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Trustworthiness of the New REDD+ Forest Methodology Among External Stakeholder Groups

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ABSTRACT

This thesis investigates the effectiveness of the new REDD+ forest methodology launched by *Verra* in November 2023 by focusing on its impact on trustworthiness. Through interviews with scientists and companies purchasing such credits, the study highlights the complexities, challenges, and potential enhancements of the new methodology. It explores the need for ongoing refinements, stakeholder engagement, and technological advancements to ensure transparency and credibility in carbon offset projects. Drawing on the organizational trust repair theory, the research emphasizes the importance of rebuilding trust among external stakeholders in the carbon market. By addressing regulatory challenges, promoting accountability, and embracing innovation through the geospatial deforestation risk tool and the jurisdictional approach, the upcoming years will prove whether the new forest methodology is expected to enhance confidence in REDD+ carbon credits verified by *Verra* amongst external stakeholders.

*"Carbon credits use the market to invert
the very forces that helped fuel the destruction of nature
in the first place, only in reverse:
by flipping the economic equation
to make nature more valuable alive than dead."*

(Vander Velde, 2024)

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LIST OF ABBREVIATIONS

GHG	Greenhouse Gas Emissions
REDD+	Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
UNFCCC	United Nations Framework Convention on Climate Change
VCM	Voluntary Carbon Market
VCMDA	Voluntary Carbon Market Disclosure Act
VCS	Verified Carbon Standard
VVB	Validation and Verification Body

1 INTRODUCTION

The overarching challenge of the 21st century is climate change triggered by carbon dioxide emissions. While carbon dioxide accounts for the biggest portion of all global manmade greenhouse gas (GHG) emissions, significantly reducing carbon emissions and methane is inevitably regarded as one of the main tasks to fight climate change (National Oceanic and Atmospheric Administration, 2023). Over the years, an instrument to offset those emissions gained more and more momentum among governments and organizations, known as carbon credits. Those specific credits can be bought by any individual, company, state, or whatever institution there is to allow them to offset not only their carbon emissions but every other GHG footprint emitted by them. A retailer of such credits can be any project that sustains its ecological carbon sinks, for instance, by avoiding deforestation or that even improves its rate of afforestation or reforestation (Freedman et al., 2009)

In today's world, there are a plethora of nature-based¹ carbon credit projects that have been launched over recent years, most commonly under the United Nations Framework Convention on Climate Change's (UNFCCC) REDD+ framework. Over time, REDD+ has gained recognition as a significant commitment to climate action in the forest sector. A recent estimation has shown, that the framework resulted in avoiding approximately 340,000 metric tons of global CO₂ emissions annually (Malan et al., 2024).

Even though there are positive examples like the Chyulu Hills project in Kenya (Vander Velde, 2024), many of those projects have been heavily criticized recently. In the spring of 2023, an

¹ Those are initiatives that lead to the protection, restoration, or sustainable management of natural or modified ecosystems.

investigation by some newspaper agencies² caused a stir across the industry (Greenfield, 2023). According to them, over 90% of REDD+ rainforest credits given out by *Verra*, the global leader in Voluntary Carbon Standards for the expanding Voluntary Carbon Market (VCM), are possibly worthless and thus do not lead to actual carbon reductions. Out of the 29 approved projects by *Verra* that were assessed, only eight were found to have evidence of substantial deforestation reductions. The US-based organization has given out more than 1 billion carbon credits so far and approved three-quarters of voluntary offsets, with its rainforest protection program representing 40% of these credits (Greenfield, 2023). Other studies (see West et al., 2023) and numbers from sales in 2023 confirm the backlash REDD+ carbon credits have faced compared to previous years (Hong et al., 2023). As an answer to those accusations, *Verra* issued a major update to its methodological approach in November 2023, which is used to assess the level of deforestation, among others, and further leads to the generation of carbon credits from REDD+ projects (Verra, 2023a). The new methodology³ is the product of collaboration and consensus among carbon market experts and stakeholders, like project developers (L, 2023). As of May 2024, only one study on the implications of the new methodology on the baseline scenario⁴ has been identified (see Meena et al., 2024). However, that study does not provide a link to any theory or concept. Due to all the accusations from last year's investigations and studies on REDD+ carbon credits and the repercussions on demand, research is needed on whether *Verra* can turn the page around with the new methodology backed up by a theory.

Barbara Haya, a researcher of carbon credits for more than 20 years, has pointed out that “*one strategy to improve the market is to show what the problems are and really force the registries*

² *The Guardian & Die Zeit*

³ The methodology is formally labeled as VM0048 Reducing Emissions from Deforestation and Forest Degradation.

⁴ The baseline scenario serves as a way to estimate the emissions that would likely have occurred in the absence of implementing the agriculture, forestry, and land-use project activity.

[e.g. Verra] to tighten up their rules so that the market could be trusted” (Greenfield, 2023). It can be argued that *Verra* has to be trusted again, which it tries to achieve through the new methodology. After some thorough research, the organizational trust repair theory by Gillespie & Siebert (2018) has been selected to form the theoretical foundation of this paper as it addresses how organizations can regain trust among their stakeholders. However, there has been no evidence of research found on how organizations can rebuild trust among external stakeholders⁵ in the context of the selected study or beyond. Therefore, this study not only contributes to the theory but also to the awareness of the new forest methodology and therefore combines novel, yet-to-be-studied aspects in an emerging industry by answering the following research question:

How can the new REDD+ forest methodology rebuild the level of trust in carbon credits among external stakeholder groups?

From this, more sub-questions arise that are fundamental to answering the research question:

- *What are the external stakeholders’ perceptions of the old and specifically new methodology?*
- *How do the changes and refinements address the concerns raised regarding the trustworthiness of carbon credits issued under the REDD+ framework?*
- *Based on suggestions from the external stakeholders, what additional measures or actions could organizations like Verra take to further enhance the level of trust in their carbon-offsetting frameworks/practices?*

⁵ Those who are not involved in the day-to-day operations of an organization but are affected by them.

After the introduction, the thesis continues with an overview of carbon trading in general, the REDD+ framework, the role of *Verra*, the organizational trust repair theory, and the methodology used. The findings section presents the data gathered through the interviews. This data is then analyzed, supplemented by insights from the literature. The section evaluates the refinements of the new methodology, discusses its theoretical and practical implications, and concludes with a summary of the main results of the research.

2 THEORETICAL FRAMEWORK & LITERATURE

2.1 Terminology

2.1.1 Carbon Trading

For a deeper understanding of the whole carbon credit industry with all its markets and dynamics, it is necessary to briefly address the concept of carbon trading. The idea of trading emissions was first presented by Ronald Coase in an article called ‘The Problem of Social Cost’ back in 1960 (Sandor et al., 2002). It then took almost 40 years before it was formally discussed among scientists and politicians and eventually led to the Kyoto Protocol under the UNFCCC. The protocol agreed to decelerate human-made CO₂ in the atmosphere. Even though the term carbon credits did not appear in the document, the concept of emission trading was reflected in the text (United Nations, 1998). Over the years, two different carbon trading markets developed. One is known as compliance or mandatory markets. Here, governments are usually the main organizers to target specific industries or sources that emit GHGs. Normally, the emitters are legally obligated to offset their emissions as the government places caps on GHG emissions. The former obtain pollution allowances or permits to reach the emission cap limits. Unused allowances can be traded to other emitters or financial intermediaries to generate profit (Brown, 2021). While those markets are strongly regulated, the other ones known as the

VCMS, are more flexible and incentive-based, which gives individuals or private companies the chance to purchase such credits on a voluntary basis. Voluntary markets differ from one another as multiple different private companies operate them. This means markets can have individual verification standards, participation requirements, credit registries, and project criteria for their carbon market (Brown, 2021). In today's VCMs, the majority of credits issued result from REDD+⁶ or renewable energy credits (Potts, 2023). Due to its importance for the research, the REDD+ framework is introduced in the upcoming chapter.

2.1.2 REDD+ Framework

The REDD+ framework is a way to generate nature-based carbon credits for the VCMs. It was first introduced by the UNFCCC in 2005 under the name RED solely emphasizing deforestation. Thereby, the main principle was to provide companies with funds if they were to stop cutting down trees. Two years later, a second D for degradation was added, which even awarded companies with money when they knocked down forests only to a certain degree (Monjane et al., 2022). Between 2010 and 2020, global forests disappeared at a rate of about 10 million hectares⁷ per year. In that regard, it is important to mention that deforestation has slowly been decreasing since 1990, and the net loss⁸ only accounts for 5 million hectares per annum (Ritchie & Roser, 2021). In 2013, however, the UNFCCC Conference of the Parties in Warsaw saw an urgent need to even develop the more profound REDD+ framework. The main objective behind REDD+ is a set of guidelines⁹ that direct activities in the forest sector that lead to a reduction of emissions from deforestation and forest degradation, as well as the promotion of sustainable management of forests and the conservation and improvement of

⁶ The share has fallen from 72% in 2021 to 53% in 2023.

⁷ This is approximately the size of Portugal.

⁸ The difference between deforestation and reforestation.

⁹ For example, the accurate application of technical methods.

forest carbon stocks in developing countries (UNFCCC, n.d.). For REDD+ projects to convert their offsetting practices into carbon credits, they need to be accounted to global standards and later verified. The leading accounting standard for REDD+ credits is an organization called *Verra* (ICVCM, 2024). It developed and launched the new forest methodology that is being assessed throughout this study. The following subchapter provides a short overview of the role of *Verra* in this research.

2.1.3 The Role of Verra

The US-based Non-Profit Organization *Verra* is the global accounting standard for the expanding VCM with a market share of 70% (Lei, 2024). The organization developed the Verified Carbon Standard (VCS) in 2007 intending to streamline the VCM by standardizing the quality of carbon units, ensuring greater assurance, and enhancing the exchangeability of carbon offsets. Certification under the VCS is granted following validation and verification of projects through ex-post accounting (Lee et al., 2017; Verra, 2017). It is important to differentiate between the validation that takes place before, ergo ex-ante, the start of the project, and the verification that takes place after, ergo ex-post, the project is concluded. The validation involves an initial evaluation of a carbon removal project's plan and implementation. In contrast, the verification involves an evaluation of a removal project or action to verify the quantified climate impact and ensure it aligns with other specified conditions (McDonald et al., 2021). While the accounting standard is provided by *Verra*, a third party, a Validation and Verification Body (VVB), is responsible for validating and verifying the executed work. The figure below shows the simplified version of a project cycle for a VCS, which could be used for REDD+ projects, for instance. Carbon credits arising from those projects can be issued both ex-ante and ex-post. While purchasers of ex-ante credits essentially fund future carbon reduction efforts, ex-post credits are based on achieved and tangible GHG offsets.

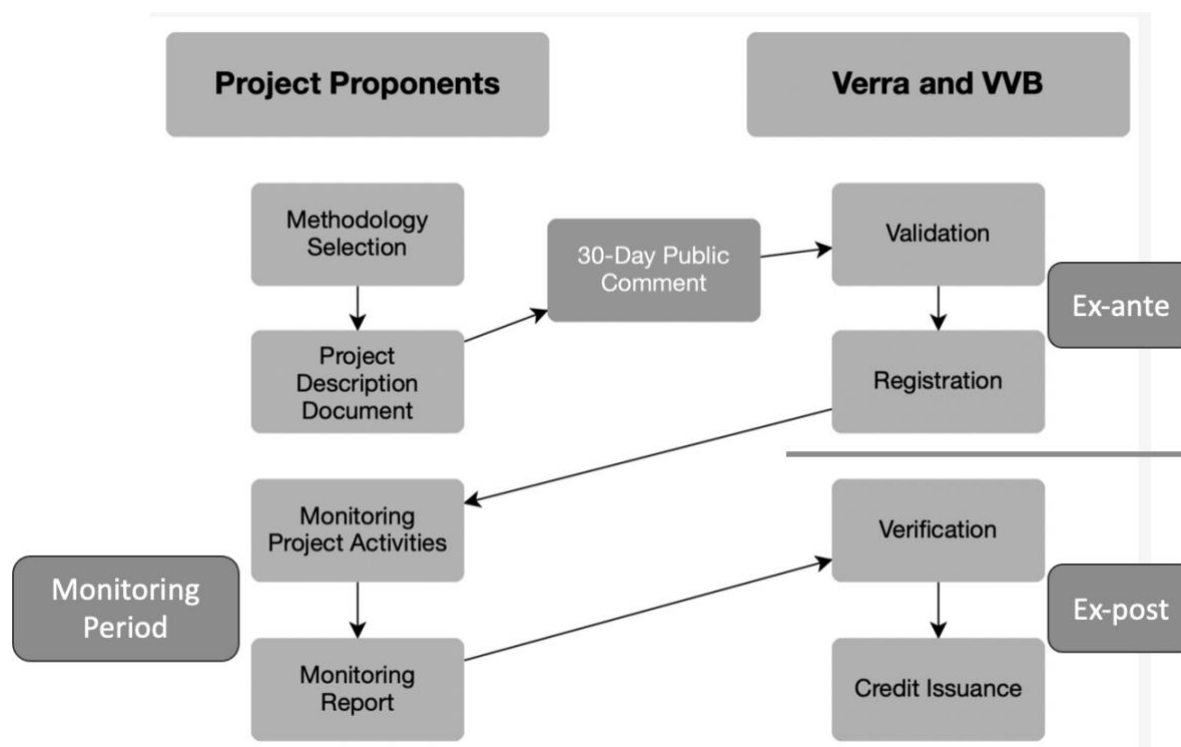


Figure 1: Illustration of the project cycle under the VCS; Source: Pan et al., 2023 & author's own illustration

Towards the end of 2023, *Verra* launched its new forest protection methodology for REDD+ projects, which is being further examined over the following pages. In the new methodology, *Verra* will take charge of overseeing and directing the process of establishing baseline scenarios. This involves utilizing jurisdictional-level¹⁰ data that adhere to rigorous standards and undergo a rigorous development procedure. The initiative will utilize modern remote-sensing technologies alongside comprehensive risk assessments to estimate projected deforestation within a project area (Verra, 2023a). In summary, by 2025, all *Verra* REDD+ projects will transition to using country-level baselines created by organizations like *Space Intelligence*¹¹ instead of having project developers produce those baselines themselves

¹⁰ Jurisdictional approaches represent an integrated landscape management strategy characterized by extensive government participation.

¹¹ A provider of nature data using satellite remote sensing data contracted by *Verra*.

(Mitchard, 2023). Even though it has been developed since 2020, it can be regarded as an answer to the discoveries from the studies by *The Guardian* and West et al. (2023) already briefly presented and is thus seen as the core element of this research.

2.2 Organizational Trust Repair Theory

The following paragraph introduces the organizational trust repair theory by Gillespie & Siebert (2018), which was chosen because the case of *Verra* presents an interesting approach to possibly adding a new dimension to the theory. First, it is necessary to outline what trust repair is about shortly. Many definitions of trust repair focus on what Dirks and his co-authors characterize as a process where a trustee is “*attempting to increase trust following a situation in which a transgression is perceived to have occurred*” (Gillespie & Siebert, 2018). In the case of this research, the trustee would be *Verra* while the transgression would be the findings from studies on the trustworthiness and legitimacy of the methodology. Essentially, repairing trust, or increasing trust at an organizational level, entails reinstating the positive perceptions of the organization’s reliability that were compromised by the breach of trust. This is crucial for encouraging trustors to once more place themselves in a position of vulnerability (Gillespie & Siebert, 2018).

Further, the authors define six complementary mechanisms for organizational trust repair. First, they present the sense-making approach, which focuses on cognitive and social processes to establish a shared understanding of the trust violation. It involves investigating and explaining what went wrong and why, aiming to shift attributions and perceptions through actions like inquiries, explanations, and apologies. The second one, the relational approach, emphasizes building and maintaining relationships to repair trust. It includes actions such as communication, building rapport, demonstrating empathy, and engaging in collaborative

problem-solving to rebuild trust with stakeholders. The next mechanism is called the structural approach focusing on organizational structures and processes that influence trust repair. This one involves implementing changes in governance, policies, procedures, and systems to enhance transparency, accountability, and integrity within the organization. The fourth is known as the cultural approach. Hereby, the cultural aspects that impact trust within an organization are addressed. It incorporates fostering a culture of trust, ethical behavior, and values alignment among employees to create a supportive and trustworthy organizational environment. Then, there is the strategic approach. This mechanism includes aligning trust repair efforts with the organization's strategic goals and objectives. It includes developing trust-building strategies that are integrated into the organization's overall strategic planning and decision-making processes. The last one called the external approach, considers external factors that influence trust repair, such as regulatory bodies, media, and public perception. It involves managing external relationships, communication, and reputation to rebuild trust with external stakeholders and the broader community (Gillespie & Siebert, 2018). The analysis of the data collected ideally should reveal whether any of those six mentioned mechanisms can be applied to the situation around the launch of *Verra's* new forest methodology or can even be extended.

2.3 Methodology

2.3.1 Research Design

The following subchapters outline the research design, data collection, and data analysis methods used in this study, along with the ethical considerations taken into account. This approach ensures the reliability and validity of the findings related to the new forest methodology launched by *Verra* in November 2023. The research utilizes a qualitative case study design which is specifically suited for in-depth exploration of specific issues within their

real-life context. As per Creswell et al. (2007), case studies focus on a particular issue using selected cases to provide detailed insights. The chosen case for this study is the new forest methodology launched by *Verra* in late 2023. A single instrumental case study design, identified by Creswell et al., directs attention toward a specific issue or concern using one well-defined case to illustrate this matter (Creswell, 2007). This design allows for a comprehensive description of the case and its contextual setting by facilitating a profound analysis that may not follow a chronological order.

2.3.2 Data Collection

The data collection process in this study is based on multiple sources of information, ensuring a robust approach as explained by Creswell (2007) for a case study design. Two primary sources were utilized:

1. **Document Analysis:** Preparatory analysis involved studying *Verra's* old and new forest methodologies. This included making use of ChatGPT to summarize the main features of the new methodology in layman's terms, which was a helpful approach due to the complexity of the methodology. Moreover, document analysis included the use of secondary, like reviewed articles and textbooks, and grey literature, such as reports, white papers, and other online material. The relevant literature was sourced from databases like Google, Google Scholar, ResearchGate, and organizational websites. Keywords used in these searches included "Verra forest methodology", "REDD+ projects", and "organizational trust repair", amongst others.
2. **In-depth Semi-Structured Interviews:** The interviews were conducted with stakeholders not affiliated with *Verra*. Originally, three groups were targeted: scientists

and researchers dealing with carbon credits, representatives from companies purchasing REDD+ credits, and carbon project developers. The inclusion criteria encompassed a professional engagement, either academic or vocational, with REDD+ carbon credits and thus also *Verra* to some extent, availability to participate in a short time window, and the ability to provide informed consent. After at least 30 potential interviewees were contacted by email, LinkedIn, and phone but only a small number and no carbon project developers responded, interviews with three scientists and two representatives from companies, known as carbon analysts, were conducted between late April and early May 2024. One interview guide was used (see Appendix A) starting with the overall perception of carbon credits, the old and new methodology, its refinements, the way it addresses trust concerns, and further room for improvements in the new methodology.

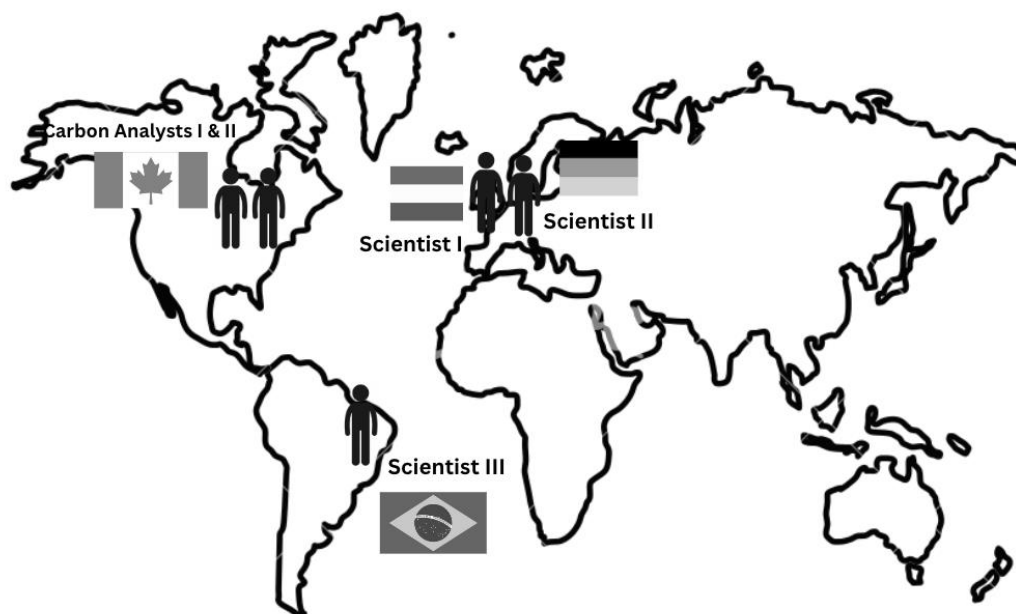


Figure 2: Map of interviewees; Source: Author's own illustration

2.3.3 *Data Analysis*

The data analysis involved coding and analyzing the results from the semi-structured interviews. They were designed to gather insights into the stakeholders' perceptions and knowledge about the new methodology. The approach adapted to analyze the data was thematic coding which is used to identify, organize, and offer insight into patterns of meaning, also known as themes, across a dataset in qualitative research (Creswell & Poth, 2018). Throughout the process, the data was read, and incorporated into an Excel file. After that, significant segments were coded with descriptive labels and then grouped into broader themes that reflected the core essence of the data. This approach allowed for a straightforward way to structure complex data. In addition, the findings from the document analysis helped to contextualize the interview findings, ultimately leading to a robust empirical analysis.

2.3.4 *Ethical Considerations*

The ethical considerations were paramount and fully adhered to throughout the whole process. Prior to conducting the interviews, written informed consent was obtained from all participants to ensure they understood the study's purpose, the nature of their participation, and their rights, including the withdrawal right until mid-May 2024. The confidentiality was maintained by anonymizing the identities of interviewees and securely storing data according to the ethical guidelines of the University of Groningen.

3 EMPIRICAL ANALYSIS

3.1 Findings

3.1.1 *Changes and Refinements in the New Methodology*

The following chapter presents the findings from the five interviews that were conducted to find out about the external stakeholders' knowledge about the old and new forest methodology by *Verra*, to identify differences and refinements, and how those address the trustworthiness of the new methodology among people involved. In total, 23 codes across five themes were defined through the thematic analysis. An overview of all the themes, codes, and their respective definitions can be found in Appendix B.

The first theme was identified as 'Changes and Refinements in the New Methodology'. It focuses on the specific changes and improvements made in the new REDD+ methodology by *Verra*. The two Canadian Carbon Analysts working for companies that have bought REDD+ carbon credits mentioned the improved monitoring and quantification techniques, for instance, through remote-sensing technologies that are being used in the new methodology. Both also highlighted the commitment to transparency as it offers clear and accessible data on deforestation and carbon sequestration. Further, Scientist II noted the enhanced calculation of the baseline scenario leading to a more accurate baseline, while another scientist mentioned something similar with regard to the reduction of flexibility. According to Scientist I, *Verra* is improving the way that it creates this hypothetical scenario, meaning that the American organization emphasizes making the baseline assumptions more realistic through advanced data science, for instance. It is however still hypothetical and volatile and thus hard to trust as per Scientist I, which leads to the next theme.

3.1.2 Concerns about Trustworthiness of the New Methodology

The second theme combines all aspects of previously raised concerns about the trustworthiness of the new methodology. As already briefly touched upon in the last subchapter, the methodology is still based on a hypothetical baseline scenario that can be influenced by policy changes, and governance, amongst others, and therefore oftentimes leads to exaggerative predictions, which was emphasized by Scientist I and II. The former issued a devastating statement about the methodology:

“But I am really thinking in terms of the voluntary carbon market, the way that this framework [methodology] was designed is inherently flawed. [...] Those methodologies are flawed.” (Scientist I, 2024).

Nonetheless, all three Scientists interviewed acknowledged the complexity behind the methodology and that it needs further technical enhancement, for example through satellite data or AI, as well as an ongoing, yet-to-be-executed practical assessment due to its topicality according to the carbon analysts. The complexity of the already implemented old methodology was further exemplified. Scientist II revealed that one REDD+ project in Brazil was designed so complexly with various safeguards that it ultimately led to the backing away of investors. The findings from the interviews revealed that even the new methodology is still surrounded by uncertainty and is far from being perfectly developed.

3.1.3 Risk and Regulatory Challenges

This theme highlights the risks and regulatory challenges associated with the implementation of the new methodology. The former subchapters already addressed the baseline scenarios. For all REDD+ projects, there is an involved risk attached to the process of the baseline, which can

lead to an overestimation, rarely even an underestimation of the offset carbon according to Scientist II. For instance, if less deforestation occurred than estimated, it would mean that the number of carbon credits generated would not equal the real number of carbon removed from the atmosphere. Scientists I and II stressed that this risk is not taken into account even though it should make the projects more transparent and trustworthy. It is mainly because project officials would lose money in most cases as an overestimation is likelier to occur than an underestimation or a perfect estimation.

Scientist III shared an eye-opening and shocking example of the incalculable challenges attached to the forest methodology. In Brazil, illegal woodcutting poses a big threat to REDD+ projects. Therefore, such projects use satellite technology to monitor changes in forestry cover. However, people doing illegal woodcutting know about satellite surveillance, so they paint their tractors and chainsaws green which makes it almost impossible for this kind of technology to detect them. This can have enormous negative implications for REDD+ projects if it leads to changes in forestation. Another challenge involves the difficulty in regulating the VCM. Since it is a voluntary market, there is a fine line between too much governmental involvement and too little as per Scientist III. The point about intervening with VCMs will further be addressed in the next subchapter.

3.1.4 Perception and Trust Building

The findings presented in this subchapter under the theme ‘Perception and Trust Building’ are most important to answer the research question. This theme explores the factors that contribute to building trust among external stakeholders and the effectiveness of the new methodology in achieving this. Scientist I mentioned that the knowledge of the people purchasing such credits is slowly increasing, making it necessary for the projects to ensure quality over simple

certification as buyers become more skeptical due to ongoing reports on the trustworthiness of carbon credits. Scientists I and II criticized the omission of ex-ante accounting in the new methodology as *Verra's* forest methodology can still generate ex-ante credits. Instead, projects should only be able to use ex-post crediting.

“That [ex-post crediting] is the gold standard when it comes to measuring impact!”

(Scientist I, 2024)

Project developers like it less because it poses a big risk for them as mentioned in the previous subchapter. The officials from REDD+ projects, under ex-post crediting, would have to wait years before they can start generating credits and therefore make money. In a worst-case scenario, it can even lead to the conclusion that the project has not generated any offsets at all, which would be disastrous for the whole supply side. Another interesting finding that could make the methodology more trustworthy, and which was shared by all three Scientists was the intervention of governments. It was already mentioned as a regulatory challenge of the VCM in the last subchapter. One example of governmental intervention was referred to the labeling of projects as carbon-free by Scientist I. Governments should step in when there are false claims about carbon offsetting, also at the VCMs, to ensure more credibility. However, not all interviewees were pledging for some governmental interference. Scientist II emphasized the need for a free market without too many regulations as those tend to make everything a lot slower. Further, the use of PR strategies to better market such projects as well as confront negative reports, and increase capacity-building initiatives, for example among indigenous people from the project areas, have been highlighted by both the Scientists and Carbon Analysts.

3.1.5 Mechanisms and Feedback for Improvement

The fifth and last theme focuses on the mechanisms in place for feedback and continuous improvement of the methodology or the carbon market in general. Scientists II and III as well as both Carbon Analysts made it clear that they were not questioning the mechanism to offset carbon emissions through reforestation or avoiding deforestation as such. There is a general acceptance of the REDD+ framework despite its flaws among scientists and organizations. Scientist III said that “[one] can observe the difficulties and imperfections regarding the methodology” and further expanded that creating the perfect methodology takes time, continuous feedback, and arising from that, many more updates in the future, describing it as a trial-and-error process and “an interesting tool [...] that is not yet finished”. Scientists I and III mentioned the Californian Carbon Market as a benchmark for proper government intervention in the VCMs concerning accountability. The findings from the interview will be analyzed over the course of the upcoming section.

3.2 Discussion

3.2.1 Evaluation of Methodological Enhancements

The following sections discuss the findings presented in the previous subchapters and are further expanded on by additional data from secondary and grey literature. It looks at the effectiveness of the changes and refinements in the methodology and how these could lead to more trustworthiness amongst external stakeholders in accordance with the organizational trust repair theory. Further, possible theoretical and practical implications are presented as well as the limitations of the study.

Before the effectiveness of the changes is discussed, it is necessary to shortly outline the main refinements and changes¹² in the new methodology that have been developed by *Verra* with the help of various stakeholders over the course of many years. A few have already been touched upon during the interviews, such as an improved baseline scenario or the use of advanced remote-sensing technologies, without addressing them more deeply, however. With the new methodology, *Verra* will now use jurisdictional baselines. Before, project developers were responsible for creating their own baselines, which oftentimes led to exaggerating crediting. Now, it is overseen by geospatial providers¹³ based on the scale of whole jurisdictions (MSCI Carbon Markets, 2023; Mitchard, 2023). There are a few more important advantages of jurisdictional approaches. As just stated, it reduces over-crediting risks due to improved baselines resulting from the usage of whole regions or even countries provided by specialists under subnational or national coordination. This also lowers the costs for monitoring, reporting, and verification, which had to be carried out by project developers before. It further encompasses the aspect of leakage by monitoring deforestation across a whole jurisdiction, leading to the detection and account for displaced deforestation. This prevents deforestation from moving unnoticed to non-project areas (Thompson et al., 2022). Concerning the example given by one of the scientists in the interviews about illegal woodcutting methods in Brazil, monitoring potential leakages originating from the example can prove to be a valuable approach in making the baseline scenario more accurate.

As an important addition to the jurisdictions, *Verra* has developed and launched a new geospatial deforestation risk tool for at least 14 jurisdictions from their REDD+ projects (MSCI, 2023). It provides a standardized jurisdictional map depicting the risk of unplanned

¹² Not all refinements and changes are presented due to word count constraints.

¹³ Like the earlier mentioned company *Space Intelligence*.

deforestation, primarily based on the distance to the forest edge. This benchmark map should establish a baseline level of predictive accuracy. Moreover, two alternative maps are generated by possibly incorporating stakeholder feedback that analyzes deforestation within the jurisdiction by considering additional factors beyond just proximity to forest edges. These factors might include proximity to roads or other infrastructure known to influence deforestation risk. It then compares the benchmark map with the alternative jurisdictional maps of unplanned deforestation risk to identify the map with the lowest margin of error. The selected risk map should ultimately be implemented within the jurisdiction (Verra, 2024). This can prove to be another vital step in improving the accuracy and efficiency of deforestation monitoring and conservation initiatives.

For further analysis of the new methodology on the trustworthiness of *Verra* as an organization, it seems fundamental to identify whether those above-mentioned enhancements and changes also address the accusations from one of the studies in 2023. Therefore, a deeper look at the study of West et al. (2023) is inevitable. The researchers looked at how well REDD+ projects in tropical countries were working to reduce deforestation. For that, they compared what actually happened in the project areas with what was expected to happen without the projects. They used a method called the synthetic control method which combines data from similar areas to see the real impact of the projects. By doing this, they could better understand if the projects were making a positive difference in protecting forests. Based on that, their research criticizes a wide range of approaches in the, back then, still old forest methodology. They point out that many project baselines are based on historical deforestation averages or trends, which may become unrealistic counterfactuals due to changes in economic or political conditions influencing deforestation. It is stressed that these baselines could be inflated by beneficiaries

who seek financial profit, even if the project does not lead to environmental additionality¹⁴. It is questioned whether the environmental integrity of the assessed REDD+ projects is prone to potential positive measurement bias from private certification. The failure to produce credible reference levels of baselines may be attributed to poor foresight and oversight of temporal changes in deforestation drivers, according to them (West et al., 2023).

In fact, the new methodology solves some of the issues criticized in the study just presented. The jurisdictional approach allows for the monitoring of leakage which should strengthen the oversight of temporal changes in deforestation drivers. Moreover, the involvement of subnational or national administration should not only limit the positive measurement bias resulting from private certification but also make the whole baseline estimations more accurate due to more and better resources involved, both human and monetary, which could increase the environmental additionality. All of what has been carried out by *Verra* through the new methodology can be shortly formulated with the words of the Scientist I interviewed that *Verra* is improving the way it creates this hypothetical baseline scenario.

This is also confirmed by the study by Meena et al. (2024), which assesses the implication of the new methodology on baselines. For their research, the authors selected jurisdictional boundaries based on specific criteria and estimated land cover transitions using high-resolution satellite images. They prepared forest cover benchmark maps and a deforestation risk map for the projects as it will be done by *Verra* or VVBs under the new methodology from 2025 on. Activity data was allocated to the projects using the geospatial deforestation risk tool and they compared the new activity data with existing baseline estimations to analyze the impact of the

¹⁴ The project should result in emissions reductions that would not have happened if the project had not been implemented, either due to planned or unplanned deforestation.

new methodology on baseline scenarios. As per them, the new methodology makes it easier to build robust and easily verifiable baselines for avoided deforestation projects thanks to the implication of jurisdiction and furthermore the deforestation risk maps. The selection of jurisdiction allows for a more tailored approach to setting baselines based on specific jurisdictional boundaries, for example. These enhancements ensure that the baseline emissions are accurately estimated, reducing the risk of over-crediting. Overall, the researchers argue that the methodology has improved the process of establishing baselines by incorporating more comprehensive criteria, addressing potential sources of error, and enhancing the accuracy of baseline estimations (Meena et al., 2024).

Nonetheless, a major factor that has neither been emphasized in the study by Meena et al. (2024) nor by *Verra* yet but was brought up by Scientists I and II during the interviews, is the aspect of ex-ante validation and ex-post certification. Scientist I was even stressing that the whole methodology is basically worthless should REDD+ projects continue to be able to generate carbon credits based on ex-ante validation. As briefly mentioned at the beginning of the paper, ex-ante baselines serve as the expected scenarios for deforestation in the absence of REDD+ interventions. One advantage of issuing such credits is related to the funding through which the carbon buyer can directly contribute to the project's success (Whiting, 2023). However, these baselines may often be unrealistic and inflated, potentially leading to an overestimation of the project outcomes as identified through the interviews. Even under the new methodology, projects can still bring ex-ante credits on the market, which is considered problematic and undoubtedly triggers the accusations of greenwashing. It is however fair to argue that the jurisdictional approach plus the deforestation risk tool will make such ex-ante baselines a lot more accurate in the future, which was also proven in the study by Meena et al. (2024).

Nevertheless, according to Scientists I and II, those baselines established ex-post based on observed deforestation in control areas that are not exposed to the REDD+ sites but similar in their vegetation should be the main way to operate. The buyer's risk is minimized as the project's success and carbon benefits have already been verified by *Verra* and the VVB. In addition, instant carbon credit retirement is possible once the carbon benefit has occurred, allowing ex-post credits to be retired in the buyer's name immediately upon sale (Whiting, 2023). The negative aspect of such crediting is the long time it takes for the actions to become countable and the scope of the benefits, in terms of the amount of carbon credits, for the project developer is hardly foreseeable as confirmed by Scientists I and II. This might drive not only the people involved in the project away but also those who finance the REDD+ initiatives. The below-displayed matrix summarizes the advantages of ex-ante validating and ex-post crediting for the buyer and seller.

		Advantages	
		Ex-ante	Ex-post
Buyer		Contribution to Success Tracking of Project Progress	Reduced Risk Immediate Retirement
	Seller	Ongoing Funding Immediate Availability	Verified Success Accurate Baseline

Figure 3: Advantages of ex-ante and ex-post crediting for buyers and sellers; Source: Author's own illustration

Overall, it can be said that *Verra* has definitely improved its forest methodology significantly and is on the right track to making the baseline scenarios more effective, which should give less reason for accusations like those from last year. However, it also needs to be mentioned that ex-ante validating remains an overwhelming issue that has yet to be addressed by the organization. It can be regarded as a trial-and-error process, as Scientist III stated, that still tries to identify the very best solution. Therefore, *Verra* should continue working on the methodology continuously to diminish all opportunities for greenwashing accusations in the future. The next subchapter connects the organization's approach to the theory by looking at how *Verra's* actions have helped repair the trust among external stakeholders that was breached a year ago.

3.2.2 Theoretical Implications

Over the course of the next section, the organizational trust repair theory by Gillespie & Siebert (2018) is used as a theoretical approach analyzed through some of the six mechanisms that are linked to the methodological enhancements made by *Verra* recently. The aim is to critically reflect whether the US-based organization has done enough to rebuild trust among its external stakeholders and provide suggestions for additional theoretical implications based on the findings from the interviews and documents. By doing so, it is added to the theory that is primarily based on trust repair among stakeholders directly involved in the operations of organizations and less so on the type of stakeholders that have been interviewed for this research.

The sense-making mechanism helps to address the issues and to transition from the old to the new methodology. As a result, by providing all these enhancements, *Verra* provides actions to change the perceptions of its external stakeholders or at least in some way, respond to the

criticism in the past. Months before the new methodology was presented, they also directly addressed the findings from the studies and reports (see Greenfield, 2023 & West et al., 2023) by issuing a technical review of the accusations made (Verra, 2023b). This can be regarded as another sense-making approach. Another mechanism that is addressed is the structural. The introduction of jurisdictional baselines and the geospatial deforestation risk tool represents structural changes in *Verra's* methodology. These changes enhance transparency and accountability, addressing the previous lack of oversight and inflated baselines that resulted from private certification (West et al., 2023). On top of the existing mechanisms, the case of *Verra* presents an opportunity to extend the organizational trust repair theory by highlighting the importance of technological innovation and data accuracy in trust repair as a new mechanism to rebuild trust. External stakeholders, like buyers and scientists, depend on precise data to make informed decisions. The introduction of advanced geospatial deforestation tools and jurisdictional baselines exemplifies how technological enhancements can be integral to restoring trust. This suggests that future trust repair efforts could benefit from incorporating ever-developing technologies and data-driven approaches to address stakeholders' concerns about trustworthiness effectively.

Such an extensive and pivotal transition does not come without challenges and requires patience. To date, the efficiency of these measures has only been tested by one team of researchers so far. However, the trustworthiness of these changes is contingent on their peer recognition and the results coming from the experiments, as well as the practical implementation coming in 2025. For scientists, the publication of datasets resulting from REDD+ projects and method descriptions is fundamental to enable replication or validation of the evidence. Without this, the new methodology might not attain the full confidence of the scientific community over its trustworthiness. Buyers who purchase these carbon credits have

similar interests but these are more related to business operations. They have to make sure not to support greenwashing by investing money into credits that create less environmental additionality as proclaimed. The two Carbon Analysts interviewed continue to evaluate the new methodology on a regular basis but are hopeful about what it promises. Transparent reporting from the project developers as well as studies like this should help them close the divide and elevate the level of trust amongst corporate people.

3.2.3 Practical Implications

To round off the empirical analysis, the most important practical implications are presented. This helps with bridging the theory and practice by showing how the organizational trust repair theory can be translated into real-world applications, making the study more relevant and useful to practitioners. It also identifies gaps where future research is needed, which is addressed in the concluding chapter. The enhanced methodological practices are the main and most obvious practical implication retrieved from the research. *Verra's* new methodology includes jurisdictional baselines and advanced deforestation risk assessment tools which are expected to improve the accuracy of the baselines. This reduces the risk of over-crediting and enhances the credibility of the credits issued under the REDD+ framework. By standardizing the process and involving jurisdictional approaches, the new methodology should increase the market's integrity by providing more reliable and trustworthy carbon credits. In this context, it is however important to stress that the development stage is far from being perfect and therefore needs further updates along the way. As mentioned earlier, the trial-and-error approach is crucial for the ongoing improvement of the methodology. Regular updates and incorporation of stakeholder feedback are necessary to adapt to new environmental, political, or regulatory challenges and technological advancements. The level of trust in the forest methodology is

strongly connected to *Verra's* willingness to implement refinements based on outside forces, such as research findings or enhanced technologies and data collection methods.

Another practical implication of the study to make the new methodology more trustworthy is the involvement of governments as mentioned by all three Scientists. To some degree, the jurisdictional approach can already be considered governmental support, nevertheless, there is more that could be done. Although the three Scientists acknowledged a need for an interplay of the VCMs and governments to make methodologies like *Verra's* more trustworthy, they were hesitant to provide ideas. This is understandable given that the whole idea behind the VCMs is market-based, hardly regulated, and operated by private organizations. Thus, too much of a public intervention could disturb the whole market for various reasons like loss of autonomy, leading to less innovation, for example.

Scientists I and III used the case of the Californian Carbon Market as an example to show how governmental regulations could be integrated within the VCM. In late 2023, the California State government issued the Voluntary Carbon Market Disclosure Act (VCMDA) that permits companies operating in the State to make false claims about net-zero emissions, carbon neutrality, and claims of notable reductions in GHG emissions. Broadly, the VCMDA aims to fight greenwashing connected to specific climate-related claims, including those that involve the purchase, use, sale, or marketing of carbon credits (Barker et al., 2023). A similar regulation, the Greenwashing Directive, has also been approved by the EU Parliament in January 2024 addressing the use of environmental claims by companies (Riordan, 2024). Both laws have yet to be enforced but it is to be questioned why they do not tackle the issue of over-crediting directly by punishing the sellers of such projects. Arguably too many regulations would make the offsetting practices too complicated, therefore driving away investment and

affecting the supply, as described by Scientist II in the context of Brazil, for instance. Instead, the lawmakers oblige companies purchasing carbon credits to fully outline their GHG reduction actions, which means companies will be required to make sure the credits they buy are trustworthy and lead to true environmental accountability in the future. The rationale behind it is to indirectly also punish the supply side by making sure that the demand side only buys credits that have been generated trustworthy and transparently, therefore influencing the daily operations of all the market players, be it the seller or buyer of carbon credits in the VCM. In theory, this should also make organizations like *Verra* produce an even better methodology to regain the trust of the buyers for carbon credits from REDD+ projects.

3.2.4 Limitations

Like any other study, this underlying research also has limitations. The main limitation is connected to the limited time available for data collection. Around 30 potential interviewees were contacted but only a small number responded and an even smaller number was available for interviews in the offered time window. This is known as a non-response bias leading to a sample that is not perfectly representative. Originally, it was intended to not only interview scientists and scholars, as well as companies that bought such carbon credits but also officials that work with REDD+ projects. However, the latter group has never responded to any approaches from the researcher's side. Additionally, both groups that have agreed to interviews are quite small and therefore not present a reasonable sample size. For instance, both companies have been from the same country, which minimizes the diversity in their answers. Given that the whole data collection had to be done over the span of a little more than a month, extended time should have helped to generate more responses and thus also more interviews. Another limitation concerns the analysis of *Verra's* new methodology. Due to its topicality, hardly any empirical research has been conducted by researchers or scientists yet. Even many of the

experts approached had yet to study the new methodology, so some of them ruled out talking to me because they lacked knowledge about the topic. This made it more difficult to find the right interviewees on top of the time constraints. All in all, the abovementioned limitations may distort and affect the generalizability of the findings and may bring the findings from the document analysis more to the forefront than originally anticipated.

4 CONCLUSION

This paper investigates how *Verra's* new forest methodology and the accompanying enhancements can be helpful in repairing the degradation of trust by external stakeholders by applying Gillespie & Siebert's (2018) organizational trust repair theory. As highlighted, the US-based organization aims to improve transparency and accountability, directly addressing past criticisms through structural interventions like jurisdictional baselines and geospatial deforestation risk tools. The adoption of advanced technologies underscores the importance of data accuracy and innovation in restoring trust, which means that the subsequent efforts to repair trust should involve the use of innovative and accurate technological solutions and models.

The study finds that while these changes are promising, their success depends on ongoing evaluations and transparent reporting. *Verra's* commitment to continuous improvement through iterative methodology refinements and evaluations is crucial for maintaining stakeholder trust. Additionally, regulatory measures, like the VCMDA in California or the Greenwashing Directive in the EU can play a vital role in enhancing the credibility of carbon credits by ensuring accurate and verifiable claims. Nonetheless, excessive public intervention might disrupt the market, giving reason for a balanced regulation.

However, the study acknowledges that significant challenges remain. Critics of ex-ante credits raise valid concerns about their reliability and the potential for over-crediting, which can undermine trust in REDD+ projects. The research results note that the effectiveness of ex-ante credits hinges on stringent monitoring and validation based on the new jurisdictional approach to prevent greenwashing and ensure environmental additionality. Ultimately, the impact of all refinements and measures will only be fully realized with extended peer recognition and practical implementation by 2025.

Future research should be conducted on the long-term effects of methodological changes made by *Verra* and their impact on external stakeholder trust. Research should explore the strategies for continuous technological innovation in maintaining and rebuilding trust to guarantee that methodologies evolve in line with advancements in data accuracy and transparency. Further, analyzing how governmental regulations can be combined with voluntary market approaches will present useful insights on improving the credibility and effectiveness of carbon offset methodologies. In essence, the success of repairing trust in *Verra's* new forest methodology resulting in REDD+ carbon credits lies in the innovative solutions, potential regulatory measures, and ongoing evaluations that ensure accountability and credibility in environmental conservation efforts.

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APPENDIXES

Appendix A: Interview Guide

Interview Guide

Section 1: Introduction

What is the name of the organization you work for?

What is your position within that organization?

Section 2: Stance on Carbon Credits & the Old and New Methodology

What is your general stance on carbon credits from the REDD+ framework? Did you have any negative experiences with REDD+ credits in the past?

Can you share your thoughts on Verra's old forest REDD+ framework?

Can you share your thoughts on Verra's new forest REDD+ framework?

Section 3: Changes and Refinements

From your perspective, what are the most significant changes or refinements (e.g. improved monitoring, baseline reassessment) introduced in the new methodology compared to the previous one?

Section 4: Rebuilding Trust

How do you believe these changes address the concerns raised regarding the trustworthiness of carbon credits issued under the REDD+ framework?

In your experience, what factors contribute most to building or eroding trust in carbon offset projects?

In your opinion, what additional measures or actions could organizations like Verra take to further enhance the level of trust in their carbon-offsetting frameworks/practices? Is there still missing something?

Section 5: Final Remarks:

Is there anything else you would like to mention?

Appendix B: Table of Themes, Codes, and Definitions

Themes	Changes and Refinements in the New Methodology	Concerns about Trustworthiness in the New Methodology	Risk and Regulatory Challenges	Perception and Trustbuilding	Mechanisms and Feedback for Improvement
Codes + Definitions	<p>Reduction of Flexibility: This change aims to prevent the overestimation of deforestation avoidance</p> <p>Calculation of Baseline: Establishing more accurate and reliable baseline scenarios</p> <p>Commitment to Transparency: Enhancing transparency in the methodology to build trust</p> <p>Improved Monitoring and Quantification: Utilizing advanced remote-sensing technologies and comprehensive risk assessments</p>	<p>Hypothetical Baseline Scenario: Avoiding the use of unrealistic baseline scenarios to enhance trustworthiness</p> <p>Flawed Methodology: The flaws from the old methodology are not fully addressed</p> <p>Very Complex: Acknowledging the complexity of the methodology</p> <p>Exaggerating: The methodology leads to inaccurate predictions</p> <p>Technical Improvement Needed: Continuous need for technical enhancements</p> <p>New Methodology Still Assessed: There is an ongoing practical assessment of the new methodology</p>	<p>Process of Baseline Increases Risk: The risk associated with establishing accurate baseline scenarios in advance</p> <p>Hard to regulate the VCM: Challenges in regulating the Voluntary Carbon Market</p> <p>Incalculable Challenges: Recognizing that unpredictable challenges can occur to the forest cover of REDD+ projects</p>	<p>Knowledge of People Involved: Buyers and other stakeholders slowly learn to better understand the carbon credit industry</p> <p>Ex-Post Instead of Ex-Ante: The carbon credit accounting should take place in retrospect instead of before the project</p> <p>Government Intervention: The role of government oversight could be extended to ensure credibility</p> <p>Free Market: The voluntary carbon market should rather be free for best development</p> <p>Increase PR and Marketing: The importance of public relations and marketing in building trust and respond to accusations</p> <p>Capacity Building Initiatives: Initiatives aimed at enhancing the capabilities and influence of stakeholders</p>	<p>Not Questioning the Mechanism: The general acceptance of the REDD+ framework despite its issues</p> <p>Trial and Error Method: Emphasizing the importance of iterative improvements and learning from feedback</p> <p>Interesting Non-Finished Tool: Viewing the new methodology as an evolving tool that is not yet complete</p> <p>Californian Carbon Market: Drawing comparison with the voluntary carbon market in California</p>