

Understanding the True Cost of a High-Quality Carbon Project

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Incentivising investment in real climate action

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Abbreviations and Definitions

Term	Definition
ARR	Afforestation, Reforestation and Revegetation. A nature-based carbon project type involving the establishment of new forest cover on previously unforested or degraded land.
CapEx	Capital Expenditure. Upfront investment costs incurred prior to or during the early stages of a carbon project, including land acquisition, site preparation, validation, and first verification.
CCP	Core Carbon Principles. The market-wide integrity threshold established by the ICVCM in 2023, setting minimum requirements for high-quality carbon credits across ten principles.
CDR	Carbon Dioxide Removal. Engineered or nature-based approaches that remove CO ₂ from the atmosphere, including biochar, enhanced rock weathering, and direct air capture.
CIWP	Continuous Improvement Work Programme. The ICVCM's structured process for refining and strengthening the Assessment Framework and CCP criteria over time.
DFI	Development Finance Institution. Publicly backed financial institutions that provide financing for private sector development in developing countries, typically at concessional or below-market rates.
EMDE	Emerging Markets and Developing Economies. A classification used by institutions such as the IEA and IMF to distinguish developing-country markets from advanced economies, typically associated with higher costs of capital and greater financing risk.
ERW	Enhanced Rock Weathering. A carbon dioxide removal approach involving the application of crushed silicate rocks to agricultural land to accelerate natural weathering processes and sequester carbon.
FPIC	Free, Prior and Informed Consent. The principle that Indigenous Peoples and local communities have the right to give or withhold consent to projects affecting their lands, territories, and resources, before those projects commence.
IFM	Improved Forest Management. A nature-based carbon project type that modifies forest management practices on existing forest land to increase carbon sequestration relative to a business-as-usual baseline.
ICVCM	Integrity Council for the Voluntary Carbon Market. The independent governance body responsible for setting and maintaining the Core Carbon Principles and Assessment Framework for the voluntary carbon market.
IPLC	Indigenous Peoples and Local Communities. A collective term used in carbon market governance to refer to rights-holders and resource users whose lands, territories, and livelihoods intersect with carbon project activities.
IRR	Internal Rate of Return. A financial metric used to estimate the profitability of an investment, representing the discount rate at which the net present value of cash flows equals zero.
LFM	Landfill Gas Management. A technology-based carbon project type that captures methane emissions from landfill sites for energy generation or destruction.
MDB	Multilateral Development Bank. International financial institutions owned by member governments that provide financing and technical assistance for development projects, including the World Bank Group and regional development banks.
MRV	Measurement, Reporting and Verification. The process by which carbon projects quantify, report, and independently verify their greenhouse gas emission reductions or removals.
NBS	Nature-Based Solutions. Carbon project approaches that work with natural ecosystems to sequester carbon or reduce emissions, including ARR, REDD+, IFM, and mangrove restoration.
NPV	Net Present Value. A financial metric that calculates the current value of a future stream of cash flows, discounted at a specified rate of return.

Term	Definition
OECD	Organisation for Economic Co-operation and Development. An intergovernmental organisation whose members are primarily high-income countries; frequently cited as a source of data and analysis on climate finance and investment.
OpEx	Operational Expenditure. Ongoing annual costs of running a carbon project after initial establishment, including monitoring, verification, community engagement, and project management.
PDD	Project Design Document. The primary public disclosure document filed by a carbon project developer with a crediting standard, setting out the project's methodology, additionality case, safeguarding arrangements, and benefit-sharing plan.
PoA	Programme of Activities. A carbon crediting structure that allows multiple smaller project activities to be registered and managed under a single umbrella framework.
REDD+	Reducing Emissions from Deforestation and Forest Degradation. A nature-based carbon project type that generates credits by protecting existing forest from deforestation or degradation relative to a counterfactual baseline.
TBS	Technology-Based Solutions. Carbon project approaches that use engineered technologies to reduce emissions or remove carbon, including biochar, cookstoves, landfill gas management, and enhanced rock weathering.
VCM	Voluntary Carbon Market. The market in which carbon credits are purchased on a voluntary basis by companies and individuals seeking to offset their greenhouse gas emissions.
VVB	Validation and Verification Body. An independent third-party organisation accredited by a crediting standard to validate project designs and verify reported emission reductions.
WRI	World Resources Institute. A global research organisation working on environment and development issues, frequently cited as a source of analysis on nature-based solutions finance and carbon market governance.

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Executive Summary

The voluntary carbon market has grown rapidly in both scale and ambition, yet one of its most fundamental questions has remained unanswered: what does it actually cost to deliver a high-integrity carbon credit? This report, produced by Sylvera through collaboration with the Integrity Council for the Voluntary Carbon Market (ICVCM) and Sylvera, provides a qualitative and quantitative analysis of cost data across multiple project types to address this question.

Cost benchmarks reveal significant divergence across project types – driven primarily by differences in capital structure. Drawing on survey responses from carbon project developers across four project types, afforestation, reforestation and revegetation (ARR), biochar, reducing emissions from deforestation and forest degradation (REDD+), and regenerative agriculture, the report finds substantial variation in median levelized cost per credit. Biochar carries the highest median at \$185 levelized cost per credit, reflecting high capital intensity, while ARR follows at \$36, with costs materially sensitive to financing assumptions given its front-loaded capital structure. REDD+ shows significantly lower medians of \$6, though the small sample size means this figure should be treated as directional rather than definitive. Despite these absolute differences, median capital expenditure (CapEx) as a proportion of total cost is broadly consistent across biochar, regenerative agriculture, and REDD+ at roughly 18–20%, with ARR a notable exception at 71%, reflecting the significant upfront investment required before any credits are issued. The higher cost per credit signals fundamental differences in financing needs and a greater sensitivity to cost of capital.

Cost of capital is a critical source of cost uncertainty. Financing conditions drive high variability in project economics, a dynamic that is most acute for nature-based solutions operating in emerging markets and developing economies. ARR projects are most exposed: a shift from a 10% to a 15% discount rate increases the median levelized cost per credit by c.37%, compared to just c.6% for biochar, a difference explained by ARR's significantly higher CapEx ratio and the consequent sensitivity of its economics to the cost at which that upfront capital is secured. Research shows that community-led and Indigenous-led projects, and those operating in frontier geographies, face the steepest financing cost premiums, compounded by limited track records, unclear carbon rights frameworks, and constrained access to institutional capital. Generally, blended finance instruments offer a credible mechanism for reducing these barriers, but deployment remains limited in scale.

Secondary revenues vary widely and carry implications for additionality. Non-carbon income ranges from 0% to 50% of total revenue for ARR projects, and 0% to 75% for biochar, reflecting differences in local market conditions and developer strategy. Where secondary revenues are substantial, they bear directly on financial additionality: if non-carbon income already makes a project viable, the case for carbon revenue as an enabling condition weakens considerably. Regional market maturity is a significant determinant of secondary revenue strategy; for example, commercial ARR projects depend on the depth and accessibility of local timber markets, while biochar producers are similarly constrained by the maturity of physical biochar demand in their operating geography.

Benefit-sharing is characterized by wide variation and limited transparency. Revenue sharing with communities ranges from 22% to 90% of total project costs across the sample – a spread that reflects definitional inconsistency as much as genuine variation in developer practice. Without a standardized taxonomy, cash transfers, local employment, infrastructure investment, and in-kind services are aggregated under the same metric, rendering cross-project comparison unreliable. The form, recipient, timing, conditionality, and governance of benefit flows are rarely disclosed, and data disaggregated by gender, youth, or marginalised sub-groups are lacking. Case studies from British Columbia, Indonesia, and Brazil's Acre state illustrate how national and subnational policy frameworks shape what communities actually receive.

The report makes a series of connected recommendations. Improving benefit-sharing transparency requires mandatory categorization of benefits; minimum floor ratios for direct monetary benefit shares on community-titled land; cost disclosure on a per-tonne annualised basis; and community-endorsed verification as a formal condition of social integrity approval.

A deeper understanding of credit costs requires a practical framework for collecting cost data through direct developer engagement, public documents review, and the application of third-party benchmarks as reference ranges rather than precise comparators.

Embedding cost transparency in market infrastructure will provide the empirical foundation for evidence-based price floors, procurement standards, and financing support mechanisms, targeted at the project types and geographies where integrity costs are highest and capital access most constrained.

Scope and structure of this report. This report focuses exclusively on the cost of delivering carbon credits – the capital and operational expenditure required to develop, validate, and operate a carbon project. It does not address carbon credit prices, which are determined by market conditions, buyer demand, and a range of factors beyond project economics. No inference about market pricing should be drawn from the cost figures presented here.

The Results section presents headline cost findings by project type, including CapEx/OpEx splits, cost-of-capital sensitivity, and the scale-cost relationship. The Discussion section examines the structural drivers of cost uncertainty and the benefit-sharing landscape in detail. The Implications section provides practical guidance for buyers, investors, developers, and policymakers on gathering, interpreting, and applying cost structure data. Readers primarily interested in benefit-sharing should read the Benefit-Sharing and Community Impact subsection of the Discussion alongside the Evaluating Benefit-Sharing Quality subsection of the Implications.

Introduction

Background

The lack of data transparency and common disclosure frameworks for understanding and assessing project cost structures in carbon markets undermines market functioning and limits the evidence base for effective policy design.

The voluntary carbon market encompasses a wide range of project types and geographies, producing significant variation in credit costs. Projects spanning afforestation, REDD+, biochar, and regenerative agriculture operate across distinct regulatory environments, financing landscapes, and social governance standards, each of which shapes the structural economics of credit generation. The cost of producing a high-integrity credit varies accordingly: by capital intensity, the lag between investment and issuance, access to affordable financing, and the rigour of social and environmental standards applied. Yet this underlying cost information is rarely visible to market participants. Buyers cannot determine whether a quoted price reflects genuine delivery costs or a quality shortfall. Developers cannot benchmark against sector norms. Policymakers lack the empirical grounding to design evidence-based price floors. Besides that, project-hosting communities, typically the last to access financial detail, cannot assess whether benefit-sharing terms represent a fair share of project economics.

Structural barriers contribute to cost and benefit-sharing data to be largely absent. Reliable cost data has been largely absent from the voluntary carbon market due to the following structural issues. Firstly, most developers treat project economics as commercially sensitive, and the primary public record, project design documents, monitoring reports, and registry filings, disclose methodology and co-benefits but rarely the financial architecture underlying a project: development costs, verification expenditure, or the proportion of gross carbon revenue reaching host communities. Besides that, this gap is compounded by definitional inconsistency: there is no standardized taxonomy for carbon project costs, and capital expenditure, operational costs, community benefits, and registration fees are accounted for differently across developers, making cross-project comparison unreliable. Benefit-sharing data presents the same problem, cash transfers, local employment, infrastructure investment, and in-kind services are rarely disaggregated, and where aggregate figures appear, their composition is opaque. Lastly, mandatory disclosure requirements are absent. Survey-based data collection, as used in this research, offers a practical route to filling the gap, but requires sustained relational engagement and robust data governance to secure information developers regard as sensitive.

Integrity expectations and CCP eligibility make cost transparency an urgent practical need. The introduction of the ICVCM's Core Carbon Principles (CCP) in 2023 has made cost transparency a practical pricing imperative [1]. The CCP Assessment Framework, particularly Criterion 7.6 on Indigenous Peoples and local communities, establishes, for the first time at market-wide scale, that meaningful community engagement, benefit-sharing, and accessible grievance mechanisms are conditions of high-integrity credit approval. As CCP eligibility is increasingly referenced in corporate procurement policies, due

diligence frameworks, and net zero commitments, the cost of delivering a compliant credit becomes a pricing floor below which no project is commercially viable. Understanding that floor, and how it varies by project type and geography, is therefore essential for setting appropriate pricing expectations, designing procurement standards, and directing capital toward projects delivering genuine climate and social outcomes. Without this information, the market risks rewarding lower-cost projects that achieve eligibility through minimal compliance rather than robust social and environmental integrity, and disadvantage developers, including many community-led and Indigenous-led projects, whose genuine commitment to social integrity generates higher delivery costs. More broadly, cost structures and benefit-sharing can address wider criticisms that carbon market revenues flow disproportionately to intermediaries rather than to the communities on the ground [3].

Indigenous Peoples and local communities (IPLCs) are not incidental participants in the voluntary carbon market, they are its ecological and institutional foundation. Indigenous Peoples manage or hold tenure rights over approximately one quarter of the world's land surface, intersecting with around 40% of protected areas and ecologically intact landscapes [2]. The forests, wetlands, grasslands, and coastal ecosystems that anchor nature-based solutions are, in a significant proportion of cases, territories that communities have stewarded for generations, and whose continued integrity depends on the continuation of that stewardship. The ICVCM's CCP Assessment Framework recognizes this explicitly through its social safeguards provisions, and the IPLC Forum, established in 2023, has identified benefit-sharing as one of five strategic priorities in its Carbon Markets Engagement Strategy. The Forum's engagement reflects a wider reframing: communities are rights-holders and potential project leaders whose free, prior, and informed consent is a precondition of project legitimacy, not a procedural courtesy. The evidence in this report suggests the market has significant distance to travel. Benefit-sharing arrangements vary widely as a proportion of total project costs, with limited consistency in how benefits are defined, disaggregated, or verified. The governance architecture through which benefits are managed, fund custody, allocation decision-making, oversight mechanisms, is rarely reported. Besides that, community readiness, the financial infrastructure and institutional capacity required to receive and manage funds effectively, remains an underappreciated determinant of whether benefit-sharing agreements produce genuine empowerment or remain commitments on paper.

About the collaboration

The ICVCM–Sylvera collaboration that underpins this research brings together two organisations with complementary roles in the voluntary carbon market. The ICVCM is the independent governance body responsible for setting and maintaining the Core Carbon Principles, the market-wide integrity threshold that defines what constitutes a high-quality carbon credit. As the standard-setter for supply-side integrity, the ICVCM has both the mandate and the responsibility to understand whether the market is delivering on its core promises: genuine emission reductions, robust social safeguards, and transparent governance. Sylvera is the leading independent carbon credit ratings and data provider, with a unique commercial

position that enables access to project-level financial and operational data across a wide range of project types and geographies.

This research reflects the complementary nature of those positions. The ICVCM's continuous improvement mandate requires an empirical grounding in what projects actually cost to deliver, and what communities actually receive from them, information that cannot be derived from methodology review or registry filings alone. Sylvera's technical relationships with project developers, and its established reputation for rigorous independent analysis, provide the access and credibility needed to collect commercially sensitive data that would not be disclosed in response to a regulatory or civil society request alone. Together, the collaboration is positioned to generate findings that are grounded in market reality, independent of any single developer's commercial interests, and aligned with the ICVCM's mandate to continuously raise the bar for integrity.

Objective

This research was designed around four interconnected objectives.

Enhancing transparency in carbon project cost structures. Despite the voluntary carbon market's rapid growth, reliable data on what it actually costs to develop, register, monitor, and verify a high-integrity carbon credit remains largely absent from public discourse. This report illuminates the full cost structure of carbon project development across diverse project types and geographies, providing an empirical foundation for appropriate pricing expectations for credits using CCP-eligible methodologies. Particular attention is given to benefit and revenue-sharing components, which represent a significant but poorly understood portion of total project costs and are rarely disaggregated in existing project documentation.

Informing policy and market design. Governments, buyers, crediting standards, integrity initiatives, and Indigenous Peoples and local communities each face decisions that depend, in part, on a realistic understanding of carbon project economics. Without reliable cost data, these actors are working with incomplete information: buyers cannot assess whether pricing reflects genuine delivery costs; crediting standards cannot design requirements that are ambitious without being unworkable; governments cannot calibrate support mechanisms or minimum price floors on an evidence-based foundation; and IPLCs cannot assess whether benefit-sharing offers reflect a fair share of project economics. This report provides foundational data to support each of these actors in planning for the true costs of mitigation, optimising environmental and social impact, and identifying inefficiencies in how costs and revenues are distributed across the project delivery chain.

Increasing disclosure of benefit-sharing arrangements. The ICVCM's Assessment Framework criterion 7.9 requires projects to demonstrate transparent and equitable benefit-sharing with affected communities, yet the market currently lacks the standardized reporting infrastructure to make this requirement consistently verifiable. By documenting the range, form, and governance of benefit-sharing arrangements across the project sample, this report establishes an empirical baseline for what disclosure looks like in practice, where gaps are most significant, and what minimum standards would be required to make cross-project comparison meaningful. In doing so, it contributes directly to the ICVCM's Continuous Improvement Work Programme and the Forum's priority of defining best practice in benefit-sharing.

Connecting findings to practical use cases. Analysis of cost structures and benefit-sharing arrangements is only valuable if it translates into actionable guidance for the market participants who need it most. This report frames its findings around three primary use cases: supporting buyer decision-making by providing benchmarks against which to evaluate whether credit pricing is consistent with demonstrated delivery costs; supporting developer pricing justification by giving developers the data needed to explain and defend their cost structures to buyers and investors; and informing policy design by providing the evidence base that governments, standard-setters, and integrity initiatives need to design requirements grounded in market reality. The Implications section sets out practical guidance for how each of these audiences can apply cost structure data in their own contexts.

Approach

Generating reliable cost and benefit-sharing data from voluntary carbon market (VCM) project developers requires navigating a landscape of commercial sensitivity, definitional inconsistency, and fragmented record-keeping. The methodology for this research was therefore not fixed at the outset. The methodology evolved iteratively in response to what was learned about data availability, participant willingness, and the practical realities of engaging developers across diverse project types and geographies. This section describes the approach taken, the design choices made, and why they were made.

Survey Design and Rationale

The primary data collection instrument was a structured survey distributed to carbon project developers. The survey was designed to capture two categories of information: (i) project cost structures, disaggregated into capital expenditure (CapEx) and ongoing operational expenditure (OpEx), and (ii) benefit-sharing arrangements with Indigenous Peoples and local communities, covering both financial and non-financial dimensions.

Initial survey design drew on consultation with Sylvera's internal economist to establish what inputs would be required to construct a meaningful economic model of project cost structures. The first version of the survey requested granular cost data across six to seven distinct cost buckets, including registration fees, legal costs, initial validation and verification body (VVB) fees, monitoring, reporting and verification (MRV) costs, and project management overhead, alongside detailed benefit-sharing parameters such as fixed disbursement amounts and percentage-of-revenue shares.

This initial design was tested with a small group of developers with whom Sylvera had established relationships. The feedback was formative. Developers flagged that the cost categories did not consistently map to how their own financial models were structured, and that the level of granularity requested felt disproportionately sensitive given the perceived outputs. In response, the survey was substantially simplified: the multiple cost sub-buckets were consolidated into single CapEx and OpEx inputs, and definitions were sharpened to reduce ambiguity. This aggregation was a deliberate trade-off, sacrificing some analytical granularity in order to increase response rates and improve the quality of the data that was returned.

Alongside simplifying the cost structure, the framing of the survey itself was revised. Early outreach positioned the survey primarily as a data collection exercise. Revised outreach anchored more explicitly on the value that participants would receive in return: access to a research memo summarising anonymized results, and early access to the final report prior to publication. This reframing reflected a broader principle that was reinforced throughout the data collection process: developers are more likely to share sensitive commercial information when they understand the purpose of the research, trust the institution requesting the data, and expect to derive tangible benefit from it.

Outreach Approach and Iteration

Data collection was conducted across four rounds of outreach, each informed by lessons drawn from the previous.

In the first round, approximately 70 project developers were approached across both nature-based solutions (NBS) and technology-based solutions (TBS) project types. These included developers active in afforestation, reforestation and revegetation (ARR), REDD+, improved forest management (IFM), mangrove restoration, biochar, improved cookstoves, landfill gas management (LFM), and enhanced rock weathering (ERW). The initial outreach relied on email distribution of the survey, with the expectation that developers would complete it independently. This proved insufficient. The level of commercial sensitivity involved meant that most prospective participants required direct engagement before they were willing to share data. Two to three calls were typically needed per developer to explain the research objectives, walk through the survey, and ensure that responses aligned with the intended definitions. The email-only model was abandoned.

A second round reached approximately 80 additional developers. Outreach was redesigned to include structured calls from the outset, and the revised, more aggregated survey was used throughout. Response rates improved relative to the first round, though total responses remained below ten at this stage. This prompted a further strategic shift.

In the third round, the survey was integrated into existing Sylvera workstreams rather than treated as a standalone request. Developers already engaged in technical work with Sylvera – including project assessments, pre-issuance ratings, and ongoing monitoring relationships – were invited to participate as part of those broader interactions. This approach proved substantially more effective. Incorporating the survey into existing engagements reduced the marginal burden on participants, and the pre-existing trust built through technical collaboration meant developers were more willing to share data that they would have declined to provide in response to cold outreach. This round is estimated to have reached a further 100 or more developers across Sylvera's external-facing teams, including commercial and customer relations staff operating at industry conferences and in bilateral conversations. Participation through these channels roughly doubled the total response count.

A fourth and final round took a different approach: a mass email campaign targeting 1,854 unique contacts at project developers. Following GDPR filtering and the removal of bounced addresses, the survey was successfully delivered to 1,024 unique developer contacts, with two follow-up emails sent to the same list. Of these, 359 contacts opened the email and 62 clicked through and downloaded the survey. This round contributed to a total data of 53 projects, alongside additional context provided directly by developers, representing a meaningful contribution to the final dataset. While the response rate relative to contacts reached was modest, consistent with the pattern observed in earlier cold-outreach efforts, the sheer scale of the campaign made it a productive complement to the more targeted engagement of previous rounds.

The experience across all four rounds points to a consistent finding: developer willingness to share cost and benefit-sharing data is strongly contingent on relational trust. Guardrails around data confidentiality are

necessary but not sufficient, and cold outreach alone, even at significant scale, yields lower conversion rates than engagement rooted in existing technical relationships. At the same time, the fourth round demonstrates that volume-based outreach can generate meaningful data where direct engagement is not feasible. The most reliable predictors of participation remained sustained technical engagement and a credible demonstration of shared interest in the outputs. The two approaches are best understood as complementary rather than mutually exclusive, and the fourth round's relative success was itself partly a product of what preceded it. By the time the mass campaign launched, Sylvera, ICVCM and the developer community had spent considerable time building familiarity with this work; through prior outreach rounds and ongoing technical relationships. The cumulative effect of that knowledge-building work, even where it had not previously generated responses, meaningfully lowered the threshold for engagement in the final round.

Project Types and Regions in Scope

The survey was open to developers across a broad range of project types, spanning both NBS and TBS categories. This breadth was intentional: one of the core objectives of the research is to document cost heterogeneity across project types, and including a diverse range of methodologies supports meaningful comparison.

Geographic coverage was not restricted, and developers from projects across multiple regions, including sub-Saharan Africa, Latin America, Southeast Asia, and the Asia-Pacific, were invited to participate. A minimum threshold of five responses per project type and region combination has been applied: no analysis is presented for responses falling below this threshold, in order to protect the confidentiality of individual respondents and avoid drawing inferences from insufficiently large samples.

Given the objectives of the research, particular attention was paid to ensuring representation from project types that are either in high demand from buyers or have been the subject of significant integrity scrutiny. REDD+ and cookstove projects, in particular, were prioritized in outreach given their prominence in the market and the volume of existing questions around their cost structures and community benefit arrangements.

Supplementary Data Sources

Survey responses are supplemented by a review of existing literature on carbon project economics and benefit-sharing arrangements in the voluntary carbon market. Given the sample sizes returned, survey responses are used to identify directional trends rather than statistically definitive findings. Detailed analysis is presented only for project types where five or more responses were received; results for project types falling below this threshold are noted but not analysed in depth. The literature review provides qualitative context for the quantitative findings from the survey, helping to situate the research within the broader landscape of what is already known about carbon project cost structures and benefit-sharing practices, and where the most significant data gaps remain.

Data Management and Maintaining Anonymity

Given the commercial sensitivity of the data collected, robust data governance protocols were applied throughout the research. A data licensing agreement, drafted by Sylvera's legal team, was presented to all participants prior to data collection. The agreement set out the intended use of the data, the anonymisation procedures that would be applied, and the restrictions on how individual responses would be handled and shared. This step was received positively by participants and was credited by several developers as a factor in their decision to contribute. Building on this, Sylvera has also incorporated data protection disclaimers within the survey file itself to give further assurance of data governance and anonymity.

No identifiable project information was requested in the survey, and participants were explicitly asked not to include project names or other identifying details in free-text responses. Upon entry, all submissions were anonymized: the Sylvera team member responsible for collecting responses was the only individual with knowledge of which developer submitted which data. The data processing and analysis team worked exclusively with anonymized submissions. Access to the underlying dataset was ring-fenced to the team directly involved in collection and analysis.

Only aggregated data will be reported publicly. As noted above, a minimum threshold of five responses per project type and region has been applied, below which no analysis will be presented. These protocols are designed to ensure that no individual developer's commercial position can be inferred from the published findings, and to maintain the trust that underpinned participation throughout the data collection process.

Findings

Results

The cost survey generated 53 responses from project developers actively developing or operating carbon projects across six project types: ARR, biochar, REDD+, cookstoves, regenerative agriculture, and mangroves. Respondents disclosed data across five dimensions, CapEx, OpEx, benefit-sharing arrangements, secondary revenues, and cost-of-capital assumptions, alongside qualitative context on the key factors shaping costs in their specific project environment.

Response granularity varied considerably, and this variation is itself insightful. Some developers supplied precise cost figures disaggregated by cost components; others provided higher-level estimates. The pattern reflects a structural reality of the voluntary carbon market: cost data is inconsistently recorded, defined, and disclosed. As described in the Approach section, the commercial sensitivity of project economics was a persistent constraint throughout data collection. Where granularity was limited, data was used to establish directional ranges rather than precise point estimates.

The results that follow present headline cost findings by project type, covering the distribution of CapEx and OpEx, the sensitivity of costs to cost-of-capital assumptions, the role of project scale, and the benefit-sharing data collected. The Discussion section draws out the broader market implications, including what the findings reveal about structural cost drivers, financing constraints, and the gap within benefit-sharing disclosures.

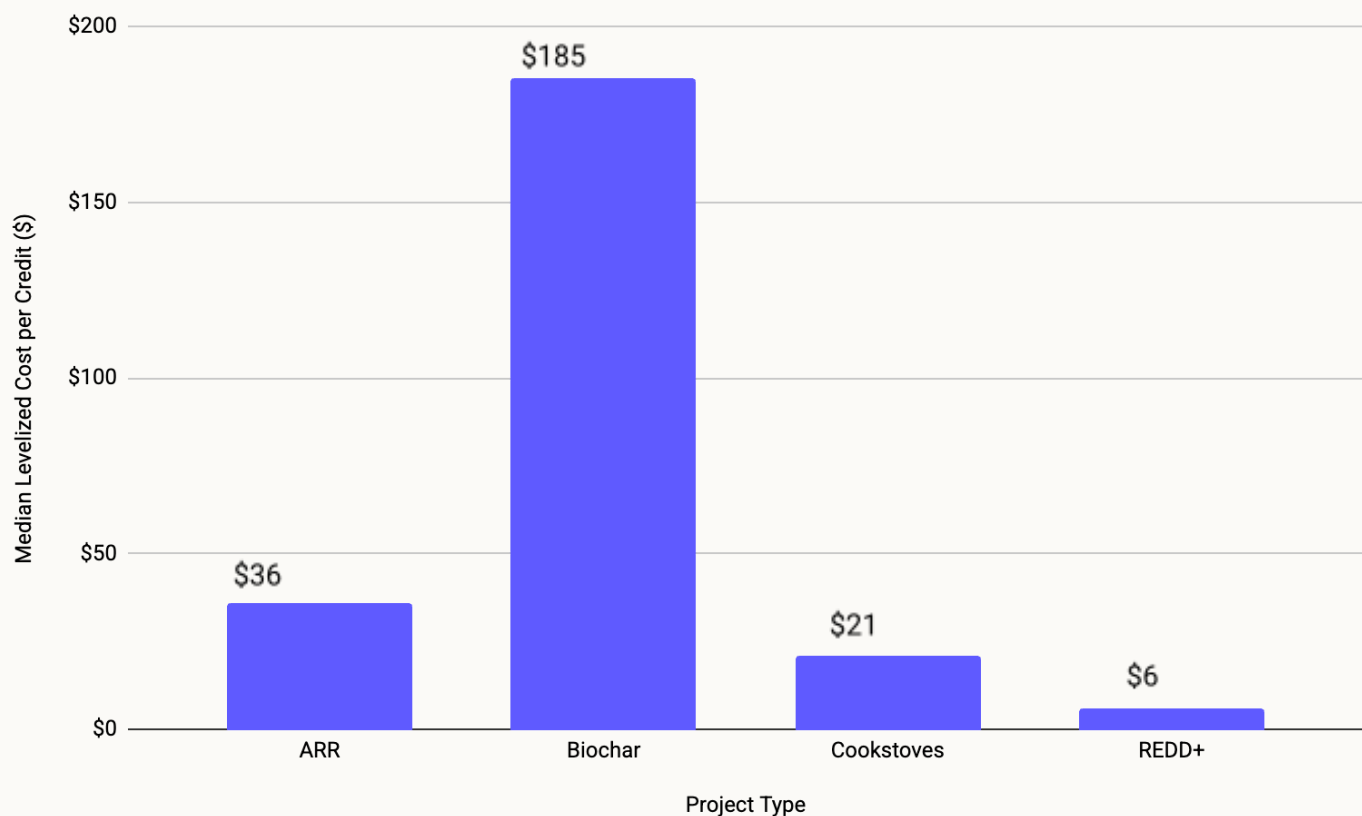


Figure 1. Median levelized cost per credit (\$) by project type

To provide a standardized comparison across different project types and project lifespans, we used a levelized cost per credit approach. The levelized cost per credit is calculated by annualizing the CapEx, adding the ongoing annual OpEx, and dividing the sum by the annual credit issuance volume. For this analysis, issuance volume is assumed to be linear and distributed annually over the project's crediting period.

CapEx is annualized using an assumed discount rate of 10%, representing a moderate cost of capital scenario. This figure sits in the middle of a range supported by the published literature. The American Carbon Registry (ACR) IFM methodology assigns NPV discount rates of 3–6% for forest landowners in the U.S [4], and the UN-REDD Pricing Forest Carbon report applies a 4% rate when normalizing forest carbon costs, anchoring the lower bound for more developed countries and industries [5]. At the upper end, the IEA Cost of Capital Observatory (2024) [6] finds the cost of capital for clean energy projects in Emerging Markets and Developing Economies (EMDEs) is at least double advanced-economy levels of ~5–6%, implying ~10–12%, while Ameli *et al.* (2021) [7] and the OECD (2024) working paper [8], on the cost of capital for climate-related investments and clean energy projects, document ranges spanning roughly 8–18%, with the upper end driven by country, currency, and offtake risk. A 10% central assumption, therefore, reflects a typical EMDE-based developer; sensitivity to this assumption is tested in Figure 3 using a 5% low case and a 15% high case.

To ensure data representativeness, two extreme outliers were excluded from the ARR category, resulting in a final sample of 12 ARR projects, 12 biochar projects, 7 cookstoves projects, 3 mangroves projects, 8 REDD+

projects, and 4 regenerative agriculture projects. Due to the limited sample sizes for mangroves, and regenerative agriculture, data for these project types were not further analysed. Besides that, 67% of ARR projects in the dataset and all cookstove projects in the dataset use CCP-approved methodologies. This suggests the cost benchmarks presented here are broadly aligned with the economics of high-integrity project development, specifically for ARR and cookstove project types.

Figure 1 illustrates a significant divergence in the median levelized cost per credit across the six project types, highlighting the premium associated with more engineered or intensive removal methodologies. Biochar carries the highest median cost, at \$185 per credit. Among the two nature-based solutions, ARR (\$36) costs considerably more than REDD+ (\$6). Cookstove projects (\$21), a tech-based avoidance type, have a median cost much closer to that of ARR than to biochar, the more heavily engineered, tech-based removal technology.

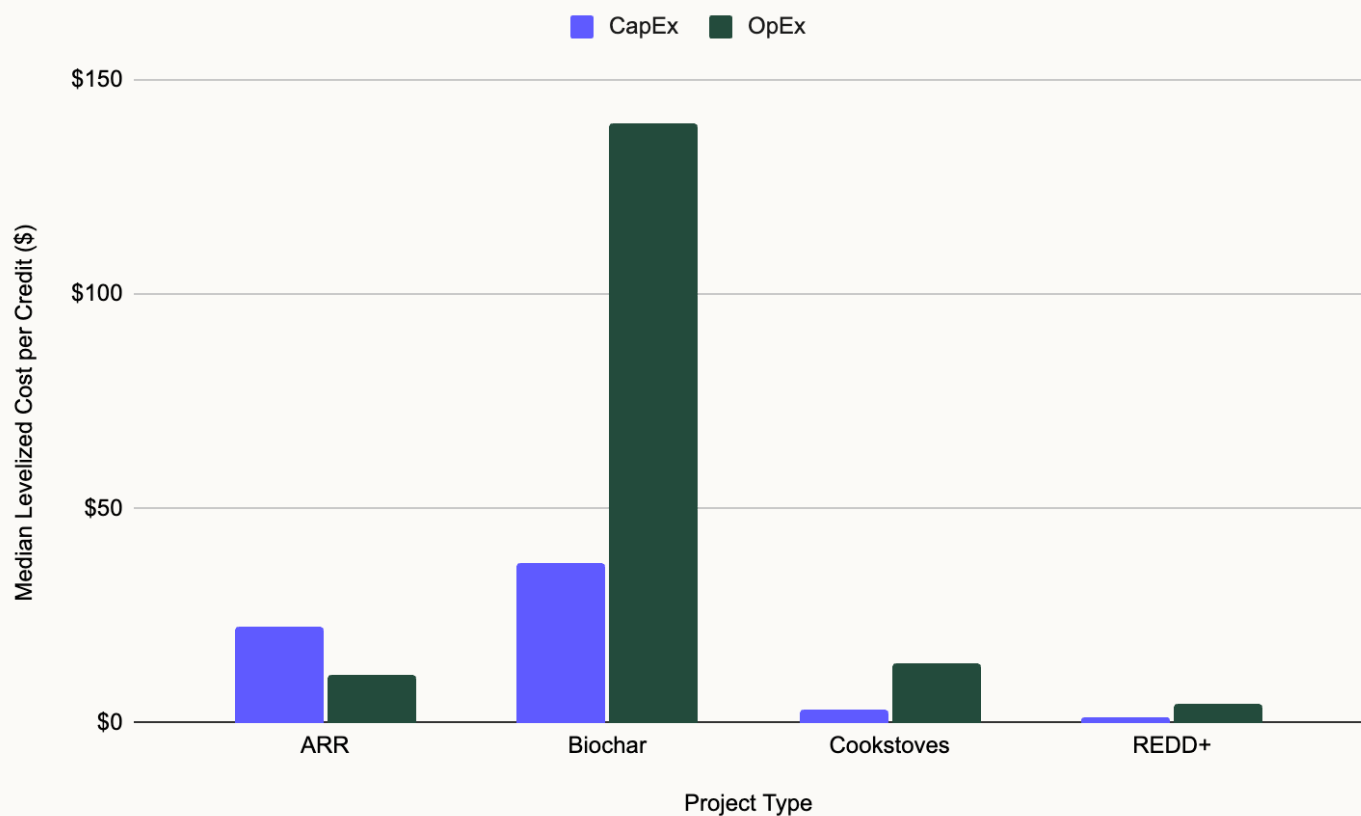


Figure 2. Median levelized capital expenditure (CapEx) and operating expenditure (OpEx) per credit (\$) by project type

Beyond the absolute cost per credit, the split between upfront investment and ongoing operational costs reveals how these project types are structurally financed. Figure 2 shows the median levelized CapEx and OpEx per credit for each project type; the median proportion of total cost attributable to CapEx was also calculated. Despite the wide differences in absolute dollar costs, this proportion is relatively uniform across four of the six types: CapEx accounts for approximately a fifth of the total levelized cost for biochar (21%), cookstoves (16%), and REDD+ (20%). ARR (71%) is the exception, with CapEx making up a far higher share. This greater capital intensity likely reflects the substantial upfront funding required for land acquisition, preparation, and initial planting, before the longer-term operational monitoring phases begin.

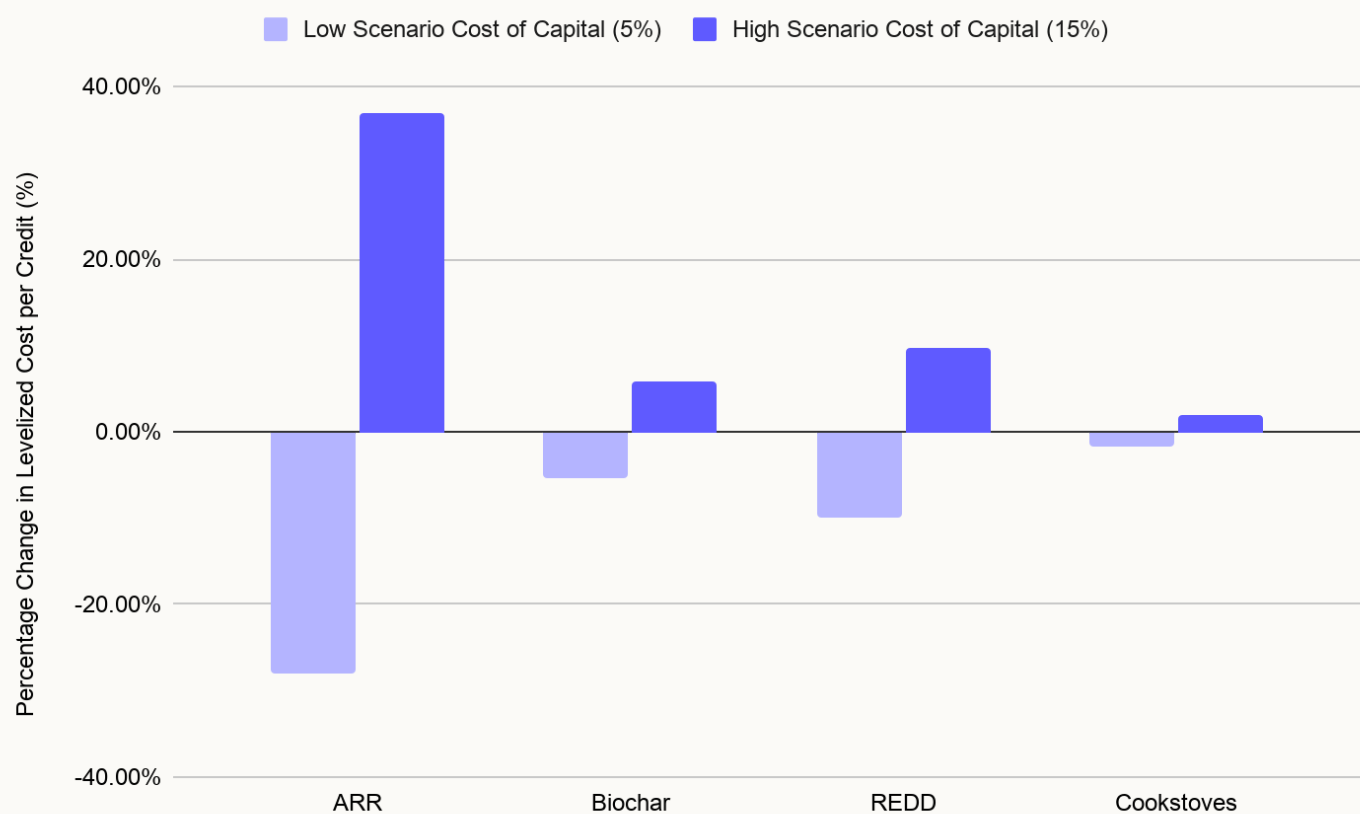


Figure 3. Sensitivity of median levelized cost per credit (\$), for ARR, biochar, REDD+, and cookstoves when the assumed cost of capital is varied from the moderate scenario (10%) to low (5%) or high (15%) scenarios

Figure 3 shows the sensitivity of the median levelized cost per credit to changes in the assumed cost of capital, expressed as the percentage change relative to the 10% moderate scenario. Mangroves and regenerative agriculture are excluded from this analysis, as fewer than five projects are available for each.

ARR is materially more sensitive than the other project types in both directions. Lowering the discount rate to 5% reduces ARR’s median levelized cost per credit by 27.95%, compared with just 5.28% for biochar, 9.93% for REDD+, and 1.78% for cookstoves. Raising it to 15% increases ARR’s cost by 36.84%, against only 5.79% for biochar, 9.62% for REDD+, and 2.02% for cookstoves. This divergence follows directly from the structural differences identified in Figure 2: ARR’s higher CapEx share (71%, versus roughly one-fifth for biochar, cookstoves, and REDD+) and longer payback horizon mean that changes in the discount rate have a larger effect on the annualized capital component, and therefore on the total levelized cost. The lower CapEx share and faster credit issuance profile of biochar, cookstoves, and REDD+ make their economics relatively robust to cost-of-capital fluctuations, whereas ARR’s economics are meaningfully exposed to the financing environment in which the developer operates.

Figures 4 to 7 plot levelized cost per credit against annual credit volume for the biochar, ARR, REDD+, and cookstoves projects, testing whether project scale influences unit costs. All four project types display a negative relationship between cost per credit and scale: higher-volume projects tend to have lower unit costs, though this sample cannot separate true scale economies from project heterogeneity. Sample sizes

are too small to support formal regression-based conclusions, so all relationships should be treated as directional rather than statistically robust.

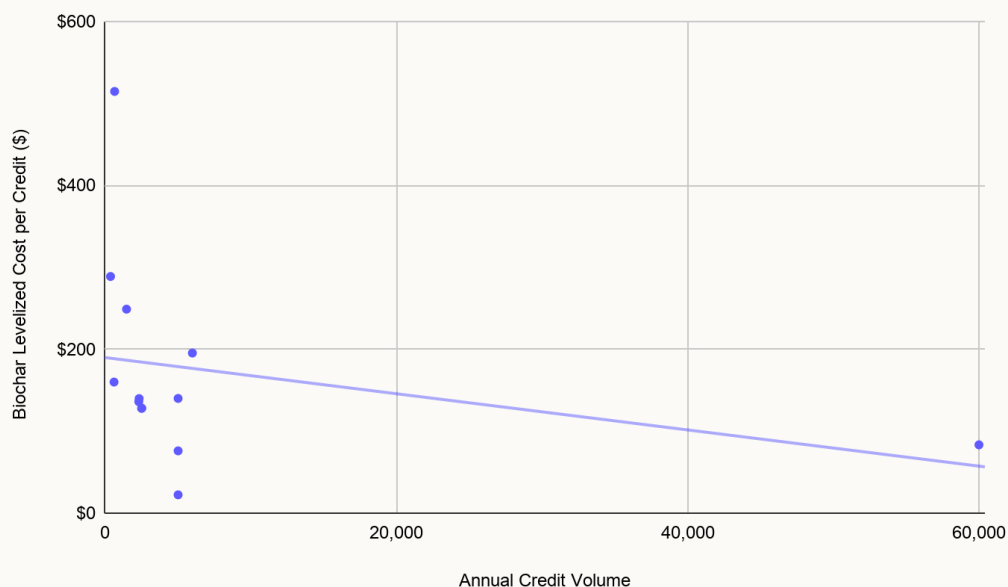


Figure 4. Levelized cost per credit (\$) vs annual credit volume, for the 12 biochar projects in Sylvera's sample

For biochar (Figure 4), the relationship is negative: the highest-cost project in the dataset (~\$544/credit) operates at the smallest scale (under 500 credits per year), while the lowest-cost projects (~\$25 to \$140/credit) cluster at annual volumes of around 2,300 credits and above. This relationship should be read with some caution, however, as one project with an annual capacity far greater than the others skews the line of best fit. This pattern is consistent with the cost structure of biochar production, where both the upfront pyrolysis equipment and the ongoing feedstock and logistics costs include components that become more efficient at higher throughput. The wide range of levelized cost per credit likely reflects the variety of pyrolysis technologies in use, along with the distinction between artisanal and industrial biochar.

For ARR (Figure 5), the relationship is also negative. These data suggest that scale economies matter to ARR unit economics, given that land acquisition and planting are significant contributors to upfront cost. That said, geography also plays an important role in determining the levelized cost per credit for ARR projects.

REDD+ (Figure 6) also shows an apparent negative relationship between levelized cost per credit and scale. The variation in project scale is notable, ranging from around 10,000 to well over 1,000,000 credits per year. The cost distribution is also narrower than ARR's, at \$1 to \$15 per credit, likely reflecting lower variable upfront costs in REDD+ than in ARR. It should also be noted that the data collected only spans three countries across two regions, so the levelized cost of REDD+ credits is likely to be more variable globally.

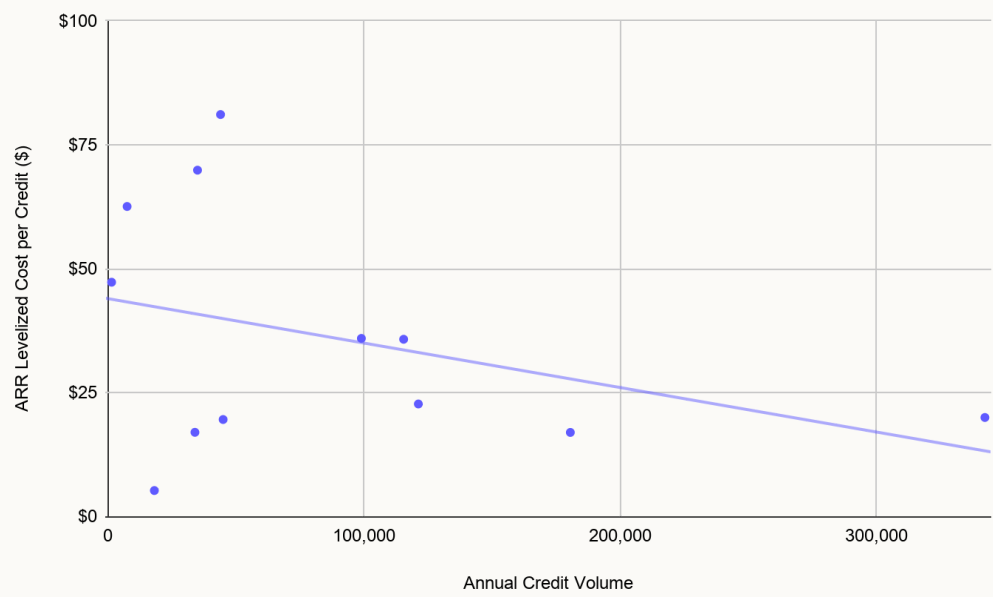


Figure 5. Levelized cost per credit (\$) vs annual credit volume, for the 12 ARR projects in Sylvera’s sample

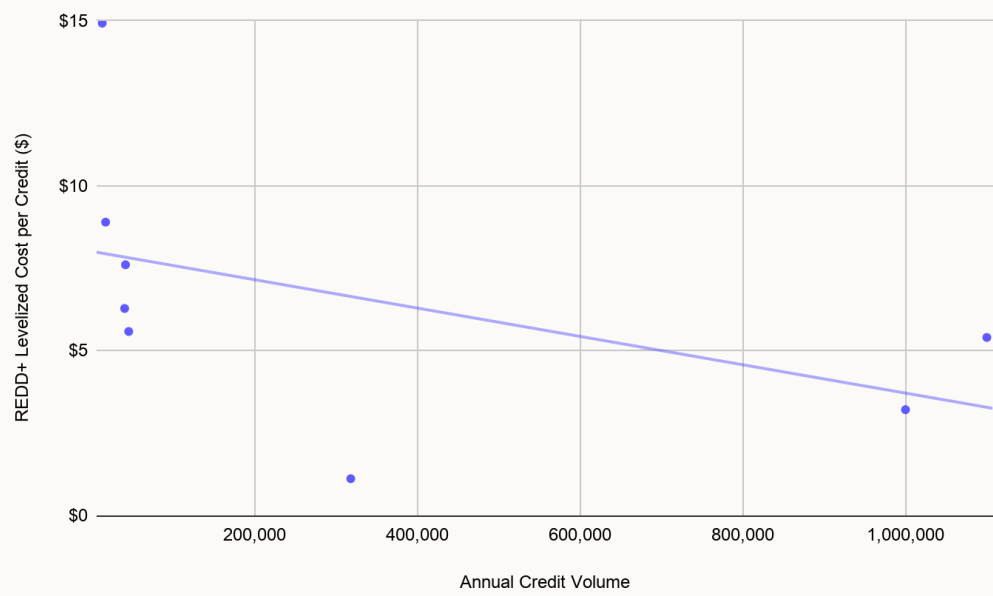


Figure 6. Levelized cost per credit (\$) vs annual credit volume, for the 8 REDD+ projects in Sylvera’s sample

The cookstoves projects (Figure 7) also show a negative relationship. Given that cookstoves are household units and the number deployed scales linearly with credit issuance, this relationship likely reflects bulk procurement discounts, paired with improvements in distribution and logistics efficiency at scale.

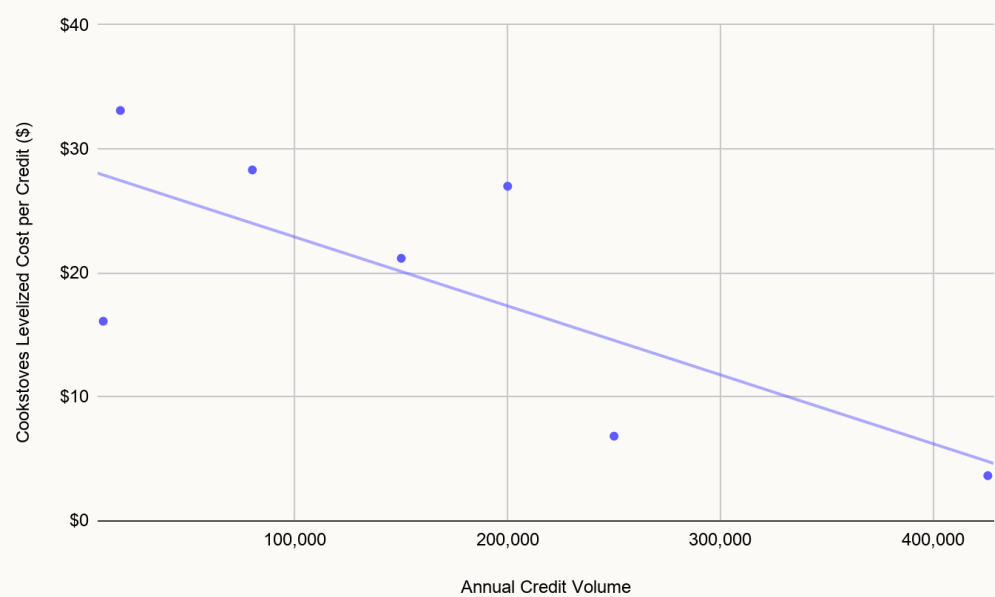


Figure 7. Levelized cost per credit (\$) vs annual credit volume, for the 7 cookstoves projects in Sylvera’s sample

Data provided on project benefit sharing was insufficiently granular to conduct a quantitative analysis. A high-level analysis of the benefit sharing models employed by projects (Figure 8) demonstrates that revenue share is the most common in the 28 projects that provided this information.

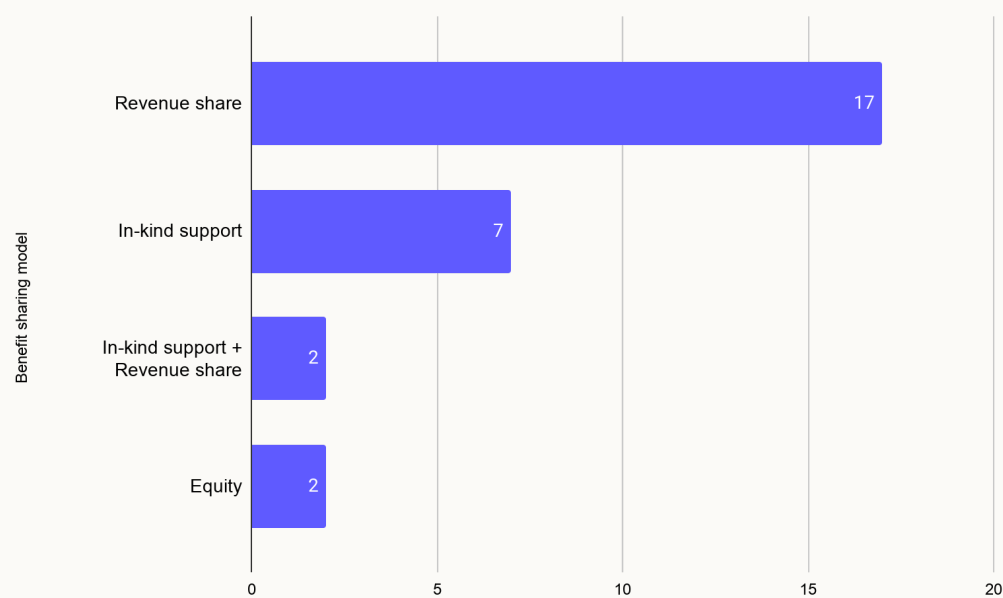


Figure 8. Distribution of revenue sharing models by number of projects (from 28 projects that provided this information)

Revenue sharing gives communities a set percentage of carbon income, usually based on gross credit sales rather than profit. Its main advantages are that community income tracks the value of the project and that a gross-revenue basis is relatively simple and transparent to account for. The drawbacks are that

payments rise and fall with the carbon price and can be delayed between issuance and sale, and that fair distribution relies on adequate financial infrastructure and local governance; where these are weak, funds may not reach individual households.

In-kind support provides non-cash benefits such as schools, clinics, water systems, training or equipment. It is useful where banking and payment systems are weak, it delivers benefits that are shared across a community, and it can help build local capacity. The drawbacks are that the benefits are often chosen by the developer rather than the community, so they may not match local priorities; they are harder to value and verify than cash; and they can obscure how small a share of total revenue is actually being returned.

Equity gives communities an ownership stake, along with a role in decision-making and a share of any increase in the project's value. It provides the closest alignment of interests of the three models and gives communities a direct say in how a project is run. The drawbacks are that it also exposes them to losses if the project underperforms, and that it requires governance capacity, legal and financial expertise, and clear land and carbon tenure that many communities do not yet have. Without that support, equity arrangements can be difficult to administer and may reinforce existing power imbalances.

Across all three, revenue sharing matters because it is the point at which benefit sharing becomes measurable and its integrity easiest to assess. Transparent and equitable distribution of revenue also supports the durability of a project. Communities that benefit materially have a stronger incentive to maintain it over time, which lowers the risk of reversals, while projects that share revenue poorly are more likely to meet local opposition. Well-governed revenue sharing therefore contributes to both the credibility of the credits and the permanence of the emission reductions behind them.

Discussion

Cost of Capital Uncertainty in Carbon Projects

Among the many cost drivers shaping carbon project economics, the cost of capital stands out as one of the single greatest sources of uncertainty, particularly for NBS. In a recent survey by the Carbon Capital Lab of developers of over 70 NBS projects globally [9], the cost of project finance was found to be the most significant factor in overall project uncertainty. This finding is consistent with the broader literature on emerging-market climate finance, which consistently identifies financing costs as a primary constraint on project viability and the transparency of credit pricing.

Uncertainty in Cost of Capital

Unlike many conventional infrastructure assets, NBS carbon projects combine several features that make the cost of capital both high and difficult to predict. Historically, the fundamental investment challenge has been unpriced externalities: there was no reliable market for ecosystem services because there was no product and no demand. The growth of carbon credit markets has begun to change this, but the resulting revenue streams remain denominated in voluntary carbon market prices, which are volatile and episodic rather than contracted, while the underlying assets (forests, wetlands, grasslands) are exposed to physical, political, and tenure-related risks over multi-decade project lifetimes. NBS projects are not pioneering new technologies, but they are pioneering new methodologies for sequestering carbon at scale in a new and still-evolving global market, and they carry all the attendant business model, execution, and country risks that come with that.

Three factors principally drive uncertainty in the cost of capital:

1. Project type and industry maturity. ARR projects are particularly sensitive to cost of capital assumptions relative to REDD+ or IFM projects. Natural climate solutions receive less than 3% of climate funding [10], despite holding the capacity to remove one-third of the emissions needed to meet global climate targets. A key reason is structural: ARR relies heavily on upfront capital expenditure, site preparation, planting, early-stage management, before any credits are issued or revenues realized. The cash flow profile is closer to a long-duration infrastructure bond than an operational business, meaning small changes in the discount rate translate into large changes in per-credit break-even cost. This is reflected in our data, where ARR's CapEx accounts for 71% of total project costs, materially higher than other NBS project types with the exception of mangroves projects which face many of the same upfront costs as ARR.

The time between project start-up costs and the issuance of significant credit volumes varies widely across ARR projects, driven by species selection, forest type, and scale. The Climate Trust notes that this lag can range from around 10 years for the fastest-growing species to approximately 22 years for large-scale post-wildfire restoration projects [11]— and in practice, the range will depend on geography and silvicultural approach. This contrasts sharply with IFM projects, which typically generate meaningful credit issuances within 3 to 5 years of start-up, given that they operate on existing, established forest carbon stocks rather

than building biomass from the ground up. REDD+ projects, by contrast, tend to incur lower capital expenditure because they protect existing forest rather than establishing new cover, making their cost structures more operationally weighted and therefore less sensitive to financing costs in absolute terms, though they carry their own distinctive risk premia related to additionality and permanence.

Cookstove projects sit at the opposite end of this spectrum from ARR. As a technology-based avoidance type, their costs are heavily operationally weighted: CapEx accounts for just 16% of total project cost in Sylvera's data, and credit issuance scales roughly linearly with the number of household units deployed rather than waiting on biomass to mature. As a result, cookstoves are the least sensitive of the project types analyzed to changes in the cost of capital, with a move in the discount rate from 10% to 5% or 15% shifting the median levelized cost per credit by only around 2% in either direction. For cookstoves, the more material uncertainties lie not in financing costs but in delivery and integrity, particularly stove usage rates, the durability of behavior change, and additionality, which are the dimensions that most shape buyer demand and risk premia for this project type.

Biochar and engineered removal projects face a structurally different cost of capital challenge. Unlike ARR, where sensitivity to financing costs is influenced by long biomass maturation timelines, the challenge for biochar and other CDR technologies is rooted in the combination of high upfront capital intensity, a limited investor base, and higher delivery risk stemming from the nascency of these project types. Crediting methodologies are still evolving and the operational track record at commercial scale is limited, both translate into risk premia that would increase the cost of capital relative to more mature asset classes.

The nascency of CDR project types represents a structural source of financing risk that is unlikely to resolve without targeted intervention. Unlike established project categories, which benefit from verified issuance data, standardized methodologies, and a demonstrated track record of delivery, biochar and other engineered removal approaches are still building these foundations. Of the 13 million metric tonnes of durable CDR credits contracted to date, only 4% has been delivered, and under these nascent circumstances, credit price discovery, access to capital, and project development involve more challenges than in established industries [12].

This absence of comparables forces institutional lenders to apply conservative, blanket risk premiums rather than project-specific assessments, creating a material barrier to debt financing. The dynamic is well-documented in the innovation finance literature: Mazzucato & Semieniuk (2018) [13] find that private financiers systematically avoid early-stage clean technology categories until sufficient deployment history exists to anchor risk models, producing a structural financing gap between proof-of-concept and commercial maturity. For CDR, this gap is further compounded by a persistent cost underestimation problem, at least in biochar, the most commercially mature CDR method. The CDR.fyi/OPIS Durable CDR Pricing Survey (2025) [12] found that for biochar specifically, experienced suppliers who had already transacted reported materially higher break-even costs than those who had yet to sell credits, suggesting that the true economics of delivery at scale are harder than new entrants anticipate.

2. Country risk and geopolitical factors. Sovereign risk, currency risk, and political instability are widely recognized in the infrastructure finance literature as key determinants of the equity risk premium and the

availability of debt finance in developing markets [14]. For carbon projects operating in tropical forest jurisdictions, which account for the majority of high-volume NBS issuances, sovereign risk, currency risk, and political instability can be substantial. A project in the Congo Basin or Southeast Asia may face a cost of equity higher than a comparable project in Western Europe or the United States, driven by currency convertibility risk, legal enforcement uncertainty over carbon rights, and the risk of policy reversal.

A growing toolkit of derisking instruments, including blended finance structures, MDB concessional lending, and political risk insurance, can partially offset the premia imposed by country risk and geopolitical uncertainty. Access to these mechanisms, however, remains highly uneven. Smaller developers, community-led and Indigenous-led projects, and those operating in frontier geographies often face the steepest financing cost penalties, yet can find it hardest to access the instruments designed to address them, including due to high transaction costs, limited institutional capacity, and a mismatch between project scale and the minimum thresholds set by development finance institutions [15].

3. Financier type and institutional maturity. The composition of the financier base significantly shapes borrowing costs. DFIs and concessional green funds, such as the Green Climate Fund or the Global Environment Facility, typically lend at below-market rates with longer tenors and more patient equity structures [10, 16]. Commercial banks and private equity funds, by contrast, apply market-rate hurdle rates and shorter payback expectations, often requiring substantial first-loss guarantees or offtake agreements before committing capital [17]. As the voluntary carbon market matures, the gap between these two financing environments is narrowing, but it remains wide enough to create material cost-of-capital differences between projects of otherwise comparable quality and scale.

A growing toolkit of blended finance structures is emerging to bridge this gap. While there is no one-size-fits-all financing approach for NBS, blended finance has been used to mitigate various risks in mature sectors such as renewable energy, with successful approaches increasingly being transferred to NBS contexts in emerging economies. Climate Policy Initiative's *Toolbox on Financing Nature-Based Solutions* (2024) [18] documents twelve such structures, ranging from blended equity vehicles and guarantee facilities to beneficiary-engagement models and philanthropic mechanisms supporting IPLC-led projects. Guarantees emerge as among the most catalytic instruments, de-risking investments, familiarising investors with nascent sectors, and recycling the same funds to support subsequent projects. However, private sector engagement in NBS remains far from mainstream.

Secondary Revenues

Secondary revenues vary considerably even within the same project type, reflecting the influence of local market conditions, developer strategy, and project design choices. Among ARR projects in the survey, secondary revenue allocation ranged from 0% to 20–50% of total project income, while biochar projects showed an even wider spread of 0% to 31–75%. Most biochar projects in the survey rely on secondary revenues at varying levels, with only one project not relying on any secondary revenue.

Beyond distribution, there is a financial structuring rationale for secondary revenues that warrants attention. Projects with predictable non-carbon income streams may be better positioned to secure project finance or attract equity investment, since secondary revenues reduce reliance on carbon credit sales and smooth overall cash flow. While this connection between secondary revenue diversification and lower cost of capital is not yet well-evidenced in the published literature, it is consistent with broader project finance theory, where revenue diversification is a recognized de-risking mechanism.

Secondary revenues also carry direct implications for the financial additionality of carbon projects. Under most crediting standards, a project is considered additional if it would not be financially viable without carbon revenues. Where secondary revenues are substantial, they may reduce or eliminate the financing gap that carbon income is intended to fill, potentially undermining additionality claims. This is particularly relevant for biochar projects where the co-product, biochar as a soil amendment or fertilizer substitute, can itself command a market price that in some regions rivals or exceeds the value of the carbon credit. For ARR projects, timber and non-timber forest product revenues play the same role: where a developer can sell harvested timber or other forest products, that income may already make the project financially viable without carbon revenues, similarly weakening the additionality case.

Regional market conditions play a significant role in determining the economic weight of secondary revenues. For ARR projects, the weight of timber as a secondary revenue stream may also depend on the maturity of local timber markets: in regions with well-developed forestry industries and established export infrastructure, such as parts of Southeast Asia and Latin America, which together account for the majority of tropical timber production and trade, timber revenues can represent a meaningful share of project economics, whereas in contexts with weaker domestic demand or underdeveloped processing and logistics infrastructure, the same forest products may generate negligible returns [19]. For biochar projects, the saleable value of physical biochar as a soil amendment or fertilizer substitute is similarly shaped by local conditions. However, the regional pattern that emerges suggests that where physical biochar markets are less developed, projects become more dependent on carbon credit revenue to sustain their economics. The IBI/USBI 2023 Global Biochar Market Report [20] illustrates this clearly: producers in South America and Africa show the highest carbon credit market participation, with over half of regional production coming from producers generating more than 90% of their revenue from carbon credit sales, a pattern attributed to relatively low labour costs paired with carbon credit prices that are largely unaffected by geographic origin, creating business models that rely nearly exclusively on carbon revenue rather than physical product sales (IBI/USBI, 2023, p.18 [20]).

Benefit-sharing and community impact

The cost landscape of benefit-sharing activities

Revenue sharing with local communities varies widely – from around 20% to 90% of total revenues, reflecting inconsistencies in how co-benefits are defined, structured, and reported across carbon projects. This range is not simply a measure of developer generosity; it is largely an artefact of definitional

divergence. Co-benefit expenditure can encompass direct cash transfers, local employment, infrastructure investment, microfinance schemes, and in-kind services, among others. Without a standardized taxonomy, projects measure and disclose different activities under the same metric, making cost comparisons effectively meaningless.

This lack of standardisation is a systemic feature of the voluntary carbon market. Financial commitments to co-benefits span a broad spectrum, from direct benefit-sharing payments and community infrastructure to capacity building, technical assistance, and legal support for rightsholders. While these costs are substantial in aggregate, the absence of a common reporting framework makes it hard to assess whether communities are receiving a fair share of carbon revenues or to benchmark performance across projects and project types. This opacity is compounded by a broader absence of standards requiring transparency and the reporting of benefit flows: where such standards exist, they are often not applied, or if they are, not uniformly so, contributing to negative perceptions that carbon markets [centralise revenues in the Global North](#) rather than distributing value to the communities whose lands and ecosystems underpin project viability [21].

How are policies impacting benefit sharing?

British Columbia, Canada, Government-to-government carbon rights negotiation *Source: Redvers et al. (2025), Lancet Planetary Health* [22]

The Atmospheric Benefit Sharing Agreement in British Columbia allows Coastal First Nations to own and sell carbon offsets directly, reducing industrial logging and generating community revenue. Canadian constitutional frameworks create space for First Nations to negotiate carbon rights on a government-to-government basis through treaties and reconciliation agreements, a governance structure that meaningfully shifts benefit-sharing power toward communities rather than developers.

Gold Standard Registry, Mandatory gender disclosure driving inclusion *Source: Nicholson & Besco (2025), Social Politics* [23]

Gold Standard-certified projects scored significantly higher on gender inclusion than all other registries, comprising 79.5% of the highest-scoring projects in a sample of 675 VCM projects. Gold Standard mandates a gender safeguarding and sensitivity assessment for all registered projects. This policy requirement alone, rather than project type or geography, is the primary driver of better gender outcomes, suggesting that mandatory disclosure requirements directly translate to more equitable benefit distribution for women.

Indonesia, State ownership of carbon rights excluding communities Source: *Lentera Hukum* (2022), "Recognition of Forest Carbon Rights in Indonesia: A Constitutional Approach"; [24] and MDPI Forests (2025), "Comparative Study of Carbon Rights Governance Among 7 Countries" [25]

In Indonesia, the current regulations position the state as the principal owner of carbon commodities, granting licenses to third parties, including communities. Although Presidential Regulation No. 98/2021 permits the transfer of carbon rights within carbon trading mechanisms, the national carbon market remains underdeveloped. This model raises serious concerns about the approximately 9.2 million families residing in forest areas, of whom 1.7 million are categorized as impoverished, who lack legal ownership and therefore have no enforceable claim to benefit-sharing. Without clear carbon rights tied to community land tenure, revenues default upward to the state or project developers.

Brazil, Acre State, Subnational government alignment enabling community benefit flows Source: CIFOR-ICRAF (2022), "Designing REDD+ benefit-sharing mechanisms: From policy to practice" [26]

Subnational governments such as Acre's have legal and political power in decentralised systems and are closer to the communities making land use decisions. Subnational governments that are strongly aligned with the national REDD+ programme can have a strong influence on the success of REDD+ projects. Acre's two-decade partnership with Indigenous Peoples, documented by the Earth Innovation Institute, is cited as one of the few cases where subnational governance alignment has successfully translated national REDD+ policy into tangible community-level benefits, including land rights recognition and livelihood support.

Several structural dimensions of benefit-sharing arrangements are particularly significant for standardized reporting or policy criteria.

The form of benefits, cash, in-kind, or services, determines the degree of community agency. Direct cash transfers are the most legible and verifiable form: they preserve community discretion over how resources are used. In-kind benefits such as schools, clinics, or water infrastructure have real value but are developer-determined, meaning communities receive what developers decide rather than what communities prioritize. Service-based benefits, training, legal assistance, healthcare, are harder still to value consistently. It is also important to distinguish between direct benefits (primary, community-specific, and going beyond a project's basic operational needs) and general benefits (those arising from everyday project operations, such as road construction for site access), which should only be counted as benefits when genuinely adapted to rightsholder preferences.

Who receives benefits is as important as what they receive. Arrangements vary widely: some projects pay affected households directly; others channel funds through village committees, community associations, or local government bodies; others route resources through third-party implementing organisations. Each arrangement carries different implications for accountability, elite capture risk, and the actual distribution

of benefits among rightsholder groups, including women, youth, and marginalised sub-groups within communities, for whom disaggregated data is almost entirely absent from current reporting [23].

The timing and conditionality of benefit flows significantly alters their value and risk profile for communities. Some projects commit to upfront or fixed annual transfers regardless of carbon market performance; others link payments to credit issuance volumes or verified emission reductions, creating variable and often unpredictable income streams; others defer significant benefit delivery to project renewal or end-of-crediting milestones. Performance-linked or deferred arrangements effectively transfer market and delivery risk onto communities, who bear the consequences of underperformance or project discontinuation without having influenced those outcomes. A rigorous accounting of benefit-sharing costs must reflect not just nominal amounts but their timing, certainty, and conditionality.

The governance architecture through which benefit flows are managed is critical, yet rarely reported. Who holds funds, who makes allocation decisions, what grievance mechanisms exist, and whether communities have formal oversight roles, these features determine whether benefit-sharing is genuinely empowering or merely performative. Two projects with identical headline benefit-sharing ratios may deliver very different outcomes: one with community-controlled funds and independent oversight, another channeling resources through a developer-appointed committee with no external accountability. Equally significant are systemic structural factors that constrain community agency before any agreement is signed: developer-controlled contracts, ambiguous or developer-claimed carbon rights ownership, intermediary margins, limited community market access, and the variable protection of Indigenous and community rights under national laws and constitutions. These upstream determinants of benefit distribution are largely invisible in current reporting frameworks, yet they profoundly shape what communities ultimately receive.

A further and underappreciated dimension is community readiness, i.e. the financial infrastructure, governance capacity, and institutional capability required to receive, manage, and deploy funds effectively. Benefit-sharing agreements may be well-designed on paper yet fail in practice if communities lack the organisational structures to govern incoming resources, manage grievance processes, or resist capture by intermediaries. This is distinct from the design of agreements and the disclosure of revenues; it requires attention to whether communities have the self-strengthening support needed to participate as genuine equals, not just formal signatories.

The need for standardisation

The case for standardising co-benefits reporting rests on three interconnected objectives: enabling genuine cross-project comparison, creating meaningful accountability for developers, and ensuring the true costs of social integrity are transparently priced into carbon credit transactions.

A functional framework requires, at minimum, a taxonomy that disaggregates benefit-sharing by form, recipient, timing, and governance. This would allow buyers, standard-setters, and communities to assess

not just how much is being shared, but with whom, in what form, under what conditions, and through what accountability structures.

Table 1: Benefit-sharing taxonomy: categories, definitions, examples, and reporting rationale

Taxonomy Category	Definition	Examples	Why It Matters
Direct monetary benefits	Cash transfers or revenue shares paid directly to communities or community-controlled entities	Per-hectare payments, profit-sharing, household cash transfers	Most legible form; enables per-household and per-tonne calculation
Direct in-kind benefits	Goods, assets, or infrastructure with quantifiable monetary value	Schools, clinics, water systems, household equipment	Should be monetised at market value; currently inflates headline figures when aggregated
Indirect livelihood benefits	Employment or income-generating activities enabled by the project	Local wages, microfinance, market linkage support	Must distinguish new income from substituted income; report net livelihood uplift
Capacity and rights support	Investment in community capacity for governance, consent, and verification	Legal assistance, technical training, governance support	Currently rarely disclosed; important proportion of project development cost
Institutional contributions	Contributions to government or civil society that benefit communities indirectly	Policy engagement, community organisation support	Additional narrative: project contributes to more systemic changes

Beyond taxonomy, standardisation requires enforceable reporting criteria. Sylvera proposes the following minimum standards for crediting bodies and standard-setting organisations:

- **Benefit-sharing planning with IPLCs.** Benefit-sharing mechanisms should be designed in direct consultation or collaboration with rightsholders. The design process should address five structural dimensions mentioned above: the form in which benefits will be delivered (cash, in-kind, or services, distinguishing direct from general benefits); who the designated recipients are and through what governance structures funds will be managed; the timing and conditionality of benefit payments; and what support will be provided to ensure community readiness to receive and deploy funds

effectively. Project documentation should include evidence of rightsholder participation i.e., who was consulted, when, through what governance structures, and how community input shaped the final arrangements. Documented evidence of this process should be a condition of project registration, not an optional disclosure.

- **Mandatory categorization.** All benefit-sharing disclosures must separate direct monetary, in-kind, livelihood, and capacity categories. Aggregated figures should not be accepted in project documentation or verification reports.
- **Minimum floor ratios.** Consider establishing a minimum direct monetary benefit share, for example, no less than 30–35% of gross carbon revenue for projects on community-titled land, with explicit justification required for any departure.
- **Lifecycle cost disclosure.** Benefit-sharing costs should be disclosed on an annualized, per-tonne basis throughout the crediting period, not only at inception, to surface whether commitments are maintained as revenues fluctuate.
- **Recipient and governance disclosure.** Reporting must identify whether benefits flow to individual households, community funds, or other entities, and describe the governance arrangements that govern those flows.
- **Disclosure of mandatory interventions.** Expenditure on FPIC facilitation and community risk identification are necessary project requirements. Standards should require these to be disclosed separately and not counted toward benefit-sharing ratios.

This framework would enable meaningful cross-project comparison and enable developers to share the benefits flowing to communities in transparent, accountable forms.

The verification gap

Even a robust standardisation framework will fall short if the verification architecture remains structurally misaligned with community interests. The current model contains an inherent conflict of interest: third-party auditors are contracted and paid by the same developers whose benefit-sharing claims they assess. Addressing this requires more than incremental improvements to audit procedures.

Two complementary reforms merit consideration:

- **Community-endorsed verification:** Social integrity verification should include mandatory community satisfaction surveys conducted by organisations with no commercial relationship to the developer. Community sign-off should be a formal condition of verification approval, not an optional consultation step. This is consistent with FPIC principles and the growing recognition that communities are rights-holders, not passive stakeholders, in carbon project governance.
- **Rights-based verification entities:** A more fundamental reform would assign social integrity assessments to entities that are downwardly accountable to communities rather than to developers, standards bodies, or governments. Assessors commercially and reputationally

dependent on community trust, rather than developer approval, would face systematic incentives to verify genuine co-benefit delivery rather than documented compliance.

Market resistance to these reforms can be anticipated, particularly from developers and auditors with established practices. The case for change is nonetheless straightforward: where verification is accountable only to developers, social integrity claims will continue to be assessed by proxies for developer interests rather than by the rightsholders who bear the consequences of underperformance.

Implications

Methodology for Gathering and Utilising Cost Structure Data

The cost and benefit-sharing data in this report represents the most comprehensive empirically grounded picture of carbon project economics assembled to date, but it is not a complete one. The data reflects what a specific sample of developers were willing to disclose, at a specific point in time, through a methodology shaped by the structural constraints documented in the Approach section. Buyers, investors, standard-setters, and community representatives will need to supplement these benchmarks with direct engagement, and sound judgement about how project-level context modifies general findings. This section provides a practical framework for doing so.

Collecting Cost Data: Start With the Relationship

Developer willingness to share cost data is determined far more by relational trust than by procedural assurance, and the experience of collecting data for this research bears this out consistently. Developers already engaged in technical work with Sylvera, through project assessments or monitoring relationships, were substantially more willing to share data than approaches via cold email outreach. Outreach that clearly communicated the purpose of the request, the data governance protections in place, and the tangible benefit to the developer, whether benchmarking data, early access to findings, or a more informed counterpart in commercial negotiations, materially improved participation rates. A formal data licensing agreement, setting out intended use, anonymisation procedures, and restrictions on individual responses, was received positively and credited by several participants as a factor in their decision to contribute.

What consistently does not work: email-only outreach with no prior relationship, requests for highly granular cost data disaggregated across sub-categories that do not map to how developers organise their own financial records, and framing the request as a data collection exercise without anchoring on the value of participation. The practical implication is that cost and benefit-sharing data collection cannot be treated as a one-off transaction, it requires sustained engagement, credible institutional positioning, and a genuine demonstration of shared interest in the outputs.

When engaging developers directly, the following questions provide a practical starting framework:

On cost structure:

- What was the total capital expenditure to reach first credit issuance, including project development, validation, and first verification?
- What are the ongoing annual operating costs, including monitoring, verification, and community engagement?
- What is the expected annual credit issuance volume, and over what crediting period?
- What discount rate or cost-of-capital assumption underpins the project's financial model?

On benefit-sharing:

- What proportion of gross carbon revenue is committed to direct community benefit-sharing, and how is this defined, cash transfers, in-kind contributions, employment, services?
- Who are the designated recipients, individual households, community funds, or third-party implementing organisations?
- How are benefit payments timed, fixed annual, linked to issuance volumes, or deferred to project renewal?
- What governance arrangements exist for community benefit fund management, and who has oversight?
- What grievance mechanisms are in place, and how frequently have they been used?

Developers should also be asked whether they would consent to their data being included in third-party benchmarking exercises, and under what anonymisation or aggregation conditions.

A more durable solution, and one likely to generate higher response rates than outreach from a single third party, would involve crediting standards themselves playing a more active role in cost data collection. The ICVCM, for instance, could work through crediting standards to systematically, or on a random sample basis, request this data from project developers as part of their standard processes, in a secure, anonymised form. A crediting body requesting disclosure carries institutional authority and a pre-existing relationship with developers that commercial or research outreach cannot replicate. This approach would also distribute the data collection burden across a more appropriate institutional actor, rather than relying on third parties to operate at the margins of developer trust.

Public Documents as Key Sources of Information

Project design documents, monitoring reports, and registry filings do not typically disclose financial cost structures, but they contain significant information relevant to benefit-sharing assessment. The following elements warrant particular attention.

In the PDD, review the benefit-sharing plan or community engagement section for documentation of the consultation process, the nature of FPIC, and the arrangements agreed with communities. Assess whether direct benefits, payments beyond basic operational requirements, are distinguished from general

co-benefits that arise incidentally from project activities. Note whether benefit recipients are identified by name, group, or governance structure, or whether the description remains generic. Check for the presence and accessibility of a grievance mechanism, and whether women, youth, or marginalised sub-groups are specifically addressed.

In monitoring reports, look for evidence that benefit-sharing commitments have been implemented and are being tracked over time. Reports that contain no reference to benefit-sharing, or that simply repeat design-stage commitments without reporting on delivery, signal that social integrity is not a genuine operational priority. Reports that quantify disbursements, beneficiary households reached, and fund governance structures provide materially higher assurance.

At the registry level, check whether the applicable crediting standard requires benefit-sharing plan disclosure and whether the project's filed documentation is complete relative to that requirement. Gaps between what a standard requires and what a project has filed are themselves informative.

Using Benchmarks Appropriately

Where direct engagement is not feasible and project documentation is incomplete, the benchmarks in this report provide a useful supplementary reference. The median levelized costs and benefit-sharing ranges documented here represent an empirical anchor for assessing whether a developer's pricing is broadly consistent with the demonstrated economics of their project type.

These benchmarks should be treated as reference ranges, not precise comparators. Cost variation within project types is substantial, and project-specific factors including scale, geography, governance model, and financing structure can produce costs that differ materially from the median without indicating any quality or integrity concern. The appropriate use of a benchmark is to flag cases where a quoted price sits so far outside demonstrated sector economics as to warrant further explanation, not to enforce a single standard.

Complementary published sources include the Öko Institut's 2023 analysis of benefit-sharing provisions in voluntary carbon market PDDs [27], [Carbon Market Watch's 2023 benefit-sharing assessment](#) [3], and the ICVCM's CIWP 4 report on Social Safeguards and Sustainable Development (2025) [28]. Where this report provides quantitative cost benchmarks, these sources provide qualitative context on benefit-sharing design and governance, together they offer a more complete picture.

Beyond standalone benchmarking exercises, cost data has the potential to be incorporated into existing integrity labels and accreditation frameworks. The CCP label, for example, represents an existing, widely recognised signal of project quality, expanding its scope to include disclosure of cost structure or benefit-sharing arrangements would embed economic transparency into a mechanism that buyers already rely on, and would give cost data institutional durability that a periodic survey cannot provide.

Evaluating Benefit-Sharing Quality

Headline ratios are an insufficient basis for assessing benefit-sharing quality. A project reporting that 40% of revenues are committed to community co-benefits may be delivering substantive value, or may be aggregating developer-controlled infrastructure, consultant fees, and third-party service delivery under a catch-all line that obscures how much actually reaches communities in forms they can direct and deploy.

Rigorous evaluation requires attention to four dimensions:

- **Form.** Are benefits delivered as cash or cash-equivalent transfers that preserve community discretion, or as in-kind contributions whose form and value are determined unilaterally by the developer?
- **Recipient.** Do benefits reach individual households or community-controlled entities, or do they flow through developer-appointed intermediaries or local government bodies with limited accountability to affected communities?
- **Timing and conditionality.** Are benefit payments fixed and predictable, or linked to credit issuance volumes in ways that transfer market and delivery risk onto communities?
- **Governance.** Is there a community-controlled fund with independent oversight, a transparent allocation process, and an accessible grievance mechanism, or is the structure effectively developer-managed?
- **Community readiness:** Are there appropriate infrastructure for the communities to receive, manage, and deploy funds effectively?

On governance, the distinction between agreement design and community readiness deserves particular emphasis. An agreement may be well-structured on paper, but if the community lacks the financial infrastructure, governance capacity, and institutional capability to receive, manage, and deploy funds effectively, and to resist capture by intermediaries, it will not translate into genuine empowerment. Buyers and investors should therefore ask not only what the agreement says, but what evidence exists that the community has the capacity to give effect to it.

Adjusting for Project Type and Geography

The benchmarks in this report do not apply uniformly across all contexts, and adjusting for project type and regional differences is an essential part of using cost data effectively.

On project type, ARR projects carry materially higher capital expenditure ratios and are significantly more sensitive to cost-of-capital assumptions than REDD+ or regenerative agriculture projects, meaning the same levelized cost per credit can reflect very different underlying structures depending on the financing environment and issuance profile. Biochar carries the highest absolute median cost in the dataset, compounded by high capital intensity and limited investor comparables, generating structural financing risk not present in established nature-based solutions categories.

On geography, sovereign risk, currency risk, and political instability can add material premia to financing costs in developing-country jurisdictions, premia that are frequently invisible in credit pricing but real determinants of developer economics. Projects where community land tenure is unclear, carbon rights ownership is contested, or national policy frameworks are unstable face materially different cost and benefit-sharing dynamics. These contextual factors are not captured in benchmarks and require country-specific knowledge that aggregate data cannot provide. The case studies presented in the Benefit-Sharing section, drawing on examples from British Columbia, Indonesia, and Brazil's Acre state, illustrate how dramatically national and subnational policy frameworks can shape carbon revenue distribution, and provide a starting framework for the contextual factors that should inform any rigorous geography-specific assessment.

Conclusion

This report set out to answer a question that remains poorly understood across the voluntary carbon market: what does a high-integrity carbon credit actually cost to produce? On cost structures, the data confirms that cost heterogeneity is substantial, structurally determined, and consequential to understanding the true cost of project implementation. On benefit-sharing, wide variation, absent standardisation, and lack of disaggregated data make it hard to assess the true cost of delivering meaningful community impact.

The findings provide an empirical foundation for strengthening transparency requirements, introducing minimum benefit-sharing taxonomy, and reforming social integrity verification. Cost benchmarking offers the most reliable methodology for assessing whether credit pricing is consistent with demonstrated project economics. However, the report's findings are reference ranges, not precise comparators, and must be adjusted for geography, project type, and context. The findings also corroborate what has been consistently reported at the community level: that current disclosure frameworks are not designed to surface the information that matters most for assessing whether carbon markets are delivering equitable outcomes on the ground.

The dataset underlying this report is a starting point, not a conclusion. This work provides methodological insights on collecting data for costs to develop carbon projects - demonstrating that cost and benefit-sharing data can be collected from commercial developers at scale, and that the results are analytically useful. This analysis should be repeated as the market evolves - tracking whether integrity costs are being appropriately priced, whether benefit-sharing disclosure is improving, and whether the reforms proposed here are producing measurable change in what communities actually receive.

References

1. Integrity Council for the Voluntary Carbon Market (ICVCM) (2023) *Core Carbon Principles, Assessment Framework and Assessment Procedure*. Available at: <https://icvcm.org/the-core-carbon-principles/>
2. Garnett, S.T., Burgess, N.D., Fa, J.E., Fernández-Llamazares, Á., Molnár, Z., Robinson, C.J., Watson, J.E.M., Zander, K.K., Austin, B., Brondizio, E.S., Collier, N.F., Duncan, T., Ellis, E., Geyle, H., Jackson, M.V., Jonas, H., Malmer, P., McGowan, B., Sivongxay, A. and Leiper, I. (2018) 'A spatial overview of the global importance of Indigenous lands for conservation', *Nature Sustainability*, 1(7), pp. 369–374. Available at: <https://www.nature.com/articles/s41893-018-0100-6>
3. Carbon Market Watch (2023) *A fair share of the voluntary carbon market? How the absence of standard rules on benefit-sharing arrangements hurts local communities and indigenous peoples*. Policy Brief, November 2023. Available at: <https://carbonmarketwatch.org/publications/a-fair-share-of-the-voluntary-carbon-market/>
4. American Carbon Registry (2022) *Description of NPV discount rates for ACR's IFM methodology v2.0*. Available at: https://acrcarbon.org/wp-content/uploads/2023/03/description-of-npv-discount-rates-for-acr2019s-ifm-methodology-v2-0_final_2022-07-07.pdf
5. UN-REDD Programme (2023) *Pricing forest carbon: A technical report*. Available at: https://www.un-redd.org/sites/default/files/2023-02/ForestCarbonPricing_Report_16Feb_FINAL.pdf
6. IEA (2024) *Cost of Capital Observatory*. Available at: <https://www.iea.org/reports/cost-of-capital-observatory>
7. Ameli, N., Dessens, O., Winning, M., Kothari, S., Chenet, H., Dobrotkova, Z., Zenghelis, D., Anandarajah, G. and Grubb, M. (2021) 'Higher cost of finance exacerbates a climate investment trap in developing economies', *Nature Communications*, 12(1), p. 4046. Available at: <https://www.nature.com/articles/s41467-021-24305-3>
8. OECD (2024) *Cost of capital for climate-related investments and clean energy projects*. ENV/WKP(2024)15/REV1. Available at: [https://one.oecd.org/document/ENV/WKP\(2024\)15/REV1/en/pdf](https://one.oecd.org/document/ENV/WKP(2024)15/REV1/en/pdf)
9. Carbon Capital Lab (2025) *NBS Project Developer Survey*. Available at: <https://carboncapitallab.com>
10. Climate Policy Initiative (CPI) (2023) *Global Landscape of Climate Finance 2023*. Available at: <https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2023/>
11. Climate Trust, The (2025) *The role of public capital in afforestation and reforestation carbon projects*. Available at: <https://climatetrust.org/news/role-of-public-capital-in-afforestation-and-reforestation-carbon-projects/>
12. CDR.fyi and OPIS (2025) *Durable CDR Pricing Survey*, January 2025. Available at: <https://www.cdr.fyi/reports/pricing-survey-jan-2025.pdf>
13. Mazzucato, M. and Semieniuk, G. (2018) *Financing green growth*. IIPP Working Paper 2018-04. Available at: https://discovery.ucl.ac.uk/id/eprint/10195740/1/Mazzucato_iipp-wp-2018-04.pdf

14. Damodaran, A. (2023) *Equity risk premiums (ERP): Determinants, estimation and implications, the 2023 edition*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4398884
15. World Resources Institute (WRI) (2025) *Financial sector guidebook for nature-based solutions investment*. Available at: <https://www.wri.org/research/financial-sector-guidebook-nature-based-solutions-investment>
16. Global Center on Adaptation (GCA) and University of Oxford (2023) *Financing nature-based solutions for adaptation*. Available at: https://gca.org/wp-content/uploads/2025/02/Financing_NbS_for_Adaptation-GCAOxford2023-fin-alv2-1.pdf
17. IFC DFI Working Group on Blended Concessional Finance (2023) *Joint report on DFI blended concessional finance*. Available at: <https://www.ifc.org/content/dam/ifc/doc/mgrt/2023-03-dfi-bcf-joint-report.pdf>
18. Climate Policy Initiative (CPI) (2024a) *Toolbox on Financing Nature-Based Solutions*. Available at: <https://www.climatepolicyinitiative.org/wp-content/uploads/2024/09/Report-Toolbox-on-Financing-Nature-Based-Solutions.pdf>
19. FAO (2018) *The state of the world's forests 2018: Forest pathways to sustainable development*. Available at: <https://openknowledge.fao.org/server/api/core/bitstreams/80da7381-fc20-44bb-b0a0-7e8c35334a80/content>
20. IBI/USBI (2023) *Global Biochar Market Report 2023*. Available at: <https://biochar-international.org/wp-content/uploads/2024/06/Global-Biochar-Market-Report-2023-%E2%80%93-Public.pdf>
21. Rongmei, D. (2025) 'Carbon markets and Indigenous Peoples in Northeast India: A critical reflection', *IWGIA, International Work Group for Indigenous Affairs*, 8 November. Available at: <https://iwgia.org/en/news/5860-carbon-markets-indigenous-peoples-northeast-india.html>
22. Redvers, N. et al. (2025) 'Indigenous data sovereignty and carbon markets', *Lancet Planetary Health*, 9(5). Available at: [https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(25\)00086-5/fulltext](https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(25)00086-5/fulltext)
23. Nicholson, H. and Besco, L. (2025) 'Gender (in)equality in the voluntary carbon market', *Social Politics: International Studies in Gender, State & Society*, 32(4), pp. 1078–1103. Available at: <https://doi.org/10.1093/sp/jxaf014>
24. Lentera Hukum (2022) 'Recognition of forest carbon rights in Indonesia: A constitutional approach', *Lentera Hukum*, 9(2). Available at: <https://jurnal.hukumonline.com/a/627fe043719ce191839c8951/recognition-of-forest-carbon-rights-in-indonesia-a-constitutional-approach/>
25. MDPI Forests (2025) 'Comparative study of carbon rights governance among 7 countries', *Forests*, 16(5), p. 816. Available at: <https://www.mdpi.com/1999-4907/16/5/816>
26. CIFOR-ICRAF (2022) *Designing REDD+ benefit-sharing mechanisms: From policy to practice*. Available at: https://www.cifor-icraf.org/publications/pdf_files/Books/REDD-Benefit-Sharing.pdf
27. Öko Institut (2023) *Assessing the transparency and integrity of benefit-sharing arrangements related to voluntary carbon market projects*, November 2023. Available at:

References

<https://www.oeko.de/publikationen/p-details/assessing-the-transparency-and-integrity-of-benefit-sharing-arrangements-related-to-voluntary-carbon-market-projects>

28. Integrity Council for the Voluntary Carbon Market (ICVCM) (2025) *Continuous Improvement Work Programme report: Sustainable Development Benefits and Safeguards*. Version 1.0, October 2025. Available at: <https://icvcm.org/continuous-improvement/>

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