

CrossBoundary Advisory

Project Finance for Carbon Activities

Kate Wharton, Managing Director, Head of Natural Capital Makari Krause, Principal, Natural Capital

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	1) Introduction	15 minutes
	2) Determining financial investibility	20 minutes
	3) Financing mechanisms for carbon projects	20 minutes
	4) Excel tutorial: putting it into practice	25 minutes
	5) Pricing and trading risk in financial markets	15 minutes
)	6) The investor landscape	25 minutes
	7) Negotiating investment terms	20 minutes
	8) Carbon project case studies	15 minutes
	9) Final Q&A and Reflections	15 minutes

CrossBoundary unlocks capital for sustainable growth and strong returns in underserved markets through our advisory and investment platforms



Advisory



We provide transaction and investment advisory services to buy side (capital providers) and sell side (capital raisers) firms to unlock private capital in underserved markets

- Market Assessment
- Fund Design and Strategy
- Due Diligence
- Financial Analysis
- Capital Raising
- Deal Structuring
- Post-Investment Planning

Investment Platforms



CrossBoundary Energy





CrossBoundary Fund for Nature

CrossBoundary

DhowVentures



CrossBoundary **Real Estate**

CrossBoundary's Natural Capital team unlocks private capital for sustainable ecosystem restoration and conservation



Capital raise for nature-based enterprises and carbon projects

Facilitate investments into nature-based solutions by providing end-to-end transaction advisory – from development of investor materials through deal close



Capital deployment support for sustainability and nature focused investors, corporations, and foundations

Source high-potential nature-based enterprises/projects, conduct operational and financial due diligence, support on deal structuring and post investment strategy



Fund design & capital raise and structuring of financing mechanisms targeting conservation and ecosystem restoration outcomes

Source high potential nature-based enterprises/projects, conduct operational and financial due diligence, design funds and financing mechanisms

Sovereign advisory for climate, nature, and carbon finance

Develop government strategies for climate and nature finance, support design of sovereign financing mechanisms, and enhance capacity of government agencies

The Carbon Finance Playbook

Authored by CrossBoundary

CARBON FINANCE PLAYBOOK

USAD

USAID

Demystifying the capital raising process for Nature-based Carbon Projects in Emerging Markets

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The first step in determining financial viability is forecasting revenues and costs



Accurate forecasts depend on **realistic assumptions about revenue potential and the full lifecycle costs** to best inform financial expectations



Forecasting revenues

Revenue Channels – Credit Sales (Voluntary/Compliance), Environmental Services

Quantity – Production estimates (e.g. tonnes avoided/removed)

Prices – Market price trends

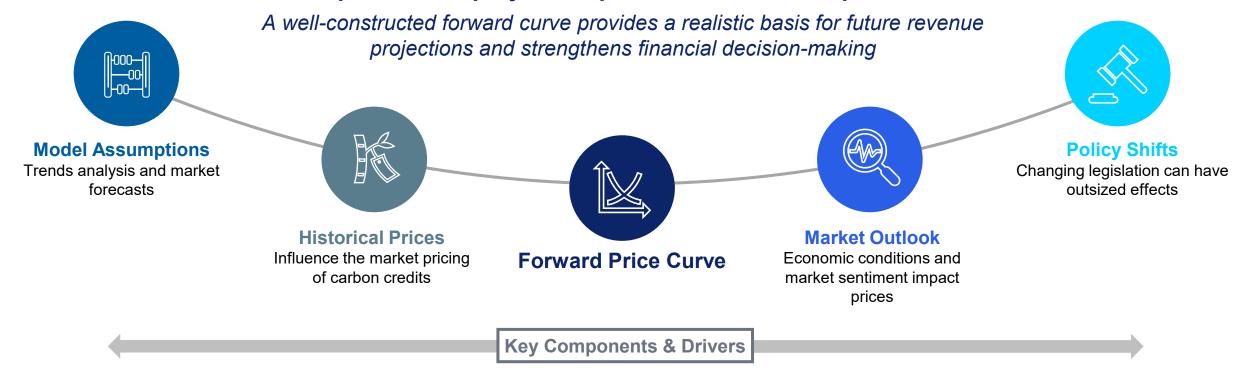
Tools – Historical data, scenario analysis, sensitivity testing



CAPEX – Upfront costs (infrastructure, installations, etc.) **OPEX** – Ongoing costs (maintenance, monitoring, compliance, etc.)

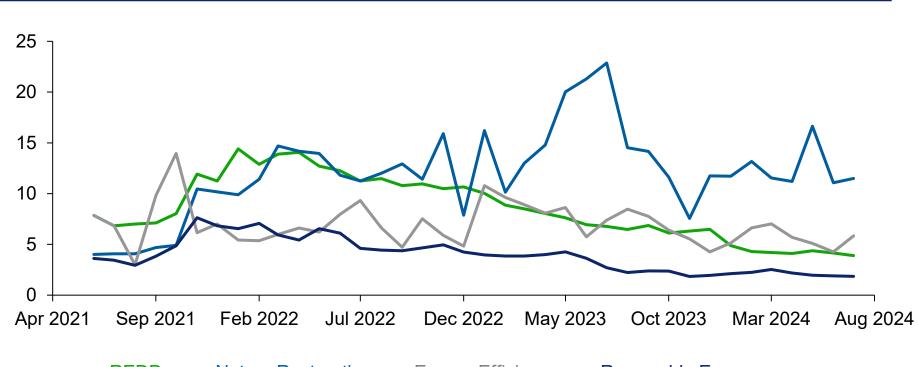
Various sources of information can be used to help set forward price curves for carbon credits

A forward price curve projects expected carbon credit prices over time



Historical prices can be the best predictor of near-term future prices

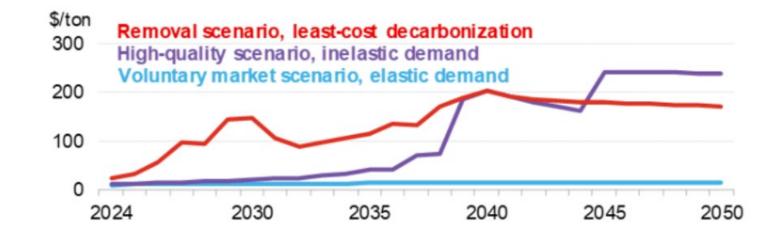
Weighted average price per credit by methodology type (USD/tCO2e)



- Nature restoration and REDD+ credits have historically traded at similar prices, however the past two years have seen a significant divergence in price
- Some high-quality nature restoration credits currently sell for \$50+

- REDD+ - Nature Restoration - Energy Efficiency - Renewable Energy

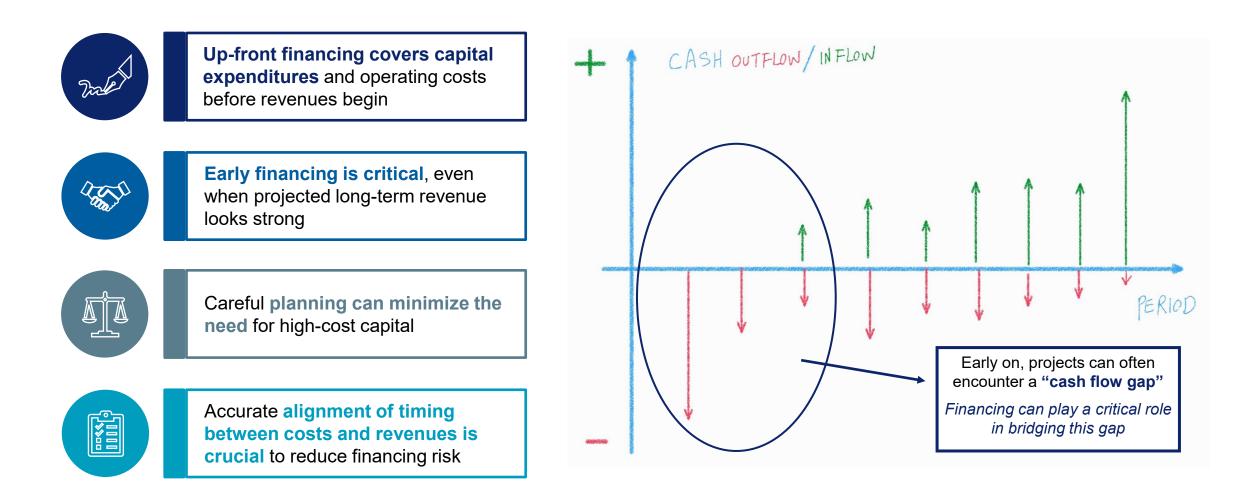
Forward curves can help in identifying pricing trends and risk



BNEF's Future Carbon Offset Price Scenarios

High-quality scenario	Integrity issues in the offset market are resolved and offset demand is inelastic
Voluntary market scenario	Integrity issues are not resolved and company demand is elastic
Removal scenario	Companies can only buy carbon removals and credits are interchangeable with other forms of abatement, meaning companies take a least-cost decarbonization approach

The first step in the capital raising process is determining your financing need

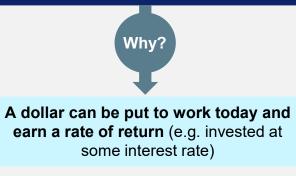


The time value of money: a dollar today is worth more than a dollar tomorrow

Understanding the time value of money

Common Adage

One dollar today is worth more than one dollar tomorrow





Key Term Present Value (PV)

The current value of future payments

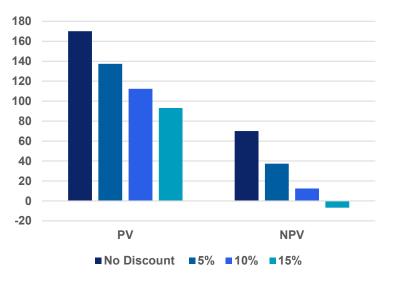
Calculated by discounting future cash flows by a specified rate to reflect risk and the time value of money

 $PV = FV / (1 + r)^{n}$

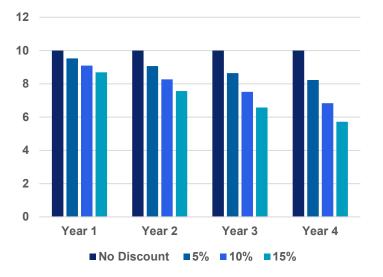
Example: A \$100 investment that returns \$10/year with an additional payback of \$120 at Year 5

Discount Rate (r)	Initial Investment	Year 1	Year 2	Year 3	Year 4	Year 5	PV	NPV
No Discount	(100.00)	10.00	10.00	10.00	10.00	130.00	170.00	70.00
5%	(100.00)	9.52	9.07	8.64	8.23	101.86	137.32	37.32
10%	(100.00)	9.09	8.26	7.51	6.83	80.72	112.42	12.42
15%	(100.00)	8.70	7.56	6.58	5.72	64.63	93.18	(6.82)

Present Value of Investment



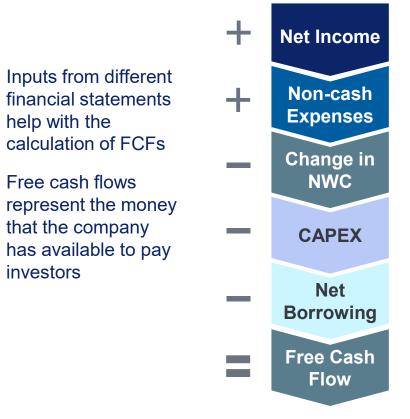
Discounted Values of \$10 Yearly Returns



Free Cash Flow is key for evaluating projects

Purpose To calculate company earnings and taxes owned **Dependencies** The income statement pulls any gains or Income losses from the sale of assets from the Statement balance sheet Purpose To track the movement of cash through the business Dependencies Cashflow The cashflow statement pulls net income and non-cash items from the income statement statement **Purpose** To track the balance, or value, of assets, liabilities, and equity Dependencies **Balance Sheet** The balance sheet pulls the cash balance from the cashflow statement and net income from the income statement

Free Cash Flow (FCF) is not directly visible on the cashflow statement and is calculated as follows



investors

Free cash flows can be used to calculate the value of the project and the return on investment

Net Present Value (NPV) is the sum of discounted FCFs



Key Insight Positive NPV indicates a viable project

Discount Rate (r)	Initial Investment	Year 1	Year 2	Year 3	Year 4	Year 5	PV	NPV
No Discount	(100.00)	10.00	10.00	10.00	10.00	130.00	170.00	70.00
5%	(100.00)	9.52	9.07	8.64	8.23	101.86	137.32	37.32
10%	(100.00)	9.09	8.26	7.51	6.83	80.72	112.42	12.42
15%	(100.00)	8.70	7.56	6.58	5.72	64.63	93.18	(6.82)

Internal Rate of Return (IRR) is the discount rate where NPV equals zero

Example: NPV = 0 from prior 'Time Value of Money' example

	Discount Rate (r)	Initial Investment	Year 1	Year 2	Year 3	Year 4	Year 5	PV	NPV
Į	13%	(100.00)	8.84	7.82	6.92	6.12	70.31	100.00	(0.00)

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Capital can be raised at different levels of the organization

ТорСо

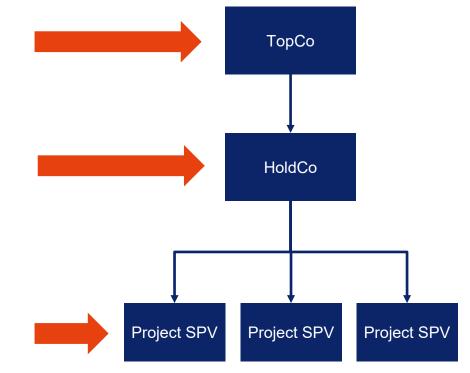
- Risk capital from venture capital, private equity, or strategic partners who want exposure to the developer's entire business
- Strategic investors may seek additional rights such as ROFR

HoldCo

- Project financing with exposure to a portfolio of underlying projects
- Useful for platform-building, acquisitions, or rolling up small projects; can provide exit flexibility and tax optimization

Project SPV

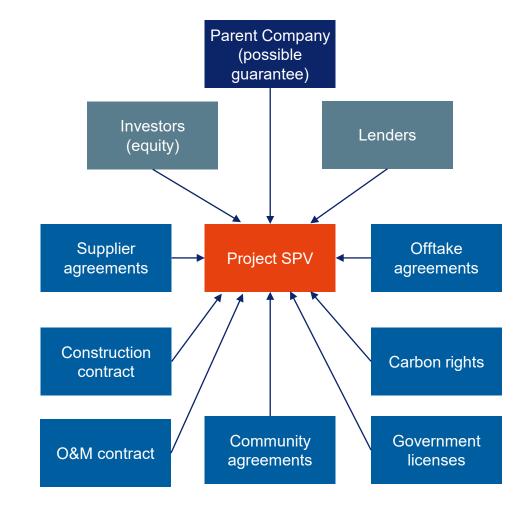
• Project-specific financing with exposure only to a single project



There are several advantages to using a project finance approach

There are many ways to structure the ownership of a carbon project, but project finance often offers some advantages:

- **Ringfencing:** Project-specific cashflows and assets are ringfenced within the SPV, giving the investor exposure only to the project rather than the full set of activities undertaken by the developer.
- **Nonrecourse:** Investors that fund the SPV typically have no or limited recourse to the general assets of the developer unless the developer provides a guarantee. In the case of project failure, investors only have access to the project SPV's assets and rights.
- **Tax optimization:** For developers operating in multiple jurisdictions, project-specific SPVs and HoldCos allow for better tax optimization and investor protections, while adhering to local laws.
- Access to local capital: A local entity can, in some jurisdictions, help unlock funding from local capital providers such as commercial banks, pension funds, and governments.



Project developers can employ a variety of blended finance structures to reduce overall cost of capital

Concessional debt or equity	Design / funding	preparation	Technical assistance funds	Guarantee or risk insurance
Subordinate and/or junior terms compared to co- investors	Supports c activities th investment	at lead to	Funds to supplement the capacity of investees and lower transaction costs	Protects investors against capital losses or provides credit enhancement
Capital Structure Senior Debt Flexible Debt Equity Junior Equity	Grants	Capital Structure Senior Debt Equity	Capital Structure Senior Debt Equity TA Facility Grants	Capital Structure Senior Debt Equity

There are various traditional financing instruments available to carbon projects, but each has its benefits and drawbacks

Lov	W Cost of capital High						
	Catalytic financing	Debt	Mezza	anine		Equity	
✓ ✓ ✓ ✓ × × ×	Non-dilutive capital Very low to zero cost of capital Reduces risk and increases return for commercial investors Can be highly risk tolerant and willing to fund early- stage work Limited availability Can require significant time to write grant proposals Typically very slow	 Non-dilutive capital Lowest cost of capital of commercial instruments Increases potential return for equity investors through leverage Interest payments on debt are typically tax-deductible X Interest expenses impact profitability and cashflow X Interest rates may be high depending on country and 	 of both debt Can provide capital withour repayment so harsh loan control Can provide valuation an requirement More expension senior security Often includ 	e non-dilutive out a strict schedule and covenants e flexibility on ad collateral is sive than red debt	✓ X	Provides upfront cash to develop the project without a risk of default liability This at-risk capital reduces the amount of debt required to fund a project and reduces the risk to the lenders Lose ownership and potentially governance rights Highest cost of capital	
X	approval and disbursement timelines May come with restrictions and requirements on how the money must be spent	 carbon markets risks X Strict covenants and lender rights in event of default X Typically requires collateral and/or guarantee 	which impac	ct ownership es interest or	·	с ,	

Several additional financing instruments are specific to carbon projects



Pre-Purchase Agreement

Buyer provides **upfront capital to support project** development in return for delivery of carbon credits

Streaming Agreement

Buyer provides upfront capital (the "streaming deposit") to **fund project development in return for a percentage of future credits** issued over a specified period, known as a "stream."

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Offtake Agreement

Buyer commits to purchasing a predetermined volume of carbon credits in the future



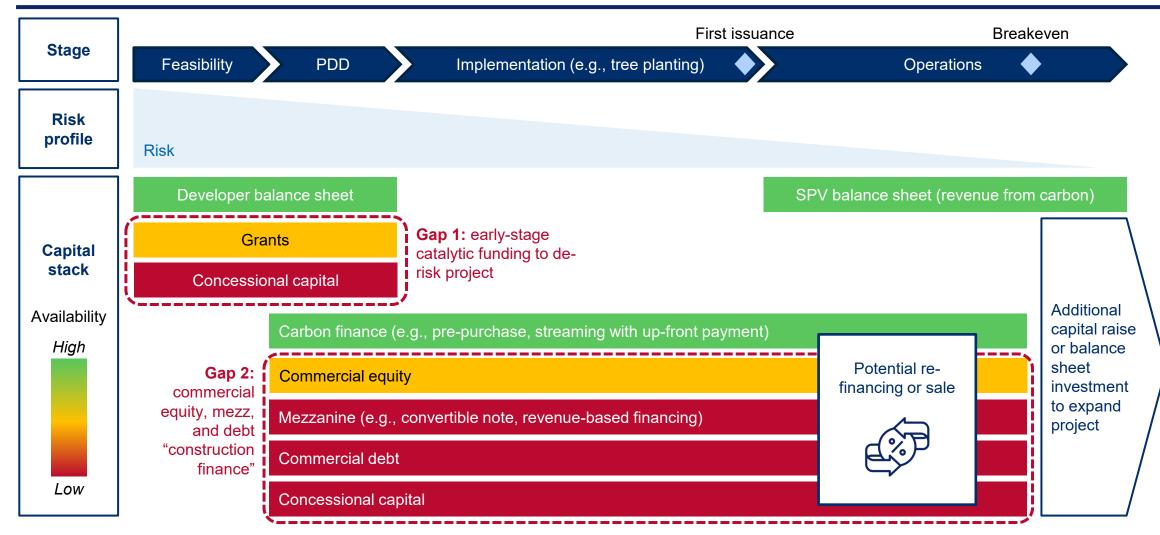
Brokerage Agreement

A contract through which a carbon **broker agrees to sell all or a portion of the carbon credits generated** by a project in exchange for a percentage commission on the value of the credits sold

These are **financing instruments that provide project capital** up-front

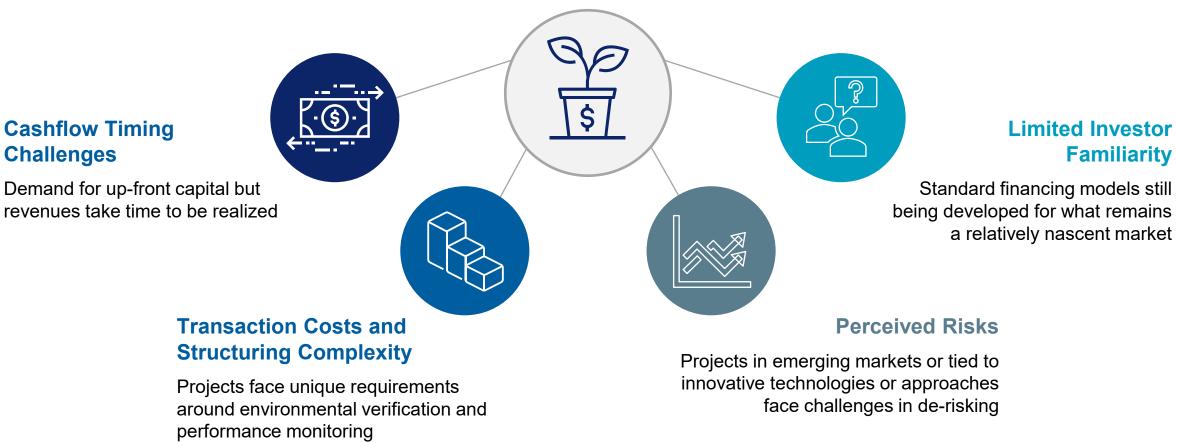
These are **tools increasing certainty around future revenues**, which can support access to other forms of financing, such as debt or equity

Financing needs and sources of capital vary throughout the project development life cycle



Various financing challenges exist for carbon projects

Addressing these gaps will lead to greater financial innovation and unlock increasing investment for carbon projects



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Putting it into practice

Excel-based tutorial

- Calculating free cash flow
- Determining financing need
- Calculating valuations and returns



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Financial markets are a mechanism for pricing and trading risk, and higher risk requires a higher return

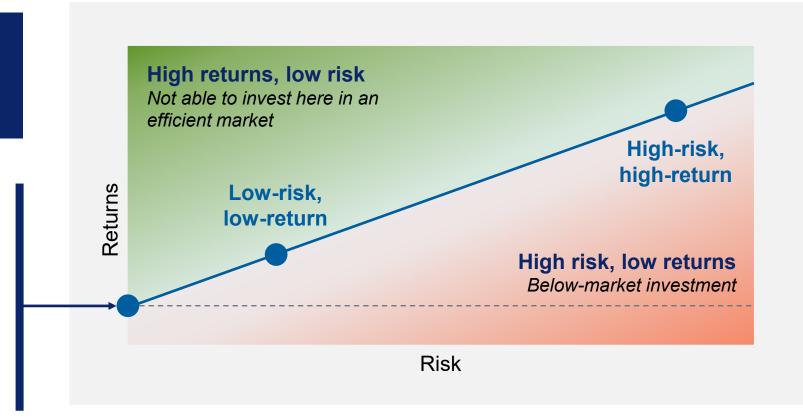


For each additional unit of risk taken on, the required rate of return must increase to compensate for that additional risk

Risk-Free Rate

The risk-free rate represents the theoretical **return on an investment with no risk of financial loss** (typically equal to yield on short-term government debt)

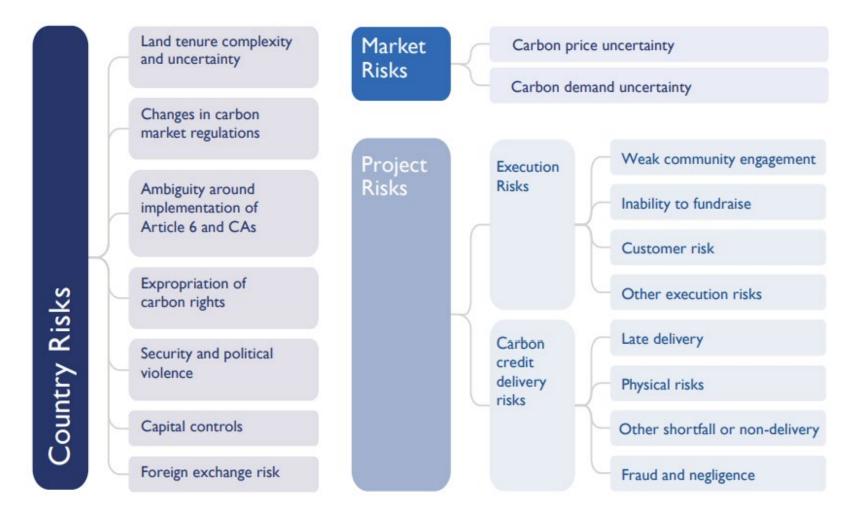
Often used as the baseline to evaluate additional risk taken by a project



There are a number of common risks that are priced into any investment

- ✓ Country risk
- ✓ Currency risk (especially for local currency revenues)
- ✓ Counterparty or credit risk
- ✓ Early-stage risk (especially pre-revenue)
- ✓ Unproven technology or business model risk
- ✓ Regulatory risk (sector- and/or project-specific)
- ✓ Illiquidity / exit risk uncertainty
- \checkmark Time horizon (longer time = greater uncertainty

Carbon projects, especially in emerging markets, also come with their own unique risks that investors must assess and price



Risks can be mitigated, allocated, or transferred

	Goal	Examples			
Mitigation	Reduce likelihood and/or impact of the risk	 Project piloting and phasing can reduce risk by demonstrating success at a smaller scale Contracted offtake agreements reduce market risk by securing a price and/or volume for credit delivery in the future Government engagement and strong FPIC processes can reduce the risk of disruption due to misalignment with stakeholders 			
Allocation	 For any residual risk, determine who within the deal will bear the risk, and the economic compensation Tip: Allocate risk to the party best able to manage it 	 Enhanced collateral/security reduces investor risk and can make sense for asset-heavy projects HoldCo/TopCo guarantees reduce investor risk, but also diminish the non-recourse advantage of project finance Milestone-based payouts to the developer help address performance risk 			
Transfer	Offload risk to a third party, for a cost	 Physical & Political Risk Insurance can cover unexpected losses due to issues such as political violence, expropriation, breach of government contract, and extreme events such as drought or fire 			

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There are two broad categories of investors for carbon projects

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Carbon Specialist Investors

- Specialists with deep expertise in carbon markets
- Often have established portfolio of relevant investments
- □ Knowledgeable in project specific metrics
- Often want to invest as a way to procure carbon credits (carbon finance) rather than for a direct financial return from the project



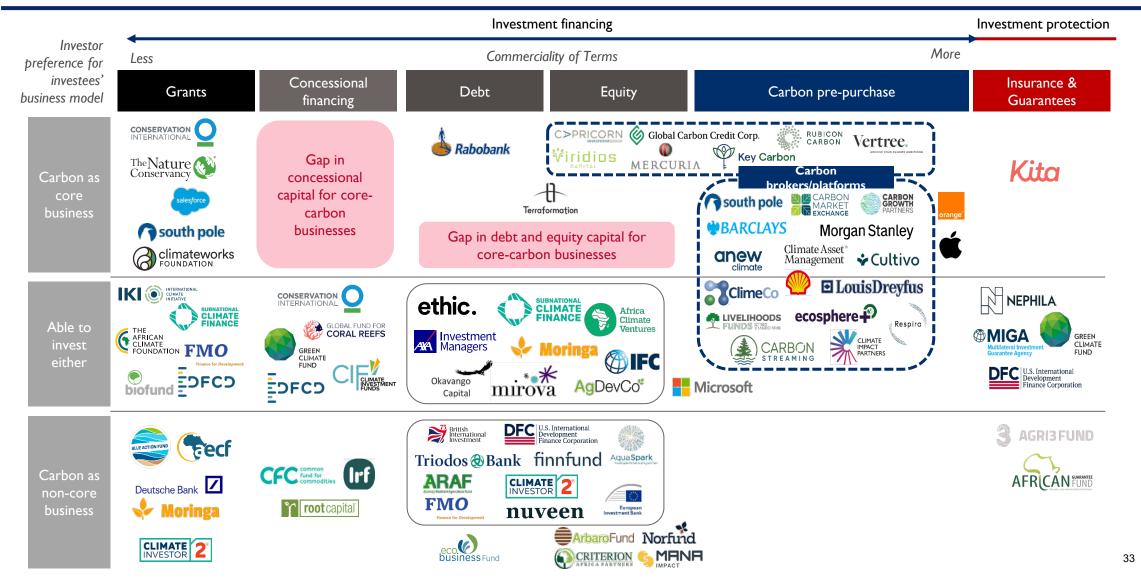
Generalist Investors

- Broader institutional or strategic investors seeking green asset diversification
- Less specialized, may focus more on broader impacts
- May prioritize financial returns over carbonspecific metrics
- Typically only invest into projects that have traditional revenue streams alongside carbon revenues (view carbon as an upside rather than a standalone business)

It is possible to raise funding from a wide range of investor types

Investor Type	Structure	Investment Time Horizon	Funding Source	Risk-Return Profile		
Private Equity (PE)	GP/LP structure, fund- based	7-10 years	Institutional investors (pension funds, endowments, etc.)	Medium to high risk, high return potential Focus on mature projects or growth-stage firms		
Venture Capital (VC)	GP/LP structure, fund- based	5-7 years	High-net-worth individuals, family offices, institutional investors	High risk, high return Typically targets early-stage startups or emerging technologies		
Development Finance Institutions (DFIs)	Government or multilateral-backed entity	10+ years	National governments, multilateral organizations	Medium to high risk, moderate returnPrioritize development impact over financial returns but often also require market-rate returnsLow risk, low to moderate returnPrefer well-structured, low-risk projects with stable cash flows		
Commercial Banks	Corporations	3-5 years (project finance loans)	Depositors, financial markets			
Carbon Funds	GP/LP structure, fund- based	7-12 years	Family offices, institutional investors, corporate sponsors	High risk, high return Focus on acquiring carbon credits for sale or retirement		
Family Offices	Private entities	Flexible (short to long term)	Wealth of high-net-worth individuals or families	Medium risk, flexible return expectations May fund innovative or niche carbon projects		
Corporates	Public or private companies	5-10 years	Corporate budgets, balance sheet capital	Medium risk, moderate return Typically seek carbon credits for compliance or ESG goals		
Foundations	Nonprofit entities	Long-term or perpetual	Endowments, donations	High risk, low or no financial return Focus on maximizing environmental and social impact		
		Long-term or perpetual	National governments	High risk, low or no return Prioritize development impact over financial returns		

There are several critical gaps in the carbon project funding landscape



Investors use various methods for calculating and evaluating returns

Internal Rate of Return (IRR)	Multiple on Invested Capital (MOIC)	Cash on Cash Returns (CoCR)		
Measures the annualized rate of return expected from the project	Tracks how many times over the	Focuses on the annual return on		
Common benchmark for comparing competing investments	initial investment is returned at exit	invested cash, providing insight into yield and liquidity		
IRR = $\frac{\text{Cash Flows}}{(1 + r)^n}$ - Investment	$MOIC = \frac{Total Cash Inflows}{Total Cash Outflows}$	CoCR = Annual Cash Inflows Total Cash Invested		

Illustrative Example¹

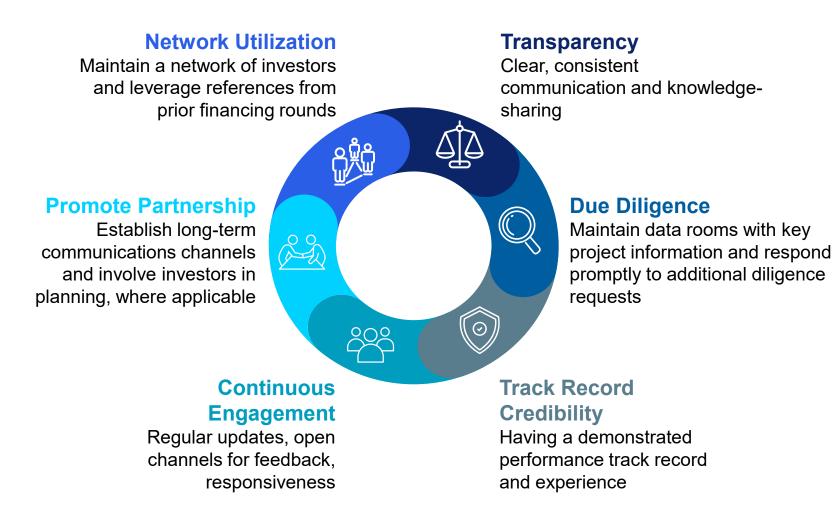
	Year 0	Year 1	Year 2	Year 3	Year 4		Α	В
Investment A	(1,000)	800	800	0	0	IRR	38%	19%
Investment B	(1,000)	300	300	500	500	MOIC	1.60	1.60

The MOIC for Investment A is <u>the same</u> as Investment B because... the total cash inflows and total cash outflows for both investments are the same

The IRR for Investment A is <u>higher</u> than Investment B because... the cash inflows are being received sooner in years 1 and 2 in comparison to the later cash inflows for Investment B in years 3 and 4

1 - Adapted from Career Principles: Accounting & Finance: Multiple on Invested Capital (MOIC)

Building relationships and trust with investors is key to successfully raising funding



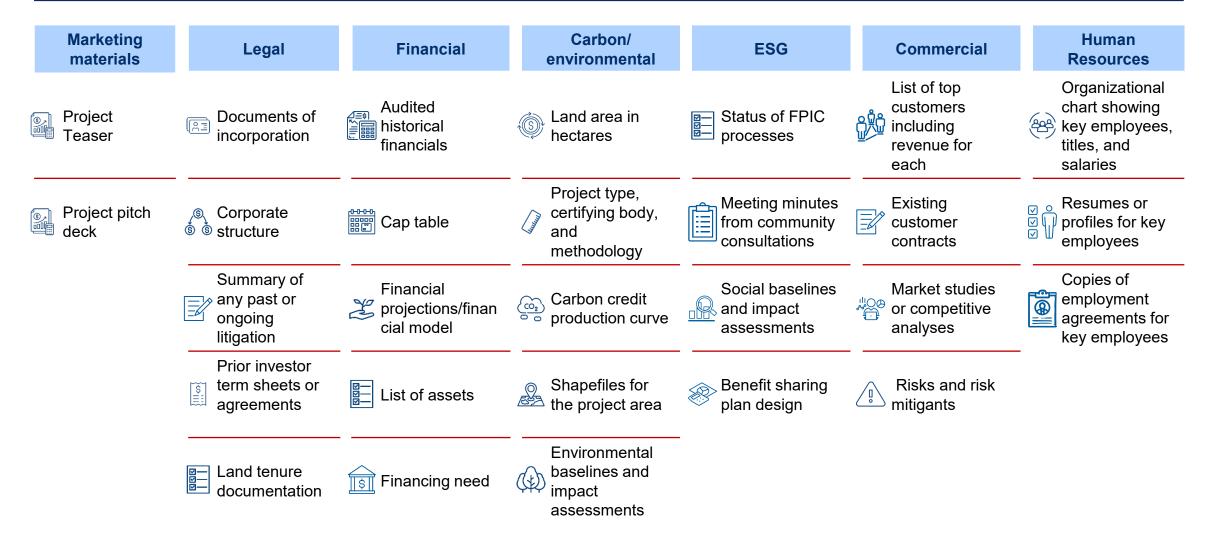
Questions to consider...

- What can you do to build long-term trust with investors?
- How can you make investors' jobs easier?
- How can you ensure that you and your project stay top of mind for investors?
- How can you help investors better understand your project?

Investors typically follow a structured due diligence process to evaluate investment opportunities

Screening	Preliminary Diligence		Investm Commi		Due Diligence	
 Review of investment materials Introductory call to screen for fit with mandate 	 Sign NDA Data room review Calls with manage team and partner Prepare Prelimin Investment Memory 	iement rs ary o	 Approval to pr allocation of re further Due Di Approval of in- terms and dea 	esources for iligence dicative al structure	 ✓ Submit Q&A ✓ Conduct site visit ✓ Engage technical experts as needed ✓ Negotiate and sign non- binding term sheet ✓ Prepare Investment Mem 	
	committee		iligence		cution	
amour	val of investment nt, structure, and key ercial terms	informa	n accuracy of ation provided by ement team	 ✓ Negotiate a legal docur ✓ Disburse fu ✓ Begin moni investment 	unding itoring	

A comprehensive data room provides extensive information about the company and project and preempts investor requests



There are certain green and red flags that investors look out for when evaluating carbon projects



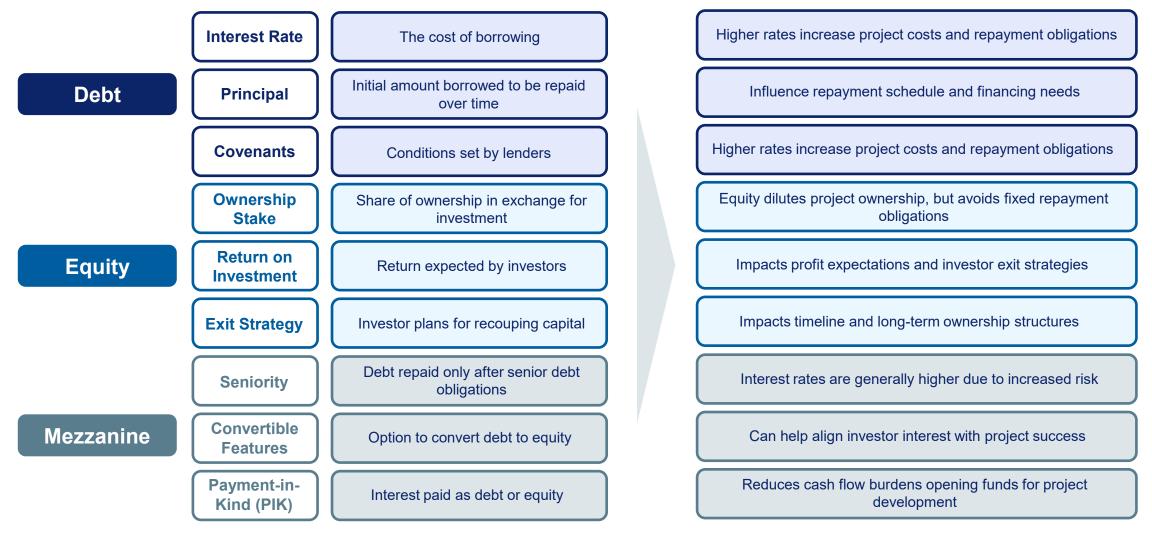
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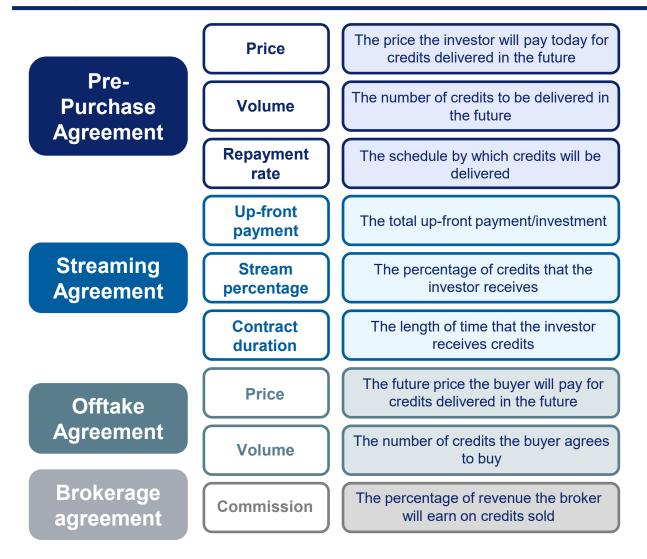
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Traditional financing instruments typically include a standard set of terms, which will be negotiated during the investment process



Several additional financing instruments are specific to carbon projects



Higher price increases the amount of money a developer can raise for a given number of credits

Higher volume increases the amount of money raised but reduces the number of credits available to sell on the spot market

Higher rates reduce the amount of cash flow available in the future and increase investor IRR

Higher amount means more cash up-front

Higher amount means more credits delivered to the investor

Longer duration means more credits delivered to the investor

Higher amount means higher revenues

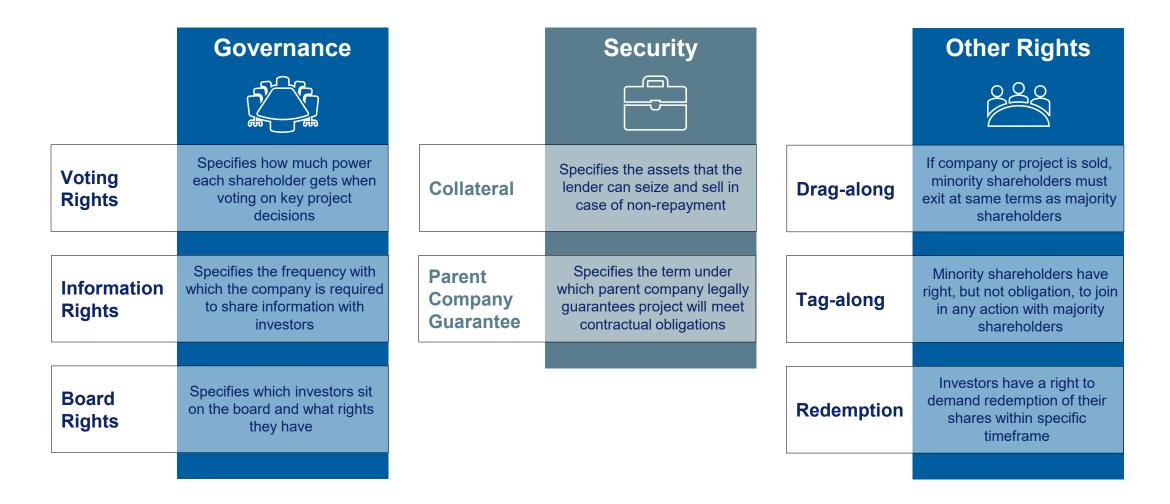
Larger volumes means less risk but also fewer credits to sell on the spot market at potentially higher prices

Lower commission means more revenue retained

Carbon financing agreements typically also contain terms and covenants to protect investors in the event of non-delivery

Non-delivery term	Implications for developer
Termination The buyer terminates the agreement if the seller fails to deliver the specified carbon credits.	This is typically the minimum consequence for non-delivery. Termination would be included alongside other terms.
Replacement of credits The buyer may stipulate that compensation should be in the form of carbon credits. This requires the developer to provide credits from its other projects or purchase credits from third party projects, often with specifications matching those of the non- delivered credits, such as carbon credit type, quality, vintage, etc.	If the project has failed, the developer may not have sufficient cash to purchase credits from third party projects, and supply constraints may make it difficult and costly to purchase matching credits. Meanwhile, cross-project delivery guarantees mean that the developer cannot ringfence risk, and so a single project failure could put the entire company including its other, unrelated projects at risk
Cash penalties	If the project has failed, the developer may not have sufficient cash to
The developer may face an obligation to pay the buyer the cash value of the non-	repay its obligations. If there is recourse to the parent company, this can
delivered carbon credits, or other financial penalty for non-delivery. The pricing of	be a significant risk to the developer.
these credits can be tied either to the offtake price or spot market price. The	If the project has not failed but is under-delivering, payment will
obligation can sit at the project level, or it can be backed by the parent company.	substantially reduce the developer's returns
Conversion to equity	Although this entails the developer relinquishing some ownership, it may
The buyer has the option to convert the value of non-delivered credits into equity in the project or developer at pre-defined conversion terms. This provision can be linked to specific project milestones. For instance, if the project is not validated by a specified deadline, the buyer has the right to convert its investment into equity.	be favorable to default or cash repayment.
Step-in rights	Developer loses control over the project and carbon rights which sit with
The buyer "steps in" to replace the developer to execute the project (either	the SPV. The developer may exit the project altogether through sale of
themselves or a third party depending on the entity's capabilities).	equity stakes.

Regardless of the instrument, investment agreements are likely to include several standard requirements and clauses



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Example project: Mangrove restoration

Project overview



50M Trees to be planted



5,000 Acres will be restored

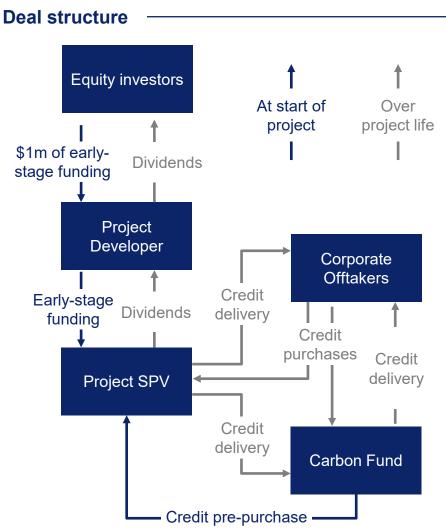


Tons of CO2 removed

- The project will restore degraded ۰ mangrove forests by planting native mangrove species.
- Planting will take 3 years to ٠ complete and the project will run for 60 years

- The project developer funded the • pre-feasibility and feasibility phases with \$1m of equity contributed by the founders and by a venture capital fund
- To fund the PDD and the planting, • the developer decided to raise \$5m from a carbon find in the form of a carbon credit pre-sale

Pre-purchase amount	\$5m
Pre-purchase price	\$10
Credits pre-purchased	500,000
Repayment rate	40%
Repayment start	Year 4
Repayment end	Year 18
Investor IRR	12%



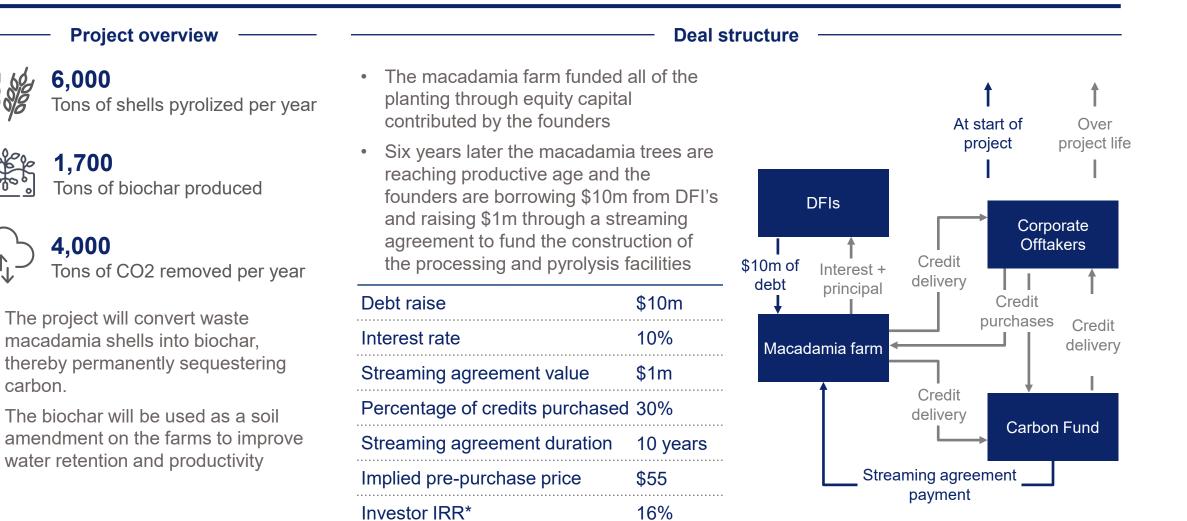
Example project: Biochar from agricultural residues

6,000

1.700

4,000

carbon.



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	8) Carbon project case studies	15 minutes
	9) Final Q&A and Reflections	15 minutes



Thank you!

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