Analysing Singapore's Recent Carbon Credits Initiative

Ben Chester Cheong*

As the world wrestles with the existential threat of climate change, innovative solutions are desperately sought. Singapore has stepped onto the global stage with its ambitious carbon credit regime. This system, introduced in November 2022 alongside a rising carbon tax, allows companies to offset up to 5% of their taxable emissions by purchasing internationally recognised carbon credits.[1] From a legal perspective, Singapore's carbon credit regime creates an interesting yet intricate landscape that presents both opportunities and challenges.

The cornerstone of the regime is the International Carbon Credit (ICC) Framework, which has been drafted to uphold high environmental integrity. Credits must meet stringent criteria outlined in Article 6 of the Paris Agreement,[2] ensuring genuine emissions reductions or removals.[3] To further bolster this integrity, Singapore established an International Advisory Panel for Carbon Credits, seeking expertise from diverse stakeholder groups. Additionally, partnership with established carbon credit programs like the Gold Standard and Verra's Verified Carbon Standard announced in December 2023 would be aimed at assisting nations in maximising the benefits of carbon crediting programs to meet their Nationally Determined Contributions (NDCs) under the Paris Agreement. The collaboration will involve creating a guide that presents uniform and efficient operational guidelines for countries to enhance their utilisation of current carbon crediting programs, thereby helping them to fulfil and surpass their NDC targets.[4]

This deliberate emphasis on integrity is crucial, considering the checkered history of carbon markets. Past schemes have been marred by accusations of 'greenwashing' and double counting, where doubtful credits offset non-existent emissions or were claimed by multiple entities.[5] Singapore's stringent framework seeks to avoid these pitfalls, providing much-needed assurance for a market requiring credibility.

However, the legal implications of this framework cannot be overlooked. The intricate web of eligibility criteria, validation procedures, and international trade regulations create a complex legal environment. Companies navigating this space must possess a deep understanding of both domestic and international

* **PhD Candidate (Department of Land Economy), Hughes Hall, University of Cambridge**

[1] Tan, Cheryl. "Companies Looking to Offset Carbon Tax Will Have to Wait Some Time More for Worthy Projects." *The Straits Times*, 15 Jan. 2024.

[2] United Nations. The Paris Agreement, 2015.

[3] National Environmental Agency. "Singapore Sets Out Eligibility Criteria for International Carbon Credits Under the Carbon Tax Regime." *NEA*, 4 Oct. 2023.

[4] Verra. "Joint Press Release: Singapore, Verra and Gold Standard Partner to Develop Playbook for Carbon Crediting Under the Paris Agreement." 11 Dec. 2023.

[5] Betz, Regina, et al. *The Carbon Market Challenge: Preventing Abuse Through Effective Governance*. Cambridge University Press, 2022; Sovacool, Benjamin K. "Four Problems with Global Carbon Markets: A Critical Review." *Energy & Environment*, vol. 22, no. 6, 2011, pp. 681-694.

carbon-related laws, potentially increasing compliance costs. Moreover, legal disputes arising from fraudulent credits or non-compliance could further complicate the system.[6]

I. Supervisory Body under Article 6.4 of the Paris Agreement.

While Singapore's focus on integrity is commendable, its effectiveness hinges on the global response. The success of the ICC Framework relies heavily on other nations implementing similar standards and adopting an internationally harmonised approach to carbon crediting. Hence, a positive development in this area is that Article 6.4 of the Paris Agreement introduced a fresh global carbon crediting system. This mechanism involves a 'Supervisory Body' responsible for creating and overseeing the necessary procedures to put this initiative into action. This encompasses formulating or endorsing methodologies, recording activities, accrediting third party verification entities, and administering the Article 6.4 Registry.[7] Fragmentation in legal frameworks and varying levels of scrutiny could undermine the entire system, raising concerns about market distortions and environmental integrity.

In this context, international cooperation and legal coherence remain important. Collaborative efforts amongst national authorities and carbon credit program developers are crucial in establishing robust verification and compliance mechanisms. Further, multilateral agreements on standardised protocols and legal frameworks would foster a more transparent and efficient global carbon market.

II. Blockchain Technology.

There is a possibility of using blockchain technology and distributed ledger systems for carbon credit verification and tracking.[8] Blockchain creates a tamper-proof, publicly accessible record of all carbon credit transactions. This can help to mitigate fraud and double counting, which are major problems in the current carbon credit market.

By streamlining the verification and tracking process, blockchain can make it easier and faster for businesses and individuals to buy and sell carbon credits. This could lead to a more efficient and liquid carbon market. It can also ensure the accuracy and integrity of carbon credit data, making it easier for all stakeholders to track the impact of carbon offset projects.

Blockchain can make it easier for smaller carbon offset projects to participate in the market, as it reduces the need for intermediaries and traditional verification processes. It can also enable the creation of new financial instruments based on carbon credits, such as tokenised credits or carbon futures. This could attract new investors and further boost the liquidity of the market.[9]

However, the potential downside is that implementing and maintaining a blockchain-based carbon credit system can be technically complex and expensive. Some blockchain implementations can be energy-

[6] ISDA. "Legal Implications of Voluntary Carbon Credits." Dec. 2021.
[7] UN Climate Change. "Article 6.4 Supervisory Body."
[8] Woo, Jung-Woong, et al. "Applying Blockchain Technology for Building Energy Performance Measurement, Reporting, and Verification (MRV) and the Carbon Credit Market: A Review of the Literature." *Building and Environment*, vol. 205, Nov. 2021.
[9] Widholm, Barbara, et al. "The Tokenisation of Carbon Assets." *State Street*, Jul. 2023

intensive, which could contradict the environmental goals of the carbon credit system. The development and application of blockchain for carbon credits will need to be carefully governed and regulated to ensure the system's integrity and effectiveness.

Overall, blockchain technology has the potential to revolutionise the carbon credit market by improving transparency, efficiency, and data quality. However, there are also significant challenges that need to be addressed before blockchain can be widely adopted in this context.[10]

III. Case Studies.

Other initiatives to reduce greenhouse gas emissions include the California Compliance Offset Program.[11] As of 2020, the California Air Resources Board has issued over 200 million offset credits.[12] However, there are concerns about double counting and offsets from outside North America. Critics argue some offsets do not deliver real emission reductions.[13]

The REDD+ Initiative[14] has contributed to deforestation reduction in several countries and improved forest management practices. However, there are complex governance structure and challenges in ensuring carbon benefits reach local communities. There are also concerns about displacement and social impacts.[15]

The Gold Standard[16] provides for a rigorous and transparent verification process. It is focussed on sustainability and co-benefits for local communities. However, it is limited in scope compared to larger programs and results in higher transaction costs for project developers.[17]

CarbonPlan[18] develops and applies rigorous scientific methods for verifying carbon removal projects, like direct air capture. However, carbon removal technologies are still nascent and expensive and requires significant investment for scaling up.[19]

The Singapore approach seems to be focussed on reducing carbon emissions, like the California Compliance Offset Program, and ensuring a robust verification process, like the Gold Standard. However, analysing the effectiveness of these initiatives with the Singapore carbon credit regime may require

---

[10] Cheong, Ben Chester. "Application of Blockchain-Enabled Technology: Regulating Non-Fungible Tokens (NFTs) in Singapore." *Singapore Law Gazette*, Jan. 2022.
[11] California Air Resources Board. "Compliance Offset Program."
[12] California Air Resources Board. "Compliance Offsets Protocol Task Force Initial Draft Recommendations." 7 Oct. 2020.
[13] Stapp, Jared, et al., "Little Evidence of Management Change in California's Forest Offset Program." *Communications Earth & Environment*, vol. 4, no. 331, 2023, pp 1-10.
[14] United Nations Environment Programme. "REDD+."
[15] Guizar-Coutino, Alejandro, et al. "A Global Evaluation of the Effectiveness of Voluntary REDD+ Projects at Reducing Deforestation and Degradation in the Moist Tropics." *Conservation Biology*, vol. 36, no. 6, 2022, pp 1-13.
[16] Gold Standard. "Gold Standard for the Global Goals."
[17] Lou, Jiehong, et al., "Integrating Sustainability into Climate Finance by Quantifying the Co-Benefits and Market Impact of Carbon Projects." *Communications Earth & Environment*, vol. 3, no. 137, 2022.
[18] CarbonPlan. "About CarbonPlan.".
[19] Fankhauser, Sam, et al., "The Meaning of Net Zero and How to Get It Right." *Nature Climate Change*, vol. 12, no. 15-21, 2022.

some more time as 'high-quality projects that truly benefit the climate have yet to become available'.[20] Singapore currently only has a carbon trade agreement with Papua New Guinea. It is necessary for an agreement to be in place between a buyer country and the host country of the carbon project to allow the transfer of emissions removal from a carbon project.[21]

A report by Carbon Direct produced in 2022 observed that there are very few carbon removal credits available in the four largest voluntary market registries, namely, the American Carbon Registry, Climate Action Reserve, Gold Standard, and Verra.[22] The report notes that none of the carbon removal credits available in these registries are considered durable. This means that the carbon removal projects that generated these credits may not be able to maintain the carbon removal benefits over time.[23] Hence, there is still a lot of work to be done in the carbon market.

IV. Possible Problems with Carbon Credits.

Critics argue that companies can use carbon offsets to appear climate conscious without reducing their own emissions.[24] This can lead to complacency and divert attention from necessary internal transformations. Furthermore, ensuring offsets represent genuine emission reductions beyond business-as-usual practices is challenging. Double counting, where the same reduction is claimed multiple times, can undermine the system's effectiveness. Some worry that carbon credit projects could displace indigenous communities or harm biodiversity, while focusing on low-cost offsets in developing countries may neglect local environmental and social needs.[25]

Singapore's ICC Framework aligns with rigorous international standards like Article 6 of the Paris Agreement, potentially enhancing credibility compared to programs criticised for weak verification or double counting. Robust validation procedures and international partnerships with established programs (Gold Standard, Verra) aim to ensure reliable credits. Singapore's success hinges on international cooperation and legal harmonisation, and presents similar challenges faced by the nascent carbon removal verification field.

V. Singapore's Carbon Tax as an Additional Lever.

In Singapore, the carbon tax rate was established at S$5 per ton of CO_2 equivalent for the initial five years beginning in 2019, allowing emitters to adapt during this transitional phase. In alignment with its net zero objective, the carbon tax will be increased to S$25 per ton of CO_2 equivalent in 2024 and 2025, followed by a raise to S$45 per ton of CO_2 equivalent in 2026 and 2027, aiming to reach a range from S$50-80 per ton of CO_2 equivalent by 2030.[26]

---

[20] Tan (n 1) *supra*.
[21] ibid.
[22] Macfarlane, Micah. "Assessing the State of the Voluntary Carbon Market in 2022." *Carbon Direct Blog*, 6 May 2022.
[23] ibid.
[24] Ghussain, Alia Al. "The Biggest Problem with Carbon Offsetting Is that It Doesn't Really Work." *Greenpeace*, 26 May 2020.
[25] Dunne, Daisy, et al. "Mapped: The Impacts of Carbon-Offset Projects Around the World." *Carbon Brief*, 20 Jan. 2024.
[26] National Climate Change Secretariat of Singapore. "Carbon Tax."

The carbon tax results in higher costs for businesses, encouraging them to reduce emissions through improved efficiency, fuel switching, and adoption of cleaner technologies. The policy sends a clear signal to investors and consumers that Singapore is serious about climate action, potentially influencing business decisions and consumer behaviour towards low-carbon options.

However, the current tax rate (S$25 per ton of CO_2 in 2024) might be insufficient to drive significant emissions reduction in the short term. Industries subject to the tax might shift production to countries with less stringent regulations, causing emissions to move but not decrease globally. Implementing and managing the carbon tax and credit scheme can be complex and resource-intensive for both the government and businesses. The tax might disproportionately burden certain industries or communities, requiring additional support measures to ensure fairness. Accurately monitoring and verifying emissions and carbon credits is crucial for the scheme's effectiveness.

VI. Conclusion.

Several key questions remain. Will the stringent ICC Framework attract sufficient investment and ensure the credibility of the market? Can international legal harmonisation keep pace with the evolving system? And most importantly, will this scheme ultimately contribute to tangible emissions reductions, fulfilling its role in the global fight against climate change?

The legal and logistical hurdles ahead are substantial, but if overcome, Singapore's model could offer a crucial stepping stone towards a sustainable future. Singapore's carbon credit regime possesses promising strengths in its focus on integrity and openness to innovation. However, concerns regarding limited scope, potential equity issues, and dependence on international collaboration remain. Its success will ultimately depend on addressing these challenges and navigating the uncertainties of the global carbon market.