Open Standard Carbon Removal Offtake Agreement (OSCAR) Guidebook

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A. Background

1. Climate Context and the Role of Carbon Dioxide Removal

Global efforts to limit warming to 1.5°C or well below 2°C, as articulated in the Paris Agreement, require a two-pronged approach: steep reductions in greenhouse gas emissions alongside the active removal of carbon dioxide (CO_2) from the atmosphere. Even if all major economies rapidly decarbonize their power systems and transition to cleaner fuels, certain "hard-to-abate" sectors - such as aviation, shipping, cement, steel, and agriculture - will continue to generate residual emissions well into the middle of the century.

Carbon dioxide removal (CDR) is uniquely positioned to address this gap. Unlike avoidance or reduction measures, which prevent future emissions, CDR directly reduces the atmospheric concentration of CO_2. This distinction makes CDR indispensable for achieving net-zero targets and eventually progressing toward net-negative global emissions.

Although the science is clear about the necessity of CDR, the sector remains in a formative stage. Technologies are often expensive, infrastructure is limited, and standards for monitoring and verifying removals are evolving. These uncertainties pose a challenge for financing, because investors and lenders typically require stable, predictable revenue streams before committing significant capital. Without financial confidence, the deployment of CDR technologies cannot reach the scale that climate goals demand.

2. Goal and Scope of this Guidebook

The global CDR market is largely voluntary and still in its early stages. As a result, limited efforts have been made to streamline transactions between CDR credit suppliers (suppliers) and CDR credit buyers (buyers), or to establish consistent processes among suppliers, third-party MRV providers, and buyers. This lack of standardization contributes to high transaction costs, market inefficiencies, and limited trust between participants.

To help address these challenges, this guidebook aims to build greater confidence and reduce friction in the voluntary carbon market (VCM) by promoting the use of standardized contractual frameworks and clarifying the processes for CDR credit delivery, MRV, and sale. It supports the use of the Open Standard Carbon Removal Purchase Agreement (OSCAR) by offering practical, article-by-article guidance that supplements OSCAR and reflects evolving market practice.

While relevant to all market participants, this guidebook may be especially useful for smaller buyers or first-time market entrants, who may lack internal contracting or technical expertise. By improving understanding of key commercial terms, legal provisions, and implementation steps, this guidebook helps stakeholders use OSCAR responsibly and effectively, supporting more transparent, consistent, and trustworthy transactions across the CDR ecosystem.

This guidebook is not intended to serve as an overview of CDR technologies or broader market dynamics. Rather, it focuses on actionable insights into the legal, financial, and operational components of successful CDR contracting. It draws on legal review, stakeholder interviews, contributions, and transactional experience to reflect current best practices and identify areas of ongoing development.

The objective of OSCAR and this guidebook is to reduce the time, cost, and complexity involved in negotiating CDR credit offtake agreements (Offtake Agreements). By offering interpretive guidance, sample provisions, and best practices, we aim to accelerate deal flow, improve stakeholder alignment, and lay a contractual foundation to support voluntary market growth and enable greater participation, particularly from new or smaller buyers.

OSCAR is based on U.S. law, but the concepts and the questions addressed therein apply universally. OSCAR, however, would need to be amended and adjusted on a jurisdiction-by-jurisdiction basis depending on the applicable law chosen by the parties thereto.

3. Carbon Removal Offtake Agreements (Offtake Agreements)

As demand for high-quality CDR grows, Offtake Agreements are becoming increasingly central to the financing and deployment of durable CDR projects.

(a) Definition and Core Function

An Offtake Agreement is a legally binding contract in which a buyer commits to purchase CDR credits from a supplier over a defined period. Each credit represents the removal and durable storage of one metric ton of CO_2, verified according to an agreed protocol and issued by a recognized registry.

The primary function of an Offtake Agreement is to reduce uncertainty. For the supplier, it creates a predictable stream of income that can be used to attract investment or secure loans. For the buyer, it assures access to verified removals that can be retired to meet voluntary climate commitments or, eventually, compliance obligations.

(b) Benefits of Offtake Agreements

Offtake Agreements play a crucial role in advancing the CDR market for several reasons:

(i) **Risk management**: By defining delivery schedules, pricing, and remedies for shortfalls, Offtake Agreements allocate risk in a way that is transparent and enforceable.

(ii) **Market certainty**: Suppliers gain confidence that their credits will be purchased, enabling them to proceed with construction or scale-up. By

locking in long-term Offtake Agreements, suppliers can better manage their financial risks and attract investors. In addition, lenders are more likely to provide funding when there is a reliable revenue stream.

(iii) **Market development**: Repetition of Offtake Agreement structures across transactions helps establish market norms and reduces negotiation time in subsequent deals. As more agreements are negotiated and executed, common contract provisions and best practices emerge, making it easier for parties to negotiate future agreements. This, in turn, helps to stimulate innovation and investment in CDR technologies and projects.

(iv) **Regulatory readiness**: Offtake Agreements often require adherence to protocols and registries that are aligned with emerging international standards, positioning buyers and suppliers for eventual compliance markets.

4. Process for Carbon Dioxide Removal

There are many pathways outlined for CDR in literature, involving systems that can scrub CO_2 from air, land, and ocean waters; the CDR taxonomy is ever evolving, and novel pathways for CDR can appear as science advances new mechanisms. Set forth below is a description of current CDR pathways as published by CDR.fyi (CDR.fyi Durable CDR Methods Update | June 2025):

Biomass Carbon Removal and Storage (BiCRS)

Bioenergy with Carbon Capture and Sequestration (BECCS)
Combines biomass energy production with carbon capture and storage technologies. CO_2 released during biomass combustion or fermentation is captured and permanently stored, creating net-negative emissions.

Biochar Carbon Removal (BCR)
Involves the pyrolysis of organic material to produce biochar, which stores carbon in a stable form when added to soil. This method can also improve soil health.

Biomass Geological Sequestration (BGS)
It involves converting biomass into forms such as bio-oil or bioslurry and storing it in geological formations for long-term carbon storage.

Biomass Direct Storage
Directly stores terrestrial biomass in stable environments, such as controlled terrestrial storage sites or sinking to the deep sea, where decomposition is minimized, and carbon is sequestered over the long term.

Direct Air Carbon Capture and Sequestration (DACCS)

The capture of CO_2 directly from the atmosphere using chemical processes combined with its permanent underground storage.

Marine CDR (mCDR)

Alkalinity Enhancement
This combines Ocean, River, and the emergent Coastal and Wastewater Alkalinity Enhancement methods under one category. This streamlined approach focuses on adding alkaline materials to aquatic systems to neutralize acidity and store carbon as bicarbonates or carbonates.

Direct Ocean Removal
Captures CO_2 directly from ocean water, reducing atmospheric concentrations as the ocean reabsorbs CO_2 to maintain equilibrium.

Marine Biomass Carbon Capture and Sequestration (MBCCS)
This combines Marine Biomass Sinking, which involves cultivating marine biomass, such as seaweed, and sinking it into deep ocean layers, and Microalgal Capture and Storage, which harnesses the carbon-capturing capacity of microalgae that can be processed into products or stored in stable environments. It can also include hybrid approaches where the biomass that captures the carbon is marine, rather than terrestrial.

Enhanced Weathering (EW)

Accelerates the natural rock weathering process to remove CO_2 from the atmosphere. Crushed silicate rocks are spread across landscapes or oceans, where they react with CO_2 and lock it into mineral form.

Mineralization

A broad category involving the conversion of CO_2 into stable mineral forms. This method combines:

Ex-situ Mineralization
A carbon storage method in which captured CO_2 is reacted with alkaline minerals outside their natural setting - typically involving mined and ground rocks or industrial by-products - within engineered systems such as reactors or treatment facilities.

In-situ Mineralization
A carbon storage method that involves injecting CO_2 into underground rock formations, where it reacts with naturally occurring minerals to form stable carbonates. While the process itself is storage-focused, the overall classification depends on the source of the CO_2; for example, CO_2 captured from biomass combustion qualifies the process as BECCS.

Microbial Mineralization
Leverages microbes to accelerate the natural process of converting CO_2 into stable mineral forms, such as carbonates. These microbes often enhance weathering reactions by producing acids or enzymes that facilitate the breakdown of silicate or carbonate rocks, enabling long-term geological storage of carbon. The microbial nature of the method will be retained as an attribute.

Surficial Mineralization
Applies alkaline minerals to surface environments where they passively react with atmospheric CO_2 to form carbonate minerals with the aim of enhancing the mineralization capacity of alkaline feedstock. The surficial nature of the method will be retained as an attribute.

Additional pathways include nature-based solutions:

Afforestation/Reforestation
Planting trees in a site where there previously wasn't a forest (afforestation) or where there previously was a forest (reforestation). They will grow and store carbon biogenically through photosynthesis. (US DOE - Fossil Energy and Carbon Management 2023)

Soil Carbon Sequestration
Increase the carbon content of soil through agricultural practices such as no till and compost. (US DOE - Fossil Energy and Carbon Management 2023)

5. Stakeholders Ecosystem in Offtake Agreements

Stakeholders involved in CDR play roles essential for successful Offtake Agreement deployments and may have different requirements to ensure Offtake Agreements are meeting their respective standards at each activity level. In the architecture of carbon removal markets, buyers and suppliers deserve equal weight. Treating them as counterparts of equal primacy underscores the balance of the market. Beyond this dyad, the stakeholder landscape becomes more complex. Aside from buyers and suppliers, stakeholders include accredited carbon removal standard bodies, registries, investors, verifiers, legal experts, and researchers, among others.

A list of relevant stakeholders and their role in Offtake Agreements deployment is provided below, divided by three classification types (primary, secondary, and case-specific):

Primary

- **Buyers**: entities purchasing CDR credits.
- **Suppliers**: entities implementing CO_2 capture projects, generating CDR credits.
- **Verifiers**: third party responsible for verifying that the CDR process follows an established protocol.
- **Standard Operators:** define methodologies, MRV requirements, and CDR credit specifications.
- **Standard Setters:** These ultimately define what a CDR credit *is* (attributes, permanence, eligibility). Their role is quasi-legislative in the VCM and needs explicit recognition in stakeholder maps.
- **Registries**: institutions that grant, track, and retire CDR credits. They are sometimes the same entity as the standard operator, but not always. This means contracts need to distinguish between "issuance risk" (standards) and "custody/retirement risk" (registries).

Secondary

- **Rating Agencies:** If a buyer requires, say, a BeZero or Sylvera minimum rating, this creates a new category of *case-specific stakeholders.* Including rating agencies clarifies that the transaction's success may depend on external benchmarks outside the control of the buyer or the supplier.
- **Investors/bankers**: institutions able to provide capital for the procurement, development, and operation of CDR projects.
- **Brokers**: intermediary between suppliers and registries, as well as between registries and buyers. Facilitate transactions by matching buyers and suppliers, but do not themselves hold the CDR credits. Their liability is generally limited, but contracts should clarify agency vs. principal roles.
- **Marketplaces**: Differ from brokers in that they often provide infrastructure for trading, custody, and retirement. Marketplaces may impose additional contractual frameworks on suppliers and buyers, which can conflict with or supersede bilateral agreements. This creates a new category of stakeholder that is distinct from traditional brokers.

Case Specific

- **Researchers**: academics and experts in science, engineering, policy, and social impact, actively working to advance CDR technologies or markets.
- **Legal experts**: lawyers with experience in contracting in CDR.
- **Insurers**: entities providing CDR specific risk-protection mechanisms to both the supplier and the buyer.

Successful establishment of Offtake Agreements requires thorough engagement of multiple stakeholders. It is important to distinguish between credited carbon removal standard bodies (which OSCAR defines as the "Carbon Standard Body") and carbon registries (which OSCAR defines as the "Registry"). While in many cases, they are housed within the same organization, their functions differ in meaningful ways. The role of issuing an asset – essentially bringing a CDR credit into existence – carries different responsibilities and risks than the ongoing task of holding, transferring, or retiring that asset in a Registry.

The influence of standard setters must also be acknowledged. They define the specifications of a CDR credit and its intended purpose, thereby shaping both the supply and demand sides of the market. Looking ahead, rating agencies may also become relevant stakeholders where a minimum rating or quality level is required for certain transactions. To bring order to this increasingly diverse ecosystem, it may be useful to classify stakeholders into three categories: primary (buyers, suppliers, standard operators), secondary (registries, rating agencies, auditors), and case-specific (public authorities, philanthropic actors, insurers).

Securing financing partners beyond the offtake is key for project scalability, and these partners also rely on the Offtake Agreement to assess bankability. Verifiers receive project data from the supplier for auditing and ensuring compliance with the agreed protocol and feed this verified data into the registry, which issues and tracks CDR credits. Engaging with government officials and regulators is also necessary to comply with permitting regulations and overarching requirements for transactions and verification. Local organizations should also be engaged to disseminate information related to the project and mitigate any major public opposition around the deployment site. Legal experts play a key role in shaping the Offtake Agreement for each specific case, managing both sides' interests and needs. Other stakeholders, such as researchers, subject matter experts, and EPC (engineering, procurement, and construction) firms, can be consulted and engaged as necessary, where their advice and expertise are necessary.

6. Market Barriers and the Need for Structured Agreements

The CDR market today faces a combination of structural, technical, and institutional barriers:

(a) **Technological maturity**: A number of CDR pathways, such as direct air capture (DAC) and enhanced mineralization, are still progressing from the pilot or demonstration stage toward full commercial scale. This transitional stage creates considerable uncertainty with respect to their long-term performance, cost trajectories, and ultimate bankability. Rather than framing these issues solely as "implementation challenges," it is more accurate to recognize that some pathways are not yet technically mature enough to be considered reliable or investable.

The forms of immaturity can be categorized as follows:

- **Fundamental research required.** Certain approaches, such as ocean alkalinity enhancement, still face unresolved scientific questions about their effectiveness, potential environmental impacts, and scaling limits.
- **Development work required.** Other methods, including DAC, have been proven in principle but require significant engineering and operational improvements, including large-scale deployment, reductions in unit costs, and the buildout of enabling infrastructure such as heat and power supply.
- **Advances in MRV required.** Pathways such as soil carbon enhancement or mineralization projects face uncertainty because the credibility of their climate impact depends heavily on monitoring, reporting, and verification (MRV) technologies. Improvements in measuring permanence, additionality, and leakage are essential before these CDR credits can be treated as fully durable.

For pathways that remain immature, contractual agreements may need to include special provisions. These could involve extended development milestones that acknowledge the longer timeline to technical readiness, more flexible delivery schedules that accommodate delays or failures, a buyer's explicit tolerance for shortfalls or underperformance, and clear contractual allocations of risk associated with MRV uncertainty.

(b) **Infrastructure gaps**: Even when capture technologies function as intended, large-scale deployment depends on the availability of transport and storage infrastructure. CO_2 pipelines, shipping capacity, and geological storage sites are unevenly distributed geographically and often face long permitting timelines. These infrastructure bottlenecks limit the ability of projects to deliver removals at scale, particularly outside regions with existing oil and gas infrastructure.

(c) **Fragmented standards**: Although multiple registries and standards are available for crediting removals, there is not yet a single globally recognized framework that ensures consistency, comparability, and integrity across markets. This lack of harmonization makes it difficult for buyers to compare CDR credits across pathways or regions and adds complexity to contractual negotiations.

(d) **Transaction costs**: Because the market has not yet converged on widely accepted contractual norms, nearly every offtake arrangement must be negotiated from scratch. This increases both the time required to finalize agreements and the associated legal and advisory costs. In many cases, transaction costs are disproportionately high compared to the relatively small volumes of CDR credits being traded in the early market.

(e) **Investor risk perception**: The absence of standardized contracts and bankable revenue structures exacerbates investor concerns. Developers often struggle to demonstrate predictable cash flows that would enable them to attract equity or debt financing. At the same time, buyers remain cautious about the credibility of the CDR credits they purchase, especially when permanence and additionality are not assured.

The Role of Offtake Agreements

Offtake Agreements are designed to address these barriers by introducing repeatable, transparent, and trusted frameworks for the procurement of CDR credits. Standardized agreements can lower transaction costs by reducing the need for lengthy negotiations, allocating risks in a predictable manner that supports financing, and building trust in the durability of CDR credits delivered. By reducing uncertainty for both developers and buyers, Offtake Agreements play a central role in accelerating the pace at which CDR projects secure financing, scale up operations, and deliver meaningful and durable climate benefits.

7. Offtake Agreements as a Bridge to Scale

In today's VCM, each Offtake Agreement is effectively a bespoke contract. Over time, repetition will drive convergence. Certain terms, such as how delivery shortfalls are cured or how double-counting is avoided, are likely to become standardized.

The analogy to the renewable energy sector is instructive. Power Purchase Agreements (PPAs) were a crucial driver of the wind and solar industries. By locking in revenue streams for 10–20 years, PPAs allowed developers to secure financing for projects that otherwise looked risky. Over time, standardized PPA terms reduced transaction costs and created a template that investors, lenders, and rating agencies understood. Offtake Agreements play a similar role for CDR: they offer a structured and credible mechanism to contract for outputs that are new, heterogeneous, and initially expensive.

Standardization has multiple benefits: it lowers legal costs, accelerates deal flow, and allows investors and insurers to benchmark transactions more effectively. At the same time, Offtake Agreements must remain flexible enough to accommodate different pathways, project scales, and buyer needs. The balance between standardization and customization will be one of the defining challenges for the sector in the coming years.

Offtake Agreements can be thought of as the contractual equivalent of infrastructure: they provide the "roads and bridges" through which capital and CDR credits flow. For developers, Offtake Agreements represent long-term demand that can be presented to financiers as evidence of future revenue. For buyers, Offtake Agreements offer clarity on what they are purchasing, under what conditions, and with what remedies in the event of underperformance.

B. Open Standard Carbon Removal Offtake Agreement (OSCAR)

1. Introduction

The Open Standard Carbon Removal Offtake Agreement (OSCAR) is intended for informational purposes and not as legal advice. It outlines the sale and purchase of CDR credits, which represent environmental attributes associated with the removal and storage of greenhouse gases. The headlines in Section 2 below correspond to the articles in OSCAR.

It is important to note that OSCAR is tailored to U.S. law. International CDR transactions might require adjustments to comply with jurisdictional requirements.

OSCAR is intentionally drafted in a buyer-friendly manner. Its primary purpose is to provide protection for buyers of CDR credits, safeguarding them against the risks of under-delivery, reputational harm, and the possibility that purchased CDR credits are later found to be invalid or non-compliant. At the same time, OSCAR is designed to remain balanced. Many suppliers are early-stage companies or start-ups, and it would be counterproductive to impose obligations that they cannot realistically fulfill. Overburdening suppliers with unworkable commitments would not only jeopardize project viability but also undermine the broader goal of scaling the CDR market. By combining protections for buyers with realistic expectations for suppliers, OSCAR seeks to create a framework that is both credible and commercially sustainable.

An Offtake Agreement is not a one-size-fits-all instrument. Its terms and risk allocations are heavily influenced by the type of CDR pathway deployed, particularly the distinction between **durable removals** and **biological or land-use-based removals**.

- **Durable removals**. These pathways typically involve manufacturing or industrial processes, such as biochar production, direct air capture (DAC), or bioenergy with carbon capture and storage (BECCS). They result in physical and measurable products where the captured carbon is stored in a stable form for centuries or longer. Because these removals involve manufactured products or engineered storage solutions, they offer a durability profile that is materially different from that of nature-based methods. OSCAR, therefore, allows for stronger warranties, but in a way that recognizes suppliers cannot take on unlimited liability, especially in early-stage markets.

- **Biological or land-use-based removals**. Pathways such as afforestation, reforestation, or soil carbon sequestration rely on natural processes. Their permanence is inherently contingent on ecological conditions—such as fire, pests, or land-use changes—and therefore carries a higher risk of reversal. In these cases, Offtake Agreements need to allocate risks realistically, making use of tools such as buffer pools or force majeure provisions rather than imposing guarantees that suppliers cannot credibly provide.

Legal practitioners who are accustomed to working primarily with forestry or avoided-deforestation credits may sometimes treat all carbon credits as interchangeable. OSCAR seeks to make explicit the critical differences between durable and biological pathways so that appropriate and balanced risk allocation can be built into the Offtake Agreements. These distinctions include:

- **Durability horizon**. For example, a DAC project may credibly commit to storing carbon for more than 100 years through geological injection, whereas afforestation projects typically have an average permanence horizon of approximately 40 years. Recognizing this, OSCAR frames obligations in line with what can be delivered, avoiding unrealistic parity between pathways.

- **Physical custody of manufactured products**. Durable pathways produce tangible carbon storage products, such as biochar, mineralized carbon, or liquefied CO_2 injected into geological formations, that can be tracked, measured, and verified in ways that biological pathways cannot.

- **Implications for risk allocation**. Because durable removals can credibly provide long-term storage assurances, they justify more robust representations, warranties, and potentially insurance mechanisms. By contrast, suppliers of afforestation or avoided-deforestation projects cannot realistically provide equivalent assurances, and their agreements must therefore rely more heavily on buffer pools, reversal risk accounts, or carefully defined carve-outs. The guiding principle is to hold suppliers accountable for what is within their control, while not penalizing them for risks they cannot manage.

Practical illustration.

A supplier of DAC credits may be able to warrant the permanence of geological storage through verifiable injection into regulated reservoirs. By contrast, a forestry project developer cannot offer the same level of assurance, given the inherent risks of fire, disease, or land-use change. Their agreements, therefore, allocate risk differently, using tools such as buffer pools of CDR credits to absorb reversals or exceptions that excuse liability for events beyond the supplier's control.

2. OSCAR's Articles

Capitalized terms used in this section have the meaning given to them in OSCAR.

(a) Article I and Article II: Purpose, Definitions, and Term

Supplier will develop, operate, and maintain one or more carbon removal projects that remove greenhouse gases from the atmosphere, as described in Exhibit A. Buyer agrees to purchase, and Supplier agrees to sell, verified carbon removal credits generated by the Project. OSCAR becomes effective on the Effective Date and remains in force until all Credits specified in Exhibit B have been delivered, or until payment has been made, unless terminated earlier in accordance with OSCAR.

Comments:

This clause establishes the basic commercial relationship. It defines the scope of the Project, the sale of verified Credits, and the duration of OSCAR. It ensures both parties know when obligations start and end, creating clarity for accounting, planning, and risk management.

(b) Article III: Sale and Purchase of CDR credits

Supplier will sell, and Buyer will purchase, the Credits specified in Exhibit B (the "Contract Credits"). Credits will be used for voluntary purposes only and will not be claimed toward any national emission targets. Supplier will not sell or otherwise encumber any Contract Credits or other environmental attributes associated with the same removals. Double-counting of Credits is strictly prohibited. Supplier undertakes to deliver CDR credits (either by transfer into the buyer's registry account or retirement on the buyer's behalf). Supplier promises exclusivity regarding the contracted CDR credits: No double-selling and no double-counting. The buyer agrees not to use credits in ways that would interfere with national climate accounting under the Paris Agreement.

Comments:

- For buyers: Ensures that CDR credits represent genuine, unique removals. Ownership cannot be diluted by competing claims.
- For suppliers: Establishes boundaries around how CDR credits can be used, avoiding conflicts with host country's obligations.
- Broader market integrity: Double-counting is one of the main reputational risks in voluntary carbon markets, and this clause addresses aspects related to double-counting.

Registries are the record-keepers of the CDR market. They issue CDR credits, track transfers, and record retirements. Without trusted registries, the risk of double issuance or double counting would undermine market confidence.

Offtake Agreements typically specify the registry in which CDR credits will be issued. They may provide fallback options if that registry ceases operations or changes its rules (OSCAR omits these potential details). Offtake Agreements often require that CDR credits carry unique serial numbers and that ownership transfers are recorded in real time.

Double-counting can occur in three ways:

- Double issuance: Two CDR credits are issued for the same ton of CO_2 removed.
- Double claiming: Two entities claim the same CDR credit toward their targets.
- Double use: A CDR credit is retired once but used to justify multiple claims.

Parties, and the broader CDR community, may not always agree on whether a particular situation constitutes double counting. To guard against these risks, Offtake Agreements often mandate that CDR credits be retired promptly upon use, that transfers be documented with registry receipts, and that international transfers be accompanied by corresponding adjustments under Article 6 of the Paris Agreement.

One of the defining features of an Offtake Agreement is its treatment of delivery. Unlike many traditional commodities, CDR credits do not exist at the outset of a contract; they are generated only after a project performs, monitoring is completed, and a registry issues a serialized CDR credit. This forward-looking nature makes delivery terms central to OSCAR.

Offtake Agreements typically establish a delivery schedule that sets out the cadence and volume of CDR credits expected over the life of the contract. Schedules may be annual (as in OSCAR), quarterly, or even monthly, depending on the maturity of the project and the needs of the buyer. The schedule functions both as a commercial commitment and as a performance benchmark against which remedies are applied.

Delivery terms also define the point at which risk transfers. Is delivery deemed to occur when the supplier causes CDR credits to be issued into its account at the registry? Or only when the supplier receives payment from the buyer, or when those CDR credits are transferred to the buyer's account? Does entitlement to the CDR credits or the environmental attributes they represent transfer between the parties at the same time as the CDR credits are transferred or retired in the registry? The answers have consequences for ownership, liability, and insurance coverage. For instance, if CDR credits are deemed delivered upon issuance, the supplier is responsible only until that moment; if delivery occurs upon transfer, the supplier may remain liable for delays or technical errors at the registry stage.

Because many projects face uncertainty in ramp-up, Offtake Agreements often allow for a "ramp period" in which delivery quantities are lower and gradually increase. This structure mirrors practices from renewable energy, where commissioning and testing periods are recognized as less predictable. Similarly, Offtake Agreements sometimes provide for "make-up rights," allowing suppliers to deliver shortfalls in subsequent periods. Such provisions must balance flexibility for suppliers with predictability for buyers, especially if buyers need CDR credits for annual reporting cycles.

(c) Article IV: Price, Payment, Taxes

Buyer will pay Supplier the Unit Price set forth in Exhibit B for each Delivered Credit, by wire transfer to the account designated by Supplier within [__] Business Days of Delivery or receipt of a valid invoice, whichever is later. Late payments will accrue interest at [__]% per annum. Each Party is responsible for its own taxes in accordance with applicable law. Unless otherwise specified, the Unit Price includes verification, registry, and transaction costs. If a tax or fee is imposed after the Effective Date that materially affects either Party, the Parties will discuss in good faith an equitable adjustment.

Payment mechanics are flexible: linked to delivery, invoicing, or project milestones. Verification and registry costs are allocated explicitly. Taxes are split depending on whether they arise before or after delivery.

OSCAR does not include a "most-favored buyer" price adjustment clause, under which the buyer's price would be reduced if the supplier sold the same CDR credits to another party at a lower rate. When negotiating an Offtake Agreement, a buyer may wish to consider including such price adjustment mechanisms; however, it is important to note that these provisions can adversely affect the bankability of the Offtake Agreement by reducing a lender's ability to predict future project revenues, which are often a project's primary collateral.

Price formation in the VCM and in CDR transactions does not depend solely on the tons of CO_2 removed. Increasingly, co-benefits such as biodiversity protection, water conservation, or community development are recognized as material factors in determining value.

There is a discussion about the quantification of impact, distinguishing between types of co-benefits and examining the methodologies by which they can be credibly measured. Only with transparent, verifiable metrics can co-benefits support pricing and withstand public and regulatory scrutiny.

Comments:

Buyers need predictability of cost; suppliers need certainty of revenue. Allocating registry/verification costs prevents hidden surprises.

Pricing in Offtake Agreements is one of the most dynamic and frequently contested areas of negotiation. Unlike mature commodity markets, the CDR sector does not yet benefit from transparent price discovery or standardized benchmarks. Each contract, therefore, functions not only as a commercial arrangement between a buyer and a supplier but also as a market signal that shapes perceptions of value across the broader industry. Striking the right balance is critical: while buyers seek predictability and fairness, suppliers - many of whom are early-stage companies - must avoid being locked into pricing structures that undermine their ability to scale or recover costs.

Common Pricing Models

Several models are emerging in practice, each with distinct advantages and trade-offs:

- **Fixed price per ton**. A fixed price provides predictability for both parties and simplifies financial planning. However, it may fail to capture future cost reductions as technologies scale, leaving buyers potentially overpaying or suppliers underfunded if market conditions shift.

- **Cost-plus pricing**. This approach bases the price on the supplier's actual costs plus a negotiated margin. It is particularly suitable for early-stage projects where unit economics are uncertain and where buyers are effectively helping to underwrite the path to scale. The challenge lies in ensuring transparency of costs without overburdening suppliers with excessive disclosure obligations; this balance may be easier for CDR pathways whose costs are dominated by a limited number of easily-verified inputs like electricity or widely-used feedstocks or materials.

- **Indexed pricing**. Indexed models tie the CDR credit price to external benchmarks, such as compliance market prices, inflation indices, or other reference commodities. This approach provides a mechanism to adjust for changing market conditions but requires careful drafting to ensure the chosen index is relevant and not easily manipulated.

- **Performance-based pricing**. In some cases, prices are adjusted according to quality metrics, such as the demonstrated permanence of storage or the delivery of co-benefits. This aligns incentives with outcomes but introduces additional verification requirements that can be costly and complex for suppliers.

Allocation of Fees and Verification Costs

Offtake Agreements often explicitly address who bears responsibility for verification costs, registry fees, and similar expenses. These costs may be bundled

into the CDR credit price itself or charged separately as line items. Both approaches are workable, but the agreement must be clear to avoid disputes. Some contracts also introduce tiered pricing structures, under which CDR credits with longer permanence horizons or higher-quality co-benefits command a premium. While this can reward suppliers for delivering higher-value outcomes, it also increases their contractual exposure if promised attributes later prove difficult to substantiate.

Role of Co-Benefits in Pricing

Co-benefits are increasingly influential in pricing negotiations. Many buyers are willing to pay a premium for CDR credits that deliver measurable biodiversity, social, or local community benefits alongside carbon removal. Suppliers, in turn, highlight these multiple value streams as part of their commercial proposition.

The challenge lies in quantification and verification:

- **Types of co-benefits**. These may include biodiversity outcomes (*e.g.*, species protection, habitat restoration), social impacts (*e.g.*, job creation, gender inclusion), or environmental improvements (*e.g.*, soil health, water quality).

- **Measurement frameworks**. Credibility often depends on recognized standards or custom impact assessments tailored to project circumstances.

- **Verification requirements**. Third-party assessments or independent expert reports are often necessary to substantiate claims. However, requiring extensive verification can impose significant costs on suppliers, particularly start-ups.

From a contractual perspective, if co-benefits are explicitly priced into the Offtake Agreement, suppliers may be asked to warrant their quantification and verification. This creates legal and financial risk if the benefits are later contested, which is why balanced drafting is essential. Offtake Agreements should ensure that suppliers are not overexposed to liabilities for impacts outside their reasonable control, while still giving buyers confidence in the claims that support a price premium.

Pricing Models with Intermediaries

Where brokers or marketplaces are involved, Offtake Agreements must also address intermediary compensation.

- **Traditional model**. Brokers or platforms often take a fixed commission, typically between 5 and 15 percent of the transaction value. This provides clarity but may not align incentives to achieve the highest possible sale price.

- **Sliding-scale model**. More sophisticated structures adjust revenue sharing based on the achieved sale price. For example:

  - If the sale price is less than or equal to $100 per ton, the supplier receives 85% of the proceeds and the broker 15%.

  - If the sale price is between $101 and $150 per ton, the supplier receives 90% and the broker 10%.

  - If the sale price exceeds $150 per ton, the supplier receives 95% and the broker 5%.

  This approach incentivizes intermediaries to secure higher sale prices while protecting suppliers from disproportionate margin erosion at the lower end of the market. It also creates greater transparency in multi-party deals, ensuring that suppliers understand how value is distributed.

Drafting Considerations

When using sliding-scale or commission-based models, the Offtake Agreement should define the "Unit Price" with precision. Ambiguities, such as whether the figure is gross or net of fees, how currency conversions are handled, or whether registry and verification charges are included, can create disputes. To further ensure fairness, suppliers should be granted audit rights, allowing them to verify the intermediary's reporting and confirm that revenue splits are accurately applied.

(d) Article V: Title Transfer

Title and risk of loss for each Credit transfer to Buyer upon payment of the Unit Price. Supplier warrants that all Credits are validly issued, verified, and free from liens or claims. Delivery may occur by (i) transfer to Buyer's registry account, or (ii) retirement to Buyer's order, with appropriate certification provided to Buyer. Bankruptcy language aims to ensure that OSCAR qualifies as a 'forward contract' under U.S. law, protecting it from certain insolvency risks.

Comments:

This section ensures legal certainty over ownership and protects against disputes about who 'owns' the Credits. It connects payment, registry transfer, and title passage, which is important for enforceability and recognition by auditors, buyers, and registries. For buyers, ownership certainty is critical: they must be able to report CDR credits without risk of later claw-back. The bankruptcy carve-outs are technical but important, ensuring enforceability even if the supplier fails financially. This shows how carbon transactions are increasingly treated like commodity trades.

(e) Article VI: Monitoring, Reporting, and Verification (MRV)

Supplier will maintain and implement an MRV Plan in accordance with the Carbon Standard and prudent industry practices. Supplier will obtain validation and verification by accredited verifiers and maintain all approvals and permits necessary for the Project. Beginning on the Effective Date, Supplier will provide quarterly progress reports to Buyer summarizing (a) Project development, (b) verification status, (c) anticipated Delivery schedule, and (d) any material risks or delays. Buyer may, upon reasonable notice, request supporting documentation or visit the Project site no more than once per year during normal business hours.

In the voluntary carbon market (VCM), a hierarchy of accreditation has emerged. At its base level, the International Carbon Reduction and Offset Alliance (ICROA) provides a "floor" of acceptability. Above that, only a very limited number of standards and methodologies have been accredited by the Integrity Council for the Voluntary Carbon Market (IC-VCM), and this exclusivity is likely to persist. The framework created by the UNFCCC, together with the PACM and regional instruments like the EU CRCF, means that buyers are now faced with a more complex decision-making environment. They must assess the risks of a given CDR credit by looking not only at its features and origin, but also at the legal or policy requirements that govern its proposed use, whether for compliance, compensation, or reputational purposes.

Comments:

MRV obligations are the backbone of credit integrity. They ensure transparency and allow Buyer oversight without micromanaging the Project. Reporting builds trust, while defined audit rights maintain accountability and help Buyers meet due diligence obligations under their own climate commitments.

Carbon markets depend on credibility. Article VI of OSCAR ensures that the project is monitored, and the relevant CDR credits are measured, reported, and verified by independent experts. Audit rights give buyers transparency and confidence - a feature increasingly demanded by corporate ESG teams and auditors.

The credibility of CDR hinges on the robustness of its MRV systems. Unlike conventional goods, carbon removals are invisible and intangible; they exist as quantified claims about atmospheric CO_2 flows. MRV is the infrastructure that transforms these claims into trusted CDR credits.

- Monitoring refers to the continuous or periodic collection of data on project performance. For direct air capture, this may involve flow meters and energy consumption logs. For soil carbon projects, it might involve remote sensing, field sampling, and modeling.

- Measurement involves quantifying net removals, often with reference to baselines and counterfactual scenarios. For example, in a biochar project, measurement requires accounting for the carbon content of the feedstock, the efficiency of pyrolysis, and the emissions associated with transportation.

- Reporting encompasses the structured presentation of data and calculations in accordance with registry or protocol requirements. Reports must be transparent, replicable, and auditable.

- Verification is the independent review of reported data by an accredited third party. Verifiers test the accuracy of data, assess the appropriateness of methodologies, and confirm that uncertainties are treated conservatively.

Offtake Agreements frequently specify the principles that MRV must meet: accuracy, transparency, comparability, independence, conservativeness, and continuous improvement. Many also reference external standards, such as ISO 14064 or the Intergovernmental Panel on Climate Change (IPCC) guidelines, to ensure alignment with international best practice.

Every Offtake Agreement must identify the protocol under which CDR credits will be generated. Methodologies define project boundaries, establish baselines, prescribe measurement approaches, and set rules for dealing with uncertainty, leakage, and permanence.

A robust protocol will:

- Define scope and boundaries to determine which carbon pools and emissions sources are included, and what geographic and temporal boundaries apply.
- Set baseline conditions to determine what emissions would have occurred in the absence of the project.
- Specify measurement techniques to identify direct measurements, modeled estimates, or remote sensing methods.
- Establish data quality standards to define thresholds for precision, sampling frequency, and calibration.
- Prescribe reporting formats to ensure comparability and transparency.
- Outline verification requirements to define frequency of audits, qualifications of verifiers, and conflict-of-interest safeguards.
- Address leakage and reversals with requirements for monitoring, buffer contributions, or insurance.
- Provide update pathways to incorporate new science and best practices over time.

By aligning with methodologies endorsed by respected registries and international initiatives (*e.g.*, IC-VCM Core Carbon Principles), Offtake Agreements enhance the credibility and fungibility of CDR credits.

Hierarchy of Accreditation

Within the voluntary carbon market (VCM), accreditation operates through multiple layers, creating a complex hierarchy that buyers must navigate. At the most basic level, membership in or accreditation by the International Carbon Reduction and Offset Alliance (ICROA) sets a recognized "floor" of quality, ensuring that standards meet minimum criteria for transparency and integrity. However, only a limited number of standards and methodologies have advanced to achieve endorsement by the Integrity Council for the Voluntary Carbon Market (IC-VCM). This results in a tiered structure in which not all ICROA-recognized standards automatically qualify for IC-VCM recognition. Buyers are therefore required to conduct layered due diligence, evaluating whether CDR credits meet baseline ICROA standards and, in addition, whether they carry the higher-level endorsement of the IC-VCM.

Interaction with Compliance Frameworks

The VCM does not exist in isolation; it increasingly overlaps with compliance and quasi-compliance regimes at the international, national, and subnational levels. Frameworks such as the UNFCCC's Paris Agreement Crediting Mechanism (PACM), the forthcoming EU Carbon Removal Certification Framework (CRCF), and national standards developed in jurisdictions such as Japan and Singapore are expected to coexist with voluntary standards. For buyers, this convergence raises critical strategic questions: Will CDR credits acquired in the VCM also be accepted for corporate compensation claims, insetting within supply chains, or even regulatory compliance under emerging national or regional regimes? Careful evaluation of the interoperability between voluntary and compliance frameworks is thus a central due diligence task.

Risk Assessment Lens

From a risk management perspective, buyers should adopt a multidimensional lens when assessing the quality and suitability of CDR credits. Key considerations include:

- **Type and features of the CDR credit.** This involves evaluating the durability and permanence of storage, as well as the robustness of monitoring, reporting, and verification (MRV) systems underpinning the CDR credit.
- **Origin of the CDR credit.** Buyers must understand the host country's rules, whether Article 6 authorizations have been issued, and the degree to which there is a risk of double-counting where the same reduction or removal is claimed by more than one entity.
- **Proposed use of the CDR credit.** The intended application, whether for voluntary corporate claims, insetting within a supply chain, or compliance

with regulatory obligations, directly influences the risk profile and determines the level of scrutiny required.

Drafting Implications

These accreditation and risk considerations translate directly into contractual obligations. Offtake Agreements may need to include specific representations by the supplier regarding the MRV protocol employed, warranties that the CDR credits comply with or are recognized under specified standards, and assurances relating to host-country authorization or Article 6 alignment where relevant. At the same time, drafting should remain balanced: suppliers, particularly early-stage project developers, cannot realistically provide absolute assurances on evolving regulatory acceptance. Offtake Agreements must therefore allocate risks in a manner that is both commercially reasonable and reflective of market realities, combining buyer protections with supplier feasibility.

(f) Article VII: Shortfalls

(a) Generation Shortfall: If the Project generates fewer Credits than projected for any Contract Year, Supplier must either deliver equivalent replacement Credits, increase future deliveries, or refund the corresponding purchase price.

(b) Delivery Shortfall: If Supplier fails to deliver the agreed quantity for other reasons, Supplier must cure within [__] days by delivering additional or replacement Credits. Failure to cure constitutes an Event of Default.

OSCAR provides for various alternatives for the parties to consider.

Comments:

Carbon removal projects are risky, and performance shortfalls do occur. This clause balances risk between the Parties. It defines remedies for under-performance, distinguishing between failure to generate (Project risk) and failure to deliver (logistical or contractual risk). The structured cure options are supposed to preserve flexibility while maintaining Buyer confidence.

(g) Article VIII: Representations and Warranties

Each Party represents that it is duly organized, validly existing, and authorized to enter into this Agreement. Supplier further represents that (a) the Project complies with applicable law and the rules of the Carbon Standard; (b) Credits delivered are genuine, verified, and free from any third-party rights; and (c) the Project does not involve known environmental, social, or human rights violations. Both parties give legal assurances about their authority, compliance with sanctions, and anti-corruption laws. The supplier additionally warrants project validation, the absence of human rights abuses, and the absence of undisclosed reputational risks.

Comments:

Representations and warranties provide assurances that form the basis for reliance. They are key for due diligence and can trigger remedies if breached. Including compliance and integrity warranties helps Buyers ensure Credits align with ESG and reputational standards. Buyers need confidence that their purchase will withstand investor, NGO, and regulatory scrutiny. This clause also helps buyers defend against allegations of 'greenwashing' - a real reputational risk in voluntary markets.

(h) Article IX: Public Announcements and Marketing

Under OSCAR, the parties are required to coordinate any press releases and public announcements. Buyer-friendly Offtake Agreements often include additional language prohibiting the supplier from using the buyer's name or logo without the buyer's prior written consent, while granting the buyer the right to use project images, data, and information for its own marketing and communications purposes. Both parties are typically subject to an overarching obligation to avoid misleading or inaccurate environmental claims in their public statements, thereby providing a framework that protects each party from reputational harm while allowing buyers to credibly highlight their climate contributions.

Increased Relevance of Communications

Public communications in the carbon market carry heightened significance because they can amplify reputational risks. A buyer who presents or frames purchased CDR credits in a misleading manner, whether by overstating their climate impact or using them in contexts for which they were not intended, may inadvertently harm the supplier. Such misrepresentations can result in accusations of greenwashing, reputational damage, or even regulatory scrutiny, with suppliers drawn into controversies beyond their control.

Key Questions for Risk Allocation

- **Can a supplier be harmed by a buyer's misuse of CDR credits?** If a buyer exaggerates claims, employs CDR credits in misleading marketing, or uses them in a way that contravenes regulatory guidelines, the supplier's reputation and credibility may suffer. This risk is especially acute for early-stage CDR companies that depend on maintaining trust with investors, regulators, and local stakeholders.
- **What remedies should be available?** To mitigate these risks, agreements may include supplier consent rights over specific uses of project information, requirements for corrective disclosures in the event of misstatements, indemnification for damages arising from buyer misuse, or,

in severe cases, termination rights that allow the supplier to disengage from the relationship.

- **Should buyers provide notice of material context changes?** Yes. Buyers should be required to notify suppliers if the intended use of CDR credits changes in a material way. For example, if CDR credits are shifted from voluntary offsetting claims to compliance obligations, or if they are deployed in connection with contested or high-risk claims frameworks. Early notice enables suppliers to assess whether they are comfortable with the new context and to exercise any applicable contractual rights. The current version of OSCAR omits this point.

Balancing Reputation and Marketing Needs

Reputation is often one of the buyer's chief motivations for purchasing CDR credits, as companies seek to demonstrate climate leadership and corporate responsibility. This section of OSCAR is therefore designed to strike a careful balance. On the one hand, it protects against unauthorized publicity and prevents buyers from making claims that could expose suppliers to reputational or legal risks. On the other hand, it grants buyers sufficient rights to communicate their involvement in carbon removal projects, enabling them to tell credible, standards-compliant climate stories. By balancing the supplier's need for confidentiality with the buyer's marketing objectives, OSCAR creates a framework that safeguards both parties while supporting transparent and responsible market growth.

(i) Article X: Environmental, Safety, and Reputational Issues

Suppliers must notify buyers promptly of environmental incidents, regulatory actions, local opposition, or press that could damage their reputation.

Comments:

A CDR credit that is technically valid but reputationally toxic (*e.g.*, linked to human rights abuses) is worthless to a corporate buyer. This section obliges early disclosure, allowing buyers to manage risk proactively. It reflects a lesson learned from past controversies around forestry and offset projects.

(j) Article XI: Events of Default, Termination, Remedies

Article XI contains extensive remedies in an event of default. The remedy section is one of the centerpieces of OSCAR (as in any Offtake Agreement) and deserves to be described and analyzed in more detail:

a. Events of Default – what actually triggers "default"?

The clause defines a closed list of Events of Default (EoDs). This is a trigger menu; nothing else is an EoD unless expressly stated. The list includes, in substance:

Buyer Payment Failure: Failure to pay undisputed amounts when due, with a 30-day cure after notice. **Purpose**: Protects Supplier's cash flow while giving Buyer a fair cure window and the ability to withhold good-faith disputed sums.
Supplier COD Failure: Failure to achieve Commercial Operation by the Commercial Operations Target Date, with no automatic cure right (unless parties agree otherwise). **Purpose**: Discipline on timely project delivery; recognizes that prolonged pre-COD delay can undermine Buyer's climate targets and budgets.
Supplier Contract Quantity Failure: Failure to Deliver the agreed Contract Quantity, if not cured through the shortfall mechanisms (Generation Shortfall or Delivery Shortfall make-ups). **Purpose**: Links performance risk to the earlier shortfall provisions so the Supplier does not immediately default; default only arises if Supplier fails to use the agreed cure tools.
Generation Shortfall Failure: If cumulative Generation Shortfalls > [25]% of Total Contract Quantity and Supplier fails to Deliver the Generation Shortfall Makeup (and no further cure). **Purpose**: Caps Buyer's exposure to structurally underperforming projects; past a certain underperformance threshold, Buyer gets a clean default/exit right.
Delivery Shortfall Failure (similar idea): If cumulative Delivery Shortfalls > [25]% of Total Contract Quantity and Supplier fails to Deliver the Delivery Shortfall Makeup (no cure beyond that). **Purpose**: Disciplines Supplier on logistics/delivery performance, not only project generation.
Supplier Breach (other than COD/volume): Any material breach (other than the specifically carved-out failures) that is curable and not cured within 30 days after notice.

Purpose: Catch-all for serious issues (*e.g.*, MRV, environmental obligations, exclusivity/double counting, confidentiality) so they are enforceable but with a standard cure concept.
Buyer Breach (non-payment): Parallel material breach standard for Buyer, with 30-day cure. **Purpose**: Preserves neutrality; Supplier also gets protection for substantive Buyer defaults (*e.g.*, misuse of Credits, confidentiality, sanctions, etc.).
Insolvency Event (either Party): Receivership, bankruptcy, assignment for creditors, etc., not dismissed within 60 days. **Purpose**: Classic credit risk protection; allows the solvent party to close out rather than continue delivering or prepaying into an insolvency.

Why this structure matters

It's tiered: not every hiccup is an EoD, and many are routed first through shortfall or cure mechanisms.

It splits performance risk (Supplier) and payment/credit risk (Buyer) in a way that's intelligible to financiers and internal risk teams.

By referencing the shortfall provisions, it ensures alignment between "underperformance mechanics" and "true default".

b. Financing Party Accommodation – cure rights for lenders

OSCAR requires Supplier to identify any Supplier Lender and allows notice of default to be shared with that lender; the lender may exercise cure rights on Supplier's behalf.

Why it's important

It supports project financeability: lenders expect a chance to step in or cure before a valuable offtake is terminated.

Neutral in tone: Buyer is not forced to wait indefinitely, but the mechanism reassures lenders and can improve bankability and pricing for both sides.

c. Termination Mechanism – how an EoD converts into an exit

Once an Event of Default occurs and is continuing:

The non-defaulting party (NDP) may designate an Early Termination Date.

From that date, future obligations (*i.e.*, those due on or after that date) are terminated, subject to the remedy / settlement mechanics that follow.

Why it's important

Creates a clear, elective mechanism (not automatic) to end OSCAR.

This is especially relevant for:

- Buyers facing persistent non-delivery or integrity issues.
- Suppliers facing non-payment or Buyer insolvency.

The elective nature gives flexibility: the NDP can delay termination if there is a realistic cure or commercial resolution.

d. Remedies – calibrated responses for different defaults

OSCAR then maps specific consequences to specific EoDs. These are framed as "exclusive rights and remedies" for that default type, which:

- Enhances predictability.
- Limits argument about additional or overlapping claims (subject to any carve-outs like fraud).

Key remedy buckets:

(a) Payment Failure (Buyer)

- If Supplier resells the unpurchased Credits: Buyer pays the price difference if the contract price > resale price.
- If Supplier does not resell: Buyer pays the Unit Price × undelivered Credits.

This is basically a liquidated expectation damages construct that protects Supplier's benefit of the bargain while avoiding full-blown damages litigation over lost opportunities.

(b) Contract Quantity Failure / Generation & Delivery Shortfall Failures (Supplier)

Supplier must either:

- Provide Replacement Credits acceptable to Buyer (same tech/standard; Buyer's discretion constrained by reasonableness), or
- Pay Buyer the difference between Unit Price and prevailing spot price for equivalent Replacement Credits, where spot price > Unit Price.

Economic logic:

- Buyer is "made whole" relative to what it would cost to source equivalent CDR elsewhere.
- Supplier is incentivized to cure in-kind (Replacement Credits) where possible; monetary remedy kicks in if not.

(c) Breach of Validity / Integrity of Credits

If Credits are invalid, misrepresented, non-compliant, encumbered, or cause recapture-related issues:

Supplier must:

- Offer acceptable Replacement Credits, or
- Refund the Unit Price plus related fines/penalties.

This is the core integrity & reputational risk safeguard:

- Protects Buyer if the Credits don't actually represent durable removals as promised.
- Links to MRV and standard compliance, which is crucial in CDR, where scientific/regulatory scrutiny is intense.

(d) Residual Termination Payment

For breaches that are not covered by the specific buckets (excluding Insolvency Events), the Non-Defaulting Party:

Calculates a Termination Payment based on its net loss. If positive: payable by Defaulting Party; if negative: deemed zero.

This functions as a catch-all economic close-out: Ensures no "remedy gaps" while still limiting gamesmanship (one-way floor at zero).

e. No-Fault Termination Events – structural safety valves

Separate from EoDs, OSCAR defines "No-Fault Termination Events" where performance becomes commercially or legally unsustainable without breach, *e.g.*:

- Long-running Force Majeure or Change in Law (12+ months of inability to perform).
- Significant Verification & Registry Cost increase (≥ 30% price impact).
- Major Generation Shortfall > 25% Total Contract Quantity (structural underperformance).
- Failure to reach COD by the Target Date due to circumstances outside both Parties' control.

On a No-Fault Termination:

- Either Party may terminate on notice. Future obligations fall away. Accrued rights/obligations remain.

Why this is important

- Introduces an orderly off-ramp where neither side is "at fault" but the deal no longer works (economically, physically, or legally)
- Distinguishes commercial frustration scenarios from wrongful non-performance—helpful for relationships, reputation, and internal governance.

f. Force Majeure & Change in Law – suspension, not instant breach

The Force Majeure / Change in Law provisions: Require prompt notice, updates, and mitigation efforts. Suspend obligations of both the affected Party and the counterparty to the same extent.

Do not immediately create an EoD; they interact with:

- No-Fault Termination Events (if long-lasting),
- Or, if misused or not properly notified/mitigated, potentially with general breach concepts.

Why this layering matters

- Avoids knee-jerk defaults for genuine external shocks (policy shifts, regulatory bans, etc.).
- Still ensures transparency and cooperation, plus a defined point (12 months) where Parties can walk away.

(k) Article XII and Article XIII: Indemnities and Liability Caps

Each Party will indemnify the other for third-party claims, damages, or losses arising from its own negligence, willful misconduct, or breach of this Agreement. Except for indemnities and intentional misconduct, neither Party is liable for indirect or consequential damages. Supplier's total liability is limited to the total contract value; Buyer's liability is limited to unpaid amounts due under this Agreement. The buyer indemnifies the supplier mainly for confidentiality breaches. Liability is capped, with exceptions for fraud and third-party indemnities.

Comments:

Indemnities allocate responsibility where risks are controllable. Caps ensure that liability remains insurable and does not deter project development. Buyers can rely on indemnities to recover losses if CDR credits are later invalidated.

(l) Article XIV and Article XV: Confidentiality, Intellectual Property

Each Party shall treat all non-public information received under this Agreement as confidential and use it only for purposes of performing this Agreement. Disclosure is permitted (a) as required by law, regulation, or court order, or (b) to affiliates, advisers, or investors bound by confidentiality obligations. Upon termination, each Party will return or destroy confidential materials unless retention is legally required.

Comments:

These provisions prevent misuse of proprietary data while allowing transparency where required by investors, regulators, or scientific partners. They reflect the tension between project confidentiality and market credibility.

Transparency is both a market requirement and a public legitimacy issue. Without access to credible data, buyers cannot justify claims, financiers cannot assess risk, and the public cannot trust outcomes. Yet many suppliers are reluctant to disclose data for competitive reasons.

Offtake Agreements can bridge this gap by specifying data-sharing obligations. Contracts may distinguish between proprietary data (kept confidential), operational data (shared with verifiers and registries), and summary data (made public). This tiered approach balances commercial confidentiality with the need for transparency.

Best practices include standardized reporting templates, alignment with FAIR (Findable, Accessible, Interoperable, Reusable) data principles, and explicit audit rights for buyers. By institutionalizing transparency, Offtake Agreements contribute to the efficiency and integrity of the broader CDR ecosystem.

(m) Article XVI: Insurance and Project Operations

Suppliers must maintain insurance (as per the schedules) and operate the project in line with industry best practice.

Comments:

Insurance requirements create a financial backstop. Operational covenants give buyers comfort that the project is responsibly managed — particularly important for novel carbon removal technologies.

Risk allocation is at the heart of Offtake Agreements. Because CDR credits are intangible and depend on future performance, both parties must carefully assess who bears which risks and under what circumstances.

Risks span technical performance, counterparty default, regulatory change, and social license. Offtake Agreements distribute these risks through conditions precedent, warranties, remedies, and insurance. The insurance market for CDR is still nascent, but products are emerging that cover reversal risk, warranty breaches, or delivery default.

Buyers and financiers increasingly conduct rigorous due diligence, evaluating technology readiness, business models, and supplier creditworthiness. Offtake

Agreements provide the framework within which these assessments are translated into binding commitments.

(n) Article XVII and Article XVIII: Sanctions, Anti-Bribery, and Anti-Corruption

Both parties commit to comply with international sanctions regimes and anti-corruption laws.

Comments:

Carbon projects often span multiple jurisdictions. These provisions prevent OSCAR from inadvertently funding sanctioned persons or corrupt practices. For corporate buyers, this is essential for compliance with internal ethics policies.

(o) Article XIX. Miscellaneous Provisions

These clauses address general legal and administrative matters (*e.g.*, governing law, jurisdiction, assignment, notices, amendments) that ensure OSCAR's enforceability and proper operation.

Comments:

While these provisions may look like 'boilerplate,' they play an important role in the overall enforceability and flexibility of OSCAR. Assignment provisions, for example, can facilitate project financing, and Section 19.04(b) may be particularly relevant in that context. The parties may also wish to consider replacing the jurisdiction clause with arbitration provisions to ensure a confidential, and potentially speedier or less expensive, forum for resolving disputes.

3. Additional Aspect: Conditions Precedent and Milestones

Before delivery obligations take effect, Offtake Agreements often include conditions precedent. These are the contractual prerequisites that must be satisfied to ensure that the CDR credits delivered will be of acceptable quality and integrity.

Conditions precedent may include:

- Successful registration of the project with an approved registry.
- Confirmation that the applicable protocol or protocol has been validated.
- Appointment of an independent verifier.
- Provision of project documents, including monitoring plans, risk assessments, and environmental impact reports.
- Evidence of insurance or buffer pool participation.

For early-stage projects, milestones may also be used. These tie specific project events, such as groundbreaking, construction completion, first injection of CO_2, or commercial operations date (COD) - to buyer obligations. In some cases, payment obligations are staged against these milestones, reducing buyer exposure to non-performance.

The combination of conditions precedent and milestones ensures that buyer commitments are not unconditional but rather are linked to demonstrable progress and compliance. This structure encourages discipline in project development while providing assurance to financiers that funds are disbursed only when key risks have been addressed.

OSCAR does not include conditions precedent because we are of the view that the default provisions in the event of a Generation Shortfall or Delivery Shortfall are sufficient as remedies in the event of a default in cases where payment is made upon or after delivery of the relevant CDR credits. Before the buyer agrees to make payment prior to the CDR project's commercial operations date, the buyer should conduct additional due diligence regarding the project's viability and may consider negotiating for such conditions precedent to payment.

4. Reversals and Leakages

The permanence of carbon storage is one of the most heavily scrutinized aspects of CDR credits. Buyers know that even if stored carbon is later released, they will not be left holding worthless claims. Suppliers, in turn, must demonstrate confidence in their durability claims.

One of the central risks in carbon removal transactions is the possibility of a "reversal," meaning that carbon dioxide that has been removed from the atmosphere is later released back, whether through natural events, human activity, or technological failure. Effective allocation of reversal risk is therefore a critical component of any offtake arrangement, and market practice is still evolving around the tools and mechanisms used to address it

Permanence refers to the duration for which carbon remains removed. Geological storage may offer permanence measured in millennia, while biological storage may last decades or centuries.

Leakage refers to unintended emissions increases outside the project boundary. For instance, afforestation in one area could displace agriculture to another, causing emissions elsewhere. Offtake Agreements may require suppliers to monitor leakage and to discount CDR credits accordingly.

Contractual Remedies vs. Insurance Solutions

Two principal approaches are used to manage reversal risk: contractual remedies embedded directly into the Offtake Agreement and third-party insurance products designed to cover specific risks.

- Contractual remedies. Offtake Agreements often include provisions such as buffer pools, replacement obligations, or volume discounts in the event of a reversal. For example, if a fire destroys a biochar storage site, the supplier may be required to provide replacement CDR credits from a reserve pool, discount the affected delivery, or draw on a buffer account established precisely for such contingencies. These mechanisms keep the remedy within the contractual relationship but may expose the supplier to liabilities that are difficult to manage if reversals occur at scale. OSCAR does not contain explicit language to this effect but requires the Supplier to operate the Project in accordance with the Carbon Standard Rules, including the Protocol (as such term is defined in OSCAR), which should provide for mechanisms relating to reversals and leakages.

- Insurance solutions. A growing set of insurance products is emerging to cover permanence risk, natural disasters, or even legal invalidation of CDR credits. Insurance may provide a more robust safety net for both parties, as it transfers risk to a third-party provider. Contracts can require suppliers to maintain evidence of insurance, allocate the cost of premiums between the buyer and the supplier, and define the rights of the buyer as a named beneficiary under the policy. However, insurance markets for carbon removals are still nascent, and coverage may be expensive or limited in scope.

Emerging Market Practice

There is no single standard at present. Some buyers are comfortable relying solely on contractual remedies, particularly when dealing with projects where buffer pools and replacement CDR credits are well established. Others, especially institutional buyers, lenders, or investors seeking "bankability, may insist on the additional layer of protection provided by third-party insurance.

A balanced approach may combine both strategies: embedding contractual remedies as a first line of protection (even if indirectly through reference to the applicable rules of the Carbon Standard and the Protocol, as defined in OSCAR) while layering insurance coverage for catastrophic or systemic risks. This hybrid model helps align buyer confidence with supplier feasibility, ensuring that reversal risk is managed in a commercially reasonable and credible manner without overburdening early-stage suppliers with obligations they cannot realistically fulfill.

5. Right of First Offer (*ROFO*) / Right of First Refusal (*ROFR*)

To secure continuity of supply, buyers sometimes negotiate preferential rights over future credits. A ROFO requires the supplier to offer additional CDR credits to the buyer before marketing them to third parties. A ROFR allows a buyer to match offers received from third parties. These rights can be valuable for buyers aiming to lock in long-term supply, but must be carefully drafted to avoid restricting the supplier's ability to scale or diversify its

customer base. Key elements include trigger events, timeframes for response, and equivalency of terms.

OSCAR does not contain a ROFO or ROFR provision. ROFO and ROFR should be used with caution. They are often difficult to accept for suppliers because it affects their ability to diversify their buyer portfolio and may have an adverse effect on the bankability of the Offtake Agreement.

6. Conclusion

OSCAR is designed to protect buyers. It addresses delivery risk, project integrity, reputational harm, and permanence concerns. For suppliers, while the obligations may appear heavy, agreeing to them signals credibility and makes projects more attractive to investors and corporate buyers.

Negotiations might eventually soften some provisions, but OSCAR provides a robust starting point and a teaching tool for understanding where the balance of risks lies in carbon removal transactions.

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THIS GUIDEBOOK IS EXPLANATORY ONLY. IT IS NOT LEGAL ADVICE AND SHOULD NOT BE RELIED UPON AS SUCH. PARTIES CONSIDERING ENTERING INTO CDR CREDIT TRANSACTIONS SHOULD CONSULT QUALIFIED LEGAL COUNSEL.

C. Implementation Guidance

1. Practical Steps for Negotiation

Negotiating an Offtake Agreement is not only a legal exercise but also a process of translating scientific uncertainty into commercial terms. Parties often approach the table with different priorities: buyers want credibility and risk protection, while suppliers want flexibility and financing certainty. A structured approach to negotiation helps bridge this gap.

First, the parties must align on objectives. Is the buyer aiming to secure removals for annual corporate sustainability reporting, to pilot a novel technology, or to lock in supply ahead of anticipated regulation? Is the supplier seeking early-stage support, project-finance bankability, or long-term market positioning? Clarity here determines the overall shape of the Offtake Agreement.

Second, the parties should define the scope of the Offtake Agreement. This includes the type of CDR credits covered, the project boundaries, the protocol to be applied, and the registry where CDR credits will be issued. The scope section should also clarify whether substitutions from other projects are permitted, and if so, under what conditions.

Third, the negotiation should cover financial mechanics. Pricing structures must balance certainty with flexibility. For example, a fixed-price agreement may be straightforward but could overcompensate suppliers if costs decline or undercompensate if they rise. Indexed or tiered models can align incentives but add complexity.

Fourth, parties should agree on risk allocation. This includes remedies for under-delivery, cure periods, termination rights, and insurance requirements. An effective risk allocation framework protects the buyer against non-performance without imposing unmanageable burdens on the supplier.

Finally, negotiations should address governance and change management. Because methodologies and standards are evolving rapidly, Offtake Agreements should include provisions for updating protocols, adapting to new registry requirements, and resolving disputes about interpretation. Without such clauses, Offtake Agreements risk becoming obsolete within a few years.

2. Electricity Use and Accounting

Many CDR technologies, particularly direct air capture (DAC), are highly electricity-intensive. The true climate value of these projects depends not only on the gross quantity of CO_2 captured but also on the carbon intensity of the electricity used to power the process. If a DAC plant operates primarily on coal-fired power, the net removals achieved may be substantially reduced or, in some cases, entirely negated. For this reason, electricity

sourcing has become a central factor in evaluating the credibility and effectiveness of CDR projects.

A Buyer's due diligence should address electricity consumption and associated emissions. Ambitious contractual frameworks may go further by mandating the use of renewable energy sources. This can be achieved through direct power purchase agreements (PPAs) with renewable energy providers or through renewable energy certificates that are matched in both time and location to the project's operational profile.

The emerging frontier in this area is 24/7 carbon-free electricity matching**,** where a project demonstrates that every hour of operation is powered by carbon-free sources located within the same grid region. Although still nascent and technically challenging, this approach is increasingly recognized as a gold standard for climate credibility. Buyers may view Offtake Agreements as an opportunity not only to procure high-quality removals but also to drive innovation in electricity sourcing, thereby linking carbon removal procurement with broader systemic decarbonization of the power grid.

Consideration of Other Project Inputs and Externalities

Electricity is not the only input that matters. Buyers are also beginning to scrutinize other critical resource dependencies and potential externalities:

- **Project inputs.** These include energy, biomass sourcing for bio-based projects, and water consumption. Each has implications for environmental sustainability and community acceptance.
- **Externalities.** Land use impacts, biodiversity trade-offs, and social effects (such as local community disruption or labor practices) must also be taken into account when evaluating overall project quality.
- **Life Cycle Assessment (LCA).** Comprehensive accounting of all inputs and outputs, from resource extraction to end-of-life, ensures that net climate benefits are real and verifiable. Aligning with ISO standards or equivalent frameworks, LCA methodologies may soon become a standard requirement imposed by buyers.

Implications for Drafting

Given these considerations, Offtake Agreements may need to go beyond merely confirming the issuance of CDR credits. They should include reporting obligations that require suppliers to disclose key inputs, resource dependencies, and externalities, backed by transparent methodologies. In doing so, Offtake Agreements strike a balance: they provide buyers with the confidence that removals are environmentally robust while ensuring that suppliers are not overburdened with obligations that exceed current technical or financial capacity.

3. Governance, Standards, and International Alignment

Offtake Agreements do not exist in a vacuum; rather, they form part of a wider ecosystem of standards, regulations, and evolving policy frameworks. For Offtake Agreements to be effective and durable, they must align with these broader governance structures, ensuring that CDR credits remain credible, transferable, and eligible across both voluntary and compliance markets.

International Frameworks

At the international level, the Paris Agreement's Article 6 sets the foundation for cross-border crediting. It establishes the rules for the international transfer of emission reductions and removals between countries. A key principle is the avoidance of double counting, achieved through "corresponding adjustments" made to national greenhouse gas inventories. For Offtake Agreements that involve cross-border projects, it is critical to reference Article 6 compliance and to specify how and when corresponding adjustments will be secured. Without these provisions, buyers risk holding CDR credits that may later be deemed ineligible for compliance or international reporting purposes.

Voluntary Market Standards

On the voluntary side, initiatives such as the Integrity Council for the Voluntary Carbon Market (IC-VCM) and its Core Carbon Principles (CCPs) are establishing benchmarks for what constitutes a "high-quality" CDR credit. Incorporating CCP-aligned methodologies or standards into Offtake Agreements signals to investors, customers, and regulators that purchased CDR credits meet rigorous thresholds for environmental integrity. This not only enhances buyer confidence but also helps suppliers demonstrate alignment with emerging global best practices.

National and Regional Policies

National frameworks are also shaping the future of carbon markets. The European Union's Carbon Removal Certification Framework (CRCF), for example, is in the process of establishing certification rules that will define eligibility for CDR credits within the EU. Similar initiatives are underway in Japan and Singapore. By anticipating such frameworks, Offtake Agreements can be structured to remain valid and transferable even as regulatory landscapes evolve. This approach effectively "future-proofs" the contracts, ensuring that CDR credits purchased today retain their eligibility tomorrow.

Convergence of Markets

- **Voluntary ↔ Compliance markets.** Over time, voluntary and compliance markets are likely to converge, though compliance markets such as the EU Emissions Trading System (ETS) or Japan's GX League may initially accept only a limited set of CDR categories.

- **Interoperability.** With the rise of registry linkages and meta-registries—such as the UNFCCC's Paris Agreement Crediting Mechanism or the EU's CRCF—legal agreements will need to recognize and accommodate multiple systems of record. This ensures that CDR credits can move seamlessly across registries without losing their integrity or value.

Future-Proofing Contracts

Drafting techniques can help contracts remain adaptable in the face of regulatory change without making them overly rigid:

- Agreements may allow for the substitution of CDR credits if a chosen standard migrates into a compliance regime or ceases to be recognized in the voluntary market.

- Standards can be defined with reference to the time of delivery, rather than the time of contract signing, to ensure flexibility as frameworks evolve.

Worked Examples

- A **biochar supplier in the EU** may issue CDR credits under the CRCF that are eligible for compliance within the EU but not yet endorsed by the IC-VCM. Buyers must understand this dual status and draft agreements accordingly.

- A **DAC supplier in Japan** may issue CDR credits that qualify under the GX League for domestic compliance but are not recognized under U.S. SEC disclosure frameworks. Here, contracts must address the different regulatory treatment across jurisdictions.

Key Lesson

Contracts should be drafted to accommodate parallel applicability in both compliance and voluntary markets while leaving space for the rapid evolution of market infrastructure. By explicitly anticipating regulatory convergence, interoperability challenges, and shifting recognition standards, Offtake Agreements can provide both buyers and suppliers with certainty today while preserving flexibility for tomorrow.

D. Lessons Learned and Future Outlook

1. The Importance of Standardization

One of the clearest lessons from early Offtake Agreements is the need for standardization. Each bespoke negotiation consumes time and legal resources, creating a drag on market growth. Standard terms for delivery, remedies, and verification would reduce costs, accelerate deal flow, and increase comparability.

2. The Role of Transparency

Another lesson is the importance of transparency. Buyers, investors, and the public all demand credible evidence that removals are real and durable. Offtake Agreements that mandate robust data disclosure and independent verification build trust and legitimacy.

3. Balancing Flexibility and Certainty

Offtake Agreements highlight the need to balance flexibility and certainty. Early-stage technologies require flexibility to account for performance variability; buyers need certainty for their climate commitments. Well-drafted Offtake Agreements strike this balance, providing enough flexibility for innovation while ensuring enough certainty for credibility.

4. Future Directions

Looking ahead, Offtake Agreements will continue to evolve along several dimensions:

- Integration with compliance markets: As governments adopt CDR targets, Offtake Agreements may become eligible for compliance purposes, increasing their importance.
- Financial innovation: Instruments like securitization of Offtake Agreements, CDR credit insurance, and project bonds could bring new capital into the market.
- Methodological convergence: As protocols mature, Offtake Agreements may reference fewer, more standardized methodologies, simplifying negotiation.

Global expansion: While many Offtake Agreements are currently centered in North America and Europe, projects in Latin America, Africa, and Asia are emerging. Offtake Agreements will need to adapt to diverse legal and regulatory contexts.

The trajectory of the CDR market points toward convergence - both of standards and methodologies, and of voluntary and compliance markets. At the same time,

interoperability of registries is set to become a defining feature of the next phase of market development.

Offtake Agreements will need to anticipate this evolving "parallel world" of overlapping frameworks. The challenge is to future-proof contracts, providing flexibility to adapt to changing regimes, without introducing undue legal complexity that hampers deal-making.

One way forward may be to illustrate the issues with worked examples, contrasting different CDR methods. For example, a contract for biochar might have different considerations than one for direct air capture. Similarly, compliance markets with limited CDR access, such as Japan's emissions trading scheme, may offer useful test cases for understanding how contracts can be structured in anticipation of limited, conditional, or evolving recognition of CDR credits.

Appendices

Appendix A: Glossary of Key Terms

A well-drafted Offtake Agreement must rest on a shared vocabulary. The following glossary provides neutral definitions of terms that frequently appear in negotiations and protocols.

Additionality: The principle that a project's removals would not have occurred in the absence of the Offtake Agreement or equivalent incentive.

Baseline: The counterfactual scenario of emissions that would have occurred without the project.

Buffer Pool: A reserve of CDR credits set aside to cover potential future reversals, typically managed by a registry.

Carbon Removal Credit: A unit representing one metric ton of CO_2 removed from the atmosphere and durably stored.

Carbon Removal Offtake Agreement: A contract between a buyer and supplier for the future purchase of CDR credits.

Carbon Removal Unit (CRU): Another term used by some registries for a verified CDR credit of one metric ton of removal.

Corresponding Adjustment: A national accounting mechanism under the Paris Agreement to prevent double-counting when CDR credits are transferred across borders.

Fungibility: The degree to which CDR credits are interchangeable across projects, pathways, or registries.

Leakage: Emissions increase outside the project boundary caused by project activities.

Life-Cycle Assessment (LCA): A method for quantifying net emissions by including upstream, operational, and downstream impacts.

Monitoring, Reporting, and Verification (MRV): The system for tracking project performance and confirming removals.

Permanence: The expected duration that the removed CO_2 will remain stored.

Registry: An independent platform that issues, tracks, and retires CDR credits.

Remedies: Contractual responses to non-performance, such as substitution or liquidated damages.

Right of First Offer (ROFO) / Right of First Refusal (ROFR): Buyer's preferential rights to future CDR credits from a supplier.

Verification: Independent confirmation by a third party that reported removals meet the protocol's requirements.

Appendix B: Offtake Agreement Negotiation Checklist

This checklist provides a neutral reference tool to ensure key provisions are considered during drafting and negotiation.

1. **Commercial Terms**
   (a) Defined project scope and pathway.
   (b) Total contracted volume and annual delivery schedule.
   (c) Pricing model (fixed, indexed, cost-plus, performance-based).
   (d) Ramp-up provisions for early-stage projects.

2. **Conditions Precedent and Milestones**
   (a) Project registration with an approved registry.
   (b) Validation of protocol and baseline.
   (c) Appointment of accredited verifier.
   (d) Evidence of insurance or buffer pool participation.
   (e) Construction, commissioning, and COD milestones tied to obligations.

3. **MRV Requirements**
   (a) Clear boundaries and baseline definition.
   (b) Measurement techniques and uncertainty treatment.
   (c) Frequency and scope of reporting.
   (d) Independent verification by an accredited body.

4. **Registry Operations**
   (a) Designated registry and acceptable alternatives.
   (b) Procedures for issuance, transfer, and retirement.
   (c) Double-counting safeguards and corresponding adjustments.

5. **Risk Allocation**
   (a) Remedies for delivery shortfalls (cure periods, substitution, damages).
   (b) Force majeure definition and mitigation obligations.
   (c) Termination rights and step-in provisions.

6. **Governance and Transparency**
   (a) Data disclosure requirements (tiered public/private).
   (b) Dispute resolution mechanism (arbitration, courts, governing law).
   (c) Change management process for evolving methodologies.

Appendix C: Resources

Protocols/Standards reviewed for Public Data Sharing practices

Protocol, Standard, or Guideline	Issuing Body	CDR Pathways Included	Last Updated
Biogenic carbon capture and storage	Isometric	BECCS	September 30, 2024
Subsurface Biomass Carbon Removal and Storage	Isometric	BiCRS	February 4, 2025
Biomass Geological Storage	Isometric	BiCRS	February 4, 2025
Bio-oil Geological Storage	Isometric	BiCRS	February 4, 2025
Biochar Production and Storage	Isometric	BiCRS	April 25, 2025
Enhanced weathering in agriculture	Isometric	Enhanced Mineralization	February 4, 2025
Open System Ex-situ mineralization	Isometric	Enhanced Mineralization	May 1, 2025
Direct Air Capture	Isometric	DACS	May 1, 2025
Biochar	Puro	BiCRS	June 2025
Carbonated Materials	Puro	Enhanced Mineralization	May 2023
Enhanced Rock Weathering	Puro	Enhanced Mineralization	October 2024
Terrestrial Storage of Biomass	Puro	BiCRS	November 2023
VM0043 CO_2 Utilization in Concrete Production	Verra	Enhanced Mineralization	December 23, 2024
VM0044 Biochar Utilization in Soil and non-Soil Applications	Verra	BiCRS	June 27, 2025
VMD0059 CO_2 Capture from Bioenergy, v1.0	Verra	BECCS	April 22, 2025
Direct Air Carbon Dioxide Capture and Geological Storage	Government of Canada	DACS	January 2025
Guidelines for Carbon Sink Certification for artisan biochar production	Carbon Standards International	BiCRS	June 15, 2024
US and Canada Biochar Protocol	Climate Action Reserve	BiCRS	March 19, 2024
Carbon mineralization using reactive mineral waste	Gold Standard	Enhanced Mineralization	May 28, 2025
Biomass Fermentation with Carbon Capture and Geologic Storage	Gold Standard	BECCS	May 28, 2025

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