White Paper

Lowering Carbon Market Risks through the Pooling of Risk Adjusted Carbon Assets

Introduction

The carbon market is an essential mechanism in addressing climate change by providing economic incentives for reducing greenhouse gas (GHG) emissions. However, this market faces significant risks that undermine its efficiency and effectiveness. Issues such as market fragmentation, price volatility, and the integrity of carbon assets creates uncertainty for investors and diminish confidence in the market. These risk can significantly be mitigated for investors by a central carbon reserve that manages a portfolio of risk discounted carbon assets.

This white paper explores how the pooling of carbon assets in a central reserve, combined with a risk-based framework to assess the quality and integrity of carbon assets such as carbon credits, can reduce market risks for investors in carbon markets.

This approach provides a more secure, transparent, and trustworthy environment that enables greater participation in carbon markets while facilitating the financing of essential carbon mitigation projects.

1. Pooling of Carbon assets in a Central Reserve

1.1 The Concept of Pooling Carbon assets

Pooling carbon assets in a centralized reserve refers to the aggregation of carbon assets from multiple sources, schemes, jurisdictions, and projects into a central repository. A reserve holds a diverse portfolio of carbon assets, each representing emission reductions or carbon removal efforts. This can then serve as a diversified and managed mitigation portfolio for participating investors.

By creating a single reserve, carbon assets from various programs, industries, and geographies are pooled together to form a collective asset base. This pool offers several advantages, including improved liquidity, reduced fragmentation, and decreased price volatility.

1.2 Advantages of Pooling Carbon assets

Pooling carbon assets in a central reserve lowers market risks in several key ways:

1. **Diversification of Mitigation Sources**: A centralized reserve allows for the inclusion of carbon assets from a wide range of projects, sectors, and geographic areas. Diversification reduces the overall risk of the portfolio because it spreads the risk across multiple projects. If one project underperforms or experiences difficulties, the impact is mitigated by the stronger performance of other assets in the pool.
2. **Improved Liquidity**: By consolidating carbon assets into a central portfolio, liquidity is enhanced. Investors can buy and sell units or shares of the pooled credits more easily, allowing for more active and continuous trading. Greater liquidity improves the attractiveness of the carbon market for investors who may otherwise be concerned about the difficulty of exiting positions in e.g. illiquid carbon credits.
3. **Price Stabilization**: A centralized reserve can serve as a price stabilizer by managing the supply and demand of credits it holds vs the units/shares it issues. The reserve can purchase excess credits during periods of oversupply and sell credits when demand increases. This stabilization mechanism helps to reduce price volatility, creating a more predictable pricing environment that encourages long-term investment, which is vital to achieve environmental goals.
4. **Lower Transaction Costs**: Pooling carbon assets into a central reserve reduces the need for investors to assess each individual project or credit independently, lowering due diligence costs for all parties. The reserve acts as an intermediary that has already conducted the necessary assessments, making it easier for investors to participate in the market without incurring high transaction costs. This makes it possible to expand the investor base beyond large institutions to retail investors and thereby democratise participation in the carbon markets.
5. **Unified Governance and Oversight**: A central reserve provides a standardized governance structure, with uniform oversight of carbon asset issuance, validation, and trading. This reduces the risk of inconsistent regulatory environments across different jurisdictions, leading to a more cohesive and transparent market.

2. A Risk-Based Approach to Carbon Asset Assessment

2.1 The Challenge of Integrity Risks in Carbon Assets

Not all carbon assets are created equal. The integrity of a carbon asset—its ability to represent a genuine, verifiable reduction or removal of GHG emissions—is a critical issue for the credibility of the carbon market. Carbon integrity risks arise when projects fail to deliver real emission reductions, overestimate the amount of carbon sequestered or reduced, or fall short of guaranteeing permanence (such as when forest carbon sequestration projects are vulnerable to deforestation or fires). These risks are compounded by the difficulty of ensuring additionality, which means that carbon projects should only generate credits if the emission reductions would not have occurred without the carbon market incentive. The quality of carbon assets is therefore paramount to investors and market participants, as low-quality or fraudulent credits undermine confidence and increase market risk.

2.2 Risk Based vs Binary Approaches

A risk-based approach to assessing carbon assets is considered better than a binary approach for several reasons:

2.2.1 Allows for a more detailed and nuanced evaluation of carbon assets.

2.2.2 Captures carbon asset complexity better than a binary approach, which might oversimplify by categorizing credits only as "acceptable" or "unacceptable" without recognizing the spectrum of quality, creating a barrier to entry.

2.2.3 Provides detailed information about the specific risks and strengths of each carbon asset, allowing stakeholders to choose assets that align with their risk tolerance and environmental goals and/or to deploy portfolio strategies to achieve their objectives.

2.2.4 Encourages project developers to improve their practices and reduce identified risks leading to overall improvements in the quality of assets over time.

2.2.5 Allows for differential pricing based on the carbon asset risk profile.

2.2.6 More flexible and adaptable to changing conditions and new information as the market develops.

2.2.7 Avoids arbitrary cutoffs that may exclude support for mitigation activities that are mostly, but not perfectly, compliant with best practices.

2.3 Implementing a Risk-Based Integrity Framework

To address carbon integrity risks, a risk-based approach is proposed for assessing and discounting carbon assets. This framework involves assessing each carbon asset project against specific risk criteria, such as additionality, permanence, leakage, and accurate measurement of emission reductions. Projects that exhibit higher integrity risks would receive a discounted mitigation valuation, while credits from high-integrity projects would retain their full face value.

Key components of the risk-based approach include:

1. **Mitigation Value**: Mitigation value (MV) is the measure used to assess the quality and integrity of carbon mitigation efforts by determining the expected impact of greenhouse gas (GHG) reductions, usually expressed in tonnes of CO_2 equivalent (tCO_2e), after adjusting for associated risks. It provides a way to differentiate carbon assets by evaluating factors such as design, implementation, and the likelihood of achieving claimed outcomes.
2. **Risk Assessment Criteria**: Each carbon asset project is evaluated on a set of criteria that assesses its environmental integrity. These criteria include:
    - **Additionality**: Does the project demonstrate that the emission reductions would not have occurred without carbon asset revenues?
    - **Permanence**: Can the project guarantee that the carbon reductions or removals are permanent, particularly in forestry or land-use projects?
    - **Leakage**: Does the project lead to an unintended increase in emissions elsewhere (e.g., deforestation displaced to another area)?
    - **Measurement and Verification**: Are the emission reductions accurately measured and verified by independent third parties?
3. **Discounting Based on Risk Levels**: Projects with higher risk factors would have the mitigation value of the assets discounted based on the severity of the identified risks. For example, a forestry project vulnerable to deforestation might have its carbon credits discounted by 20-30% to account for the uncertainty of permanence. Conversely, projects with robust guarantees of integrity—such as

advanced carbon capture and storage (CCS) technologies—would maintain their full credit value.

4. **Tiered Risk Classifications**: Carbon assets could be classified into risk tiers based on their integrity assessments. For example:
    - **Tier A Credits**: High-quality credits with low risk of non-performance or integrity failure. These credits mitigation value would be valued close to the credit value.
    - **Tier B Credits**: Moderate-risk credits that require close monitoring but are expected to deliver reliable reductions with some uncertainty. These credits mitigation value would be moderately lower than their credit value.
    - **Tier C Credits**: High-risk credits that carry significant uncertainty regarding their performance or environmental impact. These credits would be heavily discounted or excluded from the central reserve entirely.
5. **Continuous Monitoring and Auditing**: A key aspect of the risk-based approach is ongoing monitoring and third-party auditing of carbon asset projects. This ensures that the integrity of the credits is maintained over time and that risks are promptly identified and addressed.

2..4 Benefits of the Risk-Based Approach for Investors

By implementing a risk-based approach to assess and discount carbon assets, the market can provide several benefits to investors:

1. **Enhanced Market Confidence**: The transparent and rigorous assessment of carbon assets ensures that investors can trust the integrity of the credits in the reserve. This reduces the risk of purchasing low-quality or fraudulent credits, increasing investor confidence.
2. **Improved Risk-Return Profiles**: A risk-based approach allows investors to make more informed decisions by clearly understanding the risk levels of the credits in which they are investing. Investors can choose to invest in a mix of low-risk, high-integrity credits for stable returns or diversify into higher-risk credits for potentially higher rewards.

3. **Better Portfolio Management**: The combination of pooled credits and a risk-based assessment allows investors to manage their portfolios more effectively. Diversifying across risk tiers and projects within the centralized reserve helps mitigate the risk of underperforming projects and provides a more stable overall return.
4. **Protection Against Integrity Failures**: Discounting credits based on their risk ensures that the central reserve is not overvalued by including credits that are unlikely to deliver real emission reductions. This protects investors from the financial impact of integrity failures and ensures that the portfolio remains grounded in genuine environmental outcomes.

3. Lowering Carbon Market Risks through Pooling and Risk-Based Assessment

By combining the pooling of carbon assets in a centralized reserve with a risk-based assessment and discounting for integrity risks, carbon market risks for investors are significantly reduced. This integrated approach offers several key advantages:

- **Diversification and Liquidity**: Pooling credits from diverse projects improves liquidity and reduces exposure to any single project's failure. Investors benefit from a more dynamic market that can better accommodate shifts in demand and supply.
- **Risk Transparency**: A risk-based framework ensures that all credits are thoroughly assessed and transparently classified based on their quality. Investors can trust that the credits they purchase have been rigorously evaluated for integrity.
- **Stability and Predictability**: By managing supply and demand and incorporating price stabilization mechanisms, the central reserve reduces price volatility, creating a more predictable investment environment.
- **Investor Protection**: Discounting credits based on risk ensures that the central reserve remains insulated from projects with high failure rates or low environmental impact, protecting investors from the financial fallout of integrity risks.

Conclusion

Pooling carbon assets in a centralized reserve, coupled with a risk-based approach to assessing and discounting for integrity risks, offers a transformative solution to reduce market risks and enhance investor confidence in the carbon market. This integrated approach diversifies risk, increases liquidity, improves transparency, and ensures the long-term viability of carbon asset projects. By fostering a more secure and trustworthy carbon market, these mechanisms will attract greater investment and accelerate the global transition to a low-carbon economy. The central reserve, acting as a stabilizing force in the market, combined with rigorous risk assessment, can play a pivotal role in ensuring that carbon assets not only deliver real environmental outcomes but also provide attractive, stable investment opportunities.