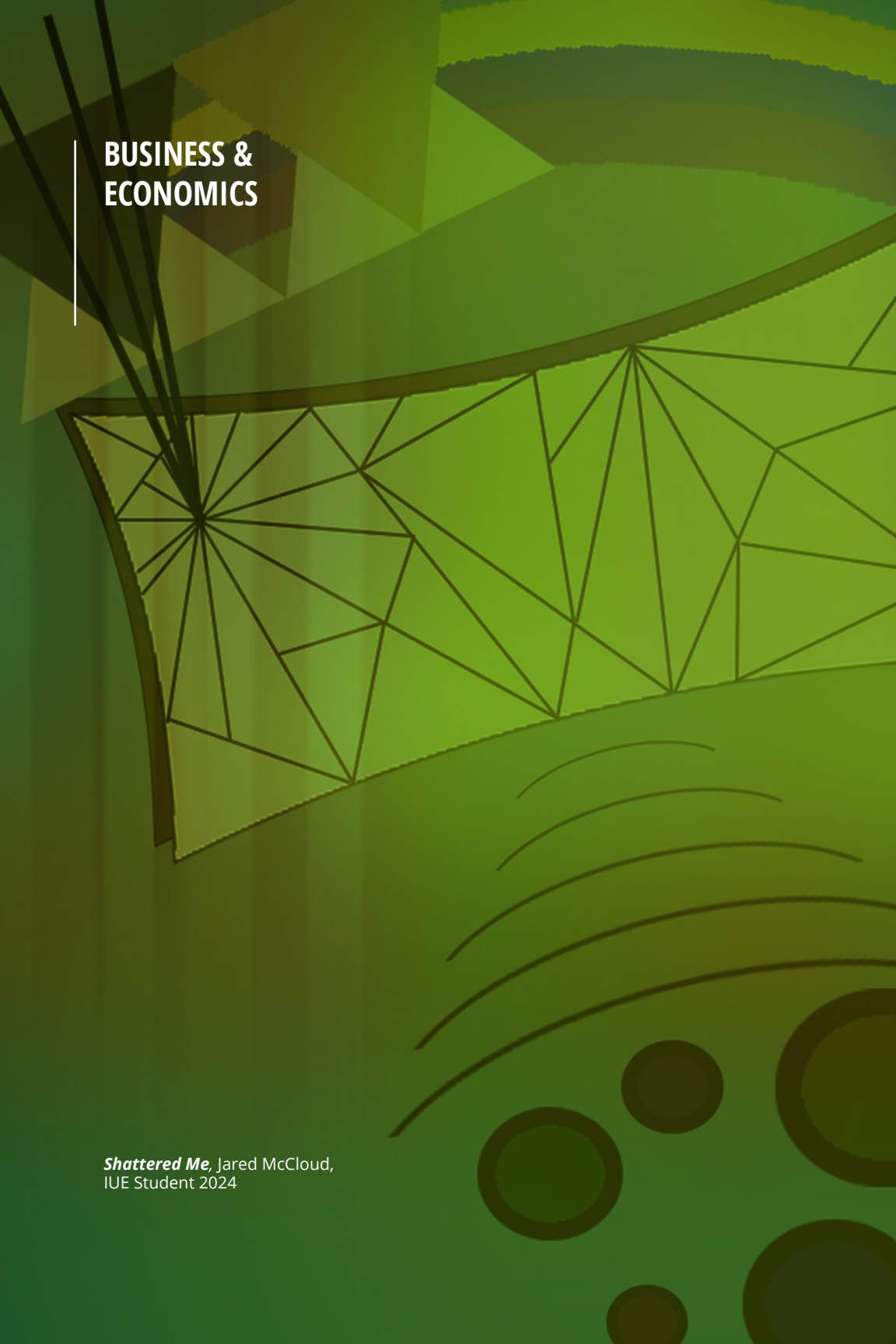
BUSINESS & ECONOMICS



Shattered Me, Jared McCloud,
IUE Student 2024

CARBON OFFSETS AND REGULATION: A LITERATURE REVIEW

Hollie Kinker

Abstract

Carbon offset markets have become increasingly popular avenues for stakeholders, ranging from industries to governments, to invest in emissions reduction projects in developing nations rather than focusing solely on mitigating their own emissions. Originating from the Clean Development Mechanism (CDM) under the Kyoto Protocol, these markets aimed to supplement efforts to meet emission reduction targets. However, the emergence of voluntary carbon mechanisms (VCMs) alongside regulatory CDMs has sparked concerns regarding trust and legitimacy within the carbon offsetting landscape. Issues such as double accounting, economic prioritization over environmental impact, and lack of consistent regulation have raised doubts about the efficacy and fairness of carbon offset markets. This article examines the causes and consequences of these challenges and proposes potential solutions to address them. It argues for the adoption of standardized regulations, certification processes, and governance structures across both CDM and VCM markets, emphasizing the need for transparency and accountability. Additionally, it explores alternative approaches such as implementing carbon taxes and prioritizing projects focused on conservation and newer technologies. By establishing clear guidelines and fostering collaboration between regulatory and voluntary markets, stakeholders can work towards restoring public trust and ensuring the effectiveness of carbon offset initiatives in combating climate change..

Key words: *carbon offset, inflated baselines, double accounting, emissions, definition, markets, Regulatory CDM, voluntary VCM, impact, climate change*

Carbon offsetting is becoming an increasingly attractive way for participants, from industry to governments, to invest in emissions reduction projects in developing countries. For each ton of CO2 emissions that are reduced or removed from the atmosphere by a funded project, a carbon credit is created. The credit can then be used for future investment projects or sold to offset emissions reductions elsewhere (Bumpus & Liverman, 2008, p. 131). Offsets started as a global project named Clean Development Mechanism (CDM) under the Kyoto Protocol with the United Nations (p.132). The purpose was to provide supplemental ways for industry and governments to meet the Protocol's emission reduction goals. While the market under CDM is regulatory, the creation of a voluntary carbon mechanism (VCM) has provided participants with a trading platform that does not fall under the same regulations and oversight as the CDM. This has led to a lack of public trust in carbon offset markets where those who are regulated (CDM) blame those who are not (VCM) for issues of double counting and economics over the environment. Market participants (Blum & Lövbrand, 2019, p. 2) suggest the best path forward to reestablish public trust is for the markets to adopt standards and regulations that apply to both markets.

Issues

Adam Bumpus and Diana Liverman (2008), both with the Oxford University Center for the Environment, summarized the charm of VCM markets in their article, "Accumulation by Decarbonization and the Governance of Carbon Offsets.". They stated that offset projects brokered through VCM have turned into opportunities for economic gain (p. 128). That was not how VCMs emerged, though. Originally, VCMs were created to run parallel to CDMs for participants whose countries chose not to sign the Kyoto Protocol (p. 132). The United States,Australia, and China, for example, are just a few of the major polluters that have not joined the Protocolthe largest emitters of

greenhouse gasses. The United States withdrew from the Kyoto Protocol in 2002. Alternatively, China signed the Protocol in 1998 but is considered a developing country under the framework definitions, meaning China is not required to take any action toward carbon reductions (Keong, 2021, p.50).

Blum & Lövbrand (2019) highlight the concerns of In "The Return of Carbon Offsetting? The Discursive Legitimation of New Market Arrangements in the Paris Climate Regime," carbon fraud accusations such as double counting and minimal sustainable follow up after a project is completed, in their paper on the legitimacy of both markets (p. 5). The offset market has become big business with a market value of $295.7 million in 2018, as referenced by Börner et al. (2020) in their paper on reducing emissions from deforestation and forest degradation in developing countries (p. 24188). "Overstated Carbon Emission Reductions from Voluntary REDD+ Projects in the Brazilian Amazon" (Börner et al., 2020, p. 24188). This market value is equivalent to 98.4 million megatons of CO2 emissions that were, supposedly, removed from the environment through carbon trading (p. 24188).

Skepticism of carbon offsetting has raised questions of legitimacy as these markets expand, particularly whether external factors such as government policies, economic trends, or other environmental initiatives play a larger role in emission reductions (Börner et al., 2020, p. 24188). There is concern that participants are placing economic value on emission reductions that would have happened without an offset project in place (p. 24188). In their paper Putz & Pinard (1993) discuss the legitimacy of carbon offset methods (p. 755). Legitimacy is discussed in "Reduced-Impact Logging as a Carbon Offset Method" (Putz & Pinard, 1993, p. 755). Offsetting projects trade on approaches like reforestation (plant a tree for every tree cut), but the authors point out that advances in timber production such as selective logging, "reduces environmental damage and carbon release" more than reforestation (p. 7 55). The authors compare cost savings and carbon

sequestration data of selective logging sites, and tree plantations on formerly denuded sites. The findings indicate that carbon sequestration in the plantations is estimated to cost "at least twice as much per ton" (Dudek & LeBlanc, 1990; Lovins & Lovins, 1991, as cited in Putz & Pinard, 1993) .

Causes

Environmental and political governance has been blamed for lack of consistency in carbon offsetting (Bumpus & Liverman, 2008, p.130). As a response to climate change, newer and often more expensive policies have been implemented that do not address previous issues such as double counting, where a carbon credit is claimed by more than one entity even though no additional carbon benefit is produced (Gillingham & Stock, 2018, p.54), or inflated baselines. In every project, a baseline is established to determine what the emissions would have been, had the project not been funded. This has led to project developers being accused of inflating baselines. The higher the baseline, the more economically lucrative the project appears to investors capturing more credits (Börner et al., 2020, p. 24188). Such issues have garnered the attention of market participants who believe that lack of regulation across both markets makes for unfair trading and reporting.

CDM projects which are regulatory in nature under the UN, are typically focused on large-scale projects in countries that have some emerging populations, such as India, China, and Brazil (Blum & Lövbrand, 2019, p. 2). These projects have been identified as failing in sustainability assurance after the exchange of money through emission offset projects (p. 2). Emissions inventory calculations reported to the UN were also called into question as to how they meet the UN's goals (Börner et al., 2020, p. 24188). Alternatively, VCM projects are typically smaller in project selection and oversight. This lack of consistency has led to accusations of double counting where an emission reduction is

"...counted more than once by different parties..." (Blum & Lövbrand, 2019, p. 4). To improve public trust, the Worldwide Fund for Nature (WWF) partnered with eighty non-governmental organizations to create the Gold Standard, which provides certification of a carbon reduction (carbon credit) by assigning a unique serial number to each credit (Blum & Lövbrand, 2019, p. 2). In addition to credit certification (p. 3), the Gold Standard has established rigorous rules to raise market credibility through ensuring that credits traded through the GS are genuinely "additional" (Börner et al., 2020, p. 24189), meaning that the reduction wouldn't have occurred without project revenue.

Consequences

The consequences of not addressing the inconsistencies between the CDM and VCM markets will lead to continued frustrations between fairness and opportunistic economic gains. The first area of concern is lack of consensus on how to define a carbon offset (Bumpus & Liverman, 2008, p. 135). This has created discourse about what the outcome of offsets should be. In their paper Gillingham & Stock (2018) raised concerns about the "The Cost of Reducing Greenhouse Gas Emissions", the authors reversion of emissions after payments have stopped (pp. 61-62). Blum & Lövbrand (2019) shared this sentiment by suggesting that offsetting creates "an illusion" (p. 4) that projects are helping mitigate climate change, but reported outcomes are inconsistent. The World Rainforest Movement, for example, argues that the Gold Standard cannot guarantee protection of local indigenous communities from land grabs or human rights violations (World Rainforest Movement, 2014, as cited in Blum & Lövbrand, 2019). While grassroots organizations Climate Justice Now and Friends of the Earth have portrayed carbon offsetting as a "false solution" which sustain ingrained structures of capitalism, colonialism, and patriarchy (Bäckstrand & Lövbrand, 2016; Friends of the Earth, 2009; Gilbertson, 2017, as cited in Blum & Lövbrand, 2019). This is particularly unclear

when both markets (CDM and VCM) operate under different sets of rules.

The second area of concern is certification of credits between the two markets. Börner et al. (2020) shared that only 5.4 million of 24.8 million credits that were traded in 2017 were certified through the Gold Standard (p. 24189). This indicates that pushing credits through the GS does not appear to provide enough assurances to gain industry acceptance. Blum & Lövbrand (2019) built on this by stating that the GS, while offering some regulation, is lacking in other areas. They quoted The World Rainforest Movement (2014) in citing that the GS doesn't address human rights violations or land grabs in local communities where these smaller projects are funded (p. 3).

While certification does ensure that a carbon credit is only traded once, lack of industry standard does not solve the issue of double counting. In drafting Article 6 of the Paris Agreement at the UN Climate conference in 2018, states were not able to agree on rules for double counting (Blum & Lövbrand, 2019, p. 4). Börner et al. (2020) posed the concern that double counting harms the integrity of offset projects because calculations cannot be tracked as additional (p. 24190). Bumpus & Liverman (2008) agreed, suggesting that the controversy over double counting harms these projects because the payments cannot be appropriately verified as additional (p. 136). Without consensus on how to establish rules for double counting in two separate markets, paths forward may require a deeper dive into defining the universal goal of carbon offsetting.

Solutions

If the goal is net zero emissions across the globe, entities will ideally invest in their own carbon offsetting and accept that costs will exceed profits for some time (Gillingham & Stock, 2018, p. 56-57). Implementing a carbon tax has gained traction in countries like Switzerland and France, where the tax is based on monetized damages

from emission pollution (p. 53). This method removes voluntary participation and encourages participants to funnel monies into cleaner processes in exchange for a smaller tax burden (p. 53-54). This taxable approach, akin to Pigouvian tax (p.53) which is a tax imposed on activities that create negative side effects for society, is already in use for items such as alcohol and cigarettes.

Putz & Pinard (1993) suggested that the key is for carbon offsetting projects to focus on newer technology and processes such as reduced-impact logging programs (p. 755). By investing in projects that have a conservation focus instead of an emissions reduction focus, global trading can help relieve some of the financial burden of developing countries (p. 756). Börner et al. (2020) shared this ideology, by stating that projects should be assigned predefined outcomes that are periodically updated to reflect the most recent climate change concerns (p. 24191). Both solutions would require carbon credit markets that are regulatory and certified.

Blum & Lövbrand (2019) argued that today's landscape has room for both regulatory (CDM) and voluntary (VCM) markets. By adopting strict rules and governance under Article 6 of the Paris Agreement implemented by the Gold Standard, the issues of double counting, fair trading, and clear expectations can be shared across both markets (p. 5).

In conclusion, participants in both markets' express frustrations over regulation and expectation of carbon offset projects. Those in positions of responsibility are unsure how to resolve issues such as double counting seen in the VCM markets, especially with many brokers and projects involved. Industry expectation appears to require that carbon offsets are legitimized through the guarantee that one carbon credit is equal to one ton of reduced emissions. The consensus of the articles reviewed supported this expectation and suggested that lack of oversight and auditing across the markets lead to a need that regulation and certification are adopted for both markets. The Gold

Standard appears to be generally accepted to regulate the issue of double counting and regulatory governance. However, this program has not addressed concerns regarding the effects that offset projects have on local communities. This is an issue across both markets, and further research and education is needed. ■

REFERENCES

Blum, M. & Lövbrand, E. (2019). The Return of Carbon Offsetting? The Discursive Legitimation of New Market Arrangements in the Paris Climate Regime. *Earth System Governance*, 2, 100028. https://doi.org/10.1016/j.esg.2019.100028

Börner, J., Kontoleon, A., Sills, E. O., & West, T. A. P. (2020). Overstated carbon emission reductions from voluntary REDD+ projects in the Brazilian Amazon. *Proceedings of the National Academy of Sciences of the United States of America*, 117(39), 24188–24194. https://www.jstor.org/stable/26969525

Bumpus, A. G., & Liverman, D. M. (2008). Accumulation by Decarbonization and the Governance of Carbon Offsets. *Economic Geography*, 84(2), 127–155. http://www.jstor.org/stable/30033170

Gillingham, K., & Stock, J. H. (2018). The Cost of Reducing Greenhouse Gas Emissions. *The Journal of Economic Perspectives*, 32(4), 53–72. https://www.jstor.org/stable/26513496

Keong, Choy Yee. (2021). The United Nations' Journey to Global Environmental Sustainability Since Stockholm: An assessment. *Global Environmental Sustainability*, 7-61. https://doi.org/10.1016/b978-0-12-822419-9.00002-3

Putz, F. E., & Pinard, M. A. (1993). Reduced-Impact Logging as a Carbon-Offset Method. *Conservation Biology*, 7(4), 755–757. http://www.jstor.org/stable/2386806