices, which can then be iterated further .

For these reasons, we respectfully urge the SB to reconsider planning the A6.4 Mechanism registry around outdated database technology that will structurally limit A6.4's ability to prioritize transparency, accessibility, auditability, information discoverability, scalability, and security. Instead, A.6.4 should "bake in" DLT capabilities from the ground up, ensuring that trust and credibility deficits which historically plagued other carbon markets do not similarly affect the Mechanism registry.

Should there be any reluctance based on tech-readiness concerns, anticipated implementation frictions, or the need for developer support, THF Sustainable Impact Fund and broader open-source Hedera ecosystem stands ready to assist.