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Göttingen, 5th of April 2023

Dear Ms. Olga Gassan-zade, Mr. El Hadji Mbaye Diagne, and to all members of the Supervisory Body,

as a start-up, associated with the University of Göttingen, we focus primarily on measurement technology to quantify carbon sinks in forests. Specifically, we develop terrestrial laser scanning technology with a spatial resolution of two centimetres, allowing for quantification of forest carbon sinks with an accuracy of 98%.

We aim to provide an accessible tool for project developers to align with the requirements defined by the Supervisory Body (SB). Our laser scanning technology can be used by anyone, anywhere. It requires pushing one button, resulting in an accurate, objective assessment of the current carbon sink.

While our input won't revolve around laser scanning, the newly achieved accuracy allows for a unique, novel perspective on global offset topics such as baselines and additionality. Pursuing the SB's vison for transparency and stringency we set baselines and assess additionality for each offset at the time of issuance. Moving away from ex-ante frameworks and avoided emissions, we are pushing for requirements to go beyond the project-level, ensuring additionality is assessed and granted for each offset individually.

The following answers will interpret the possible impact of definitions and requirements on emerging technologies and nature-based projects, specific to the forest sector.

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44.moles Input - Structured public consultation: Requirements for the development and assessment of mechanism methodologies

2. What is understood by the elements in the chapeau to paragraph 33 of the RMP and how could they be operationalized?

The elements of paragraph 33 can be understood and operationalized as follows:

a) *encourage ambition over time;*

Speaks to innovating more accurate, stringent methodologies to extend the reach of project-based mitigations. Achieving continues improvement of methodologies, in alignment with current research could be encouraged through revision of methodologies, assessing their stringency and accuracy in relation to alternatives on a regular basis. Ensuring methodologies are public, understandable, and reviewed continuously is at the core of creating a transparent, ever improving framework for future offsets.

b) *encourage broad participation;*

Speaks to the need for accessibility, where a wide range of project developers globally can apply methods and requirements defined here. Independent of scientific infrastructure and financial resources. Emphasizing the need for simple, but highly accurate methodologies is at the core of our work with 44.moles. Rigorously assessing methods impact and additionality should be of greater importance than whether it is long-established or created by a trusted “standard”.

Using accessible, and affordable methods, such as terrestrial laser scanning allows small-holder farmers to participate in mitigation efforts globally.

c) *be real, transparent, conservative, credible, below ‘business as usual’;*

Speaks to the quality of the methodologies. They need to demonstrate concrete change in greenhouse gas (GHG) levels. They need to show each step in the process, including the scientific calculations. They need to build upon and improve established scientific methods without overestimating results. The element of “below ‘business as usual’” (BAU) is too vague in the context of nature-based solutions. BAU would not result in a clear baseline for forest projects, rather it would leave room for fraudulent baselines, with project developers maximising the number of issued credits.

Moving away from ‘certificates’ toward transferring real ownership of mitigated emissions in the form of plant matter or biomass could be a novel, more stringent approach toward ‘real and credible’.

At 44.moles offsets are ownership rights to a tonne of georeferenced sequestered carbon. Each offset is unique, and traceable to its source.

d) *avoid leakage, where applicable;*

Leakage speaks to the side-effects that project activities could trigger. While positive side-effects are at the core of mitigation projects, limiting negative consequences in goes beyond the project-level. Currently, climate policies lack alignment across industries and national boarders, leading to leakage,

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with emissions moving toward the industry or the nation with less stringent requirements. We believe leakage is best addressed, by aiding in the alignment of cross-sectoral multinational policies.

h) *In respect of each participating Party, contribute to reducing emission levels in the host Party, and align with its NDC, if applicable, its long-term low GHG emission development strategy if it has submitted one and the long-term goals of the Paris Agreement.*

Speaks to the need for each methodology to consider how its output can contribute to the goals of the host party's NDC. This can be demonstrated by the creation of public accounting systems in each national party. These systems would work in combination with the Article 6.4 global registry. It is crucial to transparently account for mitigation funded by private entities, to encourage contribution towards a nations NDC.

4. What is understood by the performance-based approach(es) identified in paragraph 36 of the RMP?

5. Where might each of these approaches be most applicable – with reference to different programmes or experiences?

6. How might each of these approaches be implemented – with reference to different programmes or experience?

Performance-based approaches allow project developers to assess project mitigations by comparing emissions with different baseline-scenarios, set according to specific standards.

a) Best Available Technologies (BAT) that represent an economically feasible and environmentally sound course of action, where appropriate;

b) An ambitious benchmark approach where the baseline is set at least at the average emission level of the best performing comparable activities providing similar outputs and services in a defined scope in similar social, economic, environmental and technological circumstances;

c) An approach based on existing actual or historical emissions, adjusted downwards to ensure alignment with paragraph 33 of the RM.

Best Available Technologies (BAT) in forest-based projects would include the different management techniques. Performance-based approaches usually refer to the baseline and specifically to the framework in which they are computed. We believe that applying performance-based approaches to methodologies as a whole could benefit the market.

E.g. Improved Forest Management could be considered BAT, when computing baselines for a reforestation project. By comparing average emissions from the BAT to those of the activity the additional offsets are determined. The historical emissions approach would consider emissions from existing or previously used methodologies and create the baseline comparison with that data.

Both these approaches could be applicable to nature-based methodologies. However, both leave room for interpretation in creating the baseline. Regardless of the approach used, the variance in possible baseline scenarios leaves room for interpretation. This can be used to maximise the number of additional offsets instead of maximising for additionality. At 44.moles we believe further improvement and more stringency is needed to prevent fraudulent projects and to ensure nature-based solutions are considered trustworthy and transparent.

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Similarly, the ambitious benchmark approach is too ambiguous for forest-based solutions, as deciding what constitutes "comparable activities providing similar outputs" leaves too much room for interpretation.

We propose a different approach for nature-based solutions. Building on financial additionality as defined by the CDM in the "Tool for the demonstration and assessment of additionality". In assessing financial additionality, the baseline will be set according to the forest owners financial alternatives at the point of credit issuance. In our process, at the point of issuance the price of timber and offsets are compared. Giving the forest owner the agency to only sell an offset if a financial incentive is present, exclusively due to the offset project. Thus, making each offset sold additional.

Furthermore, we encourage applying the BAT approach to methodologies as a whole, specifically looking at measurement and verification. This would ensure project developers select the best available measurement technology, reducing the risks of overestimation. We use terrestrial laser scanning technology in our process, accurately measuring the growth in carbon storage. This technology can be used for any type of forest and producing the same quality of data.

In conclusion, with the current interpretation the performance-based approaches perpetuate lock-in, as project developers tend to choose baseline approaches that give them the most favourable outcome and not the most precise. Our proposal is an attempt to counteract this development.

7. a) How do the options for implementation of paragraph 33 of the RMP identified in the paper deliver on the proposed elements?

i. **Scalability and replicability**
ii. **Increasing stringency over time**

Performance-based approaches do not offer an optimum environment for scalability and replicability. As projects are scaled or replicated, reusing baselines could lead to inaccuracies in the way additionality is assessed. Forest growth rates, as well as timber prices change constantly, hence baselines need to be adjusted and additionality should be reassessed continuously.

By assessing additionality for each offset, specific to the forester's financial context at the time of issuance, we **decentralize baselines**, limiting the extent to which they can be manipulated at large scales, for entire projects, in effect for decades.

As each offset is quantified with laser scans, project developers, as well as forest owners have no influence on the number of offsets identified, making the process more objective and less prone to corruption. The approach delivers results of equal quality independent of the projects scale and extent. We believe that future methodologies need to ensure, independent of the project size, that baselines and additionality assessments are based on high quality data.

11. The interaction of the elements from paragraph 33 and approaches identified in paragraph 36 with paragraph 38 of the RMP on Additionality:

a) How should the different elements of the additionality requirements be understood?

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b) How should the different elements be demonstrated?

i. 'would not have occurred in the absence of the incentives from the mechanism';

Be believe that Step 2 "Investment Analysis", from the Clean Development Mechanism (CDM) "Tool for the Demonstration and Assessment of Additionality"[1] provides a good basis to demonstrate additionality.

iii. 'representing mitigation that exceeds any mitigation that is required by law or regulation';

This element considers the voluntary nature of a methodology. This can be demonstrated by referencing local laws and regulations. The aforementioned CDM tool demonstrates this in Step 1 "Identification of alternatives to the project activity consistent with current laws and regulations".

iv. 'taking a conservative approach that avoids locking in levels of emissions, technologies of carbon intensive practices incompatible with paragraph 33 of the RMP'

This can be demonstrated by building off established scientific methods and avoiding complacency with levels of emissions, technologies, or practices. Our terrestrial laser scanners allow us to see the full capacity of a forest, preventing lock-in of emissions.

13. Are there classes of projects, or levels and lifetimes of emissions that would deliver lock in? How might these be identified?

Yes, projects that use outdated methodologies, producing inaccurate results, can deliver lock-in. Usually identifiable by large up-front costs, but low mitigations. With forest-based projects the application of traditional carbon measurement leads to inaccurate data. However, due to it being long-established it is still commonly used.

Using more effective, accurate and cost-effective technology should be encouraged. This would eliminate barriers for project development and thus encourage broad participation. Ensuring that especially smaller stakeholders have feasible options to participate is crucial. Collective action is one of the main points of the Paris Agreement and the only way to achieve its goal.

14. Are there classes of project, or levels and lifetimes of emissions that might be favoured in a positive list?

A positive list should favour projects fulfilling the core requirements of additionality while utilising innovative technologies in a transparent manner. This will allow for a reduction in lock-in and a push for continuous optimization of methodologies. Transparency will allow for greater knowledge sharing among project developers and accordingly increase participation.

[1] Clean Development Mechanism Methodologies, "Tool for the Demonstration and assessment of Additionality", version 7.0.0, EB 70 annex 08, https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf/history_view

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15. What elements or criteria should be used to determine eligibility for automatic additionality, i.e., inclusion on a "positive list"?

The elements of financial additionality and permanence accountability should be at the core of projects deemed eligible for automatic additionality. Projects that demonstrate financial additionality in a broad geographic region and provide legally-sound frameworks ensuring permanence should be considered for the "positive list".

At 44.moles we ensure permanence accountability by establishing legal pathways that a forest owner can use to transparently buy back their offsets, leading to reversal. Due to the process being transparent, we can replace reversals with offsets from a safety reserve. Meaning that each offset created will always be additional, real and without an expire date. Only its georeferenced place of origin might change in case of reversal.

16. How to consider regulations enforced during the crediting period (CP) under the regulatory surplus test (e.g. At the time of enforcement or at renewal of the CP)?

During the crediting period of a project, regulations should be checked for as often as possible. At the point of renewal, newly enforced regulations must be considered.

Our forest projects have a unique set-up taking inventories every 5 years, representing 2% the project area. The quantified offsets are issued as offsets consecutively throughout the five 5 year period ahead of the next inventory. Through consecutive issuance of offsets, we can adapt and react toward regulatory updates and changed.

This method is the opposite of ex-ante project frameworks. Ex-ante offsets are issued based on projections; with consequences should the actual project mitigations not match the projection. 44.moles strongly advocates against ex-ante issuance of offsets from nature-based solutions to avoid this problem.

Frameworks that allow for continues adjustment of baselines and reassessment of additionality in alignment with current regulations should be favoured.

18. Should the crediting period less than 5 years be eligible to be specified in methodologies?

Specific to nature-based solutions, crediting periods less than 5 years should not be eligible. As forest harvesting cycles span somewhere between 30 and 130 years, projects need to commit to mitigation goals that extend beyond the forests usual harvesting date, preserving more than the average stock of carbon. Only when the project goes beyond the forests harvesting date, additionality can be proven. We believe short-term commitments within forest projects counter-act the long-term goals of the Paris Agreement.

At 44.moles projects have to last more than 30 years, with foresters agreeing to not harvest the timber sold as offsets, as well as the entirety of the carbon stock quantified at the start of the project for 99 years from the day of issuance.

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20. How might the application of the elements and approaches for baseline and additionality identified vary according to countries, sectors, technologies or practices or implementation scale?

As broad participation is encouraged, the same quality of offset projects should be achievable anywhere, independent of scientific infrastructure and financial means. Applying less stringent requirements to some projects would encourage the establishment of a two-class market.

We believe that the same methodologies and requirements need to be applied independent of the country, and sector. Consequently, all methodologies need to consider the lack of scientific infrastructure and financial resources in some sectors and for smaller scale projects.

21. How might the application of the elements and approaches for baseline and additionality identified vary in respect of activities that occur within the boundaries of a large-scale (e.g., national, sub-national, sectoral) strategy or program for reducing and removing GHG emissions?

Overall, the application of the elements and approaches should not vary in terms of quality. In regards to forest-based solutions the methodology may alter in terms of sample size taken to quantify the carbon sink. However, the methodology must remain consistent to adhere to the same quality standards.

22. How might these elements or options to address them be informed by assessments such as in IPCC and IEA or Food and Agriculture Organization?

Assessments in the IPCC, IEA or the FAO are commonly used in countries with lower scientific infrastructure and with low data coverage. While default values allow these countries to participate in the voluntary carbon offset market it inherently favours large scale, national-level projects. As the default values tend to be averages, they are more likely to represent a projects actual carbon sink when the project spans a larger area. By excluding small-holder farmers broad participation and acceptance of mitigation projects is not advancing.

While tools and methodologies from the IPCC should continue to be available for countries with low data coverage, mechanisms need to be established to provide high quality data in these areas, encouraging higher standards and allowing small-holder farmers to join as soon as possible.

24. What is meant by leakage?

Leakage describes a situation where a project activity has impact outside of its boundary. This impact can be physical, economic, or social. If a region had two areas, A and B, situated next to each other. The implementation of a project in area A could increase business activity in area B, this would be considered leakage.

25. When does leakage occur, where are the greatest risks?

Leakage occurs when the scope of a project is limited and does not account for the full space in which the effects, positive or negative, reach. In nature-based solutions some examples of this are

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demonstrated as effects in the economic environment around a project. Such as the conservation of typically harvested forests leading to increases in regional timber prices. Or the social environment around a project, such as the preservation of ancestral land integral to an indigenous community. Leakage is unavoidable so the risks of it materialize when it is not addressed. For forestry-based solutions the greatest risks of negative leakage occur when a nation's timber industry policies do not account for its intersection with the carbon market. On the other hand, a strong benefit of positive leakage is a shift in sustainability trends of the timber market. With lower barriers to entry, carbon projects provide an alternative to low-grade timber harvesting.

26. What are the main approaches to address leakage at different scales?

On the project level leakage can be addressed by thorough inspection of the area surrounding a project. Some project developers create a "leakage belt" to assess this element of a project over time and account for it through discounting of offsets. However, this method doesn't prevent leakage in the long run. It is restricted to the impact of that project. Our approach to addressing leakage is based upon broad financial feasibility. We ensure that our projects are financially feasible not just in the area they are implemented, but also in the areas likely affected from a change in timber prices. Providing foresters with a cost-effective alternative to timber harvesting reduces leakage in the long run.

29. In which cases and by what methods should 'activity carbon leakages' be addressed?

Activity carbon leakages should be addressed in cases where the effect is negative to the jurisdiction with less stringent climate policies. This is often the case when project developers from Annex I countries create projects in Non-Annex I countries, of a lower quality than they otherwise would. This can create quasi-beneficial effects for the community stakeholders involved. Where in the long-run instead of being empowered to create projects for themselves, these stakeholders are reliant on (for instance), the technologies brought in by these developers. Stricter national policies outlining the parameters for which carbon projects by foreign entities can exist could help with this. Another approach, on a larger scale, could be an increase in cross-national policies or matching commitment agreements as proposed by the authors of "Combating climate change with matching-commitment agreements" [2]. The more intentional policies are in addressing this leakage, the less prevalent it will be.

30. Where are non-permanence risks in respect of emission reductions?

In the forest-based project sphere, the risks for non-permanence and reversals often lie in the duration of projects and the lack of collective accountability around the way reversals are handled. Projects with short monitoring periods encourage short-term conservation of forests, with forest owners eventually harvesting the timber. Thus, the credits created are not additional and non-permanent. There are also risks of unintentional reversal related to natural disasters such as

[2] Molina, C., Akçay, E., Dieckmann, U. *et al*. Combating climate change with matching-commitment agreements. Sci Rep 10, 10251 (2020). https://doi.org/10.1038/s41598-020-63446-1

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wildfires. These reversals require a different response than the aforementioned reversals, especially when the forester actively reduced the risk for natural disturbances.

31. How are these typically addressed, what are the options?

With forest-based projects reversals are typically dealt with through buffer reserves to mitigate the issue on the buyer end. We believe that in addition to this, legal paths for reversals should be made available to foresters. Bringing more transparency to the issue and providing support to them, thus deterring reversals in the long-run. These paths will also create a safeguard to the foresters in cases of unintentional reversals. Owners of land more prone to natural disaster are reluctant to participate in projects due to the lack of protection for them in these instances. This creates a cycle where they instead turn to timber harvesting. Using the buffer reserve approach on its own creates a dynamic where there is a lack of support of forest owners, discouraging them from participating in projects. It is also important to note that not all intentional reversals are caused by a lack of care for the goals of a project. In some cases, the project becomes unprofitable for the individual volunteering their land or becomes a detriment to their livelihood. By providing a clear path to exit a project transparently, we are creating a safety net that forest owners can fall on should the financial incentive of a project decline.

32. Should a standardized baseline for a group of host Parties be eligible?

We do not believe that a standardized baseline for a group of parties should be eligible. This is counteractive to the element in paragraph 33 of “encouraging ambition over time”. Standardizing the baseline would stifle efforts to seek accurate data from those individual parties.

Please reach out for any questions in regard to the details of our method or our perspective on additionality and decentralized baselines in the forest sector. We hope that our input was able to provide insight and a novel, constructive perspective.

Best regards,

Finn Grundmann (CIO)