Examining Global Governance Challenges of Voluntary Carbon Offset Projects: An Agenda for Reforming the Voluntary Carbon Market

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KEYWORDS

global governance, voluntary carbon offsets, carbon credits, VCO market reform

ABSTRACT

There is substantial evidence demonstrating the contribution of greenhouse gases (GHGs) to global climate change, originating from both businesses and individuals across various sectors and countries worldwide. Although the responsibility for climate change and its mitigation has often been primarily assigned to the governments of sovereign nations as signatories of relevant international climate agreements, many large businesses and individuals are now undertaking various self-regulating initiatives to combat climate change by reducing their carbon emissions footprints. These initiatives fundamentally focus on voluntary carbon offsetting (VCO) projects, which are increasingly becoming legal, social, and ethical obligations embedded in corporate governance practices that shareholders, as well as the general public, now demand from companies as part of 'corporate climate accountability' or 'carbon accounting'. These days, VCO is gaining traction in both public and private international climate governance; however, serious governance issues and reputational concerns have begun to emerge regarding offset projects.

This article employs an analytical approach to examine the existing global governance structure of the VCO market ecosystem. More specifically, it identifies various structural challenges, both legal and in terms of accountability, that the global VCO landscape faces. The article advocates for a reform of the current governance structure of the VCO market and, accordingly, makes policy recommendations based on innovative structural design solutions for effective global VCO governance. Therefore, it contributes to the development of soft legal, regulatory, and policy frameworks aimed at promoting accountability, transparency, and credibility, as well as fostering market, technical, and structural innovations within the VCO project ecosystem. Overall, the article contributes to the ongoing debate regarding the potential role and shortcomings of VCO in climate change governance.

I. **Introduction**

A. *The Concept, Structure, and Operational Context of the VCO Market*

The concept of voluntary carbon offsetting (VCO) has emerged in recent years as a prominent initiative and a rapidly growing market tool to address global climate change.[1] Defined as a practice in which businesses or individuals can indirectly offset or reduce their greenhouse gas (GHG) emissions by funding emissions reduction initiatives or projects undertaken by others elsewhere,[2] VCO is created, verified, and traded independently of government regulations and agencies.[3] These projects primarily include renewable energy initiatives, reforestation efforts, and carbon capture, utilisation, and storage (CCUS) technologies. Lately, VCO has garnered increasing attention within both public and private international climate governance, largely due to its perceived environmental benefits, positive corporate governance image, and financial advantages.

Beyond its potential for emissions reductions, many people believe that VCO can contribute to international climate finance. Typically, climate finance includes funding sourced from public, private, and alternative financial channels at international, regional, national, and local levels, all aimed at supporting actions for climate change mitigation and adaptation. These assumptions may not be far from reality, as the global voluntary carbon market is currently valued at $2 billion,[4] despite being in its early stages.[5] Thus, with the increasing number of VCO projects and services, this sector is becoming one of the world's fastest-growing global markets. More interestingly, it is projected that the market could grow annually to reach a value of $1.1 trillion by 2050.[6]

The global governance structure and market operation of VCO encompasses a wide range of participants and activities across various jurisdictions. These participants mainly include project developers, traders, brokers, exchanges, project funders, project owners, carbon offset providers, validators, verifiers, standard organisations, and carbon offset buyers.[7] Moreover, governments, local or host communities, civil society organisations, landowners, and indigenous peoples could be actively involved as stakeholders. Each party collaborates with one another to achieve reductions in GHGs emissions or facilitate their removal, ultimately leading to the issuance of offset credits. There is typically no standardised structure, however; project governance is determined on a case-by-case basis.[8] By implication, relevant parties assume responsibility for and make decisions regarding their projects, which are based on complex, private contractual relationships. These contracts vary in terms of applicable standards to offset projects. This article, in its next subsection, examines the global context of VCO.

B. *The Global Context of VCO*

The evolution of VCO is rooted in the global climate governance regime established by the United Nations (UN), despite being governed

[1] Stoddard, Isak, et al. "Three Decades of Climate Mitigation: Why Haven't We Bent the Global Emissions Curve?" *Annual Review of Environment and Resources*, vol. 46, no. 1, 2021, pp. 653-689.
[2] White, Craig. "Voluntary Carbon Offsets: The Evolution of a Business Expense." *The Tax Advisor*, Jan. 2022.
[3] Franki, Nicole. "Regulation of the Voluntary Carbon Offset Market: Shifting the Burden of Climate Change Mitigation from Individual to Collective Action." *Columbia Journal of Environmental Law*, vol. 48, no. 1, 2022, p. 39.
[4] Gros, Marianne. "Net Zero Forces the Voluntary Carbon Market to Grow Up Fast." *EuroMoney*, Oct. 2022.
[5] Curmi, Elizabeth, et al. "Voluntary Carbon Markets: A Critical Piece of the Net-Zero Puzzle." *Citi GPS: Global Perspectives and Solutions*, Jul. 2023.
[6] Tiseo, Ian. "Forecast Carbon Offset Market Value Worldwide 2050, by Scenario." *Statista*, Feb. 2025.
[7] Liu, Ying, and Pedro Gurrola-Perez, "The Dynamics of Voluntary Carbon Markets: An Empirical Analysis of the Carbon Credits Lifecycle." *World Federation of Exchanges*, Feb. 2025; Battocletti, Vittoria, et al. "The Voluntary Carbon Market: Market Failures and Policy Implications." *University of Colorado Law Review*, vol. 95, no. 3, 2024, pp. 519-573.
[8] Bumpus, Adam, et al. "The Rise of Voluntary Carbon Offset Standards: Self-Regulation, Legitimacy and Multi-Scalar Governance." SSRN Working Paper 1680054, 2010.

privately.[9] For decades, VCO has arguably gained influence and developed side by side with the Clean Development Mechanism (CDM), a UN-regulated carbon credit market mechanism. The CDM, unlike the VCO market, permits parties with commitments to reduce emissions, as outlined in Annex B of the Kyoto Protocol,[10] to develop emission reduction projects in developing countries. These projects, upon verification, can earn Certified Emission Reductions for their emissions reductions.[11] But VCO serves as a unique alternative to carbon credits utilised in GHG emissions cap-and-trade programmes under the Kyoto Protocol,[12] which is an international treaty that builds upon the 1992 United Nations Framework Convention on Climate Change. A crucial moment for VCO occurred with the adoption of the Paris Agreement, which emphasised the importance of achieving net-zero emissions. This development sparked increased interest in the VCO market, particularly among suppliers of carbon offset credits to companies. However, it has been argued that the emissions reduction targets set by the same agreement have jeopardised the global VCO market, raising concerns about double counting.[13]

The motivations for global VCO, in addition to mitigating climate change, include the desire to transition to low-carbon economies, fulfill moral obligations, enhance corporate image, preempt regulatory measures, and identify opportunities for financial gain.[14] Large businesses are under increasing pressure from various stakeholders to integrate VCO into their corporate social responsibility (CSR) frameworks within their corporate governance systems. They are expected to demonstrate carbon accountability by improving sustainability practices, reporting on environmental, social, and governance (ESG) objectives, and their associated impacts, and taking proactive measures to reduce or even eliminate their emissions footprint, which contributes to climate change.[15] These demands are becoming enforceable as both legal obligations and social expectations, driven by corporate climate litigation, financial decisions, investor pressure, public procurement, and reputation-based campaigns by civil society organisations.

Though some emerging debates advocate for reforming the VCO market,[16] others argue that it is more prudent to seek alternatives that deliver genuine climate benefits and enhance climate finance.[17] This article responds to calls for reforming the global VCO market. But unlike existing studies, it examines the global governance challenges associated with VCO projects, highlighting specific dimensions of each challenge. Essentially, it sets an agenda for reforming the current global VCO market by addressing the identified challenges and making policy recommendations. This article is organised into four sections. The introduction, in Section I, presented a conceptual definition, governance structure, market operations, and the global context of the VCO market ecosystem. Section II analyses the regulatory and accountability challenges associated with VCO governance, while Section III offers insightful policy

[9] Kreibich, Nicolas. "Toward Global Net Zero: The Voluntary Carbon Market on Its Quest to Find Its Place in the Post-Paris Climate Regime." *WIREs Climate Change*, vol. 15, no. 5, 2024.
[10] *see* Kyoto Protocol 2303 UNTS 162, Art. 12.
[11] Bortoletto, Wagner, et al. "Exploring the Scientific Literature on Clean Development Mechanisms: A Bibliometric Analysis." *Energy Policy*, vol. 183, 2023, 1138006.
[12] Chen, Si, et al. "Voluntary Carbon Offsets: An Empirical Market Study." SSRN Working Paper 3981914, 2021.
[13] Kreibich (n 9) *supra*.
[14] Broderick, John. "Voluntary Carbon Offsets: A Contribution to Sustainable Tourism." *Sustainable Tourism Futures: Perspectives on Systems, Restructuring and Innovations*, edited by Stefan Gössling et al., Routledge, 2009, at p. 32.
[15] "Corporate Accountability and Liability Mechanisms for Climate Change: Developments and Comparative Models." *BIICL*, 2021.
[16] Meitner, Leonhard. "Voluntary Carbon Markets: A Critical Assessment." Berlin School of Economics and Law Institute for International Political Economy Working Paper 246/2024, 2024.
[17] Sovacool, Benjamin, "Building Umbrellas or Arks: Three Alternatives to Carbon Credits and Offsets." *The Electricity Journal*, vol. 23, no. 2, 2010, pp. 29-40.

recommendations for reforming the VCO market. Finally, Section IV concludes with a summary and key lessons derived from the article.

II. **Regulatory and Accountability Challenges in the Governance of VCO**

The global VCO market, a decentralised marketplace where businesses and individuals voluntarily buy and sell carbon credits to offset or reduce their greenhouse gas emissions,[18] is currently beset by legal complexities and accountability gaps. These issues present significant structural challenges to the integrity of carbon offset credits. The current transnational governance frameworks regulating transparency, accountability, accuracy, and the potential implications of VCO projects on third parties are not only complex and ambiguous but also raise concerns about the adequacy of offset credit regulation and its credibility.[19] This concern is keenly raised when comparing the VCO market to the offsetting activities within established emissions trading systems, where a regulator establishes an upper limit on GHG emissions that can be released during a specific period by a particular economic sector.

Early research has sought to investigate various aspects of the VCO market, including its functionalities and potential benefits.[20] The analysis also concentrated on identifying social, regulatory, and ecological dysfunctions within the offset market.[21] These issues stem from several factors, such as a lack of uniform standards, inconsistent verification processes, and inadequate disclosure requirements that create uncertainty and foster an environment in which VCO projects may fail to deliver the promised emissions reductions, leaving market participants unaccountable for their actions. Moreover, it has been revealed that VCO projects intensify climate inequality.[22] This inequality is particularly pronounced in developing countries, where communities and Indigenous peoples, especially those hosting VCO projects, often do not reap the benefits.

The regulatory challenges facing VCO are considerable, particularly due to a lack of oversight.[23] This absence of oversight, coupled with the lack of a definitive and structured governance system, has been argued to create barriers that hinder effective climate change mitigation.[24] More generally, VCO is largely perceived as inefficient in addressing global climate change across various dimensions. The offset credits market is consequently predisposed to a governance structure, which is fragmented and based on manifold multi-national laws, regulations, and standards. There are several factors that contribute to these legal complexities and inconsistencies.

First and foremost, the VCO market is an ecosystem comprising various participants, including traders, brokers, exchanges, project funders, project owners, project developers, carbon offset providers, validators, verifiers, standard organisations, and carbon offset buyers.[25] More stakeholders may include governments, host communities, civil societies, landowners, and Indigenous people. These stakeholders create multidimensional and overlapping relationships via complex contractual and business arrangements. The

[18] Mendelsohn, Robert, et al. "A Framework to Ensure that Voluntary Carbon Markets Will Truly Help Combat Climate Change." *Brookings*, 16 Sep. 2021.
[19] Dawes, Allegra, et al. "Voluntary Carbon Markets: A Review of Global Initiatives and Evolving Models." *Centre for Strategic and International Studies*, May 2023.
[20] Bumpus, Adam, and Diana Liverman, "Accumulation by Decarbonization and the Governance of Carbon Offsets." *Economic Policy*, vol. 84, no. 2, 2008, pp. 127-155.
[21] Ahonen, Hanna-Mari, et al. "Governance of Fragmented Compliance and Voluntary Carbon Markets under the Paris Agreement." *Politics and Governance*, vol. 10, no. 1, 2022, pp. 235-245; Badgley, Grayson, et al. "California's Forest Carbon Offsets Buffer Pool is Severely Undercapitalized." *Frontiers in Forests and Global Change*, vol. 5, 2022, 930426; West, Thales, et al. "Action Needed to Make Carbon Offsets from Tropical Forest Conservation Work for Climate Change Mitigation." *Science*, vol. 381, no. 6660, 2023, pp. 873-877.
[22] Meitner (n 16) *supra*.
[23] Ziegler, Tim. "Assessing Credibility in the Voluntary Carbon Market? Developing, Testing and Evaluating a Credibility Assessment Framework Using the Integrity Council for the Voluntary Carbon Market as a Case Study." Lund University Master's Thesis, May 2023.
[24] Franki (n 3) *supra*.
[25] Chen et al. (n 12) *supra*.

structure, content, and requirements of these relationships vary significantly from one business agreement to another, making it challenging to understand their contractual implications and to hold different VCO project participants legally accountable for errors, omissions, or misconduct. This diversity of unregulated market participants also creates a disintegrated, ambiguous, and unreliable market.

The second factor pertains to jurisdictional issues. VCO projects are often developed across different locations, particularly in developing countries, each with its unique legal system. This jurisdictional diversity can result in regulatory arbitrage.[26] Demonstrably, arbitrage may occur when businesses exploit more favourable laws in these developing jurisdictions, where institutions and legal systems are characterised by significant gaps, corruption, and weak governance, thus circumventing less favourable regulatory systems in their jurisdictions.

Thirdly, while existing standards and certification schemes, such as Verra, Gold Standard, Plan Vivo Foundation, and Climate Action Reserve provide a range of choices or options for project developers or owners, they also contribute to fragmentation and may lead to inconsistencies in project quality and credibility. Fragmentation muddles the assurance of compliance and enforcement, particularly when voluntary projects depend on self-reporting mechanisms. Furthermore, since these standards are self-driven and often motivated by business interests, doubts about their credibility are understandable. The transparency mechanisms embedded in existing standards are already a topic of ongoing discourse regarding the market integrity of VCO projects.[27]

Fourthly, there are unclear lines of liability and dispute resolution mechanisms in carbon credit transactions. For instance, it remains uncertain how project developers or owners can manage potential impacts on third parties. The various participants in a project are likely to have conflicting interests, which can affect project outcomes and the issuance of offset credits. This situation complicates the resolution of issues that may arise either before or after project implementation, resulting in greater uncertainty and risks for VCO project developers and investors. Although this primarily pertains to contractual matters, there is a valid concern regarding potential residual liability that may arise from post-project management, such as decommissioning issues.

The regulatory complexities can be addressed by electing an organisation with a long-standing history and credibility, such as ISO, to standardise VCO projects and products. This also requires international cooperation among various market participants, stakeholders, and governments worldwide. These initiatives must be led by the UN, which will provide regulatory oversight under its global climate governance framework.

On the other hand, there are presently no clear global accountability mechanisms for the international governance of VCO projects, nor are there sufficiently reliable processes for addressing issues related to project accuracy and integrity, complaints, disputes, and non-compliance. The lack of globally recognised certification mechanisms for VCO, which could ensure compliance with established limits, standards, and accountability, has also been noted. These issues have significant implications for human rights, property rights, land use, and ownership in offset project host countries.

[26] Coendet, Thomas. "The Concept of Regulatory Arbitrage." *Law and Economics of Regulation*, edited by Klaus Mathis and Avishalom Tor, Springer, 2021, at pp. 159-181; Minto, Andrea, et al. "A Risk Characterization of Regulatory Arbitrage in Financial Markets." *European Business Organizational Law Review*, vol. 22, 2021, pp. 719-752.

[27] Kreibich, Nicolas, and Lukas Hermwille. "Caught in Between: Credibility and Feasibility of the Voluntary Carbon Market Post-2020." *Climate Policy*, vol. 21, no. 7, 2021, pp. 939-957; Wyburd, Inigo. "Lost in Documentation: Transparency in Voluntary Carbon Market Registries." *Carbon Market Watch*, 28 Mar. 2024.

Methodologies for carbon accounting and project documentation lack formal requirements, as do the processes for project registration and the retirement of offset credits.[28] The situation demands that offset projects must adhere to specific standards to ensure their integrity and efficiency, particularly since the VCO market operates independently of government oversight. There is no consensus on the various existing standards within the VCO market, nor are there common rules for determining the prices of carbon credits. This lack of agreements raises further concerns about transparency and the decision-making process.[29] The prices of carbon credits, along with perceived risks and reputations, are perhaps influenced by their origin, quality, and negotiating power, especially with regards to standards under which they were developed and certified.[30]

Typically, standards set the requirements, methodologies, and safeguards for which projects must comply with to generate tradable carbon offset credits. Essentially, prices of carbon credits are inevitable for both supply and demand decision-making.

On one hand, buyers utilise carbon credit prices to evaluate the cost of meeting corporate climate targets against the carbon price, thereby determining the role the VCO market can play in achieving these targets.

On the other hand, developers can leverage transparent pricing to make informed decisions about the feasibility of developing VCO projects and the extent to which development and implementation costs can be covered by carbon finance. These decisions are central to ensuring accountability in the VCO market.

Just as suggested for addressing legal complexities, it is essential to develop an international monitoring, verification, reporting, and validation (MVRV) system to ensure accountability for VCO under UN climate governance. Establishing such a system is crucial for creating a functional and credible global carbon market that effectively achieves emissions reductions. This endeavour demands the establishment of a Global Accountability Framework (GAF) and a UN Verification Body (UNVB).

More detailed discussions on specific dimensions of regulatory complexities and accountability gaps are presented in subsections below, in no particular order. This further analysis is essential, as both challenges not only coexist but also require nuanced insights into how they jointly generate undermining effects on the VCO market.

A. *Limited Transparency*

Transparency refers to the extent to which information is accessible to external parties, enabling them to participate meaningfully in decision-making processes and to review decisions made by internal stakeholders.[31] The issue of transparency in VCO primarily stems from inadequate public disclosure of project details, emissions reductions, and credit transactions. When project information and documentation are not routinely disclosed and made available to outsiders,[32] it becomes challenging to assess the effectiveness, accuracy, and integrity of these projects. This lack of transparency can potentially undermine public trust in carbon credits. Transparency and accountability are coterminous and ensuring both are improved requires a combination of voluntary and regulatory measures.

The significance of transparency in promoting good governance and accountability has

[28] Bumpus et al. (n 8) *supra*.
[29] Dhanda, Kathy, and Laura Pincus Hartman. "The Ethics of Carbon Neutrality: A Critical Examination of Voluntary Offset Providers." *Journal of Business Ethics*, vol. 100, no. 1, 2011, pp. 119-149.
[30] Dyck, Melaina, et al. "The Voluntary Carbon Market Explained." *Climate Focus*, Oct. 2023.
[31] Creamer, Cosette, and Beth Simmons. "Transparency at Home: How Well Do Governments Share Human Rights Information with Citizens?" *Transparency in International Law*, edited by Andrea Bianchi and Ann Peters, Cambridge University Press, 2013, at pp. 239-268.
[32] Wyburd (n 27) *supra*.

garnered meaningful global consensus.[33] Transparency not only fosters accountability but also prevents corruption and enhances access to vital public information. A lack of information negatively impacts transparency and accountability. The value of information has increased over time.[34] This value is closely linked to the realisation of human rights. The import is that by making information about VCO projects publicly available, public trust can be fostered and any related violations of human rights can be effectively addressed.

Transparency serves as a safeguard against the inherent incentives for corruption in the VCO market. These incentives include the unregulated nature of VCO projects, the diversity of market participants, the existence of disparate independent standards, reporting and certification mechanisms, and the typicality of contract confidentiality. Both transparency and accountability are critical crosscutting subjects essential for the efficient management of VCO projects and climate finance.[35] To ensure accountability within the VCO project ecosystem, transparency must integrate an effective stakeholder engagement and dialogue.[36] Both transparency and accountability enhance the credibility of offset credits, foster public, and increase the interest of lenders in financing VCO projects.

B. *Derisory Monitoring, Verification, Reporting, and Validation*

Remarkably, VCO projects are characterised by derisory and inconsistent monitoring, verification, reporting, and validation (MVRV) of project performance, integrity, accuracy, and environmental impacts. This issue is evident in the increasing number of unreliable emissions reduction claims, which have resulted in a decline in trust and credibility within the carbon offset market. Common concerns include whether current MVRV practices meet specific criteria, such as additionality, permanence, measurability, leakage, transparency, and baseline setting.[37] These criteria help ensure that VCO projects genuinely lead to additional reductions in GHG emissions, supported by carbon offset funding under a credible baseline for transparent measurement and reporting of actual emissions reductions. Even with these criteria, no consensus exists, which suggests that people's understanding and definition of quality criteria for carbon offsets varies.[38]

There is an increasing number of environmentally focused non-profit standard organisations for VCO projects, such as Plan Vivo, Verra, Gold Standard, and Climate Action Reserve.[39] This proliferation presents a problem in itself, as the variations among these organisations imply that no single uniform standard or methodology applies across all projects, hence creating room for compromise. These organisations claim to certify proposed projects, establish rules and criteria for voluntary carbon offset credits, maintain registries of certified projects, and document transactions involving issued offset credits, including details about the parties on whose behalf the credits are retired. Nevertheless, a growing lack of public confidence continues to build regarding their processes. The same issue applies to third-party auditors, including validators and verifiers of projects such as Earthood Services

[33] Fontaine, Guillaume, et al. "How Transparency Enhances Public Accountability: The Case of Environmental Governance in Chile." *The Extractive Industries and Society*, vol. 9, 2022, 101040.
[34] Carvalho, Ana. "Freedom of Information and the Right to Environmental Protection." *European Scientific Journal*, 2015, pp. 64-69.
[35] Moreno-Albarracin, Antonio, et al. "Measuring What Is Not Seen- Transparency and Good Governance Nonprofit Indicators to Overcome the Limitations of Accounting Models." *Sustainability*, vol. 12, no. 18, 2020, 7275.
[36] Douglas, Scott, and Albert Meijer. "Transparency and Public Value—Analyzing the Transparency Practices and Value Creation of Public Utilities." *International Journal of Public Administration*, vol. 39, no. 12, 2016, pp. 940-951.
[37] Pagop, Sabrina, and Luc Savard, "Voluntary Carbon Markets in Africa: A Deep Dive into Opportunities and Challenges." *Mohammed VI Polytechnic University Policy Center for the New South*, Apr. 2024.
[38] Huber, Elena, et al. "A Qualitative Meta-Analysis of Carbon Offset Quality Criteria." *Journal of Environmental Management*, vol. 352, 2024, 119983.
[39] Pan, Chunyu, et al. "Key Challenges and Approaches to Addressing Barriers in Forest Carbon Offset Projects." *Journal of Forestry Research*, vol. 33, 2022, pp. 1109-1122.

and Verra, among others. Carbon offset projects can lead to increased emissions elsewhere, and these emissions may not be permanent. However, there is a lack of international evidence about whether and how project validators and verifiers address such leakages and ensure that no future emissions arise from these projects.

Every aspect of global climate change-related VCO projects, including project financing, design, and implementation, requires effective MVRV.[40] Thus, a lack of MVRV impedes market transparency and accountability, ultimately eroding public trust. Effective verification of offset credits is fundamental to ensuring the credibility of these projects. Thorough verification and validation processes facilitate accurate measurement of their impacts on GHG emissions reductions, assuring buyers and investors that the offset credits they purchase are genuine and deliver the intended environmental benefits. Moreover, it guarantees that VCO projects comply with established standards and methodologies, while also mitigating the risks of double counting or misrepresentation of emission reductions. Most importantly, verification bolsters overall accountability and transparency in the VCO market, enabling stakeholders to assess market effectiveness.

C. *Limited Stakeholder Engagement*

The governance structure and management framework of VCO involves local communities, Indigenous peoples, and various stakeholders.[41] These stakeholders, however, are currently not effectively involved in project decision-making processes. This gap creates power imbalances, restricts access to information and benefits, and undermines consultation and open dialogue, ultimately leading to an inadequate assessment of the social and environmental impacts of VCO projects. The absence of effective and adequate engagement and consultation with these stakeholders can also provoke significant disputes.[42]

Theories of stakeholder management have, over time, proved to be crucial in ensuring business integrity, resource management, and crisis management.[43] The theoretical rationale for stakeholder engagement is that groups and individuals who impact or are impacted by organisational activities are ultimately considered stakeholders.[44] The premise is that addressing the needs of all stakeholders is an essential management approach.[45] Therefore, applying these theories to VCO projects will not only be relevant but will also help restore public trust in the offset credits market.

Effective stakeholder engagement has been recognised as a crucial approach for ensuring accountability and promoting transparency.[46] Recent studies suggest that VCO market intermediaries, including exchanges, brokers, and certification bodies, can facilitate stakeholder engagement and bridge the gap between policy and practice.[47] Developers and owners of VCO projects can effectively manage potential disputes by actively involving host

[40] Vine, Edward, and Jayant Sathaye. "The Monitoring, Evaluation, Reporting and Verification of Climate Change Projects." *Mitigation and Adaptation Strategies for Global Change*, vol. 4, 1999, pp. 43-60.

[41] Lin, Derong, and Lin Yingzhi. "Stakeholders of Voluntary Forest Carbon Offset Projects in China: An Empirical Analysis." *Advances in Meteorology*, vol. 1, 2015, pp. 1-7.

[42] Kilajian, Alain, and Pisit Chareonsudjai. "Conflict Resolution and Community Engagement in Post-Audit EIA Environmental Management: Lessons Learned from a Mining Community in Thailand." *Environmental Challenges*, vol. 5, no. 2, 2021, pp. 1-32.

[43] Sarkis, Joseph, et al. "An Organizational Theoretical Review of Green Supply Chain Management Literature." *International Journal of Production Economics*, vol. 130, no. 1, 2011, pp. 1-15; De Brucker, Klaas, et al. "Multi-Criteria Analysis and the Resolution of Sustainable Development Dilemmas: A Stakeholder Management Approach." *European Journal of Operational Research*, vol. 2241, no. 1, 2013, pp. 122-131.

[44] Jensen, Michael, "Value Maximization, Stakeholder Theory, and the Corporate Objective Function." *Journal of Applied Corporate Finance*, vol. 22, no. 1, 2010, pp. 32-42.

[45] Connelley, Carroll, and Paolo Tripodi. *Aspects of Leadership: Ethics, Law, and Spirituality*. Marine Corps University Press, 2012.

[46] Douglas & Meijer (n 36) *supra*.

[47] Tanveer, Umair, et al. "Enhancing Carbon Trading Mechanisms through Innovative Collaboration: Case Studies from Developing Nations." *Journal of Cleaner Production*, vol. 482, 2024, 144122.

communities and Indigenous peoples in project decision-making processes. Additionally, it is important to provide necessary compensation to these groups, including property or landowners.

D. *Growing Concerns Regarding Human Rights and Justice*

There is a prevailing assumption that VCO projects may trigger human rights violations and have broader implications for justice. For instance, carbon capture, utilisation, and storage technologies can pose risks to economically marginalised communities or underdeveloped regions if carbon leakages occur. Such incidents can lead to serious environmental hazards, human rights issues, and disputes over property rights, land use, or ownership. Even when carbon projects aim to address human rights violations, broader justice issues related to climate change can arise, such as whether host communities benefit from these projects and whether such initiatives genuinely balance the climate interests of all countries, both developed and developing.

Truly, current realities extend beyond mere assumptions about the negative human rights impacts of VCO projects on wider society. Many unaddressed consequences of offset projects on the lived experiences of communities underscore broader injustices.[48] Evidence has shown that offset projects can exacerbate inequalities and increase poverty among many host communities. For instance, a recent study has characterised the offset project ecosystem as a form of slow violence against indigenous communities, particularly in the Global South.[49] This assertion is supported by fresh evidence from the Nhambita Community Carbon Project in Mozambique, which reportedly failed to consider the human rights of community members. These members were also not consulted about the project. Besides, the Nhambita project is reported to have aggravated food insecurity for farmers who have turned to cultivating carbon with the expectation of financial returns from the harvest. Many scholars have questioned carbon trading, of which offset projects are a part, viewing it as a form of 'carbon colonialism' in which developed nations perpetuate injustices against impoverished poor communities in developing countries.[50] This is also seen as 'carbon dumping' in least-developed countries.[51]

The growing violations of human rights and perceived injustices related to VCO projects can only be effectively addressed by reforming the current offset credits ecosystem. More so, developers and project owners must respect and protect community rights to cultivate a VCO market ecosystem that aligns with the Paris Agreement and promotes equitable energy transitions. This requires embedding just transition principles into the standards for VCO projects to ensure justice for affected communities, particularly low-income households, as well as marginalised and vulnerable populations. Finally, standards for offset projects must embrace an accountability framework and methodologies to address compliance with human rights and potential violations.

E. *Potential Regulatory Non-Compliance in VCO Host Countries*

VCO projects are believed to influence public policies.[52] One significant concern remains compliance with mandatory national regulations, environmental requirements, and standards, such as consumer protection laws and just transition principles in host

[48] Fisher, Janet, et al. "Linking Notions of Justice and Project Outcomes in Carbon Offset Forestry Projects: Insights from a Comparative Study in Uganda." *Land Use Policy*, vol. 73, 2018, pp. 259-268.

[49] Mwangi, Liz. "Voluntary Carbon Markets: Slow Violence for Indigenous Communities in the Global South?" *New Agenda: South African Journal of Social and Economic Policy*, vol. 2023, no. 1, 2023, pp. 27-35.

[50] Schlosberg, David. "Theorising Environmental Justice: The Expanding Sphere of a Discourse." *Environmental Politics*, vol. 22, no. 1, 2013, pp. 37-55.

[51] Parsons, Laurie, and Alesha de Fonseka. "Carbon Colonialism: How the UK Hides its Carbon Emissions and Environmental Impacts in the Global South." *Decolonising Geography*, Nov. 2021.

[52] Streck, Charlotte, et al. "The Voluntary Carbon Market Explained." *Climate Focus*, Dec. 2021.

countries. Most VCO projects involve cross-border transactions, where project developers or owners come from nations different from the host countries. This cross-border nature of VCO projects may lead to potential non-compliance with established laws, policies, or protocols in various countries, particularly in developing nations with weak institutions and compromised legal systems.

The extent to which VCO projects or offset credits can be independently evaluated against recognised legal standards, whether legal or otherwise, remains unclear, particularly if such standards are unmet or if the projects have implications for broader communities. Though VCO project governance occurs on a case-by-case basis with specific contractual arrangements, it is uncertain whether relevant contracts adhere to local regulatory demands or requirements. Therefore, it is important to understand whether and how these issues are addressed in VCO projects.

The responsibility for addressing these concerns does not rest with a single stakeholder. One effective approach is to establish standards that require project developers and owners to comply with mandatory national regulations and standards. These regulations are designed to ensure environmental sustainability, protect human rights, and prevent corruption within the jurisdictions in which they operate. Furthermore, project verifiers and validators must prove whether a project meets these compliance requirements before registration.

F. *Misrepresentations and Greenwashing*

Growing concerns regarding the reputation and functionality of VCO projects and their related carbon credits are beginning to surface. Current methodologies create opportunities for exaggerated or misleading claims about project benefits, credits, or environmental impacts of existing projects. For example, on May 5, 2024, it was widely reported that the multinational oil company Shell sold millions of 'phantom' credits to various clients.[53] This situation raises the potential for corruption-related crimes, which have increasingly dominated discussions about the key challenges in VCO project governance. It has been suggested that carbon trading may simply evolve into a new dimension of international white-collar crime.[54]

Equally, Verra has been allegedly implicated in the issuance of fraudulent offset credits,[55] despite being one of the most prominent voluntary registries operating under the Verified Carbon Standard, formally known as the Voluntary Carbon Standard. This standard serves as a framework for verifying carbon credits intended to offset emissions. These reputational incidents illustrate how the design of a voluntary carbon market can fail to achieve its intended goal of genuine emissions reductions. They also serve as a wake-up call to address the shortcomings of the global VCO market.

The prevalence of dishonest market practices by self-proclaimed independent standard-setters underscores increasing concerns about the overall credibility of the global carbon credit market. Most importantly, these issues highlight the urgent need to reform the current VCO market. This reform must focus on developing a robust standard and implementing regulatory oversight under UN-led global climate governance to ensure compliance with these standards and prevent fraudulent activities while ensuring that projects deliver genuine emissions reductions.

G. *Technology, Policy, and Market Black Holes*

While most emissions alternatives that organisations implement to achieve net reductions in GHG emissions are essential for

[53] Bryan, Kenza, and Clara Murray. "Shell Sold Millions of 'Phantom' Carbon Credits." *Financial Times*, 5 May 2024.
[54] Henderson, Hazel. "From Rigged Carbon Markets to Investing in Green Growth." *Real-World Economics Review*, no. 57, 2011, pp. 83-89.
[55] Fischer, Tin, and Hannah Knuth. "Co2 Certificates: Phantom Offsets and Carbon Deceit." *Zeit Online*, 19 Jan. 2023.

VCO, it is important to note that they are also characterised by inherent imperfections. For example, carbon dioxide (CO_2) leakages from CCUS technologies at storage sites can undermine the intended emissions savings.[56] Furthermore, policy and market-driven mechanisms for reducing greenhouse gas emissions can generate emission certificates that may not accurately represent genuine emissions reductions, a phenomenon commonly known as 'hot air'.

Moreover, whereas forests play a significant role in VCO projects, they are vulnerable to risk reversal due to deforestation. This susceptibility, combined with the limitations of CCUS technologies, can lead to greenwashing, where VCO products may be linked to exaggerated or misleading claims about their environmental benefits, as highlighted in the preceding subsection.[57] These issues consequently undermine the fundamental principles of effective collective climate change mitigation efforts within the framework of global climate governance.

The unfortunate news is that there is a lack of clarity regarding how project developers or owners address these issues. Similarly, there is currently no evidence to demonstrate how various standards organisations and project verifiers manage these critical GHG mitigation challenges.

Market and policy measures must be strengthened in response to the weakness inherent in most emissions alternatives utilised in VCO projects. More importantly, disclosing potential risks and uncertainties associated with offset projects could be a major approach to addressing these inherent limitations. Eventually, all stakeholders must collaborate effectively.

III. **Policy Recommendations for Reforming the VCO Market**

A. *Designating ISO as a Standards Setter for the VCO Market under the UN Climate Regime*

The United Nations' (UN) global climate change regime can play a crucial oversight role in addressing accountability and transparency concerns in the VCO market. This requires designating the International Organisation for Standardisation (ISO) with the mandate to develop uniform global standards and best practices for offset credits and products related to VCO projects, such as renewable energy, forestation, and CCUS technologies. Moreover, its mandate should involve creating a labelling system for offset credits, which would provide information on project type, location, and the intended emissions reductions.

The crucial question is: how will electing ISO as a standards setter for the global voluntary VCO market improve uniform practices in practice? That is, will VCO providers conform to these standards? ISO has the potential to improve uniform practices due to its long-standing history of establishing standards that are widely recognised, respected, and adopted across various industries worldwide.[58] Therefore, a common framework for VCO project standards developed under UN climate governance by ISO is expected to facilitate industry buy-in from VCO providers, particularly if no competing alternatives or options are available. There are instances where ISO standards have been successfully applied to global projects involving participants from various countries. One notable example is ISO 55001, a quality framework designed to standardise effective asset management practices. This standard has been adopted by organisations worldwide, including SinoOcean, a leading offshore asset management firm; Alpiq, a prominent European electricity company; ENEL Brasil;

[56] Gholami, Raoof, et al. "Leakage Risk Assessment of a CO_2 Storage Site: A Review." *Earth-Science Reviews*, vol. 223, 2021, 103849.

[57] De Freitas Netto, Veira, et al. "Concepts and Forms of Greenwashing: A Systematic Review." *Environmental Science Europe*, vol. 32, 2020, 19; Yildirim, Seda. "Greenwashing: A Rapid Escape from Sustainability or a Slow Transition?" *LBS Journal of Management and Research*, vol. 21. no. 1, 2023, pp. 53-63.

[58] Anholon, Rosley, et al. "The Importance of ISO Management System Standards in a Scenario of Profound Changes Caused by the COVID-19 Pandemic to Brazilian Companies." *Brazilian Journal of Operations and Production Management*, vol. 19, no. 1, 2021, pp. 1-4.

and AES Brasil, among others.[59] These case studies underscore ISO's potential to standardise VCO projects and products effectively.

Essentially, adoption is particularly feasible when global climate governance offers incentives for compliance. VCO providers may be more inclined to adopt an ISO standard if regulatory bodies worldwide recognise it as non-competitive. Even companies that prioritise sustainability and transparency may choose to adopt ISO standards as a means demonstrating their commitments. Despite being an independent, non-governmental international standard development organisation, ISO's membership comprises representatives from the national standard organisations of member countries. This governance structure enhances its credibility and fosters a welcoming and supportive environment for its role in the VCO market.

There are more specific, fundamental advantages to adopting an ISO-developed international standard. First, ISO standards can help reduce multiplicity, fragmentation, and inconsistencies arising from the proliferation of standards established by various governments, regulatory bodies, and other international organisations. Secondly, ISO standards can improve quality control, enhance credibility, and facilitate comparison and evaluation of VCO projects. Thirdly, implementing labelling for VCO is essential for the efficient verification and certification of offset projects. Moreover, ISO can monitor compliance with the standards, facilitate stakeholder engagement and participation in the development and implementation of these standards, regularly review and update the standards, and provide guidance and support to project developers, buyers, and other stakeholders regarding the application of the standards. These benefits can improve global governance and oversight of the VCO market, as well as enhance climate protection efforts.[60]

The overarching promise is that if a global standard is developed and adhered to, offset credits can be credible and serve as a valuable tool for catalysing genuine emissions reductions. Thus, legitimate claims for carbon credits can empower consumers and governments to make informed decisions.[61] Furthermore, this standard will help avoid double counting, where multiple parties may claim a similar carbon offset, resulting in bloated emissions reductions.

B. *Designing a Standardised International Monitoring, Verification, Reporting, and Validation System*

There is a pressing need for a reformed VCO market, in which a single, globally applicable standardised MVRV System is designed and developed in collaboration with the UNFCCC Secretariat. This system will function as an oversight mechanism for global offset projects, regardless of project individuality and jurisdiction of origin, ensuring the transparency and integrity of both the projects and the carbon credits they generate. Moreover, a global MVRV process will facilitate decision-making regarding equitable considerations within the VCO project ecosystem, a critical issue highlighted by various authors.[62] Therefore, key design elements should include a Global Accountability Framework (GAF) and a UN Verification Body (UNVB).

To address the current governance challenges associated with the VCO market, a GAF can establish standardised MVRV requirements. Mandatory public disclosure of project information, including project documents,

[59] *see*, for example, ISO/TC 251-Asset Management.

[60] Ofori, Kwame, et al. "Environmental Consequences of ISO 14001 in European Economies amidst Structural Change and Technology Innovation: Insights from Green Governance Dynamism." *Journal of Greener Production*, vol. 411, 2023, 137301.

[61] Ahonen, Hanna-Mari, et al. "Building Capacity for Best Practices in the Voluntary Carbon Market: Insights from a Series of Nordic Capacity Building Events." *Nordic Council of Ministers*, 2024.

[62] Corbera, Esteve, et al. "How Do Regulated and Voluntary Carbon-Offset Schemes Compare?" *Journal of Integrative Environmental Sciences*, vol. 6, no. 1, 2009, pp. 25-50.

monitoring and verification reports, and regular audits should be a key component of these requirements to ensure the accuracy and integrity of emissions reductions. One promise is that a GAF will promote consistency and comparability among projects, facilitating evaluation and coherence. The framework will also assist in risk management by helping to identify and mitigate significant risks associated with VCO projects, such as the potential leakage of CO_2. More importantly, it will ensure that projects meet established standards and best practices set by ISO, thereby guaranteeing that emissions reductions are real, measurable, and additional, while also preventing regulatory arbitrage in other countries. Given the growing concerns about the broader impacts of VCO projects on communities, a GAF can integrate a complaint and grievance mechanism to address potential allegations and concerns regarding misconduct and human rights violations. More specifically, it can provide guidance and support to project developers, buyers, and other stakeholders.

To enhance the effectiveness of the GAF, a three-tier governance structure is proposed, including a Multi-Stakeholder Board (MSB), Technical Advisory Committee (TAC), and a Secretariat. The MSB should include representatives from governments, private sector organisations, non-governmental organisations (NGOs), Indigenous peoples' organisations, as well as academia and research institutions. The TAC should comprise experts from various fields, including climate change, sustainable development, accounting and finance, law and policy, environmental science and ecology, and social impact assessment. The Secretariat should be responsible for the day-to-day operations of the GAF, which includes developing and implementing policies and procedures, providing technical support and guidance, and coordinating stakeholder engagement. They can publicly disclose information on non-compliant projects, which may impact their reputation and credibility.

The establishment of a GAF ensures that a UNVB is equipped with a solid foundation for robust auditing processes and the validation of carbon offset projects against ISO standards before registration. This approach eliminates the need to rely on disparate self-acclaimed, self-regulating third parties worldwide, whose services may be compromised and, consequently, lack public trust. As a result, a UNVB can provide independent verification of VCO projects and offer global recognition of these verified projects by certifying that they have passed rigorous verification, undergone assessment, and met established standards. The verification report must include any issues or concerns identified during the verification process. The UNVB verification and certification processes, in turn, will facilitate international cooperation and trade in the VCO market, as well as help build capacity among project developers and owners. Developers or owners of offset projects must register with a UNVB to ensure seamless coordination and to create a common global database or registry of operating projects worldwide. This registration facilitates the aggregation of VCO projects for measuring baselines and net changes in emissions.

The UNVB should consist of a panel of independent experts and a technical review committee, each responsible for verifying the accuracy and completeness of the information submitted by VCO project developers or owners. They should also be tasked with reviewing and assessing the scientific and technical aspects of offset projects. The UNFCCC secretariat may play a crucial coordination role in coordinating efforts to ensure consistency and alignment with existing international frameworks. The UNVB should possess enforcement power to verify and certify projects that comply with ISO-established standards while denying certification to those that do not meet these criteria. Denial of projects may result in the imposition of sanctions or penalties on projects or offset credit suppliers that fail to adhere to the standards. Then, it can also report non-compliance to regulatory bodies in

the countries where the projects are implemented.

C. *Developing a Framework for International Cooperation*

The current landscape of carbon offsetting calls for a framework of international cooperation among governments and organisations. But a mutual recognition agreement based on a hybrid approach that incorporates both hard and soft law is essential for strengthening any international corporation. That is, such an agreement should combine legally binding guidelines with non-binding obligations among UNFCCC member countries. On one hand, binding obligations may include environmental standards, such as Environmental Impact Assessment (EIA) and the Polluter Pays Principle (PPP), under existing international environmental agreements. This may, in addition, encompass social standards for VCO projects, including requirements for human rights, community engagement, governance, and transparency of offset projects, which should involve the disclosure of project information and financial reporting. On the other hand, the guidelines should integrate non-binding recommendations for stakeholder engagement, including protocols for community consultation and participation.

The guidelines, in essence, will not have a binding effect on signatory members *per se*; however, compliance with the binding environmental standards outlined in the guidelines will be mandatory for VCO developers or owners implementing any projects in host countries. Member countries can adopt a cooperative approach by acknowledging and accepting carbon credits issued in other jurisdictions. There is no doubt that such an agreement will align with the goals of the Paris Agreement and the SDGs.[63] This hybrid approach will ensure consistency and interaction with international and municipal laws, regulations, and policies, while also encouraging multi-stakeholder engagement and participation. The guidelines should incorporate reporting and disclosure requirements as a means of enforcement, mandating that participating countries and project organisations report on their compliance with publicly disclosed reports. The implementation and enforcement of these guidelines could also be monitored by the UNVB.

Fundamentally, international cooperation can play a crucial role in streamlining global VCO projects. Firstly, it ensures that participants in the VCO market adhere to uniform international standards, methodologies, and guidelines established by a globally recognised body. This promotes consistency and harmonisation of project standards while enhancing transparency and accountability. Secondly, international cooperation has the potential to facilitate the sharing of best practices, technologies, and expertise, thereby strengthening the capacities of countries and stakeholders to develop and implement offset projects effectively. Lastly, such cooperation enables the global scalability of VCO projects.

IV. **Conclusion**

This article examines the global governance challenges inherent in the current VCO market. It identifies two major structural governance challenges: legal complexities and accountability gaps. These challenges encompass several specific dimensions, including limited transparency; inadequate monitoring, verification, reporting, and validation of offset projects; human rights abuses, injustices, and inequality; regulatory non-compliance in host countries; misrepresentation of offset credits; opportunities for greenwashing; and deficiencies in technology, policy, and market frameworks.

These broad and specific issues undermine the market integrity of carbon offset credits, creating an environment characterised by increasing uncertainties, fragmentation of

[63] Piris-Cabezas, Pedro, et al. "Estimating the Potential of International Carbon Markets to Increase Global Climate Ambition." *World Development*, vol. 1, 2023, 106257.

standards, and a proliferation of market participants or stakeholders. They also exacerbate injustices and inequalities, particularly for communities in developing host countries, erode public trust, and attract intense public criticism. The VCO market has, however, continued to boom as part of the global blue economy, contributing to climate change mitigation and international climate finance. More so, it is increasingly recognised within both public and private climate governance.

The article advocates for a reform of the global VCO market by developing insightful policy recommendations aimed at addressing the identified challenges. These recommendations, if implemented, will streamline standards for the VCO market and ultimately enhance the credibility, accountability, and transparency of offset credits. The broader negative impacts offset projects on communities will also be tackled.