



Clean Cooking Industry Snapshot

Top Trends: Investment, Revenue, and Carbon Markets

WITH CONTRIBUTIONS FROM





Photo: Nick Wambugu for CCA

Introduction

The Clean Cooking Alliance's Clean Cooking Industry Snapshot series offers insights into investment and operational trends shaping the clean cooking sector, including the impact of carbon finance.

The report is intended to inform prospective and current financiers of the sector, as well as enterprises both in the sector and adjacent to it. It builds on previous editions of the Industry Snapshot by analyzing data submitted by for-profit, clean cooking enterprises serving households in low- and middle-income countries.

This report covers a wide range of technologies, including industrial biomass cookstove manufacturers; processed biomass-based fuel producers (including pellets and charcoal briquettes); ethanol cooking fuel and stove suppliers; prefabricated biogas systems manufacturers; liquified petroleum gas (LPG) downstream distributors; and electric cooking appliance manufacturers.

In addition, it includes enterprises that provide specialized services within the value chain, such as technology integration and last-mile distribution.

It does not cover informal, for-profit businesses; businesses operating in high-income markets; fuel and stove producers exclusively targeting industrial or commercial applications; upstream and midstream fuel enterprises; or infrastructure developers and operators.

This report is not an exhaustive representation of the for-profit clean cooking sector. As a "snapshot," it provides an abbreviated understanding of a situation based on a particular period. This latest edition adopts a condensed approach focusing on top trends in investment, revenue, and carbon markets.

Summary

The clean cooking sector has reached an inflection point. Record levels of capital, rising enterprise revenues, and the growing role of carbon finance all signal strong progress. Simultaneously, equity and grant flows are stalling, potentially reducing the sector's ability to withstand future shocks. Addressing this structural imbalance is important for unlocking diverse forms of capital that can drive inclusive, resilient, and long-term growth.

What the Data Show

1. Investment is rising, with a capital mix leaning heavily on debt. Clean cooking is attracting more capital than ever, driven by a 238% surge in debt investment since 2018. At the same time, equity has stalled, with median deal sizes falling. Grants now make up just 7% of total capital, potentially limiting the sector's ability to experiment or support models outside of the mainstream carbon model.

2. Carbon revenues are driving growth, but performance gains are uneven. Enterprise revenues have grown more than eightfold since 2018, with carbon credit and product and fuel sales now accounting for over 95% of income. Carbon revenues have been catalytic, surging by 158% in 2023 and accelerating enterprise performance. However, these gains are unevenly distributed. Companies active in carbon markets saw revenues nearly quintuple since 2021, while those without carbon programs saw declines.

3. Product and fuel sales revenue is strong, and carbon revenue is growing. Product and fuel sales make up 61% of enterprise revenue – an encouraging sign of consumer willingness to pay for clean cooking solutions. In parallel, the rapid growth of carbon income may be a warning to businesses of the risks of over-relying on this revenue stream: whereas product and fuel sales offer fast, actionable signals, carbon revenue provide delayed feedback, making it harder to course-correct if needed.

4. Carbon-linked models are thriving; with support, more companies could follow their path. Carbon-linked enterprises grew their revenues by 387% between 2021 and 2023. However, smaller companies face high barriers to entry, from limited technical capacity and access to local subject matter experts, to insufficient upfront equity for project implementation and access to buyers. As a result, carbon gains are concentrated among those already positioned to grow.

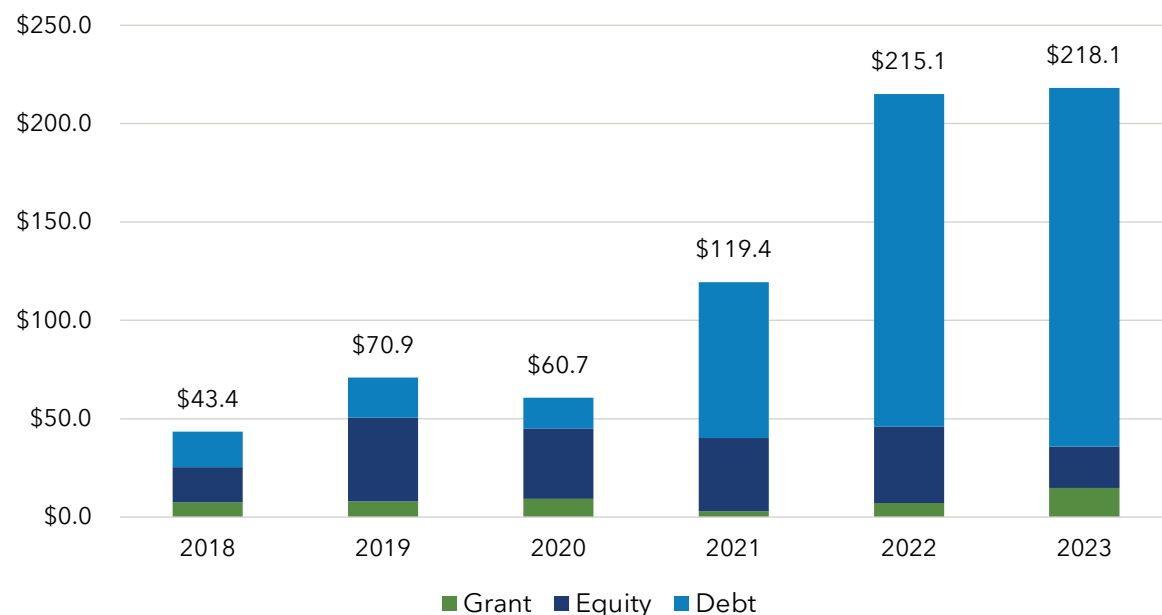
5. Clean cooking carbon markets are growing, and integrity initiatives are having an impact, but challenges remain. Issuances grew by 168% in 2023, outpacing the 133% rise in retirements and pointing to a possible supply-demand mismatch. At the same time, registries such as Gold Standard and Verra are tightening quality standards, while initiatives such as the Integrity Council for the Voluntary Carbon Market (ICVCM), CORSIA Phase 1, and the forthcoming Clean Cooking Code of Conduct and CLEAR Methodology are rightfully raising integrity expectations. These efforts may justify higher prices but also reduce issuances and increase compliance costs. Whether rising prices can keep pace with higher costs and lower volume remains an open question.



Investment Trends

- ▶ The clean cooking sector is maturing financially. The capital mix shows a growing dependence on debt and a decline in equity and grants.
- ▶ Investment sizes are shifting as the market matures. Debt deals are growing in scale, while equity investments are reducing and grants are stalling, potentially limiting early-stage growth.
- ▶ Almost all capital invested went to enterprises already issuing carbon credits or registering a Program of Activities (PoA).

Capital Raised (\$M) by Investment Type



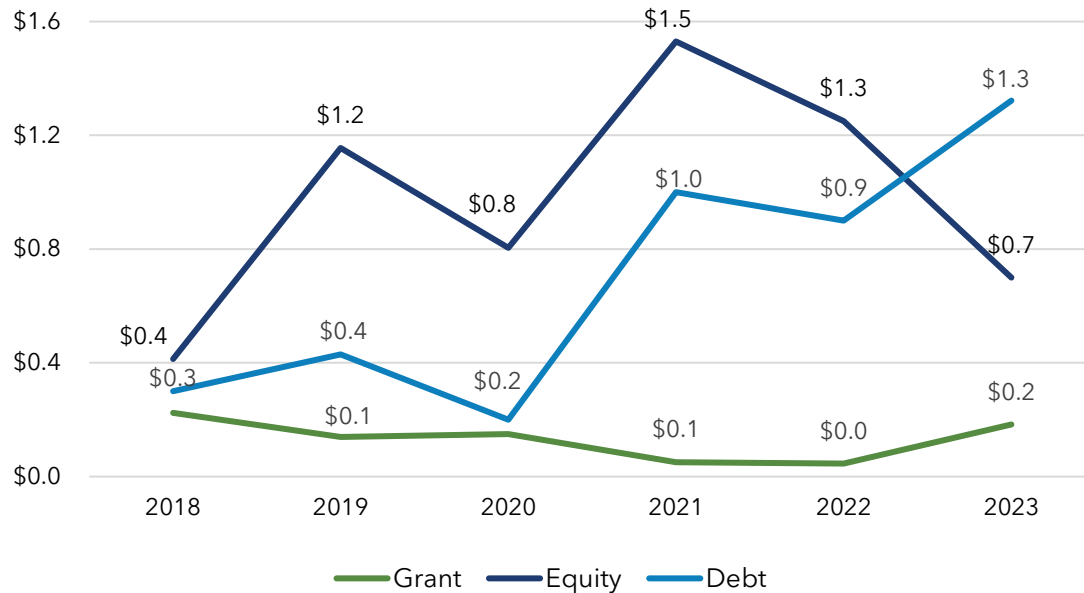
- Over the past five years, capital raised grew fivefold, driven by a surge in debt financing.
- Total investment plateaued between 2022 and 2023, with a nominal 1.4% increase.
- Debt financing made up over 84% of capital raised, up from 17% in 2018. As in 2021 and 2022, debt continued to rise, this time increasing by 8%.
- Equity investment fell by 46%, to its lowest point in five years. This reflects a broader reduction in venture capital investment in 2023* but also that equity investments have failed to grow meaningfully since 2019.
- Grant funding increased from \$7.2 million in 2022 to \$14.8 million in 2023, but \$12 million came from a single large grant. Outside of this, grant funding fell.

* KPMG Private Enterprise's Venture Pulse Report, Q1 2024

The sector's remarkable success in mobilizing record levels of capital, particularly through unprecedented levels of debt investment, marks a turning point. At the same time, many early-stage markets thrive on higher shares of risk-tolerant capital, such as equity and grants, before layering in debt. Indeed, equity and grants allow enterprises to build the fundamentals, such as investing in product development, setting up operational capacity, and registering carbon programs. The current clean cooking capital mix introduces questions around innovation support, resilience, and inclusive access to funding.

- This imbalance may also put the sustainability of debt-fueled expansion at risk. Debt can drive scale, but only if underpinned by a pipeline of investable enterprises with the capacity to absorb and repay it.
- To safeguard progress and ensure inclusive growth, the sector must restore a balanced capital stack by reinvigorating equity and smaller-scale grant flows to support enterprises across their full lifecycle, from early-stage innovation to commercial scale.

Median Investment Size (\$M) by Investment Type

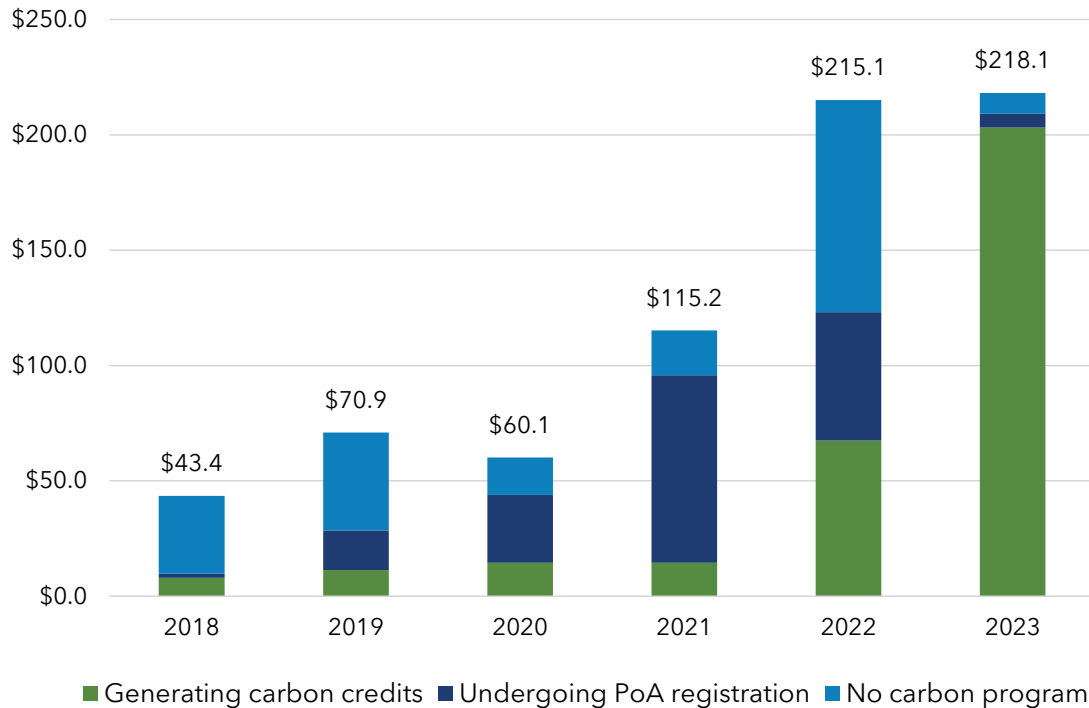


- Median debt investment size increased from \$0.9 million to \$1.3 million between 2022 and 2023. The number of debt investments increased from 18 to 20, continuing a multi-year upward trend.
- Median equity investment size has fallen by 54% since 2021, even though the number of equity investments was constant at 16 for the last two years.
- The number of grants fell precipitously from 29 in 2022 to 10 in 2023. Eighty percent of 2023 grant funding came from one large grant. The median grant size remained flat at just \$0.2 million. This level, unchanged since 2020, is far lower than what is typically needed to fund meaningful, early-stage, risk-tolerant or inclusive initiatives.
- Investment was highly concentrated, with eight companies receiving 90% of capital. This was an uptick from 2020, when only five companies accounted for 90% of investment, but indicates that a few large players continued to dominate.

The sector's capital base is growing. Large debt deals are becoming the norm, while shrinking equity sizes and stagnant grants suggest reduced risk appetite.

- Larger debt deals, which suggest sector maturity, have been accompanied by a concentration of capital. Big, repeatable investments are good for scale, but they may bypass less established enterprises.
- Shrinking equity investment means a reduced strategic runway per company. Stable deal counts but smaller tickets imply that capital is being spread more thinly, potentially leaving enterprises undercapitalized for growth or scale.
- Stagnant grant sizes may signal a reduced focus on non-commercial needs like consumer research, inclusion, research and development, and ecosystem support.

Capital Raised (\$M) by Carbon Program Status



- Carbon-linked business models have become the dominant driver of capital flows in clean cooking, with nearly all 2023 funding going to enterprises already generating credits or registering a PoA. This type of capital made up 96% of funds raised in 2023, compared to 57% in 2022.

The carbon market has become the gateway to investment in clean cooking. While capital is flowing to enterprises with certified projects, enterprises that are in the pre-carbon stage, or exploring alternative models, risk being left behind.

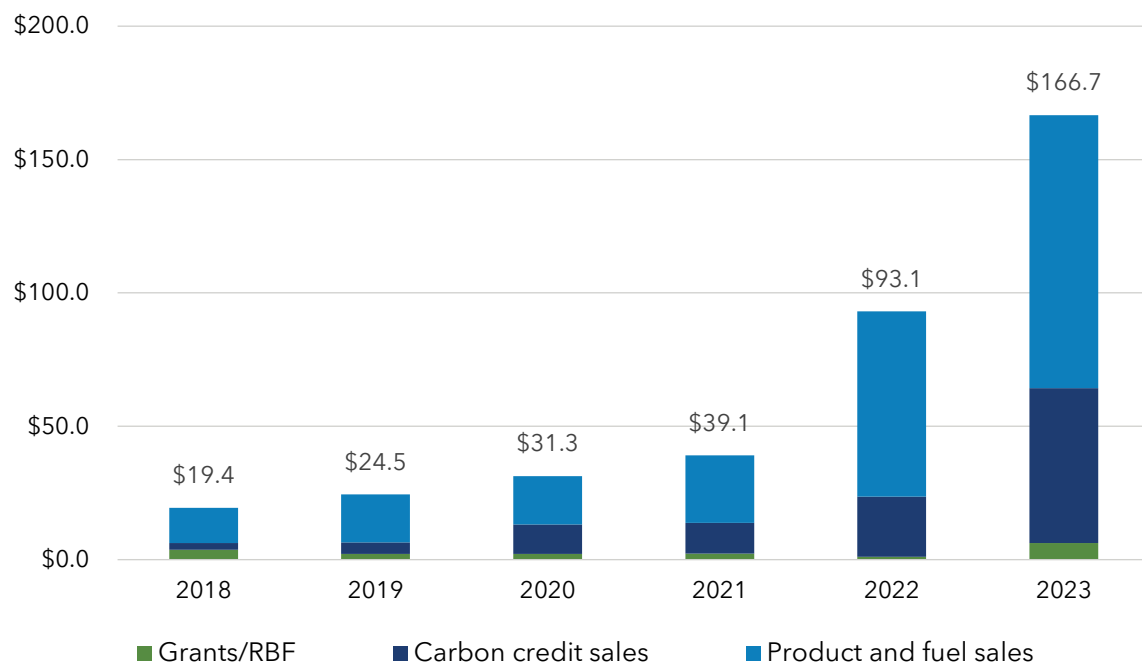
- Carbon projects have unlocked new financial pathways, especially for debt. Carbon-linked business models are not just raising more capital; they are accessing it through more sophisticated tools. Developers are leveraging forward purchase agreements, treating carbon contracts and existing inventory as collateral, and pointing to robust product and fuel sales as proof of market strength. Innovative financial structuring allows many projects to meet debt financiers' need for security and comfort.
- While this shift demonstrates how carbon markets can anchor investment, it also raises the bar for participation. Enterprises that have not reached registration or cannot structure similar instruments may find themselves locked out of the capital flow.
- The result is a capital landscape that is more investable, but also less inclusive. With 93% of capital in 2023 going to projects already generating credits and 90% to just eight large enterprises, the ecosystem risks overlooking early-stage ventures, socially driven models, and first-time developers – particularly local actors – who may need time or grant support to reach carbon readiness.
- CCA is exploring the development of aggregation platforms that may offer a more practical and cost-effective path for smaller companies to engage in carbon markets, compared to becoming a standalone carbon project developer. These platforms could reduce transaction costs, offer access to pooled financing and technical support, and give investors greater confidence in credit quality and delivery – potentially unlocking capital that individual companies may not be able to access alone.

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Revenue Trends

- ▶ Clean cooking enterprises saw record-setting growth in revenues, driven by rising product and fuel sales and a surge in carbon credit sales.
- ▶ Enterprises with carbon programs have seen growth in revenues – not just from carbon revenues, but also from product and fuel sales.
- ▶ The clean cooking sector has achieved commercial breakthroughs. However, an increasing reliance on revenue from carbon credit sales may indicate that the sector is seeing less diversity in business models and higher financial concentration.

Clean Cooking Enterprise Revenue (\$M)

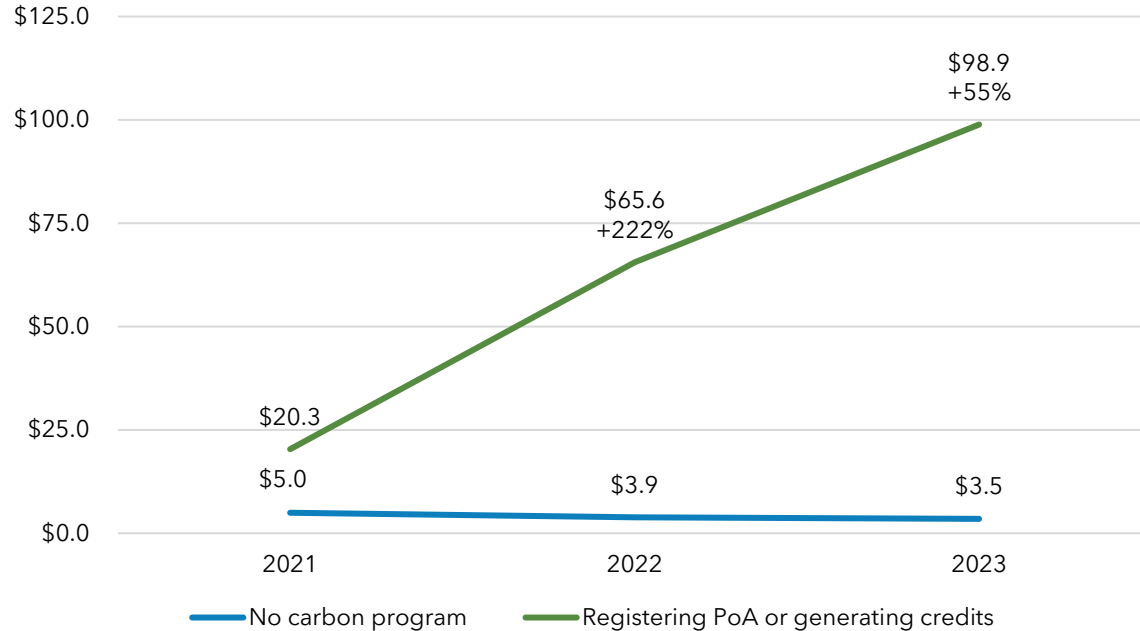


- Between 2018 and 2023, total enterprise revenue grew more than eightfold.
- Carbon revenue increased by 158% in 2023 alone, outpacing strong growth in sales of products and fuels. With more carbon credits expected to be issued from past mitigation efforts, this revenue expansion will likely continue in the short to medium term.
- Total enterprise revenue rose from \$19.4 million in 2018 to \$166.7 million in 2023 – an increase of over 750%. Revenue grew by 79% compared to 2022.
- Carbon revenue accounted for most of the growth, increasing by \$35.6 million – a 58% increase over 2022.
- Revenue from the sales of products and fuels also saw significant growth, rising by \$33 million, or 48% compared to 2022.
- Revenue from grants and results-based financing schemes (RBF) reached \$6.2 million in 2023 – nearly six times higher than in 2022, and an all-time high.

Carbon revenue is not just powering short-term growth. It is also laying the foundation for medium-term financial stability.

- Product sales in 2023 will likely begin generating carbon revenue in 2024 and continue doing so for 3-5 years under most crediting frameworks. This makes carbon revenue not just a boost, but also a multi-year income stream that strengthens enterprise cash flow, supports reinvestment, and enhances planning certainty.
- Continued success depends on sustaining and then growing demand for cookstove credits, including through integrity initiatives that increase buyer confidence.

Product and Fuel Sales Revenue* (\$M) by Carbon Program Status



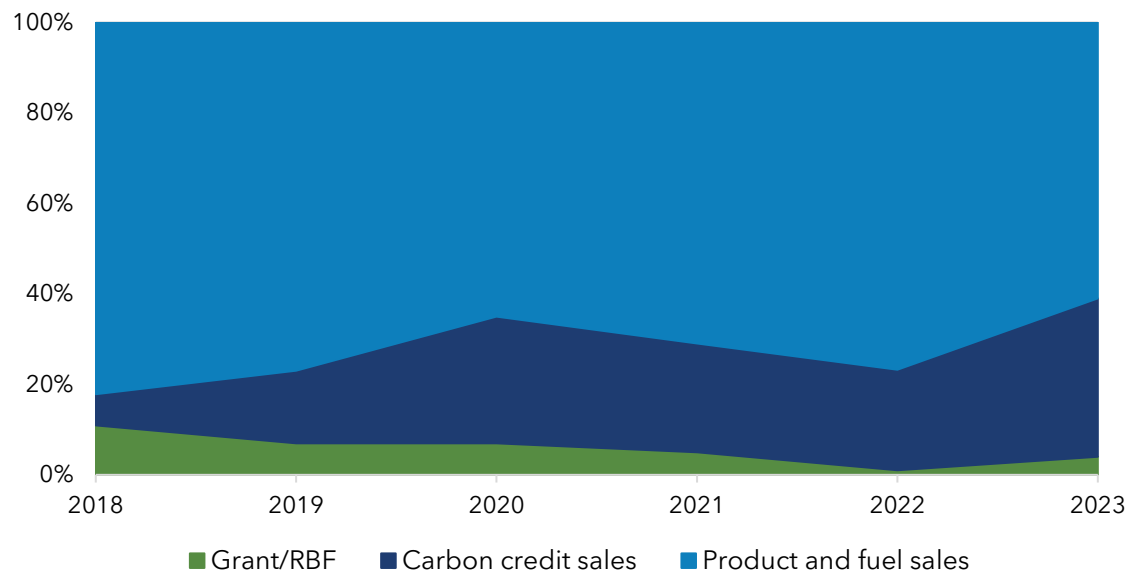
* Revenue for a cohort of 20 enterprises tracked by CCA since 2014.

- Companies setting up or operating carbon programs have seen a 387% growth in product and fuel sales revenue since 2021 – a nearly fivefold increase.
- Enterprises without carbon programs have seen falling product and fuel sales revenue over the last two years.

Carbon market participation is now strongly associated with enterprise growth. Access to carbon finance appears to amplify sales performance, helping companies scale faster, reach more customers, and invest in delivery capacity.

- Carbon finance is acting as a commercial catalyst. Companies generating or registering for credits are using carbon revenue to fund working capital, inventory, and market expansion – boosting product sales performance at the same time.
- Carbon market engagement is now a threshold for scalability. For many companies, registering for carbon credits is not just a matter of commercial viability, but a financial opportunity that is becoming a prerequisite for scale, especially in low-margin retail markets.

Revenue* by Type, as a Percentage of Total



* Revenue for a cohort of 20 enterprises tracked by CCA since 2014.

- Revenues from carbon credit sales – and product sales enabled by them – are now driving nearly all sector growth.
- Product and fuel sales still made up 61% of enterprise revenue in 2023, signaling robust underlying demand.
- Carbon credit sales accounted for 35% of revenue in 2023. Outside of 2020, this is the highest share of carbon credit revenues since CCA began collecting data on the sector.
- Despite strong growth, grants and RBF made up only 4% of revenues in 2023, representing a significant shift from 2018-2020, when RBF's share of revenues ranged from 7-11%.

The sector's growth is real. Looking ahead, a narrowing revenue base risks eroding the sector's ability to self-correct, adapt, and serve diverse needs.

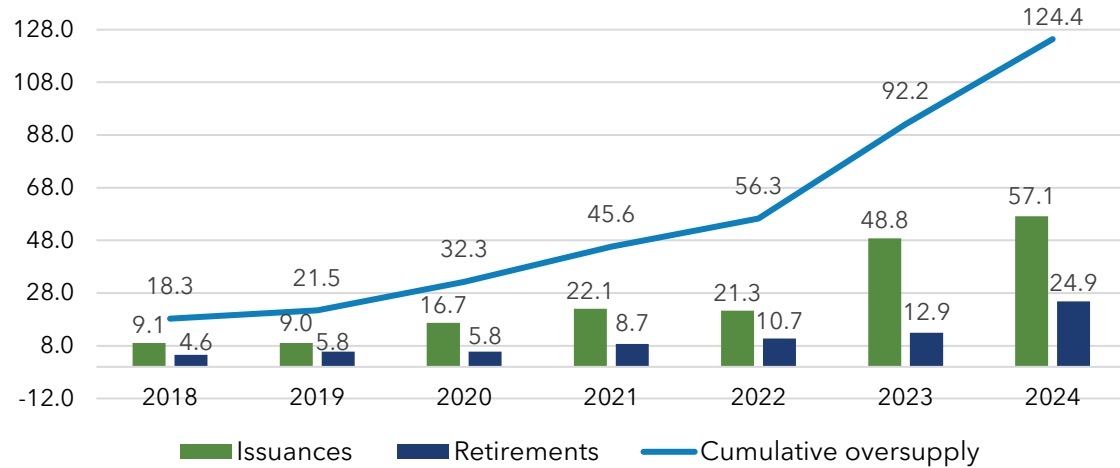
- Carbon-readiness now defines which enterprises can succeed. Those lacking scale or support to enter carbon markets may be indefinitely excluded, even if they serve high-impact niches.
- Product and fuel sales test demand in real time, whereas carbon revenue reflects impact much later. Sales of clean cooking products and fuel are a real-time signal of consumer demand. Carbon revenue arrives later, so overdependence on it may lead to blind spots and slower responses to usage failure.
- The downward trend in RBF's share of revenue indicates reduced access to a key, flexible funding stream for experimentation and early-stage inclusion. RBF can serve as a bridge between grant and commercial capital, providing performance-based incentives and helping to de-risk capital flows to early-stage or unconventional models. While growth in 2023 was encouraging, RBF has not kept pace with the overall industry's expansion since 2018, underscoring the need for greater catalytic capital to foster innovation.



Carbon Market Trends

- ▶ The clean cooking carbon market is under pressure, with headline prices falling amid rising oversupply.
- ▶ At the same time, a high-integrity segment is beginning to emerge. New methodologies and standards may increase developers' costs and reduce the number of issuances per project but improve buyer confidence and price stability .

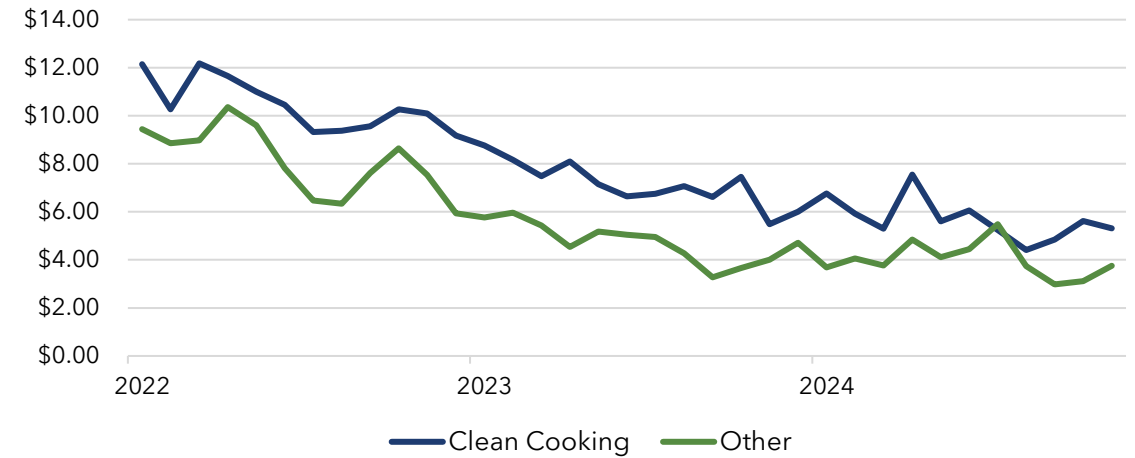
Credit Issuances, Retirements, and Unsold Supply (M)



Source: MSCI, 2025

- Retirements increased by 14.2 million (+133%) since 2022, but issuances grew faster, increasing by 35.8 million (+168%) over the same period.
- Cumulative unsold credits increased by 121% since 2022, reaching 124.4 million in 2024. The oversupply in 2024 alone was 32.2 million credits.

Average Credit Prices (\$) for Clean Cooking vs Other Project Types



Source: Allied Offsets, 2025

- The average price for clean cooking credits fell from ~\$12 in early 2022 to ~\$5 in 2024, a drop of nearly 60%, reflecting overall market stress.
- Clean cooking continues to trade at a premium over other project types, but the gap is narrowing, signaling a weakening of either buyer differentiation or buyer risk appetite.

The clean cooking carbon market is entering a critical transition. While oversupply is bringing down average prices, a parallel shift toward higher integrity may create new price tiers and restore buyer confidence.

- Falling prices reflect broad market stress. Headline price erosion is likely driven by oversupply, fragmented buyer engagement, and delayed retirements, partly resulting from the uneven quality of previous cookstove carbon projects.
- A quality-led segment is emerging but needs active buyer recognition. [ICVCM's Core Carbon Principles](#), [CORSIA Phase 1 rules](#), and the forthcoming [Clean Cooking Code of Conduct](#), are raising the bar for integrity, in tandem with improved methodologies like [CLEAR](#) and [ICVCM-approved approaches](#) by Gold Standard and Verra. However, their market impact depends on whether buyers are willing to differentiate and pay for higher-quality credits.
- Stronger standards may shrink supply but could strengthen long-term value. New requirements may reduce issuances per project and raise developer costs, but should improve trust, price stability, and sector credibility over time.

Questions for Further Research

1. Is there an opportunity cost of retreating grant funding? Rapid growth in debt investment is a sign of maturity in the sector, but slowdowns in equity and grant funding – which is critical for early-stage companies – could put future growth at risk.

2. Can carbon revenue continue to scale up clean cooking? Carbon revenue is driving both access to finance and market expansion, but the data do not show whether it can sustainably scale up the entire sector. Without cash flow flexibility or broader enterprise participation, growth may be vulnerable to policy or price shocks.

3. Could the success of the carbon-financed model be overshadowing other high-potentials models? The widening gap between carbon and non-carbon enterprises raises risks of overexposure, potentially deterring investors seeking diversification as well as excluding alternative, high-potential models.

4. Can revenue from product and fuel sales keep its place as the primary driver of income? Product and fuel sales offer early feedback on consumer demand, price sensitivity, and willingness to pay – vital signals for both investors and policymakers. If this income stream erodes, the sector risks becoming less responsive and adaptable.

5. Are local financial systems being mobilized? Capital flows are rising, but if local banks are not fully engaged – offering inventory finance, bridging loans, or end-user credit – businesses too small to access global finance may be unable to unlock their full potential.

6. Will higher credit prices keep pace with the growing cost of mitigation and crediting under high-integrity initiatives? New integrity initiatives are an opportunity to strengthen carbon markets, but projects will also generate fewer credits in the future, while seeing greater compliance costs. Buyers need to see enough additional value in these credits to pay a premium for them.

7. How can more detailed data inform decision-making? While CCA's Industry Snapshot provides insight into sector trends, more consistent, granular, and standardized data will be critical to attract institutional capital and guide evidence-based policy.



Methodology

Approach: A survey was sent to over 700 contacts at clean cooking enterprises, who voluntarily submitted data on investment, finances, and operational performance for 2023.

Data Consistency and Gaps: The voluntary nature of the self-reporting survey comes with challenges in data consistency and completeness. To look at long-running trends, CCA supplemented reporting gaps with data from past surveys and publicly available information such as news stories.

CCA carefully reviews each survey response for completeness and undertakes one round of validation on any anomalous data, engaging directly with the relevant enterprises. However, CCA does not conduct any further due diligence. The online survey contains basic automated data validation and verification checks.

Assumptions: Annual investment data is based on reported investment flows each year and is not adjusted for inflation. Investment data is reported at the firm level.

Disclaimer: The information provided in this report is for informational purposes only and should not be construed as business or investing advice.

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Photo: KM Asad for CCA