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TASKFORCE ON SCALING VOLUNTARY CARBON MARKETS

CONSULTATION DOCUMENT

The logo consists of a solid blue square. Inside the square, the letters 'TSV' are stacked above the letters 'CM'. The letters are white, bold, and sans-serif. The 'V' in 'TSV' is positioned between the 'T' and 'S', and the 'M' in 'CM' is positioned between the 'C' and 'M'.

TSV
CM

ABOUT THE TASKFORCE

The Taskforce on Scaling Voluntary Carbon Markets is a private sector-led initiative working to scale an effective and efficient voluntary carbon market to help meet the goals of the Paris Agreement.

The Taskforce was initiated by Mark Carney, UN Special Envoy for Climate Action and Finance Advisor to UK Prime Minister Boris Johnson for the 26th UN Climate Change Conference of the Parties (COP26); is chaired by Bill Winters, Group Chief Executive, Standard Chartered; and sponsored by the Institute of International Finance (IIF) under the leadership of IIF President and CEO, Tim Adams. Annette Nazareth, a partner at Davis Polk and former Commissioner of the US Securities and Exchange Commission, serves as the Operating Lead for the Taskforce. McKinsey & Company provides knowledge and advisory support.

The Taskforce's more than 50 members represent buyers and sellers of carbon credits, standard setters, the financial sector and market infrastructure providers. The Taskforce's unique value proposition has been to bring all parts of the value chain to work intensively together and to provide recommended actions for the most pressing pain-points facing voluntary carbon markets.

The Taskforce is also supported by a highly engaged Consultation Group, composed of subject-matter experts from more than 80 institutions, who contribute additional perspective to the recommendations.

ABOUT THE REPORT

This report was developed by the Taskforce on Scaling Voluntary Carbon Markets, drawing on multiple sources, including a research collaboration with McKinsey & Company, which is providing knowledge and advisory support to the IIF. The Taskforce is responsible for the conclusions and recommendations of the research. The findings in this report do not necessarily reflect the views of individual Taskforce members or contributors. Members of the Taskforce on Scaling Voluntary Carbon Markets provided insights across their particular fields of expertise.

ACKNOWLEDGEMENTS

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TASKFORCE LEADERSHIP



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A WORD FROM THE TASKFORCE LEADERSHIP

The need for climate action, and tools to mobilize finance for the low-carbon and resilient transition, grows more urgent by the day. To achieve the Paris goals to limit global warming to 2°C or lower, the global community needs to reach 'net zero' emissions by no later than 2050. This will require a whole-economy transition —every company, every bank, every insurer and investor will have to adjust their business models, develop credible plans for the transition and implement them.

Stakeholders across the global economy are stepping up to this challenge. Investors, executives, policymakers, and consumers have realized the role they can play and have promoted or committed to strategies to achieve net zero or net negative. To identify the risks and opportunities arising from this transition, investors are demanding transition plans and granular information about how companies plan to reach these targets.

Many companies, especially in hard-to-abate sectors, will need to offset emissions as they achieve their decarbonization goals, creating a surge in demand for credible offsets. The credibility of voluntary carbon credits in transition plans will be open to increased scrutiny. To facilitate this global decarbonization there is a need for a large, transparent, verifiable and robust voluntary carbon market. The scaling up of markets has the potential to help support financial flows to developing countries, as activities and projects in these countries can provide a cost-effective source of these carbon emission reductions.

The Taskforce on Scaling Voluntary Carbon Markets was convened in September, bringing together experts from across the carbon markets value-chain, from over 20 sectors of the economy and six continents, and with experience of the full history of these markets. Supported by a consultation group covering an even broader set of experts and observers, it has worked at pace to draw up a roadmap to build the market infrastructure needed for a fully functional voluntary market. This consultation document sets out their findings, and the Taskforce is inviting feedback on the roadmap, ahead of the publication of the final blueprint.

The Taskforce's recommendations aim to identify the infrastructure solutions necessary to scale the voluntary carbon markets. These are recommendations for the private-sector developed by both current and potential market users to ensure this market can deliver to the needs of its participants without compromising the integrity of decarbonization. The Taskforce has found six key areas where efforts are required to achieve a large, transparent, verifiable and robust voluntary carbon market; these themes are establishing core carbon principles, exchange traded core carbon reference contracts, infrastructure, offset legitimacy, market integrity and demand signaling.

This is truly a historic opportunity to contribute to getting the world to net zero, and we encourage responses from participants across the economic value chain to ensure that the final blueprint sets out a pathway toward the real growth of these markets.

We would like to thank the Taskforce members and Operating team for their extensive contributions and dedication to this effort. We very much look forward to receiving feedback from all of you during our public consultation. This feedback will be essential to making the report's recommendations most effective as we pursue this important goal of scaling up voluntary carbon markets.

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1. EXECUTIVE SUMMARY

Limiting global warming to 1.5°C, in line with the Paris Agreement, requires that global annual greenhouse gas (GHG) emissions are cut by 50 percent of current levels by 2030 and reduced to “net zero” by 2050. To achieve these goals, deep, broad-ranging, and rapid action to reduce emissions must begin immediately across all sectors of the economy.¹ As an increasing number of firms are committing to net zero to support these goals, they will be expected to show how they plan to meet these net zero targets through an appropriate mix of direct emissions reductions and use of carbon credits.

Carbon credits, purchased voluntarily, enable organizations to compensate or neutralize emissions not yet eliminated by financing the avoidance / reduction of emissions from other sources, or the removal of greenhouse gases from the atmosphere.² The projects generating these emissions reductions can be broadly grouped into two categories: i) avoidance / reduction projects, such as renewable energy or methane capture and ii) removal/sequestration projects, such as reforestation or technology-driven carbon capture. In addition to emissions reductions, projects also generate various co-benefits, ranging from increased biodiversity, job creation, support for local communities, and health benefits from avoided pollution. In addition, many of the highest-potential projects are located in less developed countries. As a result, a further benefit is that carbon credits can generate flows of private capital to these less developed countries.

While an important tool, offsetting cannot be considered as a substitute for direct emissions reductions by corporates, but as a complement, in order to accelerate climate action. It's important that any offsetting that forms part of climate commitments is done through high integrity carbon avoidance / reduction and removal/sequestration projects.

For finance to flow to these emissions avoidance / reduction and removal/sequestration projects, a well-functioning voluntary carbon market will be a critical enabler.³ Recognizing this need, the Institute of International Finance (IIF) established a private-sector **Taskforce on Scaling Voluntary Carbon Markets** (Taskforce). The purpose of the Taskforce is to significantly scale up voluntary carbon markets and ensure they are transparent, verifiable and robust. Hence, as first step, the Taskforce developed a blueprint for a voluntary carbon market which:

- connects supply of carbon credits to demand in a seamless, cost-effective, and transparent way
- instills confidence and ensures credibility in carbon credits being exchanged/transacted
- is scalable to meet the expected increase in demand as more companies commit to achieving the 1.5°C ambition set out by the Paris Agreement

The work of the Taskforce is guided by four key principles. First, the Taskforce will produce

1. The Paris Agreement, unlike the Kyoto Protocol, effectively covers nearly all greenhouse gas emissions and makes them the responsibility of national governments.

2. In this report, we generally follow the convention of using “carbon credit” to describe the verified emissions reduction or removals generated, traded, and retired and “offset” to describe the act of financing other climate mitigation actions to compensate or neutralize for one’s own footprint. Unless specified, when we discuss carbon credits, we refer to credits used for voluntary purposes, as opposed to compliance purposes (e.g., meeting obligations in jurisdictions with regulated carbon market schemes). The majority of credits retired in the voluntary market is issued by private standards (e.g. VCS, Gold Standard, ACR, CAR and Plan Vivo). Some compliance schemes allow the use of private standard credits, an example being the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

3. It is important to note that the advancement of regulated markets and regulations would also enable the private sector to play a full part in the transition to a net positive carbon economy.

open-source solutions for private-sector organizations to take forward. Second, voluntary carbon markets must have high environmental integrity and minimize any risks of negative consequences (i.e., align to do no harm principles). Third, recognizing the broad range of important work underway in this space, the Taskforce will amplify existing and ongoing work of parallel initiatives. Fourth, and perhaps most importantly, the Taskforce's work is predicated upon the principle that voluntary carbon markets must not disincentivize companies' own emissions reduction efforts.

A number of scoping considerations have shaped the work of the Taskforce (more in Chapter 1). For example, we chose not to take up the issue of the appropriate role of offsetting in the context of decarbonization strategies as these are being addressed by other initiatives involving climate scientists and business experts. Across all of our recommendations wherever possible, we leverage existing work and point to the need for relevant expert bodies to take on further work.

Finally, we recognize that regulatory decisions, including international climate policy architecture, may significantly impact outcomes of efforts to scale up the voluntary carbon market. We also note the existence of compliance markets (e.g., EU ETS, forthcoming China ETS, California's Cap-and-Trade Program). They are not covered in this report but have clear linkages to the voluntary carbon markets (VCM). Considering the core focus of the Taskforce on private sector solutions, we do not seek to opine on policy priorities. Where the Taskforce has identified challenges to scaling up voluntary markets that rely on addressing political issues, the report notes the interdependency and recognizes that this needs to be dealt with, but does not seek to provide recommendations.

A BLUEPRINT FOR EFFECTIVE VOLUNTARY CARBON MARKETS

As the decarbonization of the global economy accelerates in the coming years, demand for voluntary offsetting will likely increase. That demand is more likely to be met if a large-scale, voluntary carbon market takes shape, which is able to help companies achieve net zero and net-negative goals. The scale up will need to be significant – our estimate is that voluntary carbon markets need to grow by more than 15-fold by 2030 in order to support the investment required to deliver the 1.5°C pathway (see Box, "Key Figures Illustrating the Need to Scale").

The voluntary carbon market has made significant strides in both market functioning and credit integrity since its early days. However, in order to achieve another step-change in scale, there are structural

challenges that remain to be solved. Today buyers struggle to navigate various standards to find high-quality carbon credits at transparent prices. Co-benefits of those credits (i.e., benefits beyond carbon), while measured, reported, and verified, add another layer of complexity.⁴ Understanding of what constitutes a high-quality credit changes as views on additionality, permanence, and leakage evolve. On the supply side, sellers face unpredictable demand, low prices, limited access to financing and long lead times to verify credits. As a consequence of these underlying pain-points, financial intermediaries and data players have not entered the market at scale, leading to a current state of low liquidity and limited data transparency.

4 Nevertheless there is clear evidence that co-benefits is a driver of buyers purchasing decisions.

KEY FIGURES ILLUSTRATING THE NEED TO SCALE⁵

- In order to reach the 1.5°C goal, we must remain within a 570 gigaton (Gt) CO₂ cumulative 2018–50 carbon budget.
- This goal requires net GHG emissions to fall by 23 Gt per year by 2030 (which represents a reduction in emissions equivalent to 1.5x the total emissions from all oil consumption in 2019).
- At a minimum, 2 Gt will need to come from sequestration and removal to reach the net 23Gt reduction by 2030.
- Achieving 2 Gt of emissions sequestration and removal by 2030 requires a 15-fold scale-up of voluntary offsetting in 2030 versus 2019, assuming carbon credits are used to finance all of these actions.
- As carbon credits can help finance both avoidance / reduction measures as well as removal / sequestration, it is likely that the scale up will be significantly larger than 15-fold.

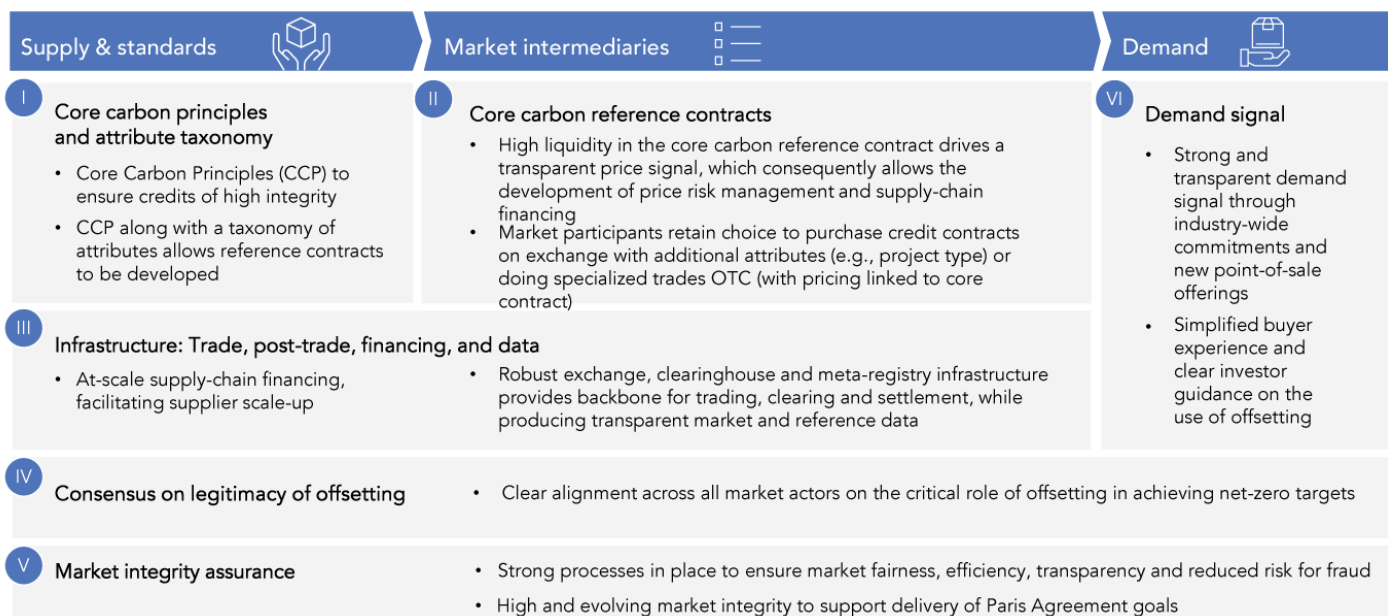
To support the scale-up of the voluntary carbon markets, the Taskforce has identified six key topics for action, spanning the entire value chain. The six topics for action are:

- I. CORE CARBON PRINCIPLES AND ATTRIBUTE TAXONOMY
- II. CORE CARBON REFERENCE CONTRACTS
- III. INFRASTRUCTURE: TRADE, POST-TRADE, FINANCING, AND DATA
- IV. CONSENSUS ON THE LEGITIMACY OF OFFSETTING
- V. MARKET INTEGRITY ASSURANCE
- VI. DEMAND SIGNALS

These six topics for action shape the high-level vision which the Taskforce aspires to reach.

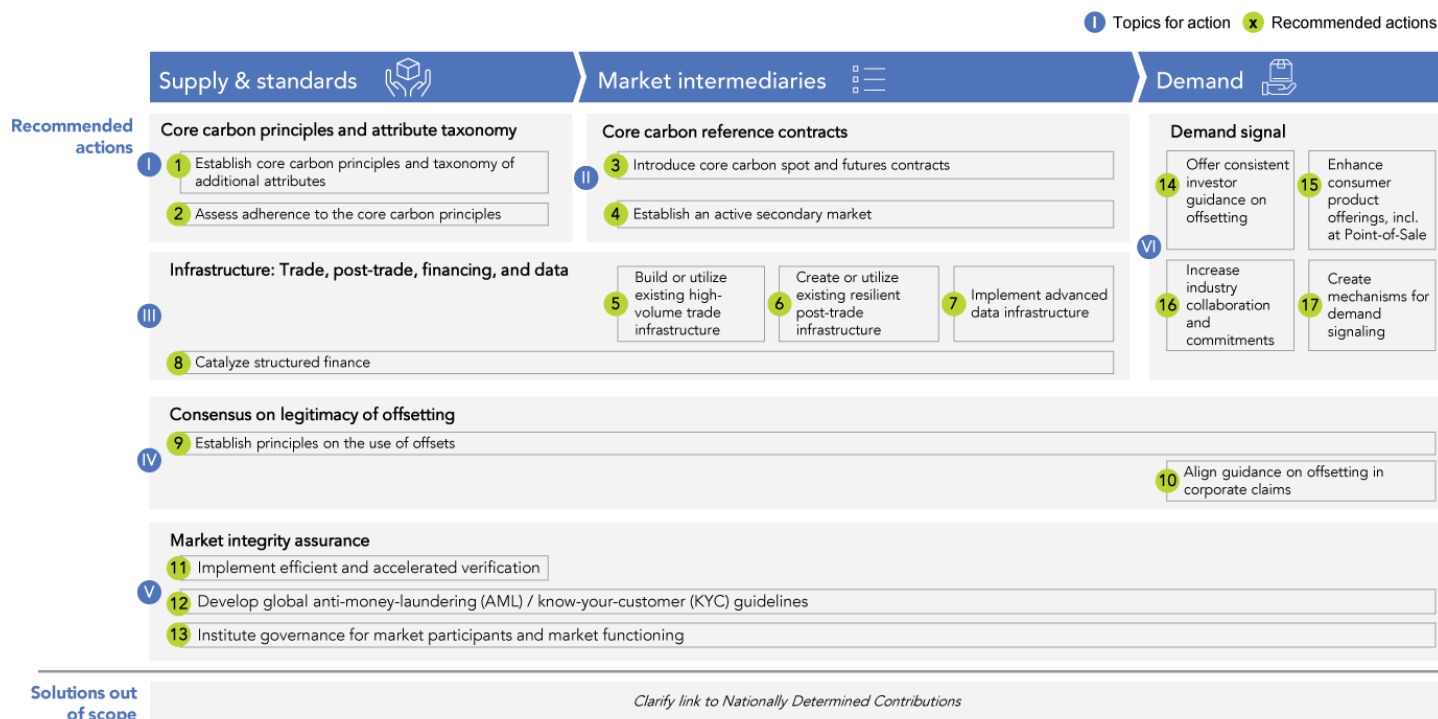
⁵ Data from VCS, GS, CAR, ACR and Plan Vivo market registries; McKinsey analysis; McKinsey 1.5°C Scenario Analysis; IPCC; Le Quéré et al. 2018.

EXHIBIT 1: VISION FOR VOLUNTARY CARBON MARKETS



To deliver the vision, a set of 17 underlying recommended actions have been developed by the Taskforce (Exhibit 2) These recommended actions form the core of the Taskforce blueprint.

EXHIBIT 2: OVERVIEW OF RECOMMENDED ACTIONS



AVOIDANCE / REDUCTION VS. REMOVAL PROJECTS

A key delineation between the types of carbon credits is the type of project the financing supports. These project types can be broadly grouped into avoidance / reduction projects (e.g., renewable energy, improved waste disposal such as methane capture) and removal/sequestration projects (e.g., reforestation, technology-driven carbon capture and storage). To limit warming to 1.5°C, we will need to shift in the medium to long term away from avoidance / reduction toward removal projects. However, in the short term, we need to maximize the amount of financing directed toward all project types. Furthermore, it is important to note that the largest category of avoidance projects - avoided deforestation - generally has higher biodiversity co-benefits.

Across our recommended actions, we address this avoidance / reduction versus removal debate in two ways:

1. In topics for action I and II, we emphasize the ability to distinguish between avoidance / reduction credits and removal/sequestration credits. This distinction is captured as an additional attribute. Buyers who want to buy removal credits will have the ability to do so. In the longer term it may be considered whether a separate core carbon contract for removals is needed. We recommend the establishment of a governance body which can oversee and adapt these decisions over time.
2. In topics for action IV and VI, we again note that in the short term, all project types are needed to maximize climate mitigation. We only require a shift toward removal/sequestration in the medium to long term. We ask stakeholders to acknowledge the different roles of each project type across corporate claims and recommend that investors issue clear guidance to corporates accordingly.

I. CORE CARBON PRINCIPLES & ATTRIBUTE TAXONOMY

The success of scaling voluntary carbon markets rests on building a market with both high integrity and sufficient liquidity. This can be achieved via a set of “Core Carbon Principles” (CCPs) and a taxonomy of additional attributes.

To enable contracts that assure buyers and the wider ecosystem that genuine emissions reductions are made with high environmental integrity, without any negative social or environmental side-effects, we believe that the market needs to align on a set of CCPs. These principles set out threshold quality criteria to which a carbon credit and the supporting standards and methodologies should adhere.

Currently, liquidity in VCMs is fragmented. Projects have a range of attributes (e.g., project type, geography) that can influence their value, and buyers have different attribute preferences. In today’s market, matching each individual buyer with a corresponding supplier is a time-consuming and inefficient process, transacted over-the-counter.

Reference contracts can bundle suppliers' products and buyers' preferences to allow for significantly more efficient matching of buyers and suppliers. Buyers could benefit from a simplified buyer journey, increased price transparency and more effective price risk management. Suppliers benefit from improved access to financing and a clear price signal to inform their investment decisions as well as enable price risk management. The planet benefits due to increased climate action, financed by a scaled-up voluntary carbon market. A set of Core Carbon Principles is a critical enabler, as it can serve as the basis for a core carbon reference contract. To accommodate buyers' heterogeneous preferences, a few variations of the core reference contract that offer additional attributes should be made available. To enable these, a taxonomy of additional attributes has to be defined.

RECOMMENDED ACTION 1:

ESTABLISH CORE CARBON PRINCIPLES AND TAXONOMY OF ADDITIONAL ATTRIBUTES.

CCPs will set the threshold quality criteria for a verified ton of carbon (or carbon equivalent) avoided/reduced or removed/sequestered. These quality thresholds will ensure CCP credits adhere to the highest level of environmental and market integrity. The CCPs should be hosted and updated⁶ by an independent third-party organization.⁷ The organizational setup for this governance body is subject to further consultation and discussion, including responses to the Taskforce's Public Consultation Survey (see sidebar: Need for End-to-End Market Governance; details on the consultation process in Chapter 5). This entity should define a taxonomy of additional attributes that can be used to classify all projects and credits. These additional attributes should

include vintage⁸, project type (i.e., avoidance / reduction, or removal / sequestration), co-benefits including impact on sustainable development goals (SDGs), location, and inclusion of corresponding adjustments.⁹ These attributes will allow buyers additional choices in contracts built based on them. In particular, some buyers may want to only buy CCP credits with removal attributes, as these credits may be necessary for certain types of claims in the future (e.g., net zero). In the longer term it may therefore be considered whether a separate core contract for removals is needed. Initially, the Taskforce recommends keeping only one core contract to avoid splitting liquidity as the majority of projects are likely to remain avoidance and reduction in the short term.

⁶ These updates will need to reflect decisions made on new and evolving types of offset projects / methodologies (e.g., forms of soil sequestration), updated guidance on the amount of buffer necessary for each project type, etc.

⁷ Organizations selected to host and curate the CCPs will need to have a deep understanding both of the sector and how private finance can work to mitigate climate change. They will also need to be aware of parallel regulatory initiatives (e.g., EU taxonomy for sustainable activities) and manage relevant areas of alignment or coordination.

⁸ There are three key dates pertaining to each project that are relevant: project start, year of credit issuance, and year the actual emission reduction took place. In this report, when vintage is discussed, we generally refer to the last definition: the year the actual emission reduction took place.

⁹ Corresponding adjustments are described in further detail in Chapter 1.

RECOMMENDED ACTION 2:

ASSESS ADHERENCE TO THE CORE CARBON PRINCIPLES.

There is a need for an independent third-party organization to assess standards, methodologies, and validation against the CCPs and the set of additional attributes.¹⁰ While it is possible for this work to be conducted by the same body as the one who hosts the CCPs, the Taskforce recommends this task to be carried out by separate expert

verification agencies. These verification agencies should be accredited by the body which hosts the CCPs. The taxonomy would ideally be adopted by all relevant carbon market standards entities, who should in turn clarify which of their methodologies have received certification for adhering to the CCPs and the additional attributes.

II. CORE CARBON REFERENCE CONTRACTS

As mentioned above, one of the key issues in today's voluntary carbon market is that there are no "liquid" reference contracts (e.g., spot and futures) with a daily, reliable price signal. This makes price risk management almost impossible and serves as an impediment to the growth of supplier financing. In order to concentrate liquidity and unlock the benefits that come with it, there is a need for core carbon reference contracts that can be traded on exchanges.

After these reference contracts are developed, there will still be a significant number of parties that prefer and continue to make trades over the counter (OTC). These OTC contracts can also benefit as they could use the price of the core carbon contract as a starting point and then negotiate pricing for additional attributes. This ensures that the relevance of the core carbon contract will further increase, while at the same time still allowing for OTC arrangements for those who desire them. Some OTC contracts in the future may continue to be fully bespoke. For all OTC contracts we note the need for standard contracts to enable more efficient trading on the primary market.

RECOMMENDED ACTION 3:

INTRODUCE CORE CARBON SPOT AND FUTURES CONTRACTS.

Development and listing of a standardized spot and futures core carbon contract (based on the CCPs) with physical delivery (delivery of certificates) will allow development of a transparent, daily market price. Exchanges could also develop reference contracts which combine the core carbon contract with additional attributes that are separately priced

(e.g., project type or location).¹¹ These futures contracts should have suitable maturities (e.g., one year), be cleared at clearinghouses, and potentially offer the option to financially settle (no actual delivery of certificates), and be fungible across all markets/trading platforms. A core carbon contract should also be set up to allow more flexible purchase

¹⁰ CORSIA demonstrates this is possible to achieve.

¹¹ Listing a contract on exchanges would mean making use of existing financial market infrastructure for pooling liquidity, which can involve the additional benefits of a regulated trading environment (e.g., market surveillance of trading activity, mandatory KYC/AML checks of participants).

sizes for buyers, with different underlying projects amalgamated to deliver the size required. For this to take off, key buyers need to become active in these contracts.

The Taskforce encourages large buyers to purchase a share of their voluntary credits on exchange, through reference contracts, to encourage the development of liquidity.

RECOMMENDED ACTION 4:

ESTABLISH AN ACTIVE SECONDARY MARKET.

An active secondary market allows investors, buyers and sellers to manage and hedge their risk exposures. In particular, these liquid markets will support longer-term financing for project developers and allow buyers to manage risks that arise from carbon reduction commitments. Market makers and risk takers should be involved in these markets to provide additional liquidity. It will be important to create access to the markets

for participants who traditionally were not present in the financial markets and may have faced barriers navigating the complexity involved in onboarding to an exchange or clearinghouse (e.g., not have the capital to engage). Access could be improved through existing bank intermediaries, brokers, or via a specific carbon development bank. It will also be important to drive awareness among buyers and sellers about these access points.

III. INFRASTRUCTURE: TRADE, POST-TRADE, FINANCING, AND DATA

A core set of infrastructure components need to be in place to make a market work. The components must work together in a way that is resilient, flexible, and able to handle large-scale trade volumes.

RECOMMENDED ACTION 5:

BUILD OR UTILIZE EXISTING HIGH-VOLUME TRADE INFRASTRUCTURE.

Robust trade infrastructure is a vital precondition for the listing and high-volume trading of core carbon reference contracts (spot and futures), as well as contracts reflecting a limited set of additional attributes. Exchanges should provide access to market

data, for example through APIs. They should also adhere to suitable cybersecurity standards. OTC infrastructure should continue to exist in parallel to exchange infrastructure, and OTC brokers are encouraged to provide increased transparency on market data.

RECOMMENDED ACTION 6:

CREATE OR UTILIZE EXISTING RESILIENT POST-TRADE INFRASTRUCTURE.

Clearinghouses are needed to enable a futures market and provide counterparty default protection. They should offer access to relevant data (e.g., open interest), for example through APIs. Meta-registries should provide custodian-like services for buyers and suppliers and enable the creation of standardized issuance numbers for

individual projects across existing registries (similar to the concept of International Securities Identification Number (ISINs) in capital markets). Meta-registries along with the underlying registries of the standards providers should apply suitable cybersecurity standards to prevent hacking.

RECOMMENDED ACTION 7:

IMPLEMENT ADVANCED DATA INFRASTRUCTURE.

Sophisticated and timely data is essential for all environmental and capital markets. In particular, data providers should offer transparent reference and market data, which is not readily available today, due to limited registry data access and an opaque OTC market. For example, the Taskforce encourages that statements detailing the retirement of credits, including the names of entities in which credits are retired, should be made public. Data providers should also collect and offer historical project and project developer performance and risk

data to facilitate structured finance and the formulation of OTC contracts. New reporting and analytics services (spanning across registries) need to be developed for buyers and suppliers. Implementation could be supported by meta-registries, which collect and structure all openly accessible reference data. A critical enabler is that all registries offer reference data through open APIs. Furthermore, intermediaries (e.g., exchanges and clearinghouses) should include trading information in their existing data flows.

RECOMMENDED ACTION 8:

CATALYZE STRUCTURED FINANCE.

Banks and other supply chain financiers should provide lending facilities for project developers (both capital expenditures and working capital) collateralized by carbon credits. In the medium to long term, a liquid spot and futures contracts market for carbon credits would provide a great foundation for structured finance offerings because it would provide clarity on pricing and facilitate risk transfer, improving the overall bankability of

these projects. In particular, financing should be provided based on expected cashflows from offtake agreements. This is an important way of bridging the gap between immediate investment / capital needs and expected future cashflows. However, since futures contracts will not materialize in the short term, additional structured finance solutions are required to provide a comprehensive suite of solutions for developers.

THE TASKFORCE RECOMMENDS THE FOLLOWING STEPS TO CATALYZE FINANCING:

- Develop data transparency on risk, including previous project/supplier performance.¹²
- Equip and train financiers across the ecosystem to rapidly assess execution risk.
- Provide recognition for banks that finance offset projects (e.g., develop “green financier” label or extend existing labels).
- Encourage existing development banks and green investment banks to commit to increase lending facilities for suppliers, in particular for the smallest suppliers (over the long term, the Taskforce’s aim is to create a market that can generate standalone funding for emissions reductions; use of public finance should only be a bridge solution).
- Uphold transparency and continued high standards on AML/KYC.

IV. CONSENSUS ON THE LEGITIMACY OF OFFSETTING

A key problem facing the development of voluntary carbon markets arises from the lack of a shared vision for, and understanding of, the role of offsetting in supporting the achievement of net zero goals.

RECOMMENDED ACTION 9.

ESTABLISH PRINCIPLES ON THE USE OF OFFSETS.

Establishing principles for offsetting can help ensure that it does not disincentivize other climate action. The Taskforce recommends two sets of principles for companies. The first, Principles for Net zero Aligned Corporate Claims and Use of Offsets, sets out guidelines on the use of offsets for corporate buyers. The second, Principles for Credible Use of

Offsets in Products or at Point of Sale, sets out high-level principles for the design of offset product or point-of-sale (POS) offerings to customers. We recommend that these principles be further developed, hosted, and curated by an independent body best placed to do so. The principles should be voluntarily followed.

¹² This could be done by data providers in the market.

RECOMMENDED ACTION 10:

ALIGN GUIDANCE ON OFFSETTING IN CORPORATE CLAIMS.

Alignment will need to be reached regarding the use of offsetting in corporate claims across ongoing initiatives. These initiatives include the Science Based Targets Initiative's (SBTi) process, among others, to define the role of offsetting in supporting net zero claims as well as efforts by investors, via organizations

such as Climate Action 100+ and the Net zero Asset Owner Alliance (NZAOA), to offer guidance to corporates on climate action. Furthermore, the blueprint calls for the alignment of carbon accounting and corporate claims standards, Other ongoing efforts are described in Chapter 4.

V. MARKET INTEGRITY ASSURANCE

Integrity of voluntary carbon markets should be further improved. Today the market lacks a strong governance body to decide on participant eligibility, tackle sub-optimal validation and verification processes, and combat fraud or money-laundering. As an example, the highly fragmented nature of supply creates potential for errors as well as for fraud (e.g., potential conflicts of interest between the auditor and the project developer, issues in baseline modeling, double counting under multiple standards). There is also potential for money laundering, in particular due to lack of price transparency and regulatory oversight. Finally, there may be duplication in anti-money laundering (AML) and know-your-customer (KYC) efforts, as various market participants independently screen complex counterparties. To promote market integrity, the Taskforce recommends three actions.

RECOMMENDED ACTION 11:

INSTITUTE EFFICIENT AND ACCELERATED VERIFICATION.

The Taskforce proposes a digitized project cycle with two features: a shared data protocol that captures necessary project data digitally and protects its integrity during processing and transfer, and an integrated process that allows verification entities to continuously monitor and validate integrity as projects are developed, rather than at the end of the process. The Taskforce acknowledges that monitoring, reporting, and verification (MRV) involves a global community of

assurance providers with overlaps between the compliance and voluntary markets. The verification process should be consistent across the markets for all carbon credits issued. Furthermore, technology is rapidly evolving. The Taskforce recommends that the share data protocol explore the inclusive use of satellite imaging, digital sensors, and distributed-ledger technologies (DLT), to further improve speed, accuracy and integrity.

RECOMMENDED ACTION 12:

DEVELOP AML/KYC GUIDELINES.

Anti-money-laundering and know-your-customer guidelines consistent with existing regulations in trading and banking should be developed. This is especially important where regulation does not currently exist. The work needed goes beyond the scope of the Taskforce. This would include AML/KYC guidelines for specific groups of market

participants (e.g., suppliers, buyers, and intermediaries) as well as guidelines for which market participants are responsible for the AML/KYC screening. A governance body would need to host these, and ensure they are coordinated with other existing regulatory regimes at the international level (e.g., the Financial Action Task Force (FATF)).

RECOMMENDED ACTION 13:

INSTITUTE GOVERNANCE FOR MARKET PARTICIPANTS AND MARKET FUNCTIONING.

It could be the same or different organization as the one hosting and curating the CCPs (see sidebar: Need for End-to-End Governance). This body will need to ensure market integrity along three dimensions. The first dimension is on participant eligibility. This may include setting the principles for what buyers, suppliers, and intermediaries must adhere to in order to participate in voluntary carbon markets. It would also include establishing, hosting, and curating principles for the use of offsetting set out in recommended action 9.

The second dimension is on participant oversight. In particular, the Taskforce recommends developing principles to minimize conflicts of interest in the MRV process and providing accreditation, audit, and spot checks for the conduct of the validation and verification bodies (VVBs). The third dimension is on overseeing market functioning. This may include developing principles to prevent fraud across the value chain, including ensuring good AML practices per recommended action 12.

NEED FOR END-TO-END MARKET GOVERNANCE

Comprehensive market governance is critical to ensure high integrity in the voluntary carbon market, both at the carbon credit level, and at the level of market participants and market functioning (Exhibit 3). Hence, the Taskforce recommends the setup of governance bodies as follows:

GOVERNANCE BODIES TO ENSURE INTEGRITY OF CARBON CREDITS:

- Establish, host, and curate the Core Carbon Principles (CCPs) and the definition of additional attributes: This body would set the quality standards at the credit level and keep these up to date over time. It would develop guidance for any required guardrails or exclusions of project types, as technologies mature and as new information becomes available.¹³ At the project level, standard and methodology setters should continue to develop methodologies that adhere to these evolving CCPs.

¹³ The body's rulemaking should ensure that guardrails have a phase-in period.

- Assess adherence of methodologies and standards to the CCPs: This body will assess both past and current standard setters and methodologies against the CCPs. This body could be the same as or a different body to the one that establishes, hosts and curates the CCPs. It is also possible that these assessments could be undertaken on behalf of the assessment body, by separate expert verification agencies, which would have to be accredited by the independent body.

The need for these bodies are outlined in recommended actions 1 and 2.

F. GOVERNANCE BODIES TO ENSURE INTEGRITY OF MARKET PARTICIPANTS AND MARKET FUNCTIONING

- Establish principles for participant eligibility: Setting the principles for what buyers, suppliers and intermediaries must adhere to in order to participate in voluntary carbon markets, similar to know-your-customer rules applied in the banking industry.
- Ensure participant oversight: Establish a new process for accrediting the validation and verification bodies (VVBs) that assess projects and methodologies, and authorize issuance of carbon credits. Provide oversight of these VVBs through regular audits and spot checks to ensure rigorous adherence to the CCPs and implementation of the methodologies and standards. Develop rules that validation and verification bodies must adhere to, for example that the same organization cannot carry out both validation and verification activities.
- Oversee market functioning: Develop principles to prevent fraud, including money laundering.

The need for these bodies are outlined in recommended actions 12 and 13.

Such organizations will need substantial expertise and resourcing, and further work is needed to set out financing models for these functions. To ensure the best governance setup is found, we actively encourage your feedback in the Public Consultation Survey on which specific organizations could be best suited to play a role in this governance.

EXHIBIT 3: GOVERNANCE BODIES



1. Potentially carried out by expert verification agencies

VII. DEMAND SIGNALS

The Taskforce believes that a clear demand signal could be one of the most important factors as it would provide the impetus to drive the development of liquid markets and scaled-up supply. To that end, the Taskforce proposes the following recommendations.

RECOMMENDED ACTION 14:

OFFER CONSISTENT INVESTOR GUIDANCE ON OFFSETTING.

Aligned investor guidance on the role of voluntary offsetting can be a powerful lever to help grow demand. The Taskforce recommends that investor alliances, such as the Institutional Investors Group on Climate Change (IIGCC), Climate Action 100+, and the Net zero Asset Owner Alliance, acknowledge that while emissions reduction

remains the priority for corporates, offsetting plays a limited but vital role in achieving the Paris Agreement ambition. This could be enacted by developing clear guidance to corporates, including on the appropriate use of offsetting, consistent with the principles laid out by the Taskforce.

RECOMMENDED ACTION 15:

ENHANCE CONSUMER PRODUCT OFFERINGS, INCLUDING AT POINT-OF-SALE (POS).

Implementing consumer solutions across sectors could rapidly scale demand for voluntary credits. The Taskforce recommends implementing the CCPs for consumer products. This would improve legitimacy and consistency of claims. Existing POS carbon

credit offerings (e.g., purchase of an offset airline ticket) could be enhanced through the use of digital technology, for example enabling carbon credit registries to interface with software that would allow “micro transactions” involving voluntary credits.

RECOMMENDED ACTION 16:

INCREASE INDUSTRY COLLABORATION AND COMMITMENTS.

Identifying and supporting priority sectors where industry-wide collaboration, through consortia, commitments and/or industry-wide POS programs, could support the growth of offset demand. The need is likely to be

greatest among hard-to-abate industries such as oil and gas, steel, and cement; companies should lead the way by setting ambitious goals ahead of regulation, given the immediate need for change.

RECOMMENDED ACTION 17:

CREATE MECHANISMS FOR DEMAND SIGNALING.

Establishing effective ways for end buyers to signal future demand would improve market transparency and facilitate scaling of credit supply. The Taskforce encourages companies to send long-term demand signals (via, for example, long-term offtake agreements or reduction commitments). Companies could

create more transparency on “intermediate demand” for the interim period prior to reaching net zero and the likely demand when they reach their target date, for example through a buyer commitment registry, which could either be hosted by a standard setter (e.g., SBTi or CDP) or a data provider.

WHAT'S NEXT?

The Taskforce welcomes feedback on this Consultation Document and has initiated a public consultation to gather inputs from all interested stakeholders. **The Consultation Period is open until December 10, 2020.** Please submit responses via the Public Consultation Survey, [here](#).

In January 2021, the Taskforce will issue its final report, including an updated blueprint for a voluntary carbon market and a road map to its implementation.

2. CARBON CREDITS AND CLIMATE CHANGE:

THE CRUCIAL IMPORTANCE OF CARBON MARKETS

Meeting the long-term temperature goal of the Paris Agreement of limiting warming to 1.5°C will require a global decarbonization of all aspects of the economy.¹⁴ In 2018, the Intergovernmental Panel on Climate Change (IPCC) clarified that achieving a 1.5°C goal will require an approximately 50 percent reduction of emissions by 2030 (-23 gigatons of carbon-dioxide equivalent [GtCO₂e])¹⁵, leading to achievement of net zero emissions by 2050, when emissions are balanced by removal of carbon dioxide from the atmosphere.¹⁶ This Taskforce is aligned behind the ambition of achieving that 1.5°C goal.

As organizations in every sector decarbonize their operations and value chains, some will find that emissions from certain sources can only be eliminated at a prohibitive expense with existing technologies, and that emissions from other sources cannot be eliminated at all. Carbon credits, purchased voluntarily, enable organizations to compensate for these residual emissions by financing the reduction of emissions from other sources, or the removal of greenhouse gases from

the atmosphere.¹⁷ In certain sectors, some firms are seeking to not only reduce current emissions, but also compensate for past contributions to climate change. In this broad context, voluntary carbon markets, where carbon credits can be traded, are set to play an increasingly significant role in ambitious strategies, including net zero targets, through both the removal/sequestration and the avoidance or reduction of emissions. This is alongside the role of compliance carbon markets in achieving net zero.

Recognizing the importance of voluntary carbon markets in achieving net zero carbon emissions, the Institute of International Finance has established a Taskforce on Scaling Voluntary Carbon Markets, with a mandate of creating a blueprint for voluntary carbon markets that could meet much greater demand for carbon credits.

This chapter provides a closer look at the need for carbon credits and at the Taskforce's effort to build consensus on how to scale up voluntary markets and define solutions to the challenges they now face.

14 The Paris Agreement, unlike the Kyoto Protocol, effectively covers nearly all greenhouse gas emissions and makes them the responsibility of national governments. *Paris Agreement*, United Nations Framework Convention on Climate Change, Dec. 12, 2015, unfccc.int.

15 *Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C approved by governments*, Intergovernmental Panel on Climate Change, Oct. 8, 2018, ipcc.ch.

16 We recognize that there is uncertainty due to climate sensitivity and modeling assumptions; however, any further commentary is out of the scope of this report. We base our case on the IPCC guidance on the 1.5°C pathway.

17 As countries move toward legislated net zero targets and these targets are enforced by governments, any company in a hard-to-abate sector with residual emissions reductions may also need to demonstrate on a compliance basis that they are either (i) reducing those emissions to zero; or (ii) offsetting them. If they are offsetting them, these offsets may no longer be purely "voluntary", as the company may start to face legal obligations to report on their use of carbon credits.

THE ROLE OF VOLUNTARY CARBON MARKETS IN SUPPORTING THE GLOBAL NET ZERO GOAL

Should current emissions trends continue, global average temperatures would likely rise 3.5°C above preindustrial levels by 2100.¹⁸ A temperature rise of this magnitude will push critical natural carbon sinks (including permafrost, or the Amazon rainforest) beyond dangerous tipping points, initiating harmful feedback loops in the climate system (such as ice loss, rapid release of methane, and changes in ocean circulation). This will amplify the impacts of anthropogenic emissions releases. Physical impacts such as fires, flooding, and storms, will continue to increase in frequency and intensity, leading to vast ecosystem and human impacts. From a socioeconomic perspective, five systems are directly affected by climate change: livability and workability, food, physical assets, infrastructure, and natural capital.¹⁹ Billions of lives are affected, with significant knock-on effects for financial markets and the economy. The impacts of climate change are already being felt, and are set to worsen. Averting the worst of potential climate futures requires a

global effort to limit global warming to 1.5°C. As noted above, achieving the 2050 net zero pathway necessary for the 1.5°C goal requires deep, rapid reductions, beginning now, across all sectors of the economy.

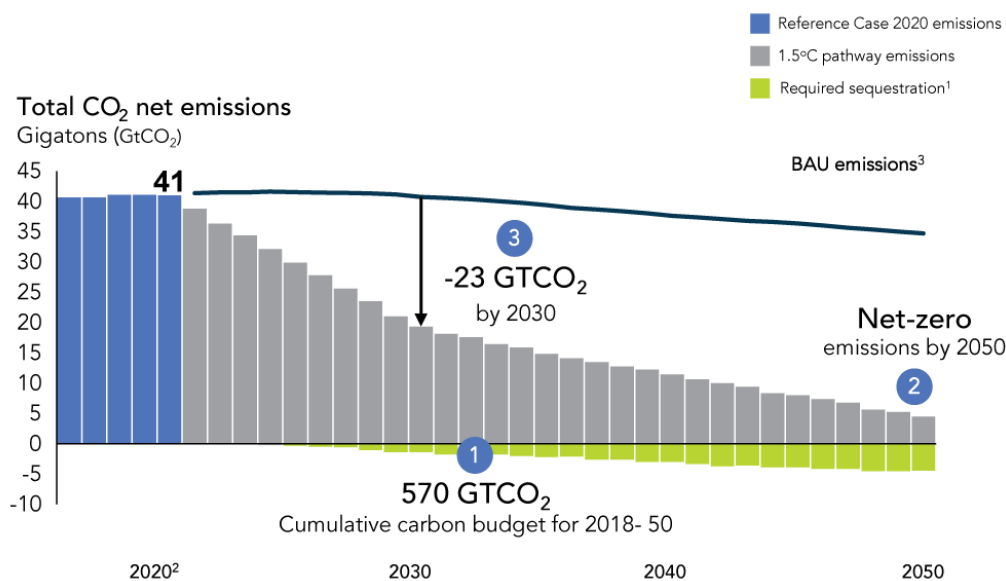
However, there are material limits to the decarbonization of economic and industrial processes which the world is likely to continue to rely on, not least to deliver other mitigation and adaptation measures. For example, making cement necessarily involves a chemical process, calcination, that accounts for most of the cement industry's carbon emissions. Therefore, to achieve net zero, residual emissions will have to be neutralized by the removal of carbon dioxide from the atmosphere, using so-called negative emissions technologies such as direct air capture with carbon storage (DACCS) and bio-energy with carbon capture and storage (BECCS), as well as the use of natural climate solutions (NCS)²⁰ such as reforestation (Exhibit 4).

18. The IPCC's Representative Concentration Pathways (RCP) scenario 8.5 notes that the mean warming increase is 3.7°C, with the likely range being 2.6° to 4.8°.

19. Jonathan Woetzel, Dickon Pinner, Hamid Samandari, Hauke Engel, Mekala Krishnan, Brodie Boland, and Carter Powis, *Climate risk and response: Physical hazards and socioeconomic impacts*, McKinsey Global Institute, Jan. 16, 2020, McKinsey.com.

20. Natural climate solutions (NCS) refers specifically to natural solutions that mitigate climate change; Nature-based Solutions (NBS) are defined by IUCN as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits" This is a broader and different term than NCS.

EXHIBIT 4: 1.5°C PATHWAY EMISSIONS



- 1 In order to reach the 1.5°C goal we must remain within the 570 GtCO₂ carbon budget
- 2 By 2050 all remaining emissions need to be fully offset by sequestration (net zero)
- 3 To set us on this path we must reduce net emissions by 23 GtCO₂ by 2030

1. 570GT of cumulative CO₂ emissions from 2018 for a 66% chance of a 1.5°C increase in global mean surface temperature (GMST)
 2. While emissions fell by a quarter at the peak of COVID-related lock-down, daily emission have rebounded to be only 5% lower than 2019 levels. Scenarios to 2050 still remain the same. From Nature: Current and future global climate impacts resulting from COVID-19
 3. Business-as-usual emissions

Source: McKinsey 1.5oC Scenario Analysis; IPCC; Le Quéré et al. 2018

Robust and efficient voluntary carbon markets can enable private sector actors to take ambitious steps toward compensating for their contribution to climate risk through the purchase and retirement of carbon credits as offsets. A carbon credit is a verifiable quantity of climate mitigation for which the buyer can claim an offset as a result of financing either:

- **Reduction or avoidance** of carbon emissions, by funding the implementation of technologies or practices that avert potential future carbon emissions when they otherwise would not have taken place (e.g., implementation of renewable energy projects instead of fossil-fuel energy, energy efficiency, clean cookstoves, capture and destruction of industrial greenhouse gases (GHGs), and emissions reductions from reduced deforestation; or
- **Removal or sequestration** (storage) of carbon dioxide from the atmosphere, by funding the implementation of negative-emissions technologies and the use of specific natural climate solutions.

In this report, we generally follow the convention of using “carbon credit” to describe the verified emissions reduction or removals generated, traded, and retired and “offset” to describe the act of financing other climate mitigation actions to compensate or neutralize for one’s own footprint.

EXHIBIT 5: ILLUSTRATIVE LIFECYCLE OF A CARBON CREDIT & CORRESPONDING PROJECT CASH FLOW

LIFE CYCLE OF A CARBON CREDIT

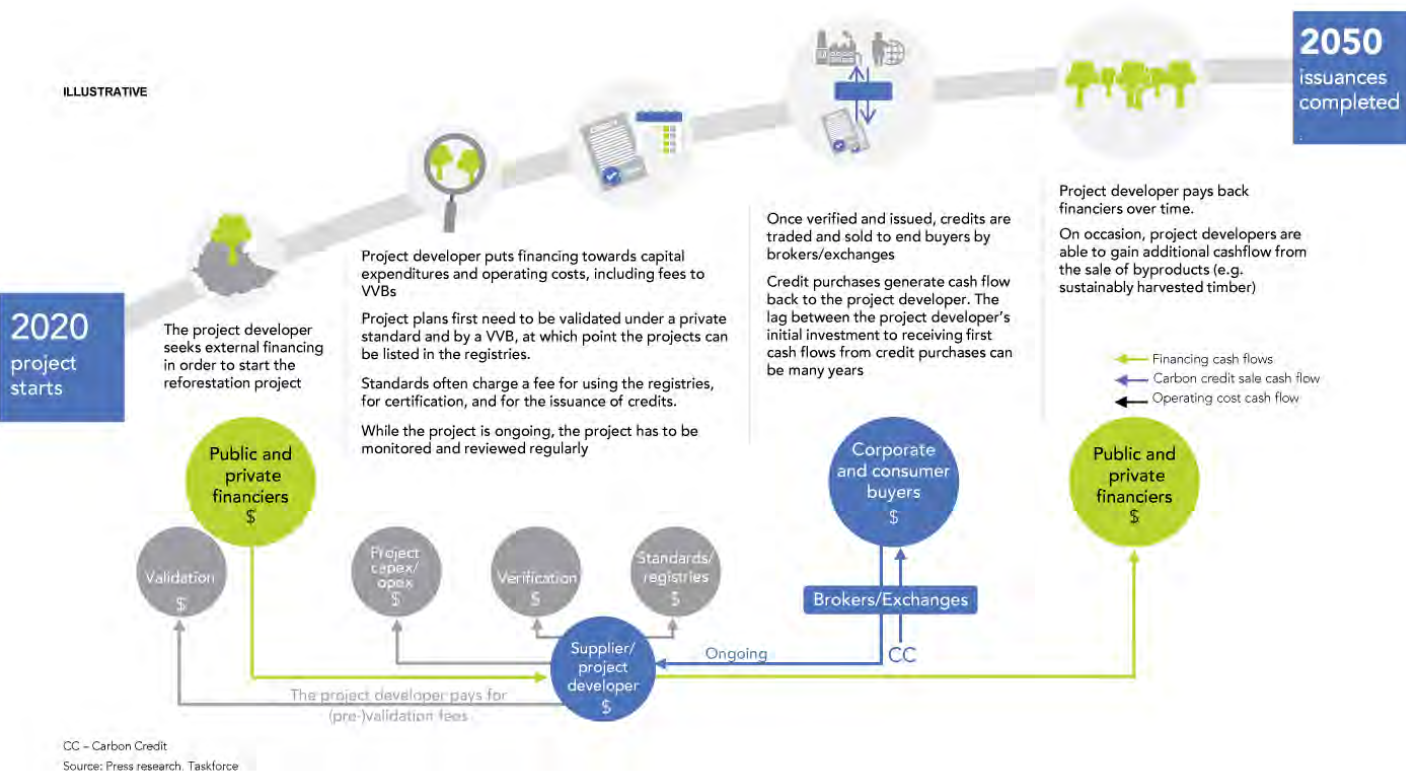
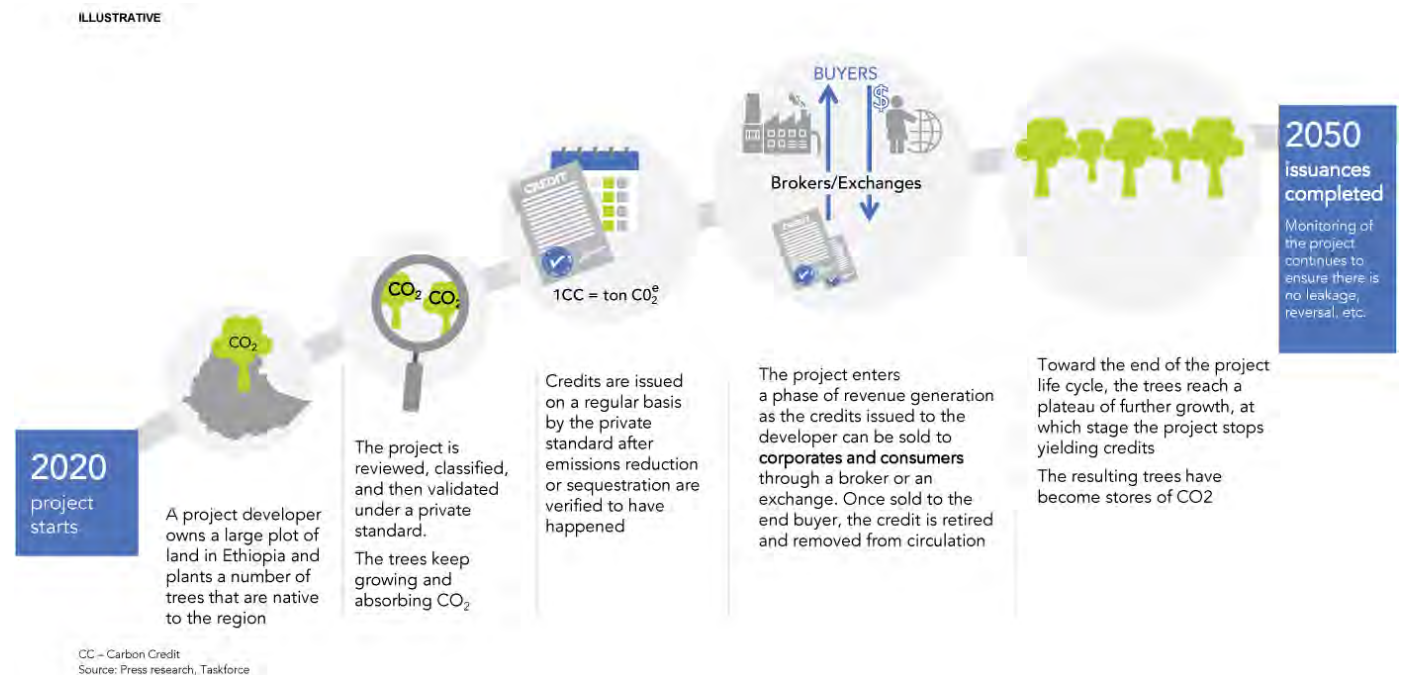


Exhibit 6 shows two different sample projects. The biogas digester project is an example of avoid-ance/reduction projects. The reforestation project is an example of a removal/sequestration project with a natural climate solution.

EXHIBIT 6: SAMPLE PROJECTS

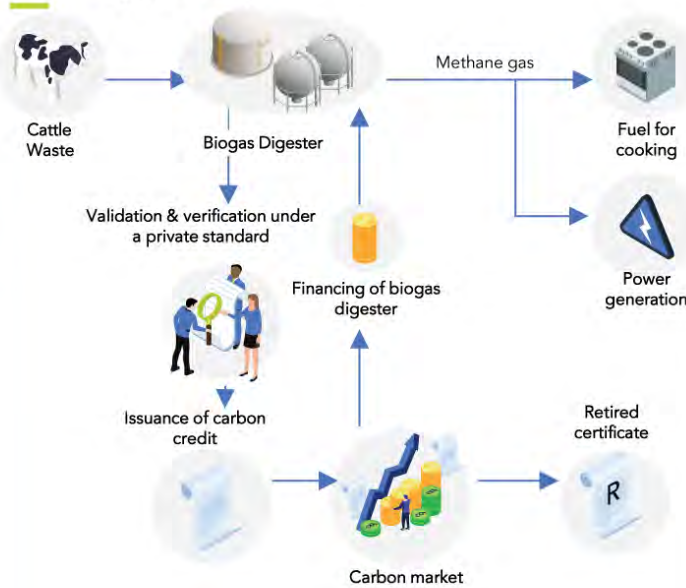


Project context

A biogas digester can collect waste to produce methane gas used for cooking or power generation

However, the high capex and the technical complexity associated with biogas digesters can make it prohibitive for farmers to install them on their farms. Carbon credits can help finance the project

Illustrative project setup



Potential co-benefits

- Production of organic fertilizer to enhance crop production
- Local employment and job training for project construction and maintenance
- Reduced waste odors with reduced cases of acute lower respiratory infection
- Decreases reliance on wood for fuel
- Improved quality of life for farmers impacted, incl. redistribution of household labor



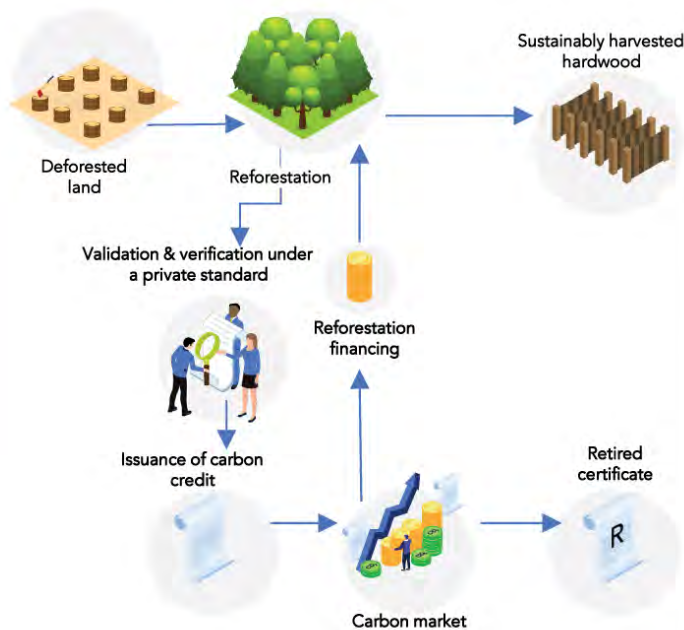
Project context

The deforested land was previously used for cattle ranching

The remoteness of deforested land, lack of investment and a lack of know-how prevented reforestation activities

The project developer identified this opportunity for reforestation after the previous owner put the land up for sale

The project developer made sure to plant native species to do no harm to the ecological system in place



Potential co-benefits

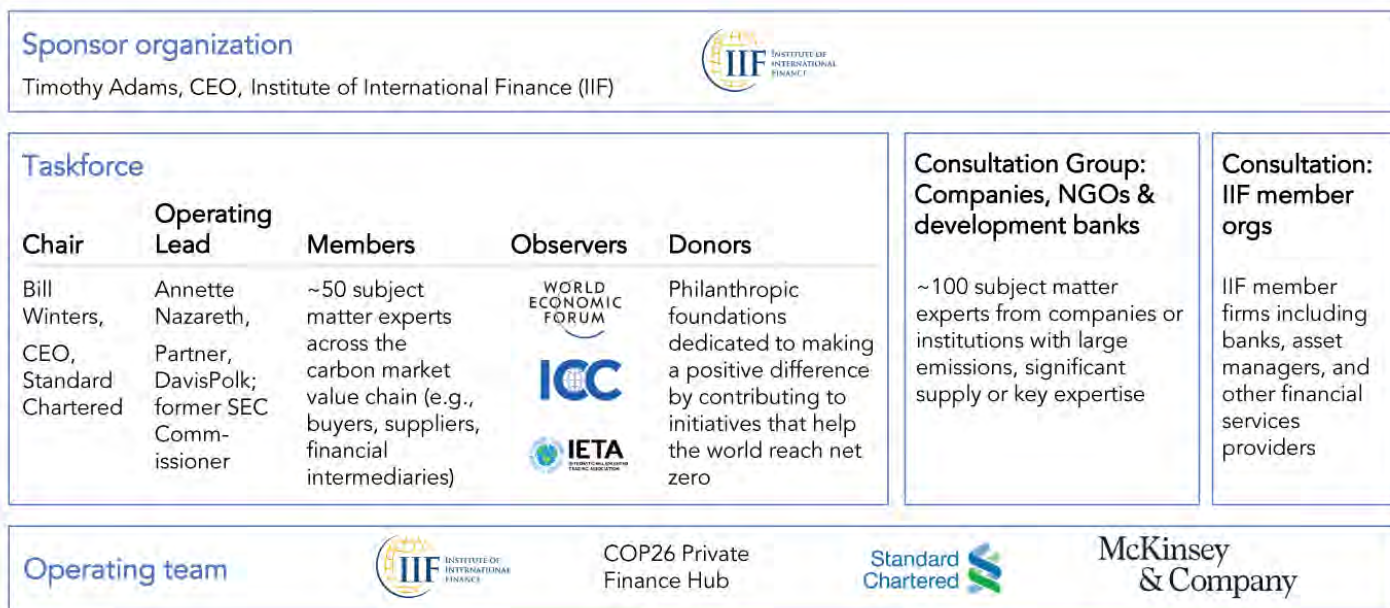
- Better synergy between natural resources in the area (e.g., water retention, soil health)
- Ecosystem corridors for wildlife
- Poverty alleviation and local job creation
- Capability building on the importance of sustainable activities

A BLUEPRINT FOR SCALING VOLUNTARY CARBON MARKETS:

THE WORK OF THE TASKFORCE

The pressing need for a step change in the generation and trading of high-quality and robust carbon credits inspired the Institute of International Finance to establish a private sector Taskforce, bringing together experts from across the VCM supply chain. The Taskforce will aid the development of a scalable, liquid, transparent, high-integrity, and reliable voluntary carbon market and is chartered to draw on best practices to date and lessons learned from all existing carbon markets. Exhibit 7 shows the structure of the Taskforce, building on the approach used for the Task Force on Climate-related Financial Disclosures (TCFD).

EXHIBIT 7: TASKFORCE STRUCTURE



MANDATE

The Taskforce on Scaling Voluntary Carbon Markets has a mandate to harness the expertise in the private sector to develop a blueprint for a voluntary carbon market which:

- connects the supply of carbon credits to demand in a seamless, cost-effective, and transparent way
- instills confidence and ensures credibility in carbon credits being exchanged/transacted
- is scalable to meet the expected increase in demand as more companies commit to achieving the 1.5°C ambition set out by the Paris Agreement

SCOPE OF THE TASKFORCE

Now is the moment to establish the infrastructure for effective carbon markets. New rules are expected to be agreed on in the next round of the United Nations Framework Convention on Climate Change (UNFCCC) climate negotiations at the 26th meeting (COP26) in Glasgow in late 2021. There, parties are due to submit plans with increased ambition for national emissions reductions, and to agree on international accounting and transfer rules for mitigation outcomes under Article 6 of the Paris Agreement. One of the last components of the “Paris rulebook”, these rules will determine how emissions reductions achieved in one country and transferred to another will be captured in each country’s emissions balance to prevent the same emission reduction from being counted towards more than one Nationally Determined Contribution. These are known as the Article 6 negotiations (see sidebar, “Addressing the Challenges of Corresponding Adjustments”), and these rules will influence companies’ use of carbon credits.

In line with the scope of its mandate, the Taskforce chose not to take up the issue of the appropriate role of offsetting in decarbonization strategies. Companies in “harder-to-abate” sectors, in which technological constraints limit their ability to decarbonize operations and supply chains, might offset to achieve greater emissions reductions than they might otherwise. Various other initiatives, involving climate scientists and business experts, are working to clarify the proper role of offsetting in decarbonization strategies. The Taskforce defers to those experts on how companies can best achieve emissions reductions.

Similarly, the Taskforce has not provided

recommendations on policy issues that could affect demand for and supply of carbon credits, or the functioning of regulated compliance markets (e.g., emissions-trading schemes). For the current market, the Taskforce acknowledges that the carbon market is in a period of transition from a regulatory perspective, especially in relation to the Article 6 negotiations. There are other regulatory interlinkages to the voluntary carbon market — everything from land use and property laws to regional carbon pricing or compliance schemes. Changes in these myriad rules will impact the scaling of the voluntary carbon markets.

For example, airlines will begin to implement the voluntary pilot phase of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), increasing carbon credit demand. California’s emissions-trading scheme will lower the volume of carbon credits that companies can purchase to comply with regulations, capped at 4 to 6 percent of emissions covered by compliance credits between 2021 and 2030. We acknowledge the permitted use of credits from private standards in compliance markets drives a portion of demand for these credits.

Where the Taskforce has identified challenges to scaling up voluntary markets that rely on unblocking political issues, the report notes the interdependency, recognizes that this needs to be dealt with, but does not comment on the political dynamics or seek to provide solutions. In particular, the Taskforce understands that there are interactions between the voluntary carbon market and the frameworks governing carbon markets under the Paris Agreement, including Article 6. Voluntary carbon market scale-up would

benefit from regulatory clarity. However, a full examination of these issues is beyond the scope of the Taskforce which focuses on building the market infrastructure needed to scale the market.

Instead, the Taskforce is actively engaging with parallel initiatives examining these issues. For example, a consortium led by Trove Research and University College London is working closely with a sub-group of Taskforce members to conduct analysis on the interactions between the voluntary carbon market and the Paris Framework. Relevant insights from this work will inform the Taskforce's final conclusions. (Further information on this initiative can be found at globalcarbonoffsets.com.)

By helping scale up carbon markets, implementation of the recommendations in the Taskforce's blueprint for the voluntary carbon market will help the private sector mobilize capital to finance the low-carbon transition. Carbon markets are not the only way to do this: many of the institutions represented by Taskforce members, as well as governments, international organizations, and development banks, are deploying a variety of other tools to mobilize finance for the low-carbon transition. This wider work is a core component of national and regional policy making, and while the IIF participates in some of those efforts, these other tools are outside the scope of the Taskforce's work.

ADDRESSING THE CHALLENGE OF CORRESPONDING ADJUSTMENTS

A corresponding adjustment (CA) is an accounting tool set out in Article 6 of the Paris Agreement meant to ensure that emission reductions or removals are counted only once towards a mitigation obligation at country-level given that all signatories to the agreement have agreed to take on, and account for, targets. In particular, CAs are meant to be issued by countries hosting emission reduction or removal activities that generate units which are subsequently transferred to another country.

Even though the specific rules around corresponding adjustments have yet to be finalized, they represent a new concept and there are still differing opinions as to whether and how these adjustments should apply to the voluntary carbon market. The Taskforce recognizes that the outcome of the negotiations of Article 6 of the Paris Agreement, in particular in relation to rules around CAs, may influence the voluntary carbon market. In particular, there are

concerns about the workability of requiring CAs for all voluntary transactions given how many countries may not be willing or able to commit to such adjustments, at least in the near term, when voluntary finance may be critical to drive climate action.

Some buyers have told the Taskforce that they would like to secure CAs for voluntary market activities to protect against regulatory, reputational and other risks. They may be concerned that their emissions reduction claim, represented by retiring credits, may not be valid if it is also being claimed by the host country (i.e., country in which the reduction took place).

On the other hand, not all buyers may require corresponding adjustments: corporate and national emissions accounting can exist separately. It is environmentally sound for a firm, so long as it fulfils the criteria for the use of offsets as part of a decarbonization strategy in recommendation 9, to make

claims such as carbon neutrality on the back of emissions reductions they financed, provided that any claims also clearly indicate that those reductions remain part of the national balance of the host country for the purposes of accounting under the Paris Agreement. In addition, some buyers may prefer to contribute to a host country's emissions target. Separately, since the transfer of CAs will need to be reported at the intergovernmental level, there may be a time-lag between the transfer of a carbon credit and the proof of an associated CA. This risks extending the verification process for credits with associated CAs. There may be potential solutions, such as obtaining letters of intent or commitment from host countries, in parallel with additional buffers set by the standards setters.

The Taskforce cannot deliver policy guidance on CAs, and this is subject to ongoing

international negotiations. The perspective of market players above is provided to recognize these interdependencies and inform this broader conversation. Failure to clarify and align the CA rules may be an impediment for scaling the VCM and only a clearly articulated, workable and credible resolution will provide assurance to the full range of voluntary carbon credit buyers. Such a resolution should ensure the avoidance of double-counting at the national level.

In the meantime, buyers will need assurance that their carbon credits are unique – the core carbon principles described in Recommended action 1 in Chapter 4 will in this regard be crucial to ensuring integrity. The Taskforce also hopes to support buyers who want to purchase credits including CAs by reflecting these in the defined taxonomy of additional attributes – as detailed in Recommended action 1.

KEY GUIDING PRINCIPLES

Carbon markets can provide a way of increasing emissions reductions by uncovering economically efficient ways of driving change that can reduce costs and increase ambition. Carbon markets are unusual in that they create financial value for something that is hard to verify (reduced or avoided emissions) and which can be non-permanent (enhanced carbon sinks). Therefore, the rules of the game are important to maintaining trust. It is imperative that carbon credits lead to emissions reductions or removals in addition to what would have happened anyway.

The Taskforce has developed this draft blueprint according to four key principles:

1. The first is that the Taskforce will produce **open-source solutions for private-sector organizations to take forward**. These solutions are not meant to compete with other initiatives, but to work alongside them to scale up voluntary carbon markets globally for the benefit of all participants.
2. The second principle is that **voluntary carbon markets must have high environmental integrity and minimize any risks of negative consequences (i.e., seek to do no harm)**. The design of some carbon markets has occasionally allowed projects that generate carbon credits to cause harm to local communities and ecosystems. Carbon markets should be designed to ensure that emissions-reduction projects benefit local communities, preserve or strengthen ecosystems, and do no harm.
3. Recognizing the broad range of important work underway in this space, a third principle

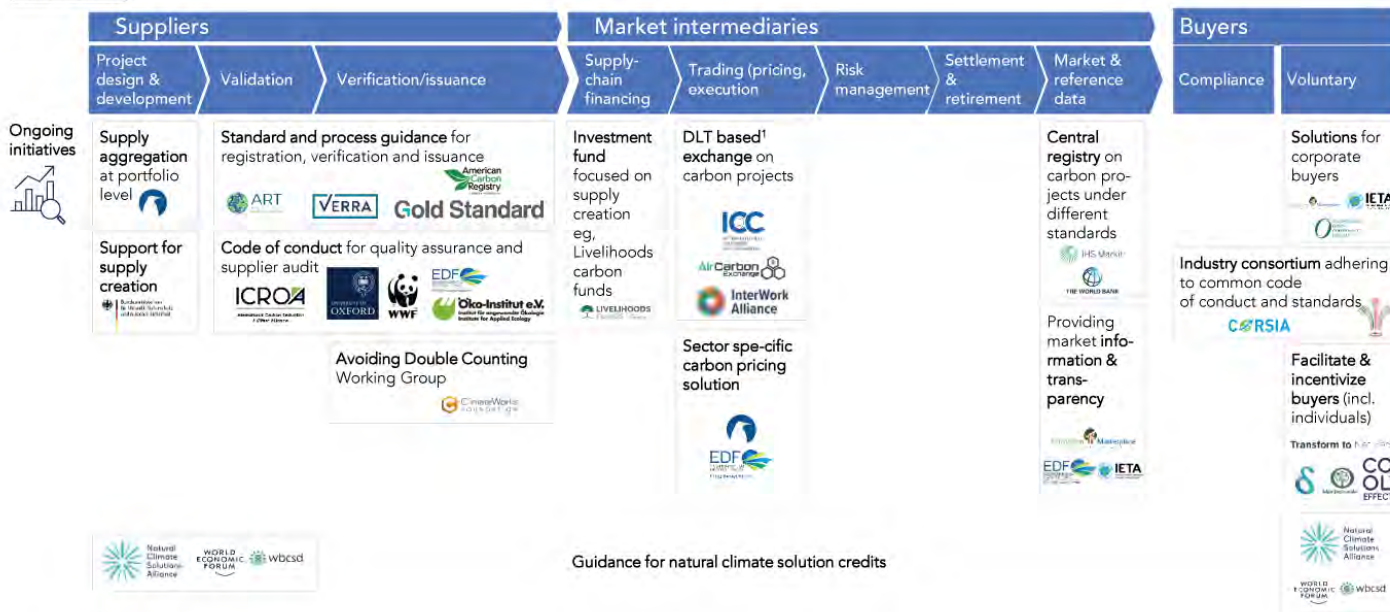
is to amplify existing and ongoing work of parallel initiatives. The Taskforce aims to bring together players across the value chain and across the globe, and has mapped out a detailed landscape of existing initiatives (Exhibit 8).²¹ These ongoing initiatives all inform the blueprint for scaling voluntary carbon markets. Many are members of the Taskforce or Consultation Group, and lessons from these initiatives are incorporated into this report. Going forward, the road map and related efforts arising from this report will need to work alongside these organizations and projects to ensure we learn from and support one another's efforts.

4. Lastly, and perhaps most importantly, the Taskforce's work is predicated upon the principle that **voluntary carbon markets must not undermine incentives for emissions mitigation**. To reach the goals of the Paris Agreement in line with climate science, all sectors must reduce their absolute emissions, and globally we will need to compensate for historic emissions. Carbon markets should therefore be designed in a way that does not lessen incentives for businesses to reduce their own emissions. They should also enable companies to become carbon negative (e.g., removing more carbon emissions than they produce), to achieve the even more ambitious goals that are necessary for achieving the Paris Agreement targets.

The next chapter sets out important considerations for the design of the voluntary carbon markets, based on the Taskforce's research.

EXHIBIT 8: ONGOING CARBON MARKET INITIATIVES

Non-Exhaustive



1. Distributed-ledger technology

21 Details can be found in the appendix.

3. THE REQUIREMENTS FOR SCALING UP VOLUNTARY CARBON MARKETS

To understand what is required to scale the voluntary carbon market, it is important to draw lessons from from experience in recent decades. This chapter takes a brief look at the past before addressing the current state and exploring the preconditions for future growth. We explore the need for strong demand signals, assured supply, and for adequate and robust market infrastructure.

I. A BRIEF HISTORY OF VOLUNTARY CARBON MARKETS

Voluntary carbon trading began in 1989, before the first Conference of the Parties (COP) to the UNFCCC. Early transactions mostly related to projects aiming at preventing deforestation (Exhibit 9).

Several developments brought the use of carbon credits closer to mainstream practice. First, the adoption in 1997 of the Kyoto Protocol²² established several elements of a carbon-market infrastructure—in particular, the Clean Development Mechanism (CDM), which set standards for carbon-offsetting methodologies and laid the foundation for an official central registry of credits.

In 2003 came the launch of the first centralized cap-and-trade system, the voluntary but legally binding Chicago Climate Exchange (CCX), that also permitted the application of a limited percentage of verified credits to comply with the emissions reduction schedule. CCX was a self-regulated exchange, with oversight provided by the Commodity Futures Trading Commission and member baseline and reduction compliance audited annually by NASD/FINRA. CCX provided price discovery for emissions trading globally, and provided its 450 members, including major companies, universities, cities and

states, a platform for making commitments to reduce emissions via standardized, legally binding contracts.

The tradeable instrument on CCX was the fungible CCX carbon financial instrument (CFI), equivalent to one ton of CO₂.²³ Members of CCX committed to directly reduce all Scope 1 emissions from all North American operations on a specified reduction schedule, and could apply credits on a limited basis to meet their compliance requirement.²⁴ As in a classic cap-and-trade system, members who achieved their reduction targets beyond their compliance requirements had surplus CFI allowances to sell or bank; those who did not meet the targets complied by purchasing additional CFIs from those with a surplus. Associate Members were Scope 2 emitters only, and committed to reduce or offset their entire annual North American emissions by the purchase of CFIs from CCX members. By enabling members to achieve emissions reductions of 700 million tons of carbon-dioxide equivalent (MtCO₂e) over seven years, the CCX demonstrated that an exchange and trading platform could improve the transparency and liquidity of carbon markets, including integration of

22 The Kyoto Protocol commits industrialized countries and economies in transition to a greener future to limit and reduce greenhouse gases emissions in accordance with agreed individual targets.

23 CCX covered all six greenhouse gases and pioneered some offset protocols. Offset projects could only be eligible for CFI credit issuance if verified by bona fide verifier systems, such as DNV.

24 When CCX ceased its Phase II operations in 2010, only 10 percent of the compliance requirements of emitting members had been met by offsetting.

carbon credits.²⁵ CCX also launched and co-owned China's first carbon market, and had affiliates worldwide, serving as a template for an eventual global market. The CCX ceased operations in 2010. This decline was partially triggered by unmet regulatory expectations, including the failure of the Waxman-Markey bill in the US for a national cap-and-trade system to pass, as well as the breakdown in negotiations at Copenhagen in 2009, dashing hopes for global carbon markets taking off.

The history of compliance and voluntary carbon markets have been interlinked since their inception. One can observe correlated movements between compliance market, Certified Emissions Reductions (CERs) volumes, and voluntary credit volumes traded (e.g., both had a significant drop-off in 2013). A critical development in compliance markets worth highlighting, was the linking of the CDM to the EU Emissions Trading System (EU ETS) in 2005. This allowed companies to use CERs, which are carbon credits generated from

CDM projects, to comply with EU emissions regulations. Between 2008 and 2016, the EU ETS reduced more than 1 billion tons of CO₂.²⁶ The connection between the CDM and the EU ETS also brought new attention to voluntary markets. Seeing that large industrial companies had to pay for the right to emit greenhouse gases, service providers like consulting and law firms anticipated that they might eventually face similar requirements and began purchasing voluntary credits. CER trading volumes dropped heavily after 2012, by which time covered entities of EU ETS had purchased much of their allowed credits for the 2012 to 2020 phase. They are still being traded but at much reduced levels (see appendix: CDM/CERs analysis).²⁷ We note that if compliance schemes (e.g., EU ETS, the California Cap-and-Trade program, the piloted China ETS) will update decisions on accepting private standard credits going forward, it may significantly impact demand for private standard credits.

25 *Building Bridges: State of the Voluntary Carbon Markets 2010*, Forest Trends, June 14, 2010, forest-trends.org; Paula DiPerna, "Pricing Carbon: Integrating Promise, Practice and Lessons Learned from the Chicago Climate Exchange," In: Walker et al (eds), *Designing a Sustainable Financial System*, Palgrave, Macmillan, Cham, 2018.

26 Patrick Bayer and Michael Aklin, "The European Union Emissions Trading System reduced CO₂ emissions despite low prices," in *PNAS* 2020.

27 This was driven by the supply of large volumes from HFC projects and large hydro projects from certain countries, both of which had raised concerns with the EU around additionality (and thus eligibility), and so entities purchased before eligibility could be removed. In the next (fourth) phase of the EU-ETS, offsets are not permitted.

EXHIBIT 9: HISTORICAL VOLUNTARY CARBON, MARKET EVOLUTION AND TIMELINE²⁸

Annual volume of CO₂e traded in the voluntary carbon market, metric ton

■ Total volume traded



Source: McKinsey, Ecosystem Marketplace, ICROA

From the history of voluntary carbon markets, we take away the significance of offset demand, carbon credit supply, and market infrastructure for the proper functioning of the marketplace.

²⁸ For a more in-depth, interactive timeline, please see the parallel timeline initiative led by ICROA (voluntarycarbonmarket.org). We also note that while the China ETS is a compliance market, when it does come online fully, the sheer size of it will still have implications on the VCM.

DEMAND

Demand signals are critical to the success of carbon markets. Although corporate climate strategies and targets can motivate companies to purchase carbon credits, tight budgets can limit their buying during economic downturns. The annual trading volume in voluntary markets dropped by half after the global financial crisis, between 2008 and 2013. With sufficient industry pressure and a clear narrative on the legitimacy of the market, demand can rise. Ambitious and transparent corporate claims are essential to signaling longer-term demand and thereby attracting sellers to the market. Today, we have a much stronger demand signal through

companies setting net zero goals between 2030 and 2050. There will be a significant increase in demand going forward.

Demand can also be affected by regulation. In 2008, market observers speculated that new regulations in the compliance market would strengthen demand for carbon credits. But the failure of the Copenhagen climate summit in 2009 dashed hopes that carbon markets would take off in the short term, which meant participants lost confidence and prices and volume collapsed. Similarly, linking the CDM to the EU ETS increased offset demand—and breaking the link caused demand to plummet.

SUPPLY

The defining point in the history of carbon credit supply has been quality. This has been discussed in two ways: i) quality of individual projects as measured against private standards and ii) perceptions of offsetting in catalyzing progress toward decarbonization.

Verification of credits is overseen by standards to ensure an adequate supply of verifiable, high-quality carbon credits. Early developers of projects that produced voluntary carbon credits used their own standards for measuring the amount of carbon emissions a project would counterbalance. In a few instances, these standards turned out to be unreliable. When they came to light, the industry lost credibility. Project developers

must demonstrate, beyond any doubt, that the project and associated credits compensate for the quantity of emissions that they are supposed to. However, verification can be costly, especially for smaller-scale project developers.

Beyond verification of the carbon credit, quality points to a broader set of beliefs in legitimacy of offsetting. Debate continues today on the role of offsetting in corporate claims and in contributing to a global net zero goal. Effective governance of offsetting is essential to the success of voluntary carbon credit supply in catalyzing progress on decarbonization.

MARKET INFRASTRUCTURE

Finally, intermediaries and market infrastructure are essential to facilitating a functioning marketplace. From 2006 to 2008, the quantity of carbon credits traded in voluntary markets more than tripled. This period of growth, however, was brought to an abrupt halt by the financial crisis of 2007–2008 and unsuccessful Copenhagen climate summit in 2009. The CCX, which had handled

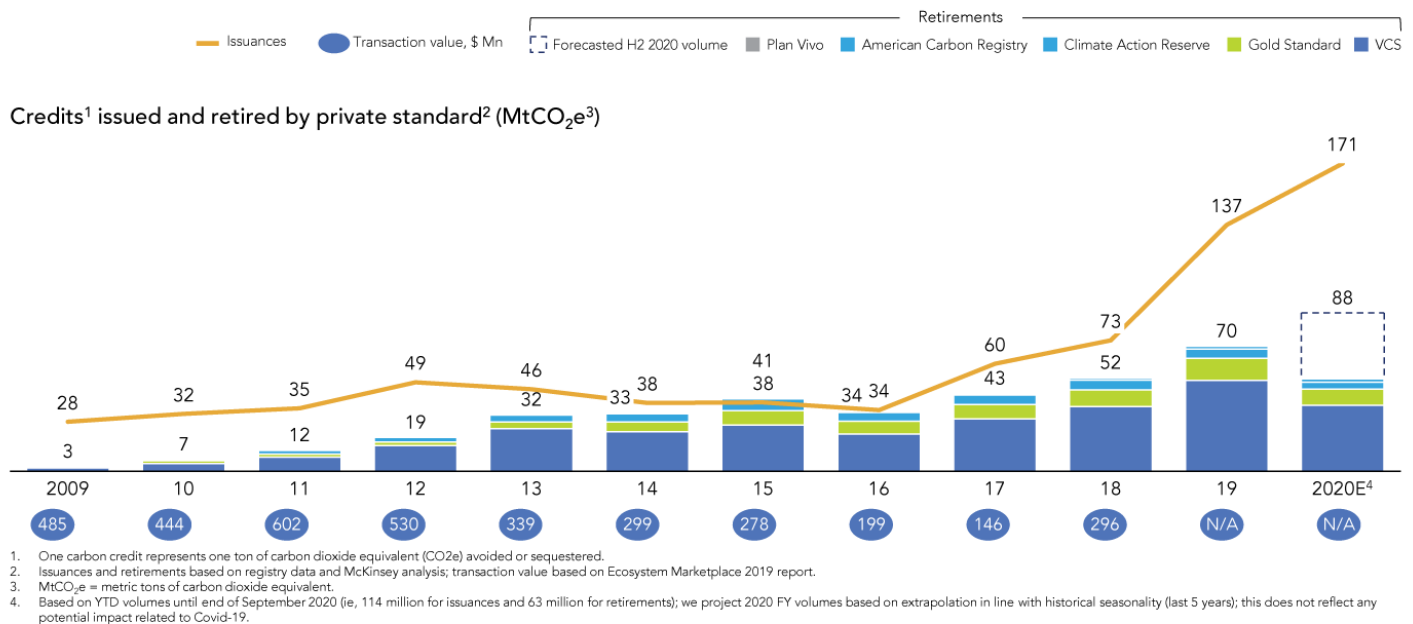
the trading of nearly half the world's voluntary emissions credits, ceased operating in 2010,²⁹ and companies resorted to trading carbon credits over the counter.

The resulting over-the-counter market which persists to today, has led to a marketplace that lacks liquidity and transparency.

II. THE PRESENT: RISING DEMAND FOR VOLUNTARY OFFSETTING

In the past two years, voluntary markets for carbon credits have grown substantially.³⁰ In 2017, some 43 MtCO₂e worth of carbon credits were retired, allowing the purchaser of these carbon credits to claim to have reduced emissions. Over twice as much volume, 88 MtCO₂e, is projected to retire in 2020 (Exhibit 10).

EXHIBIT 10: RECENT GROWTH IN VOLUNTARY CARBON MARKETS



Pressure from investors appears to be a potent driver of demand. Many large asset owners have called on companies to commit to achieving net zero emissions: for example, BlackRock CEO Larry Fink³¹ wrote to chief executives saying his company would now avoid investments

²⁹ This decline was partially triggered by regulatory expectations that were never met (including the failure of the Waxman-Markey bill in the US for a national cap-and-trade system to pass, as well as the breakdown in negotiations at Copenhagen in 2009), dashing hopes for carbon markets taking off.

³⁰ Outside of CERs, units under the Clean Development Mechanism.

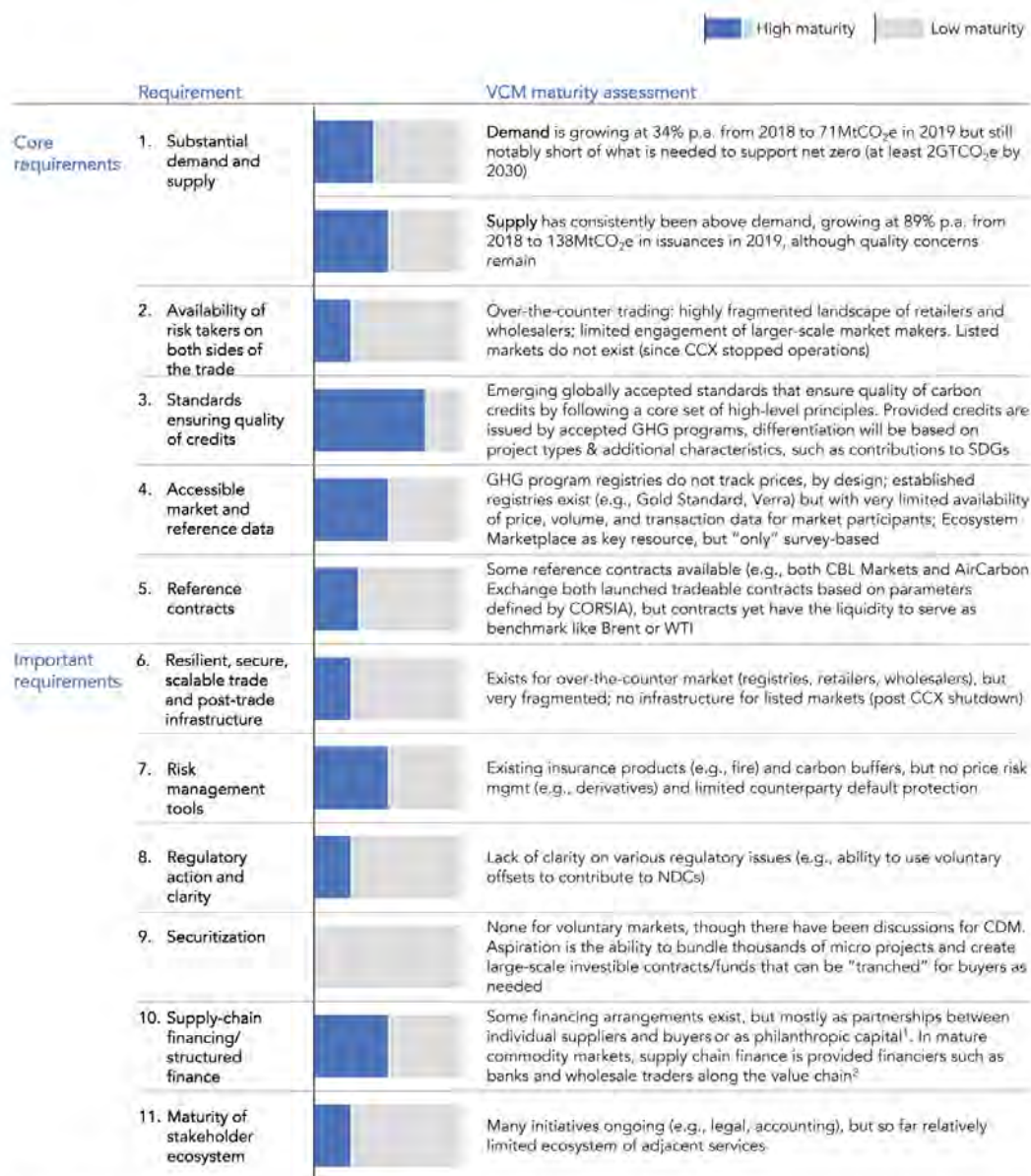
³¹ Larry Fink, "A Fundamental Reshaping of Finance," BlackRock, January 2020, blackrock.com.

in companies that “present a high sustainability-related risk.” In September 2020, the Climate Action Steering Committee, involving more than 500 global investors with over \$47 trillion in assets, sent a letter to CEOs and chairs of the board at 161 global companies calling on firms to commit to net zero business strategies. Signals like these have prompted companies to focus on reducing their emissions footprints — a shift that is visible across several sectors.

OBSTACLES ON THE ROAD TO MATURITY

Despite these promising signs, it would be premature to suggest that voluntary carbon markets are on a secure growth trajectory. There remain significant obstacles to be overcome before voluntary carbon markets can achieve similar maturity to other advanced markets, such as corn, metals, and power (Exhibit 11).

EXHIBIT 11: CURRENT VOLUNTARY CARBON MARKET MATURITY ASSESSMENT



1. eg, Livelihoods funds
 2. For capex, working capital and maturities

Source: Taskforce, McKinsey analysis

KEY MATURITY ELEMENTS THAT NEED TO BE ADDRESSED ARE:

SUBSTANTIAL DEMAND AND SUPPLY

A persistent mismatch between issuance and retirement of credits has resulted in a large oversupply of credits for nearly every year on record. Since 2016, the gap between credit issuances and retirements has grown by 211

percent per annum. At times less than 50 percent of credits generated in a year have been retired. The supply glut has driven prices down on average 11 percent per year from 2012 to 2018.

QUALITY ASSURANCE OF SUPPLY

Quality of carbon credits remains an issue of concern. Supplies of carbon credits doubled from 2018 (73 MtCO₂e) to 2019 (137 MtCO₂e). Most voluntary carbon credits are issued by reputable players, and more than 90 percent of credits adhere to the most common standards for verification: Verra's VCS Program, the Gold Standard, American Carbon Registry, and the Climate Action Reserve.³² Nevertheless, buyers remain uncertain about the quality of credits being supplied. Many are especially concerned about permanence — the question of whether projects maintain GHG reductions or removals on a permanent basis, in which case they must have specific requirements stretching

over multiple decades and a comprehensive risk mitigation and compensation mechanism in place, with a means to replace any units lost. Other concerns include leakage (where a project results in an increase in emissions outside of the project boundary), and additionality (the question of whether projects genuinely yield emission abatement that would not otherwise occur). These concerns apply especially to two large categories of projects: large-scale renewable energy, and forestry and land use. Projects sequestering carbon in (agricultural) soil are an emerging project category, and methodologies are still evolving to answer similar quality concerns of measurability, permanence, and additionality.

A CENTRAL MARKET INFRASTRUCTURE FOR CONDUCTING AND FINANCING TRANSACTIONS

The market for voluntary carbon credits remains mainly over the counter, with a highly fragmented landscape of retailers and wholesalers. No participant acts as a market maker. Resilient, secure, scalable trade and post-trade infrastructure does not exist. A few risk management tools exist, such as insurance products and carbon buffers, but there is limited price risk management or counterparty default protection. Supply-chain financing or structured finance only exists in

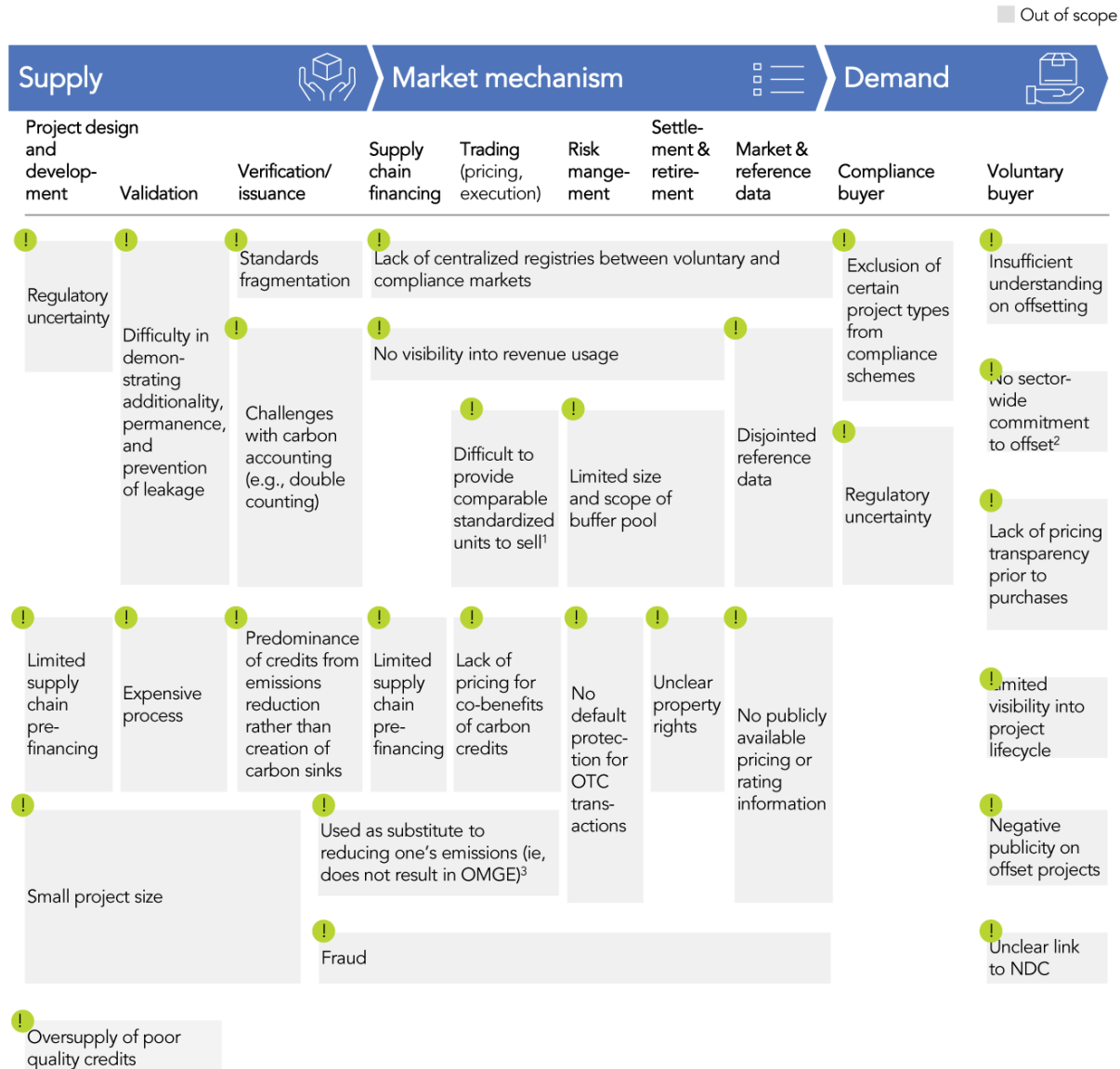
partnerships between individual suppliers and certain large buyers, whereas in mature commodity markets, banks and wholesale traders provide supply-chain finance. Although there are a number of established registries, price, volume, and transaction data are limited. Open access data is further limited.

³² These four standards are approved by ICROA, have been approved by ICAO for the CORSIA, and work in a number of compliance carbon markets.

III. THE FUTURE: CHALLENGES IN SCALING THE MARKET

While demand for voluntary carbon credits is expected to exceed 88 MtCO₂e this year, it is still notably short of what is needed to support net zero, estimated to be at least 2 Gt CO₂ per year by 2030. Taskforce members also identified key pain points which are impeding market development across the voluntary carbon market value chain (Exhibit 12). These pain points go one step further than the current market maturity assessment, as they synthesize key challenges along the value chain and point us in the direction of key topics for action, discussed in the next chapter.

EXHIBIT 12: VOLUNTARY CARBON MARKET MAJOR PAIN POINTS



1. Due to additionality or level of protection.
 2. Potential to create a competitive disadvantage for those companies who offset.
 3. Offsetting fund the equivalent emissions reductions as that emitted, and so does not result in an Overall Mitigation in Global Emissions (OMGE), relevant for Paris Agreement's Article 6.4.
 4. While resolving the oversupply of CDM credits from Kyoto is critical to address for Article 6 negotiations, it cannot be resolved through market based solutions.

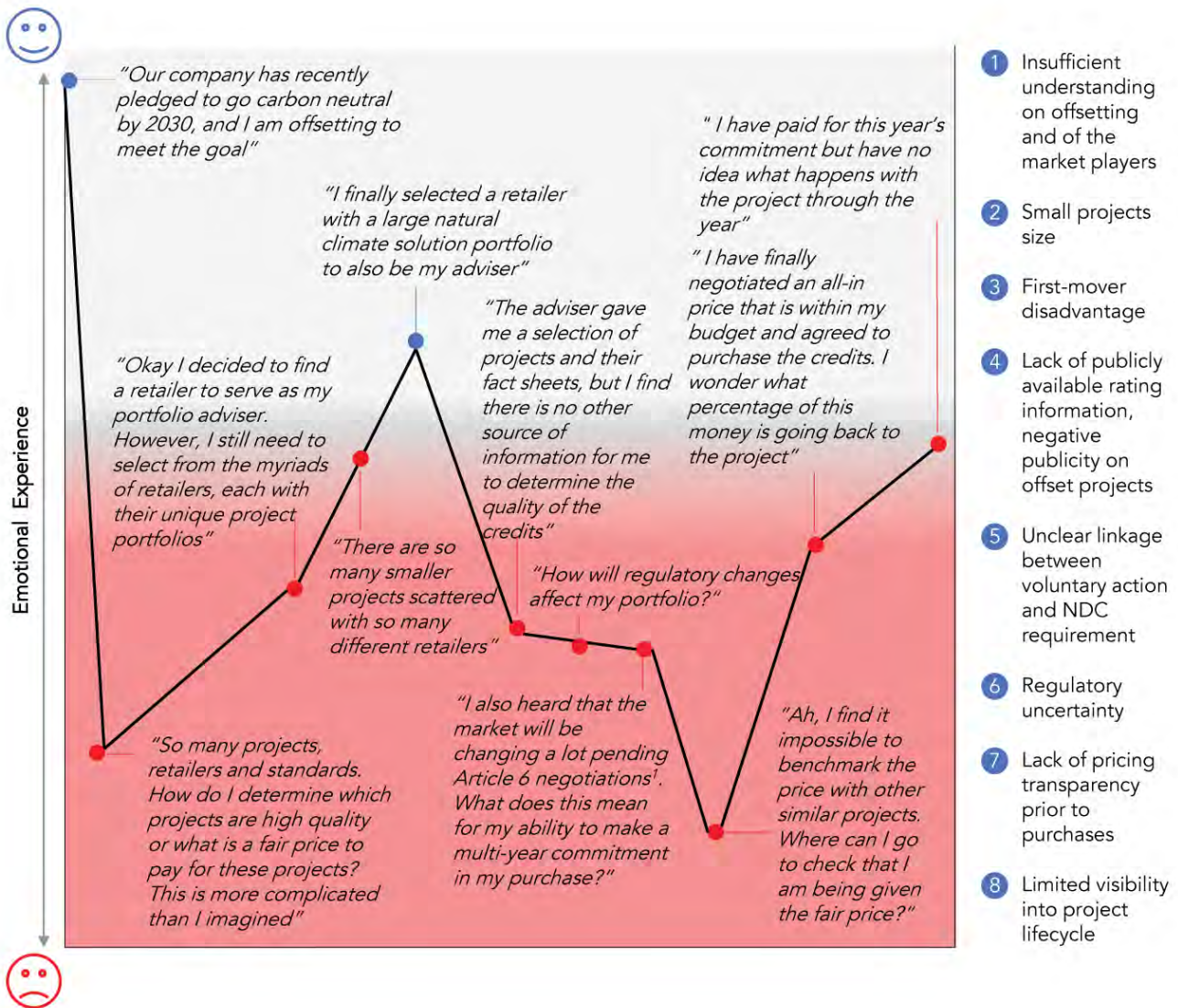
Source: Taskforce, McKinsey analysis, Expert interviews, Press reports, Carbon market watch: Carbon Markets 1012019, World bank: State and Trends of Carbon Pricing 2019, Ecosystem Marketplace (EM); Overview and Comparison of existing carbon schemes

BUYER AND SUPPLIER PERSPECTIVES

Fragmented and complex markets mean that the typical buyer's journey involves a number of difficulties: insufficient understanding of offsetting, negative publicity on associated projects, difficulty finding sufficiently large project sizes, lack of commonly agreed principles to ensure the quality of credits, regulatory uncertainty, lack of pricing transparency, and limited visibility into project life cycle (Exhibit 13).

EXHIBIT 13: AN ILLUSTRATIVE BUYER JOURNEY

EXAMPLE PAIN POINTS, NON-EXHAUSTIVE



1. Article 6 allows the trade of carbon credits to be used for Nationally Determined Contributions; however, the link between NDCs and voluntary offsets still needs to be clarified

Source: McKinsey analysis

A BUYER'S PERSPECTIVE:

VOLKER HESSEL FROM SIEMENS, SUSTAINABILITY MANAGER



“There are three main areas of concern for us as a buyer: By far the most important is credibility, followed by linkage of offset projects to our core business, and price transparency.

Credibility is crucial and of the foremost concern to us as corporate buyers. We’re not so worried about price or brokering the cheapest deal because our reputation is tied to the quality of the credits we purchase.

As a technology-driven company, we focus on the linkage of offsets to our business. This ability to customize the type of credits we purchase helps us make our action more compelling to our employees and key stakeholders. And this can have multiple implications. Offsets that compensate for land-use by our offices might be equally relevant for us as technology-driven offsets which are close to our core business. The ability for us to customize the type and co-benefits of voluntary credits would be welcome.

Finally, transparency in market pricing is currently lacking. It is very hard to understand what drives the price differential across offset projects, nor is there clarity on what the purchase price is helping to buy. This is especially important given the large pricing differences we observe in the marketplace. Transparency will help us make the best decisions on offsetting.”

AMY BANN FROM BOEING, STRATEGY DIRECTOR FOR ENVIRONMENT & MATERIALS



“The aviation sector set decarbonization goals over a decade ago to catalyze our long-term emissions reductions strategy of technology innovation, operational efficiency and sustainable fuels.

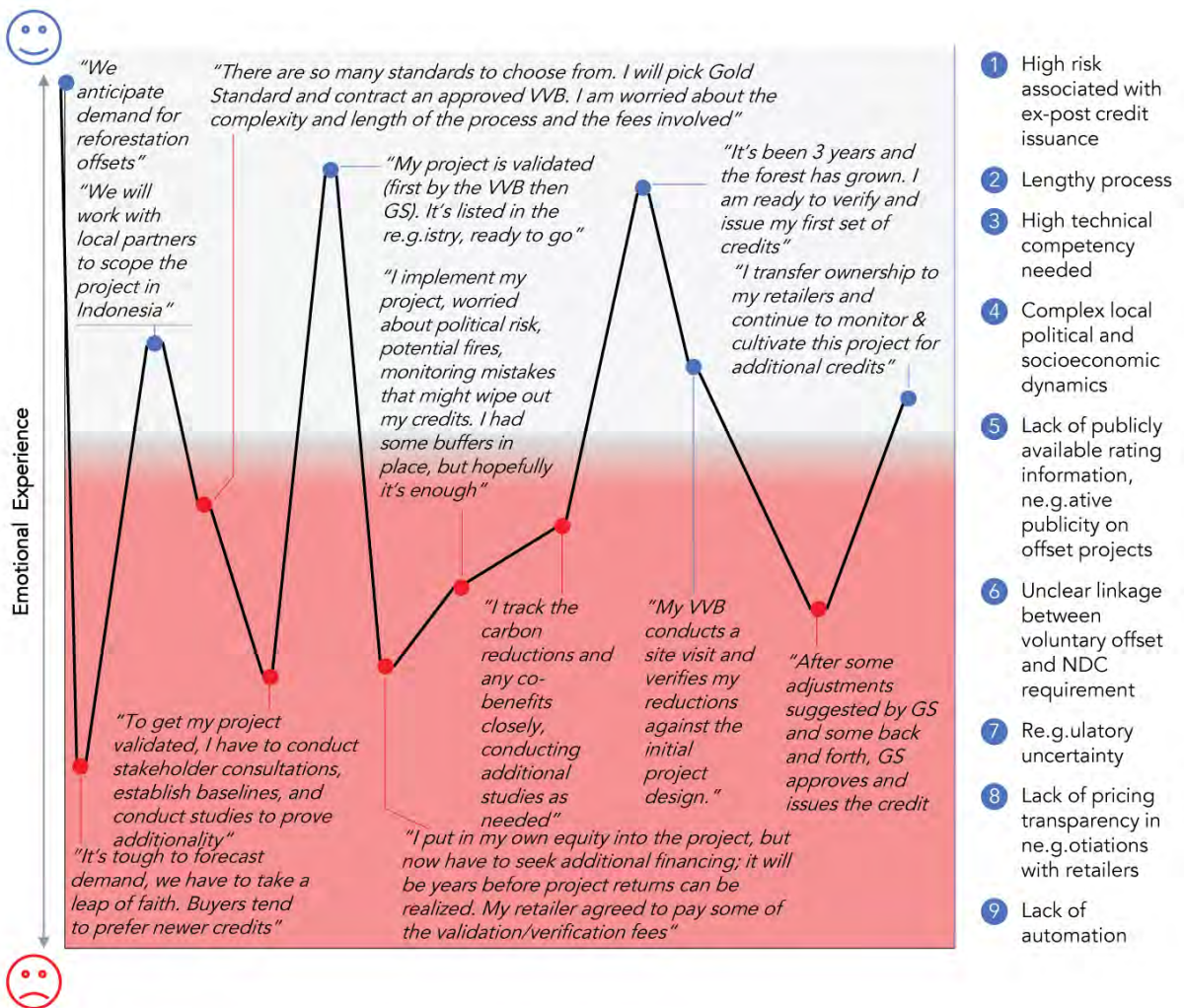
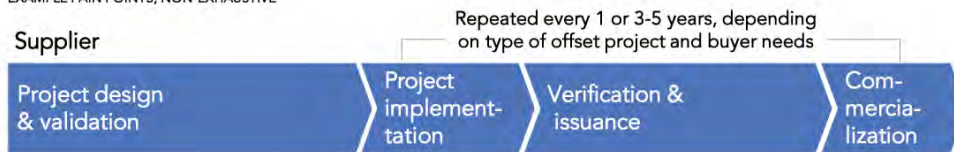
As we weighed how to incorporate offsetting as a ‘gap filling’ component of our strategy to address emissions that cannot be directly abated in sector, we saw a need for global standards to enable large scale purchasing with high quality assurance. Together with world governments and environmental non-governmental organizations, we crafted the CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation) program hosted at the United Nation’s International Civil Aviation Organization. It shifts the functions of verification and criteria selection from buyers to a centrally managed and approved process. We benchmarked best practices from existing schemes

and deliberated over complex issues for several years resulting in a robust, one-of-its-kind program announced just before the Paris agreement was forged.

We are pleased that CORSIA is serving as inspiration to scale up the voluntary market, drawing from valuable lessons learned and updating elements as conditions evolve. With the rise in demand for offsets as timelines to decarbonize accelerate, it's key for compliance and voluntary markets to work in tandem to foster widely accepted, stringent standards. This Taskforce has a critical role in charting the course ahead as we move forward to link together UN mechanisms with private sector markets at this pivotal moment in carbon market growth."

EXHIBIT 14: AN ILLUSTRATIVE SUPPLIER JOURNEY

EXAMPLE PAIN POINTS, NON-EXHAUSTIVE



- 1 High risk associated with ex-post credit issuance
- 2 Lengthy process
- 3 High technical competency needed
- 4 Complex local political and socioeconomic dynamics
- 5 Lack of publicly available rating information, ne.g.ative publicity on offset projects
- 6 Unclear linkage between voluntary offset and NDC requirement
- 7 Re.g.ulatory uncertainty
- 8 Lack of pricing transparency in ne.g.otiations with retailers
- 9 Lack of automation

Source: McKinsey analysis

A SUPPLIER'S PERSPECTIVE:

JOCHEN GASSNER FROM FIRST CLI-MATE, CEO



“A few key observations from the supplier side include: 1) rapid transitions in the market, 2) ability to match supply to buyer needs, and 3) financing.

The market as it stands today is in a period of transition. First, the transition from Kyoto to Paris raises questions about how voluntary offsets are accounted on the corporate and host country levels. Under the Paris Agreement and its implementation in national policies, voluntary markets will compete with nations and international compliance trading schemes over the supply and use of emission reductions. This may lead to undersupply of carbon credits for the voluntary market.

Second, corporates are transitioning from purchasing credits each year to using voluntary offsetting as an instrument in their long-term climate/net zero strategies. This means that offset purchases are linked to long-term emission reduction trajectories. Sourcing and delivery of credits need to be planned with a five- to ten- year demand profile in mind. Voluntary markets are largely spot markets today; purchases will be done under long-term forward contracts in the future.

Offset projects are contracted for their specific characteristics by many buyers. Heterogeneous specifications (such as location, project type) across buyers and limitations on project supply make it sometimes very difficult to match supply and demand in the spot market, let alone plan supply that matches demand in the future.

Third, the willingness of buyers or intermediaries to provide up-front financing is limited. However, financing is essential, especially with a long lag time between project development, issuance, and retirement. Whereas forward contracts can be a solution, given the lack of reference points for prices, buyers cannot agree on prices years down the line for a project.

Finally, there is always policy risk if standards change their rules halfway through a project's life cycle.”

4. OUTLOOK FOR VOLUNTARY CARBON MARKETS

Following review of the requirements to scale voluntary carbon markets, the next step is to develop an understanding of potential future carbon offsetting demand and supply, in order to extract relevant implications for the blueprint recommendations.

I. DEMAND OUTLOOK

Because of uncertainty surrounding emissions trajectories and regulation, there are very few published outlooks on voluntary demand for carbon offsets.³³ However, we do know that the momentum for climate action is building as more organizations understand the case for managing the physical and transition risks posed by climate change. Currently 30 percent of Fortune 500 companies have made climate commitments, a five-fold increase from 2016.³⁴

Our analysis considers three distinct, high-level demand outlooks based on:

COMMITMENTS TO DATE:

Offset demand that has been established by climate commitments of more than 700 large companies. This is our lower bound, and does not account for likely growth in climate commitments.

TASKFORCE SURVEY:

Projected offset demand envisioned by subject matter experts within the Taskforce.

DECARBONIZATION SCENARIOS:

Removal/sequestration required in 1.5-degree and 2-degree climate scenarios in 2050. This is our upper bound for potential market size in 2050 because it assumes that all removal/sequestration is supported by voluntary offsets (rather than compliance markets or other financing mechanisms).

³³ Literature on future demand typically focuses on compliance markets and the implications of Article 6; for example, IETA finds approximately 5GT CO₂e per year in offset potential with facilitation from Article 6; "The Economic Potential of Article 6 of the Paris Agreement and Implementation Challenges", IETA, September 2019. Recent Trove Research paper, 2020 conducts high level top down estimate and finds 1.1GT in 2030 and 1-3GT in 2050, Trove Research, 2020, trove-research.com).

³⁴ "Climate commitments" include RE100, SBTi, Carbon Neutral; "Response Required: How the Fortune 500 is delivering climate action and the urgent need for more of it," Natural Capital Partners, October 2020.

HERE WE LAY OUT THE APPROACH FOR EACH OUTLOOK:

COMMITMENTS TO DATE:

We analyzed offset demand using commitment data from more than 700 of the world's largest companies. First, we identified companies that have publicly made net zero or carbon neutral commitments. To calculate each company's offset demand, we estimated residual scope one and two emissions for the target date of net zero emissions or carbon neutrality. We then assumed that all these residual emissions³⁵ will be offset in voluntary

carbon markets. To be conservative, this estimate does not account for (i) offsetting of scope three emissions or (i) likely increases in climate commitments. However, we note that it is considered best practice to include all three scopes of emissions for carbon neutral and net zero commitments, as prescribed by several standards. This approach therefore represents our lower bound.

TASKFORCE SURVEY:

We used results from a survey of 65 subject matter experts within the Taskforce that captures their projections of voluntary offsetting demand in 2030 and 2050. These experts have deep applied expertise in

the field and include representatives of corporates, offset originators, standard setters, civil-society organizations, NGOs, financial institutions, and exchanges.

DECARBONIZATION SCENARIOS:

Decarbonization scenarios reach 1.5-degree or 2-degree pathways through (i) avoidance / reduction of GHG emissions, and (ii) removal/sequestration of carbon dioxide from the atmosphere. In the short term, there is a focus on avoidance / reduction and over time the volume of removal/sequestration required increases. Most scenarios in line with the Paris Agreement reduce emissions by at least half by 2030 and reach net zero emissions by 2050, often with a sizeable role for removal/sequestration of carbon dioxide.³⁶

Removal/sequestration is needed for two purposes. The first is to offset annual emissions to reach net zero (that is, to compensate for yearly residual emissions by yearly removing an equivalent amount of carbon dioxide).

The second purpose is to correct for historic emissions (that is, to reach net-negative emissions, with yearly carbon dioxide removal in excess of yearly emissions). This explains the 'overshoot' in negative emissions in many climate models which assume that the carbon budget is breached before mid-century and that negative emissions post 2050 are used to reduce atmospheric CO₂. To illustrate the degree of reductions and removal typically seen in these scenarios, we show below three climate scenarios published by the Network for Greening the Financial System (NGFS). For detail, see sidebar "About the NGFS Climate Scenarios"). These three scenarios include both a 1.5-degree and 2-degree scenario and reflect the "marker" scenarios as identified by NGFS as closely as possible.³⁷

³⁵ Residual emissions were calculated using commitment data where possible (e.g., if company X has committed

³⁶ Henderson, Pinner and Rogers, April 2020, "Climate Math: What a 1.5-degree pathway would take", McKinsey.com

³⁷ Delayed 2°C scenario limited with CDR with REMIND-MAGPIE 1.7-3.0 represents an "actual" NGFS marker

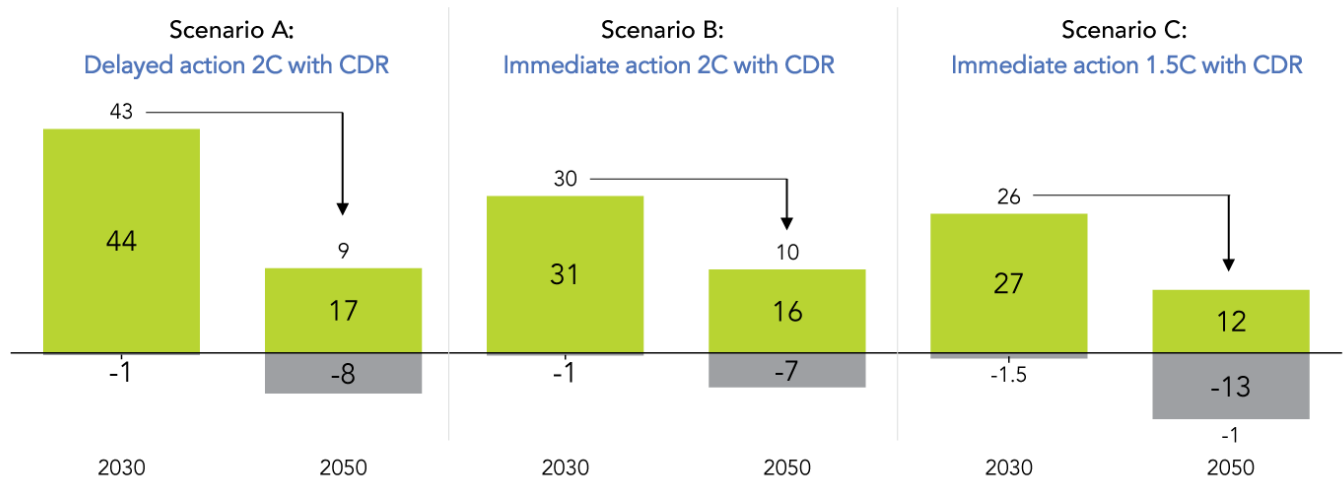
ABOUT THE NGFS CLIMATE SCENARIOS

The Network for Greening the Financial System (NGFS) is a group of 75 central banks and supervisors committed to sharing best practices, contributing to the development of climate and environment-related risk management in the financial sector, and mobilizing mainstream finance to support the transition towards a sustainable economy. The NGFS has selected eight climate scenarios to explore the impacts of climate change and climate policy with the aim of providing a common reference framework. These climate scenarios are generated by well-established integrated assessment models (IAMs): GGCAM, MESSAGEix-GLOBIOM and REMIND-MAGPIE. IAMs are useful for scenario analysis because they provide internally consistent estimates across economic, energy, land-use and climate systems metrics. However, they are also subject to some limitations and simplifications, for example, their ability to capture big changes that could arise from sudden policy shifts.

EXHIBIT 15: THREE SELECTED NGFS CLIMATE SCENARIOS

→ Emissions avoidance/ reduction ■ Carbon dioxide removal/sequestration¹ ■ Carbon dioxide emissions

Selected NGFS climate mitigation scenario
Gt CO₂ per year



In order to translate these climate scenarios into a demand outlook, there are two important dynamics to call out. The first is that while voluntary markets are likely to be a major driver of demand for removal/

sequestration of carbon dioxide, they will not be the only one (i.e., compliance markets and financing mechanisms other than offsets). In other words, voluntary markets will make up a sub-share of the total removal/sequestration

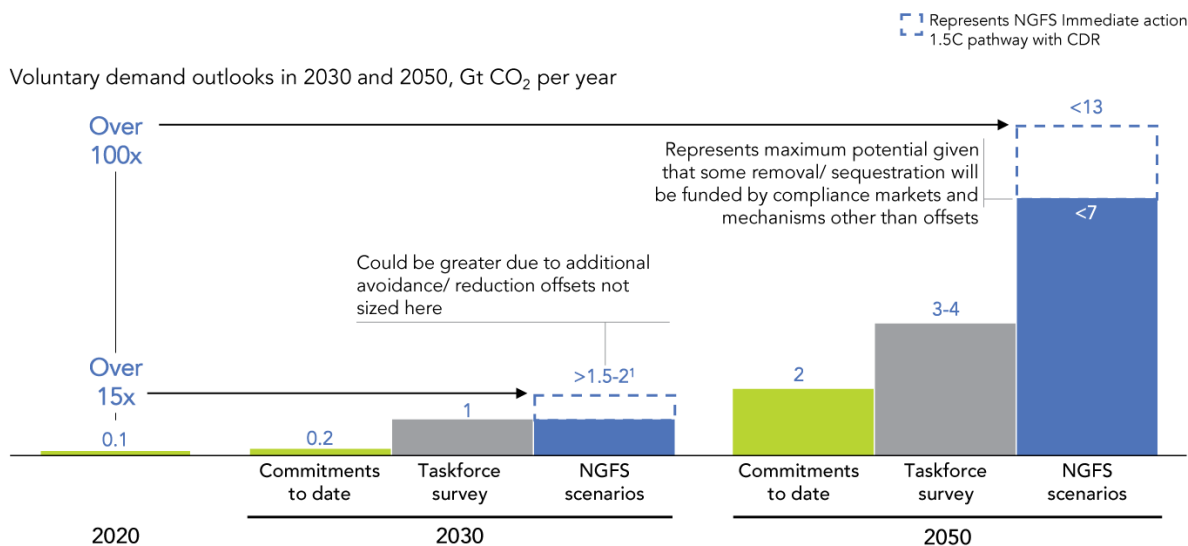
scenario. Immediate 2°C scenario with CDR is a second marker scenario when used by the GCAM 5.2 model. For the purpose of consistency, we use this same Immediate 2°C scenario with CDR, but we use the REMIND-MAGPIE model instead. (REMIND-MAGPIE stands for Regional Model of Investments and Development Model of Agricultural Production and its Impacts).

across climate scenarios. The second dynamic is that in the short- to medium-term, avoidance / reduction offsets will remain a major part of voluntary markets but by 2050 the market should have shifted to removal/sequestration. In 2030, NGFS scenarios show that up to 1.5 GtCO₂ of removal /sequestration may be needed each year to achieve a 1.5°C pathway in 2030 (Exhibit 15). However, offset demand may be higher as avoidance / reduction offsets may also play an important role in 2030 to drive the steep emissions avoidance / reduction needed to 2030.

By 2050, the NGFS scenarios show that 7 to 13 GtCO₂ of removal/sequestration would be needed each year to achieve net zero emissions (Exhibit 15). This represents the upper bound of our demand outlook. It is an upper bound because (i) it does not account for the share of demand that will flow through compliance markets (for example, the EU ETS) or that will be financed by mechanisms other than offsets, (ii) we do not expect any

avoidance / reduction to be supported by offsets in 2050, and (iii) ideally, and as reflected in other climate pathways (see Exhibit 4 from executive summary), avoidance / reduction happens at a quicker rate than NGFS lays out so there may be less need for removal/sequestration by 2050. In summary, we find that in an emissions scenario consistent with a 1.5C pathway, carbon markets could grow more than 15-fold to more than 1.5 to 238 GtCO₂ of carbon credits per year in 2030, and over 100-fold by 2050 to up to 7 to 13 GtCO₂ of carbon credits per year by 2050 (Exhibit 16). Delivering up to 7 to 13 GtCO₂ per year of removal/sequestration in 2050 would pose a very significant challenge. Biophysical limits and technical challenges could make meeting this demand either difficult and costly or implausible. This underlines the need for emissions reduction to be implemented as urgently as possible, and likely at a faster pace than identified in the NGFS scenarios.³⁹

EXHIBIT 16: VOLUNTARY DEMAND OUTLOOKS



WHAT THIS ANALYSIS IS AND IS NOT:

38 For the upper range of 2, we take McKinsey 1.5°C Scenario Analysis to ensure consistency with climate pathway shown by Exhibit 4 from the executive summary

39 See Henderson, Pinner and Rogers, April 2020, "Climate Math: What a 1.5-degree pathway would take", McKinsey.com climate math article for a more ambitious decarbonization scenario

WHAT IT IS	WHAT IT IS NOT
<ul style="list-style-type: none"> • A way of framing upper and lower bounds of potential demand for voluntary offsets • A range of outlooks based on three distinct analytical approaches 	<ul style="list-style-type: none"> • A forecast • A supply-side view • A detailed feasibility assessment of NGFS scenarios

II. SUPPLY OUTLOOK

Sizing the potential supply of offsets requires the assessment of three project types:

AVOIDANCE / REDUCTION:

Helps fund projects that result in GHG emissions avoidance / reduction (such as preventing deforestation, distributing clean cookstoves, modifying industrial processes to emit fewer GHGs, and funding the transition to renewable energy in areas where it is not yet competitively priced). This project type covers everything that helps reduce or eliminate current emissions.

CARBON-DIOXIDE REMOVAL THROUGH NATURE BASED SEQUESTRATION:

Uses natural landscapes to sequester carbon in the biosphere; methods include reforestation, mangrove and peatland restoration, and soil carbon sequestration.

CARBON-DIOXIDE REMOVAL THROUGH TECHNOLOGY-BASED REMOVALS:

Removes CO₂ from the atmosphere with the help of modern technology and stores it in the geosphere; solutions include bio-energy with carbon capture and storage (BECCS) and direct air capture with carbon storage (DACCS).

Each offset category has different advantages and disadvantages, as well as different roles to play over time. For example, avoidance / reduction offsets are essential for decarbonization in the next decade and are a large share of available supply today. Nature-based sequestration can produce high co-benefits for nature, economies, and society, yet it also faces challenges related to mobilization (for example, potential property-

rights challenges). Technology-based removal is critical to delivering carbon removal and permanent storage at scale, yet it is sub-scale today and developing new capacity often involves long lead times.

To draw implications for the blueprint, we have developed a preliminary supply scenario that is subject to refinement. This scenario is focused on the potential supply of offsets in 2030. The year 2030 was chosen to reflect the aim of the Taskforce to mobilize action at pace. Beyond 2030, there will be inevitable shifts in supply: for example, the potential of DACCS is likely to grow as the technology is deployed and costs come down with scale.


WHAT THIS ANALYSIS IS AND IS NOT:




WHAT IT IS	WHAT IT IS NOT
<ul style="list-style-type: none"> • A way of framing potential sources of supply • A scenario based on analysis for select carbon offset supply sources 	<ul style="list-style-type: none"> • A full assessment of all carbon offset supply potential • A complete assessment of constraints (e.g., carbon storage capacity and accessibility)

This scenario focuses on project types with relatively high scale potential that have already been deployed (Exhibit 17). For example, the scenario uses existing literature⁴⁰ to identify high-priority natural climate solutions, and sources such as the Global CCS Institute to evaluate options for

technology-based removal. This is not to say that other project types are unimportant. As research in this field continues, it will be possible to include additional project types, such as grassland conservation and biochar (charcoal produced from biomass).

EXHIBIT 17: PROJECT TYPES SELECTED FOR DETAILED ANALYSIS

 Included in supply scenario

	 Avoidance/ reduction	 Nature-based sequestration	 Technology- based removal ¹
Project types	<ul style="list-style-type: none"> • Avoided nature loss • Avoided deforestation • Avoided peatland impact • Avoided coastal impact (mangroves and seagrasses) • Emissions avoidance/ reduction eg, • Renewable energy • Waste disposal • Household devices • Chemical processes/industrial manufacturing • Energy efficiency and fuel switching 	<ul style="list-style-type: none"> • Reforestation • Trees in cropland • Peat restoration • Coastal restoration (mangroves and seagrasses) • Cover crops • Natural forest management • Grassland conservation • Grazing optimization • Conservation agriculture 	<ul style="list-style-type: none"> • Bioenergy crops with Carbon Capture and Storage (BECCS) • Direct Air Carbon Capture and Storage (DACCS) • Biochar • Enhanced weathering

Note: Natural climate solutions are included in both nature-based sequestration and reduction and avoidance offsets

This scenario uses a specific method to estimate the potential supply of offsets in each category.

AVOIDANCE / REDUCTION:

To estimate offsets from avoided losses of nature, we used available literature. For example, in the case of avoided deforestation, we replicated analysis used in Busch et al., 2019,⁴¹ which estimates the potential for avoiding deforestation to 2050 based on the rate of gross deforestation in the tropics from 2000 to 2010, on agricultural revenue, and on scenarios for carbon price incentives. For other avoidance / reduction

offsets (e.g., renewable energy, waste disposal, household devices) we compared: (i) a detailed literature review⁴² of “projected” potential that considers registered projects and non-registered projects that are in the pipeline, with (ii) a top down view of “new” project potential, such as high volumes of offsets for chemical processes and industrial manufacturing.

NATURE-BASED SEQUESTRATION:

We used detailed geospatial mapping to identify total biophysical potential. This potential was then adjusted down to correct for (i) biomes where natural climate solutions could have a negative effect, such as reforestation in non-forest biomes and boreal

forests due to albedo effect; (ii) water stress; (iii) human footprint (that is, we excluded cropland and urban areas, as well as areas where urban expansion is projected; and (iv) land with high economic returns from other uses.

TECHNOLOGY-BASED REMOVAL:

For these projects, we used different approaches. For example, the limit on BECCS is determined by the global sustainable biomass potential based on environmental, social and economic constraints such as limiting the amount of wood taken to allow for soil quality maintenance⁴³.

Overall, we find the total supply potential in this scenario is likely to be 8 to 12 GtCO₂

per year by 2030 (Exhibit 18). This represents an “order of magnitude” estimate intended only to draw implications for the blueprint. Most offsets are from natural climate solutions, mainly forestry solutions (avoided deforestation and reforestation).⁴⁴ Not all of this potential will be realized due to three key mobilization challenges related to implausibility and cost as discussed below.

41 Busch et al., 2019, Nat. Comm. 9, 436-466; ACRE McKinsey analysis

42 Examples of literature include- Lifting Off: Analysis of Potential Carbon Offset supply for CORSIA Phase I (2021-2023), The Nature Conservancy and Anthropocene LLC 2020; Using the Clean Development Mechanism for nationally determined contributions and international aviation assessment of impacts on global GHG emissions, Stockholm Environment Institute, 2017

43 Examples of literature include- Lifting Off: Analysis of Potential Carbon Offset supply for CORSIA Phase I (2021-2023), The Nature Conservancy and Anthropocene LLC 2020; Using the Clean Development Mechanism for nationally determined contributions and international aviation assessment of impacts on global GHG emissions, Stockholm Environment Institute, 2017

44 McKinsey ACRE analysis

CHALLENGE 1.

THE SCALE-UP REQUIRED IS SIGNIFICANT AND WILL REQUIRE INTERNATIONAL FLOWS OF CAPITAL

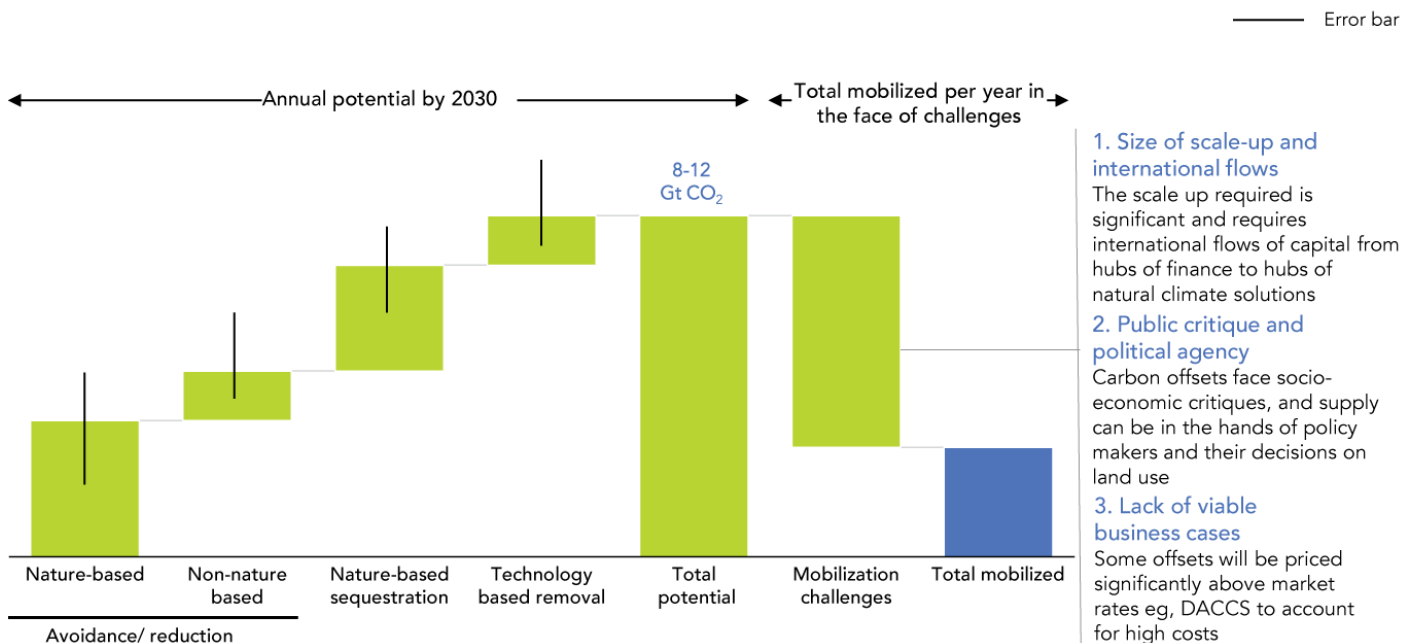
Realizing the potential supply of offsets would require unprecedented rates of mobilization. For example, it would take a total area over two times the size of California to be reforested to sequester 1 Gt CO₂ each year until 2050.⁴⁵ (This may need to be even greater in the face of risks such as forest fires.) Similarly, approximately 100 coal plants would have to be converted to BECCS technology in order to remove 1 Gt CO₂ each year.⁴⁶

Much of the supply would come from countries with high natural capital assets and potential. Twenty countries account for the majority of potential supply of natural

climate solutions; these countries are led by Indonesia, Brazil, the Democratic Republic of Congo, Peru, and Bolivia.

Finally, we note that a significant proportion of offsets will require cross-border purchase agreements, because most of today's demand comes from Europe and the United States and most of the potential supply is outside these regions.⁴⁷ Cross-border flows will pose an additional practical barrier to mobilizing supply because of complexities such as accounting for risk, ensuring standards, and monitoring and tracking.

EXHIBIT 18: ILLUSTRATIVE SUPPLY SCENARIO FOR 2030



45 McKinsey ACRE analysis

46 Assumes average coal plant capacity of ~10Mt CO₂ capture/year (McKinsey analysis of WRI 2019 Global Power Plant Database- average MW capacity of coal plants over 1000MW is 1845MW which is equivalent to ~10Mt CO₂ capture)

47 McKinsey data on the world's largest 700 companies, >70 percent of those with climate commitments are headquartered in Europe and the US

CHALLENGE 2.

CARBON OFFSETS FACE SOCIOECONOMIC CRITIQUES, AND SUPPLY IS INFLUENCED BY THE SOCIAL ACCEPTANCE OF OFFSETS AND BY THE CHOICES OF POLICY MAKERS

As mentioned in the executive summary, carbon offsets have been the subject of some critique. For example, some worry that mass reforestation would be conducted in a way that supports monocultures instead of

restoring natural ecosystems. The potential for mobilization will depend in large part on social acceptance, policy objectives, and regulation and incentives on land use in high-potential countries.

CHALLENGE 3.

COSTS VARY BY PROJECT TYPE, AND SOME TYPES WILL BE ECONOMICALLY UNATTRACTIVE FOR BUYERS AND SUPPLIERS

Many offsets can be issued at low costs; for example, academic assessment suggests that about 50 percent of the potential supply from avoided deforestation \$10/tCO₂.⁴⁸ However, some project types have high costs, making them business cases are a limiting factor today. For example, early DACCS facilities are expected to remove carbon dioxide at

a cost of more than \$200/tCO₂. While the industry expects costs to come down as it achieves scale, it is still in an early stage of development. As of this writing, just one large commercial DACCS plant is expected to come online in 2023, in Texas's Permian Basin.⁴⁹

FOUR KEY IMPLICATIONS FOR OUR BLUEPRINT

This final section presents four key insights from our demand and supply outlook, along with their implications for the blueprint for scaling up carbon markets.

1. CARBON DIOXIDE REMOVAL/ SEQUESTRATION CANNOT REPLACE THE NEED FOR IMMEDIATE EMISSIONS AVOIDANCE / REDUCTION, AND WILL BE REQUIRED EVEN IN THE MOST AMBITIOUS DECARBONIZATION SCENARIOS

Decarbonization scenarios highlight the potential need for a large volume of removal/sequestration in 2050. However, the supply scenario outlined above shows that supplying the necessary quantity of removal/sequestration would be either difficult and costly or implausible. It is therefore essential that emissions mitigation remains the first priority. Furthermore, it will likely be necessary for mitigation to outpace the scenarios identified by the NGFS and

other climate modelers—that is, delivering emissions reductions more quickly will reduce the need for carbon-dioxide removal. For example, the pathway shown in Exhibit 4 from the executive summary, identified potential to reach net zero emissions in 2050 with 5 Gt of CO₂ removal/sequestration by accelerating emissions reduction.

48 Natural climate solutions, Griscom et al., 2017

49 Large scale is measured as >1MT CO₂/ year; "Oxy and Carbon Engineering partner to combine Air Capture and Enhanced Oil Recovery", Global CCS Institute, June 5, 2019, [globalccsinstitute.com](https://www.globalccsinstitute.com)

The Taskforce's recommendations emphasize that large-scale emissions avoidance reduction should be a priority and should begin start now, with offsets playing a vital yet complementary role.

This point is reflected in several recommendations:

RECOMMENDED ACTION 9: Establish principles on the use of offsets — This will help ensure that offsets do not crowd out other climate action.

RECOMMENDED ACTION 10: Align guidance on offsetting in corporate claims — This will clearly distinguish between the roles of avoidance / reduction and removal/ sequestration.

RECOMMENDED ACTION 14: Offer consistent investor guidance on offsets — This will support investors as they think through their options for climate action.

2. BUYERS AND SELLERS WILL NEED TO BE ABLE TO TRADE CREDITS ACROSS THE WORLD TO ENSURE SUFFICIENT SUPPLY AND ALLOW EVERYONE TO BENEFIT

There is a geographical mismatch between sources of finance and sources of offset supply. As mentioned above, most of today's demand comes from Europe and the United States, and most of the potential supply is outside these regions. The opportunity to scale up voluntary carbon markets

therefore depends on efficient, high-integrity international exchanges for offsets. All market participants, including regulators, need to encourage international allocation of capital for offsets. This necessity is reflected in several recommendations:

RECOMMENDED ACTION 1-17: These aim to facilitate efficient matching of buyers and suppliers at scale.

3. SCALING UP HIGH-QUALITY NATURAL CLIMATE SOLUTIONS IS CRITICAL TO SUCCESS

Achieving a sufficient supply of offsets will require the scaling up of natural climate solutions, given that they account for the majority of potential supply to 2030 and that

removal/sequestration technologies will likely take time to ramp up. The importance of natural climate solutions is reflected in these recommendations:

RECOMMENDED ACTION 1: Establish core carbon principles and taxonomy— This will set the quality criteria for a carbon offset.

RECOMMENDED ACTION 2: Assess adherence to the core carbon principles— This will assess standards and ensure integrity in the market.

RECOMMENDED ACTION 11: Institute efficient and accelerated verification— This will support the scale-up of issuances and retirements.

4. A WIDE PORTFOLIO OF OFFSETS IS NEEDED, FROM AVOIDANCE / REDUCTION TO REMOVAL/SEQUESTRATION

Given the various challenges involved in expanding the supply of carbon offsets, achieving scale will be difficult unless supplies increase from all project types. Additionally, the advantages and disadvantages of different project types mean that decision makers will require a range of options. Lastly, project types are expected to perform different roles over time. In the short term, for example, avoidance / reduction activity and offsets will make the most difference. In the long term,

after avoidance / reduction opportunities are exhausted, the pursuit of removal and sequestration options will support progress toward global net zero emissions.

The Taskforce recommends that stakeholders acknowledge the role that each type of offset can play in meeting corporate claims and recommend that investors issue clear guidance to corporates accordingly. The need for a diverse portfolio of offsets is reflected in one recommendation:

RECOMMENDED ACTION 13: Institute governance for market participants and market functioning—This governance would develop guidance on the appropriate use or exclusion of project types over time, thereby supporting the use of a variety of offsets.

The next chapter presents the Taskforce’s blueprint and recommendations for scaling up voluntary carbon markets.

5. DRAFT BLUEPRINT RECOMMENDATIONS

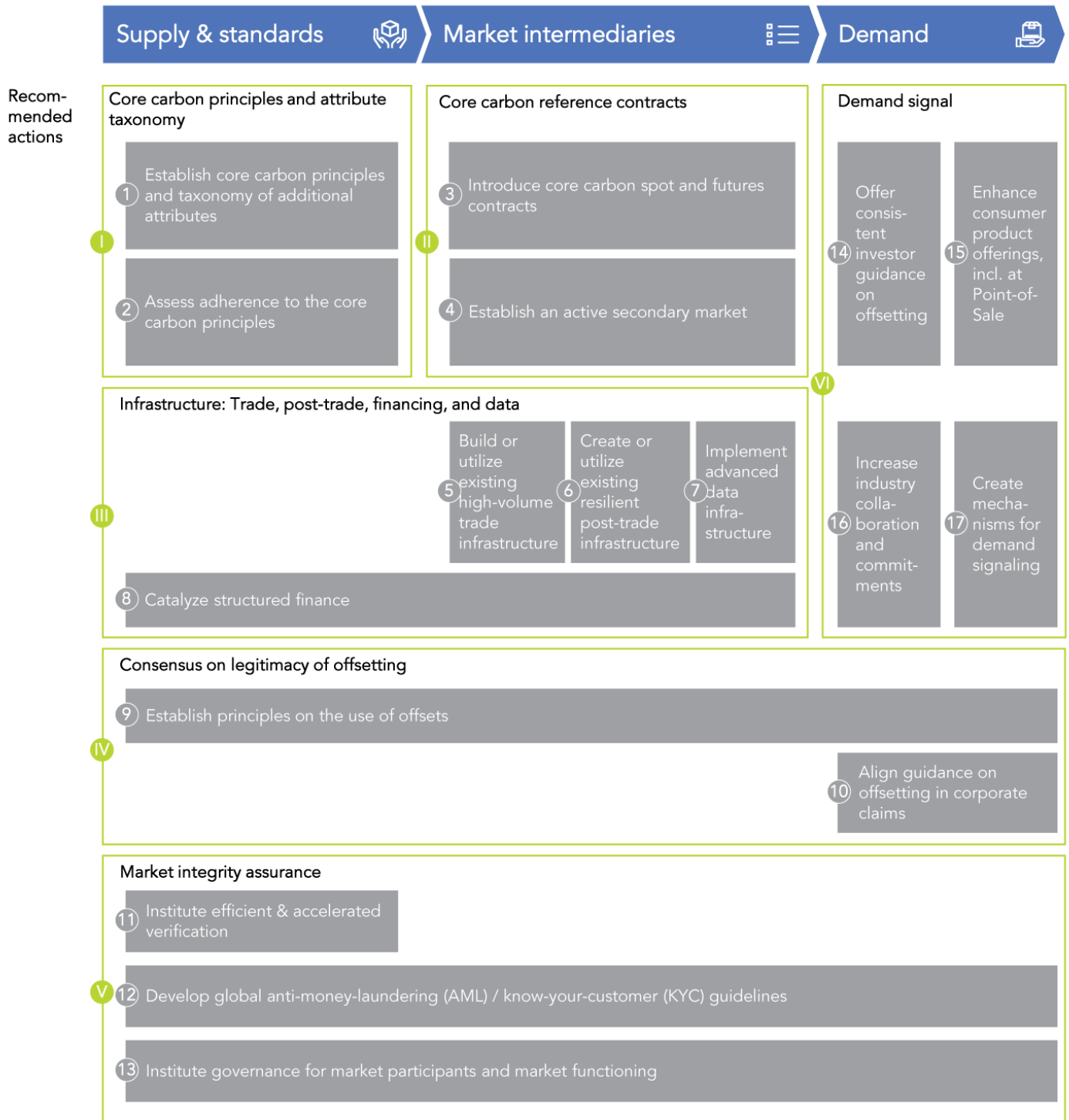
To support the scaling-up of voluntary carbon markets, the Taskforce has identified six major topics requiring action, spanning the entire value chain (Exhibit 20). The six topics for action are:

- I. CORE CARBON PRINCIPLES AND ATTRIBUTE TAXONOMY
- II. CORE CARBON REFERENCE CONTRACTS
- III. INFRASTRUCTURE: TRADE, POST-TRADE, FINANCING, AND DATA
- IV. CONSENSUS ON THE LEGITIMACY OF OFFSETTING
- V. MARKET INTEGRITY ASSURANCE
- VI. DEMAND SIGNALS

To address these six topics, we propose a set of 17 recommended actions (Exhibit 20). These recommended actions form the core of the Taskforce blueprint and are outlined below.

EXHIBIT 20: KEY RECOMMENDED ACTIONS ALONG THE VALUE CHAIN

① Topics for action ✕ Recommended actions



Solutions out of scope

Clarify link to Nationally Determined Contributions

I. CORE CARBON PRINCIPLES AND ATTRIBUTE TAXONOMY

Successful development of voluntary carbon markets depends on building credibility and transparency. This is why it's crucial to ensure the market has confidence in any new reference contracts being launched. To enable high-integrity contracts, a set of core carbon principles is required, against which carbon credits and their underlying standard and methodology can be assessed.

RECOMMENDED ACTION 1:

ESTABLISH CORE CARBON PRINCIPLES AND TAXONOMY

The Taskforce recommends the establishment of “Core Carbon Principles” (CCPs) for a ton of verified carbon (or carbon equivalent), avoided, reduced or removed. These CCPs set out threshold quality criteria to which a credit and the supporting standard and methodology should adhere (Exhibit 21). The Taskforce argues for adopting the broadest possible definition of the CCPs, while ensuring high integrity and quality are maintained.

Detailed definitions for the recommended quality criteria shown in Exhibit 22 can be found in the appendix.

An important note on the criteria “Permanent” and “Free of Leakage” (Exhibit 21), is that they include buffer provisions. These buffers act as an insurance policy, for cases where, for example forest fires release previously offset carbon dioxide into the atmosphere, as all other projects would have contributed sufficient additional carbon dioxide to cover these losses. This would mean that a credit retired by a buyer would remain valid, in the unfortunate event of damage to the underlying project.

An important decision is whether credits need to be of a certain “vintage” to qualify for the

CCPs, thus excluding projects with emissions reductions prior to a certain date.⁵⁰ It should be noted that independently of this decision, any vintage credit would have to prove that its methodology adheres to the CCPs. The Taskforce defers any decision on excluding credits of a certain vintage to the Public Consultation and future governance body. This governance body may choose to exclude all projects from earlier vintages, or only certain methodologies and/or project types

Buyers who participated in the Taskforce expressed a desire to continue to tailor their offset purchases. Examples include buyers who want to support a certain location, aid in financing new technologies (e.g., BECCS, DAC), or support other SDG goals. To accommodate the need for standardization as well as customization, the Taskforce developed a recommended framework that combines the CCPs with separate additional attributes (Exhibit 22). The rationale behind separating additional attributes from the core carbon product is to drive liquidity into the core carbon reference contracts (which will be based on the CCPs). The taxonomy of additional attributes includes vintage, project type, co-benefits or contribution to the SDGs, location, and corresponding adjustments.

⁵⁰ There are three key dates pertaining to each project that are relevant: project start, year of credit issuance, and year the actual emission reduction took place. In this report, when vintage is discussed, we generally refer to the last definition: the year the actual emission reduction took place.

In particular some buyers may want to buy only CCPs with removal attributes, as these may be necessary for certain types of claims in the future (e.g., net zero). In the longer term it may therefore be considered whether a separate core contract for removals is needed. Initially the Taskforce recommends keeping only one core contract to avoid splitting liquidity, as the majority of credits are likely to remain avoidance and reduction in the short-term. At the same time, there be nothing to stop an organization launching a removals only contract, consistent with the CCPs. Liquidity would move to that contract if that is what the market wants.

To facilitate development of the CCPs, the Taskforce recommends that an independent third-party organization should host and curate the CCPs.⁵¹ This is subject to further consultation, including responses to the Taskforce's Public Consultation Survey (see Chapter 5). The governance structure needs to minimize conflicts of interest and ensure that, over time and based on the best available data, concepts such as additionality, permanence and what constitutes sufficient buffers are kept up to date to maintain confidence of all participants. This organization will be tasked with governing the CCPs in so far as certain standards or methodologies do not meet specific key criteria for a carbon credit.

This governance body will in the future need to decide which project types do not meet the quality thresholds or would only meet them with additional guardrails. One example

may be renewable energy projects, which may eventually be phased out as renewables become so economically efficient that they no longer satisfy the additionality principle. This transition has already started: the VCS program no longer accepts grid-connected renewable energy projects in non-least-developed countries, and Gold Standard has set up a similar guardrail.

Another example of a project type which may require the governance body to implement guardrails is REDD+.⁵² In the past, there have been concerns about baselining, permanence, and leakage. For example a forestry project could experience a loss of trees through a fire or illegal loggers could simply move to another location. In response, the voluntary carbon standards bodies have implemented a number of guardrail measures (e.g., improved project design, full accounting of potential leakage, establishment of buffer pools to manage reversal risk, and other frameworks to evaluate effectiveness). As part of the discussion on how to ensure these REDD+ projects are effective, there is a debate as to whether standalone project-based REDD+⁵³ should be allowed in the mid to longer term. Furthermore as many governments have begun to account for deforestation and forest degradation at the jurisdictional level, there is a need to ensure national accounting adds up, and thus for individual project based REDD+ projects to "nest" into the jurisdictional program. Given this debate, the governance organization may consider additional guardrails. For example, 1) Where

51 To clarify, the Taskforce is not the entity that will set the CCPs, the independent body should set and continually update them. This is what we mean by "curate."

52 REDD+ stands for Reducing Emissions from Deforestation and forest Degradation, plus the sustainable management of forests, and the conservation and enhancement of forest carbon stocks

53 Project-based REDD+ generally support private forest owners who receive credits to protect their forest from deforestation, while jurisdictional or nested REDD+ generally support government programs to protect forests from deforestation, potentially with private land owners "nesting" into the broader government programs.

REDD+ activities or pools are accounted for by the country at the jurisdictional scale, all such project activities must be nested within that program; 2) For activities not accounted for at the jurisdictional scale, projects operate on a standalone basis (i.e., not required to be nested within a jurisdictional program); 3) Where previous activities are subsequently included in a jurisdictional program, credits from standalone activities would no longer be eligible (after a reasonable grace period).

The future governance body will also have to opine upon inclusion of CDM credits (CERs). Due to additionality concerns these may have to be excluded. As a minimum historic CDM

credits (CERs) would likely not be included in the CCPs.

The governance body should not be tied to any governments or sectoral interests. The Taskforce acknowledges the existing ICAO/CORSIA principles and the reference contract built on them – for example “GEO” on CBL Markets.⁵⁴ However, beyond an interim period, during which ICAO/CORSIA’s work on principles could potentially be leveraged to build liquidity, we believe there should be a transition to a more suitable body.⁵⁵ Ideally the governance body should collaborate with ICAO / CORSIA , with the goal to harmonize efforts around a common standard.

EXHIBIT 21: DEFINITION OF CORE CARBON PRINCIPLES AND ADDITIONAL ATTRIBUTES

Carbon credit components



Description

A ton of verified carbon or carbon equivalent removed, avoided, or reduced
Adhering to a set of threshold quality criteria for the credit and the supporting standard / methodology

Other product attributes described in a taxonomy (e.g., project type, co-benefits, region, location, vintage) that buyers find helpful in addition to the “pure” carbon

⁵⁴ The Taskforce acknowledges that the Emissions Unit Criteria and associated guidelines for interpretation were developed by ICAO over the course of several years by doing a gap analysis of best practices across standards and adopting the most rigorous criteria from across the sector.

⁵⁵ The Executive Board of the CDM and the governance around the Californian LCFS were suggested as potential models for this CCP body to learn from. Adjacent to the question of *who* this body should be, there is the further question of how the governance body would interact with existing bodies and trade groups.

EXHIBIT 22: EXAMPLE OF POTENTIAL CORE CARBON PRINCIPLES

ICROA dimensions CORSIA dimensions TSM Taskforce dimensions

Core Carbon Principles: Detailed description of each criterion in the appendix			Additional attributes
<p>Carbon credit definition:</p> <p>A carbon credit is a verifiable action that compensates for the emission of one ton of CO₂e</p> <p>Carbon credits need to fulfill minimum quality criteria listed here</p>	<p>Threshold quality standards for the carbon credit:¹</p> <ul style="list-style-type: none"> Real Based on realistic and credible baselines Monitored, reported and verified Permanent Additional Free of leakage Only counted once Do no harm Earliest project start date 2016² Only jurisdictional or nested REDD 	<p>Threshold quality standards for the supporting Standard / GHG program:</p> <ul style="list-style-type: none"> Program governance Program transparency and public participation provisions Clear and transparent requirements for independent third-party verification Legal underpinning Publicly accessible registry Registry operation Third-party recognition Inclusion of Clean Development Mechanism 	<p>Credits can also exhibit these other attributes as part of the product taxonomy:</p> <ul style="list-style-type: none"> Vintage (e.g., year of actual emissions reduction) Project type (e.g., reduction/avoidance, removal/sequestration) Co-benefits /SDGs (e.g., water, biodiversity, gender equality) Location (e.g., APAC, Americas) Corresponding adjustment (e.g., yes/no)

1. Definitions of threshold quality standards in the appendix. The Taskforce also recognizes that there are other initiatives ongoing (e.g., World Bank, WWF/EDF/Oeko-Institut, etc.)
 2. Under CORSIA, current vintage rules refer to credits issued due to activities that started their first crediting period from 1 January 2016 and in respect of emissions reductions that occurred through 31 December 2020
 3. Inclusion to be determined by future host body of the Core Carbon Principles based on detailed review of additionality, leakage and baselines

Source: ICROA, CORSIA, WWF/EDF/Oeko Institut

RECOMMENDED ACTION 2:

ASSESS ADHERENCE TO THE CORE CARBON PRINCIPLES

There is a need for an independent third-party organization to assess standards, methodologies, and validation against the CCPs and the set of additional attributes.⁵⁶ While it is possible for this work to be conducted by the same body as the one who hosts the CCPs, the Taskforce recommends this task to be carried out by separate expert verification agencies. These verification

agencies should be accredited by the body which hosts the CCPs.

The taxonomy should be adopted across standard setters, including the largest ones: VCS, GS, ACR, CAR, Plan-Vivo, and ART.⁵⁷ The standard setters should clarify which of their methodologies have received certification for adhering to the CCPs.

II. CORE CARBON REFERENCE CONTRACTS

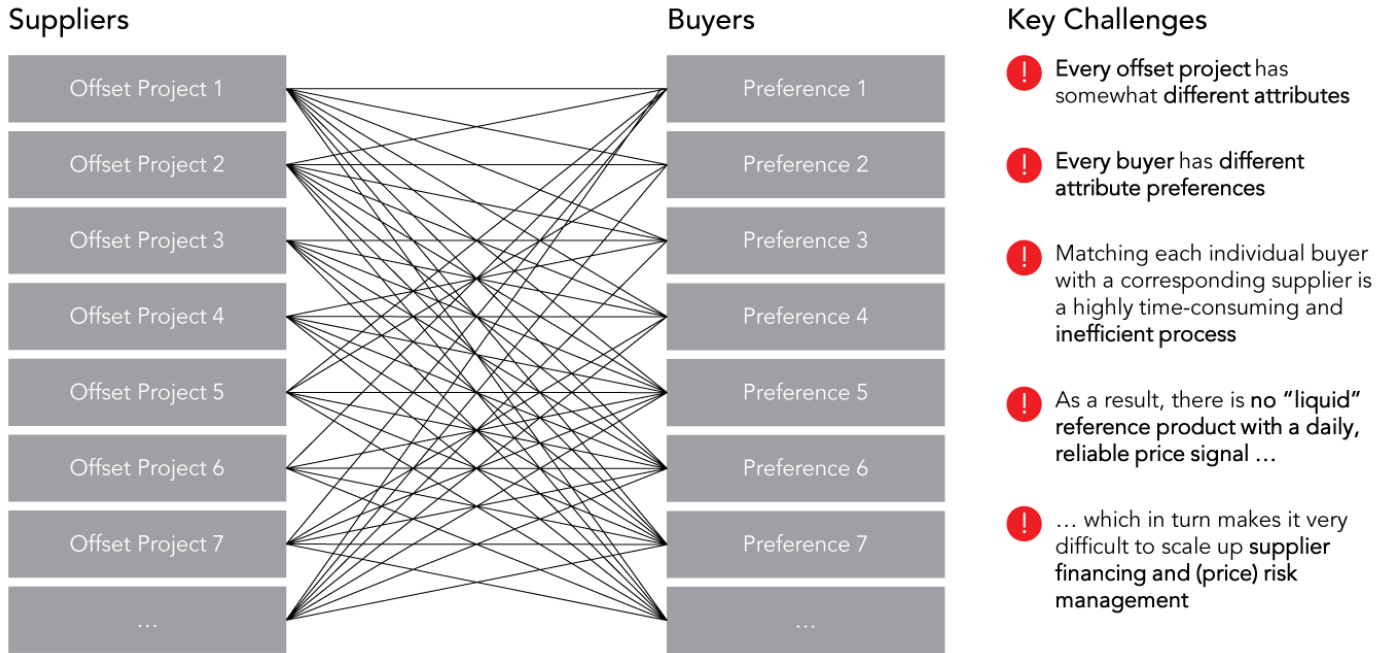
Every project has somewhat different attributes (e.g., carbon removal versus avoidance, geography, vintage, project type) and every buyer has different attribute preferences. For example, some buyers look to purchase credits linked to their geography or supply chain or credits which offer particular SDG-impacts or co-benefits. Matching each

individual buyer with a corresponding supplier is a time-consuming and inefficient process (Exhibit 23). As a result, there are no liquid reference contracts (e.g., spot and futures) with a daily, reliable price signal, which in turn makes it very difficult to scale up supplier financing and (price) risk management.

56 CORSIA demonstrates this is possible to achieve.

57 Defined in the appendix – acronyms

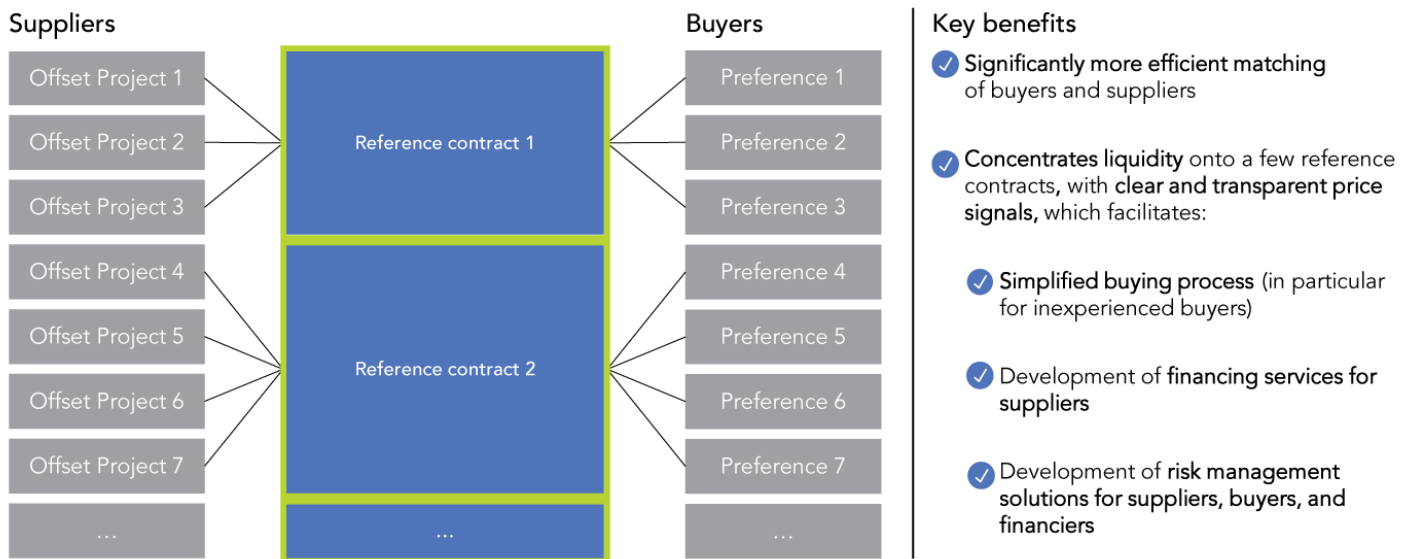
EXHIBIT 23: THE CHALLENGE IN A NUTSHELL (SIMPLIFIED)



Reference contracts can bundle suppliers' products and buyers' preferences to allow for significantly more efficient matching of buyers and suppliers (Exhibit 24). Buyers benefit from a simplified buyer journey and increased

price transparency. Suppliers benefit from price risk management and improved access to financing, as well as a clear price signal to inform their investment decisions.

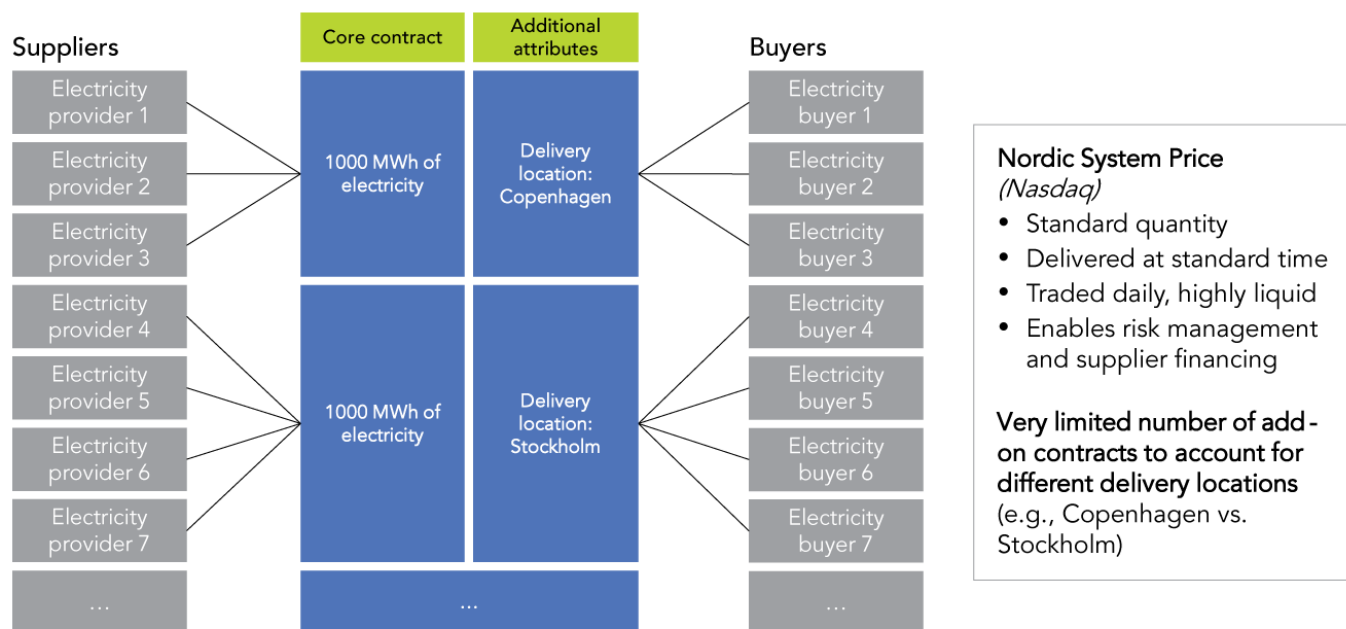
EXHIBIT 24: THE SOLUTION IN A NUTSHELL (SIMPLIFIED)



Several other markets with non-standardized products (e.g., corn, oil and other commodities) have successfully implemented reference contracts in the past. The Nordic power markets (Exhibit 25) have the Nordic System Price as the core contract, and attributes (in this case the location of

delivery) are traded as an add-on to the core contract. Many other commodity markets work according to similar principles and have succeeded in standardizing and scaling contracts despite the vast complexity of the underlying physical substance, without compromising on integrity and quality.

EXHIBIT 25: REFERENCE CONTRACT IN THE NORDIC POWER MARKET



RECOMMENDED ACTION 3:

INTRODUCE CORE CARBON SPOT AND FUTURES CONTRACTS

The Taskforce recommends the introduction of a spot and futures reference contract, based on the CCPs, with physical delivery. This contract bundles credits that satisfy the CCPs from several suppliers into one contract. A buyer receives any of the eligible carbon credits traded in the “Core Carbon Contract” and, at delivery, a certificate for the particular underlying credit.

One potential way these contracts could emerge is that exchange traded spot market contracts with transparent price signals will enable a forward curve to develop. As that

curve develops, it will enable futures markets to develop contracts based on the reference contract. Futures contracts serve the longer-dated needs of the market. The core futures contracts should have suitable maturities (e.g., one year), be cleared at clearinghouses, and offer the option to financially settle (no actual delivery of certificates). Futures contract should be fungible to allow for trading across all markets and not only on a single platform, potentially enhancing market liquidity. The futures market will be the basis for industrialized financing. Banks and financiers will be able to finance against a

futures price. Financing can also be linked to offtake agreements (allowing banks to finance project development based on the existence of a contract with a future buyer already in place).

In addition to the core carbon spot and futures contracts, which are based on the CCPs, additional attributes demanded by buyers (such as the distinction between removal and reduction credits) can be woven into additional reference contracts (see contract option 2 in Exhibit 26) that can either be priced and traded as a “basis” (difference to) the core contracts, or as standalone contracts. A buyer will receive any carbon credit that qualifies for the “Core Carbon Contract” and in addition fulfils the desired additional attributes. At delivery, a certificate for the underlying credit, related to that specific additional attribute, will be presented to buyers. Crucially, the number of permutations of these additional reference contracts should be kept to a minimum. The goal is to concentrate as much liquidity in as few contracts as possible. Therefore, the additional reference contracts should represent the most prevalent buyer preferences.⁵⁸

These core carbon contracts should also be set up to allow more flexible purchase sizes for buyers, with different underlying projects amalgamated together to deliver the size required.

Over-the-counter (OTC) markets will continue to exist after the development of reference contracts, but will be tightly linked to them. There are various reasons why buyers may not wish to trade on an exchange, such as the need for highly bespoke contracts or the complexity involved in onboarding to an exchange or clearinghouse. However, OTC markets will benefit from the development of reference contracts. When negotiating OTC contracts, both parties can use the price of the liquid core carbon contract as a starting point, negotiating only the pricing for the additional attributes, however complex they might be (e.g., unique combinations of project type, location, vintage, SDG-impact and other co-benefits, etc.).

In addition it is recommended that master agreements be improved based on currently existing agreements, such as the ISDA emissions trading annex. This would enable more efficient trading of credits, in particular for the primary OTC market. Standard documentation should include trading terms. The Taskforce recommends that an appropriate industry body is appointed to host and curate the standardized trading documentation.

Finally the OTC market would greatly benefit from increased transparency, one way to achieve this could be the entry of price reporting agencies such as Platts, Argus or Heren.

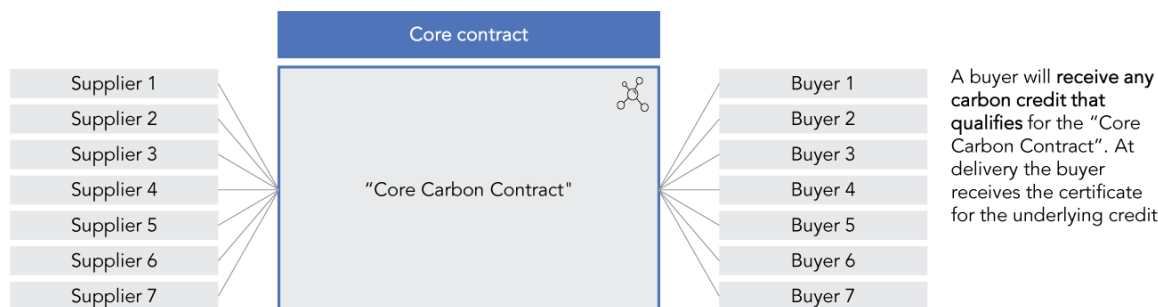
⁵⁸ For co-benefits, we encourage recognition and further development of existing programs (e.g., the Blue Carbon Initiative for marine-based co-benefits, and Gold Standard’s Black Carbon Quantification Methodology for co-benefits of addressing pollutants).

EXHIBIT 26: CONTRACT OPTIONS FOR THE VOLUNTARY CARBON MARKET

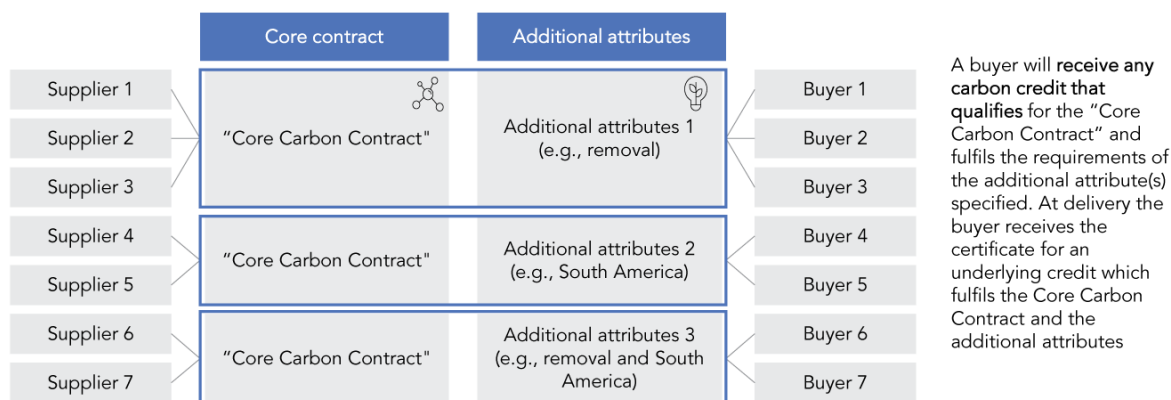
Contract

Exchange-traded reference contracts

1 Core reference contract which fulfils the "Core Carbon Principles"



2 Reference contracts which combines the "Core Carbon Contract" with select additional attributes¹



OTC contracts

3 OTC contracts leveraging reference contracts as benchmarks for pricing



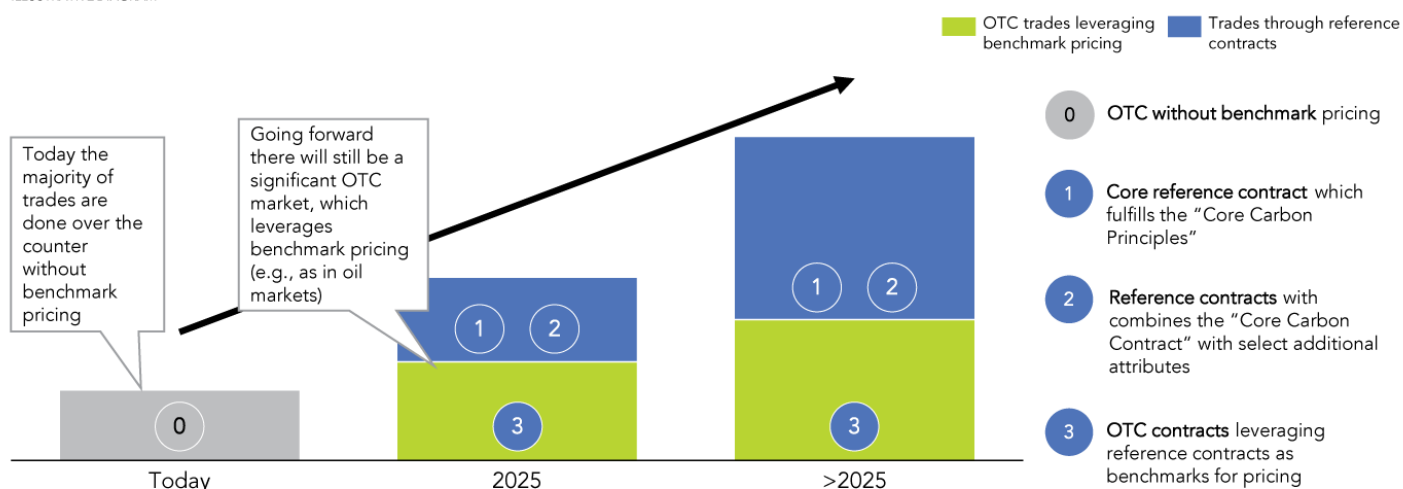
1. Two sub-options exist: i) Core Carbon Contract and additional attributes traded within one contract ii) Core Carbon Contract and additional attributes traded as two fully separate contracts

For reference contracts to develop into a pricing benchmark and enable the associated benefits, a substantial proportion of buyers must switch their purchasing away from OTC and toward reference contracts (spot and futures). We therefore recommend that large

buyers make this transition in their carbon credit portfolio over the coming years (Exhibit 27). The more that contracts in general can be referenced to the core carbon contract, the more the liquidity will grow.

EXHIBIT 27: BROAD ADOPTION IS KEY TO SUCCESS

ILLUSTRATIVE DIAGRAM



Concentration of liquidity and associated benefits **only materialize if reference contracts are widely adopted**. This will require buyers to adapt purchasing behavior. We would recommend buyers to transition a part of their carbon credit portfolio to reference contracts.

RECOMMENDED ACTION 4:

ESTABLISH AN ACTIVE SECONDARY MARKET.

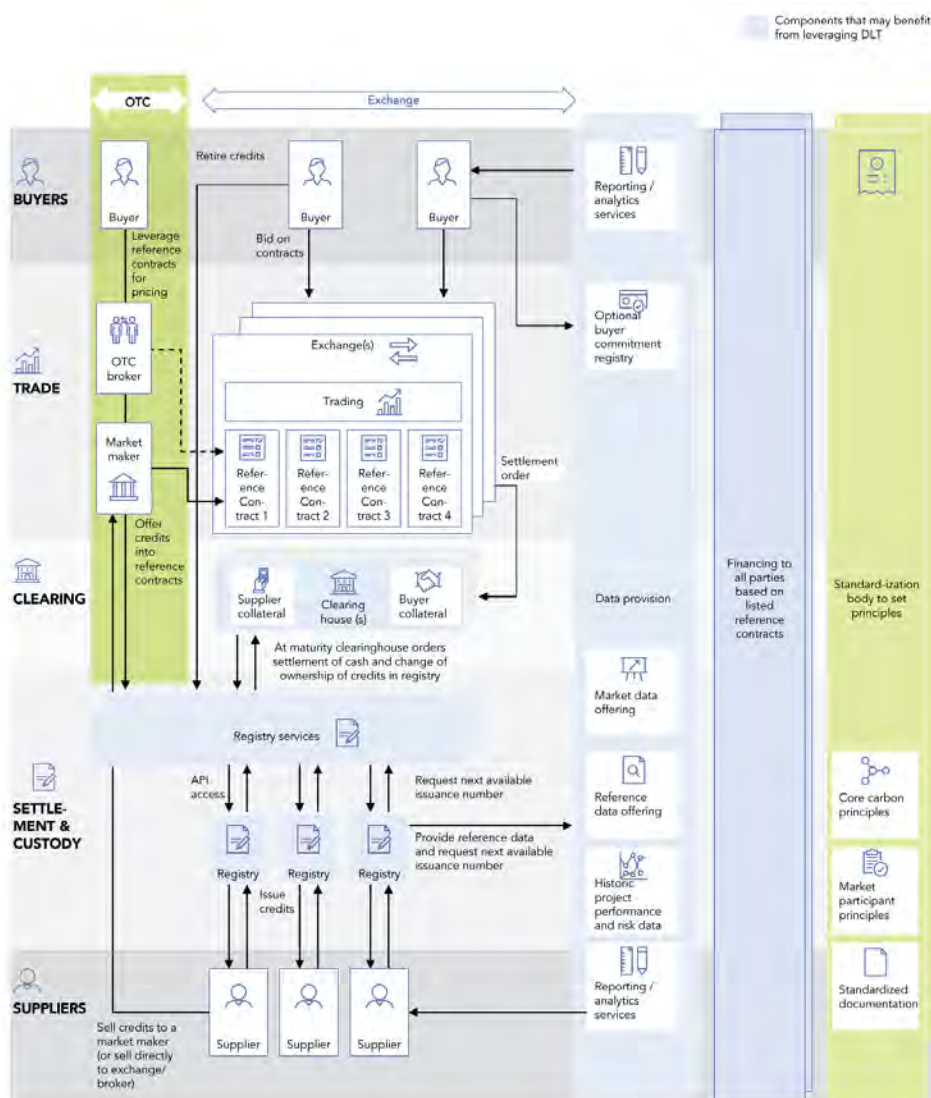
Establish an active secondary market. An active secondary market allows investors, buyers and sellers to manage and hedge their risk exposures. In particular, these liquid markets will support longer-term financing for project developers and allow buyers to manage risks that arise from carbon reduction commitments. Market makers and risk takers should be involved in these markets to provide additional liquidity. It will be important to create access to the markets

for participants who traditionally were not present in the financial markets and may have faced barriers navigating the complexity involved in onboarding to an exchange or clearing house (e.g., not have the capital to engage). Access could be improved through existing bank intermediaries, brokers, or via a specific carbon development bank. It will also be important to drive awareness for buyers and sellers about these access points.

III. INFRASTRUCTURE: TRADE, POST-TRADE, FINANCING, AND DATA INFRASTRUCTURE

For a market to function, a core set of infrastructure components needs to be in place. These components must work together in a way that is resilient, flexible, and able to handle large-scale trade volumes. The required components of the future architecture can be found in Exhibit 28.

EXHIBIT 28: TRADE INFRASTRUCTURE DESIGN



Source: McKinsey analysis

The critical recommended actions to develop the target infrastructure are outlined below.

RECOMMENDED ACTION 5:

BUILD OR UTILIZE EXISTING HIGH-VOLUME TRADE INFRASTRUCTURE

Robust trade infrastructure is a vital precondition for the listing and high-volume trading of core carbon reference contracts (spot and futures), as well as contracts reflecting a limited set of additional attributes. Exchanges should provide access to market

data, for example through APIs. They should also adhere to suitable cybersecurity standards. OTC infrastructure should continue to exist in parallel to exchange infrastructure, and OTC brokers are encouraged to provide increased transparency on market data.

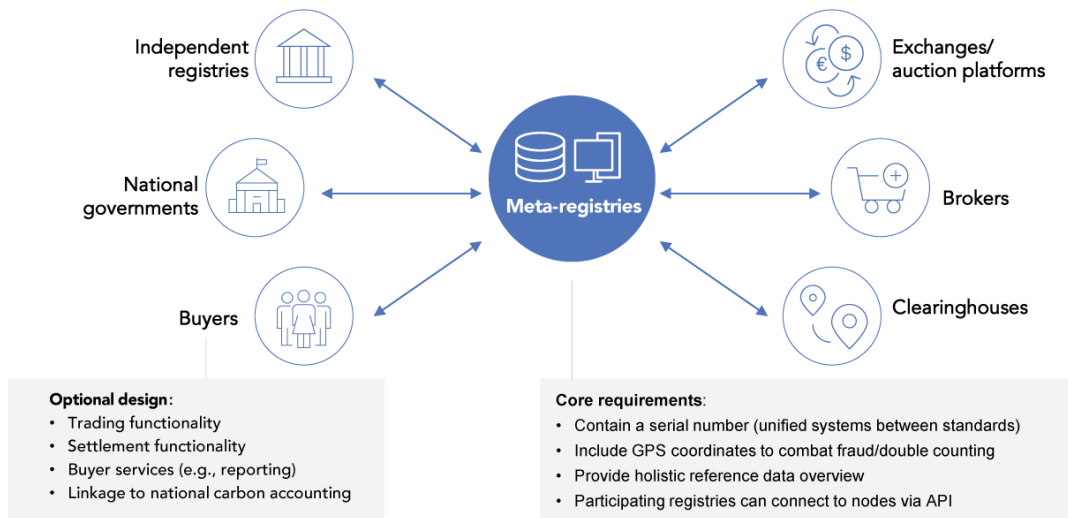
RECOMMENDED ACTION 6:

CREATE OR UTILIZE EXISTING RESILIENT POST-TRADE INFRASTRUCTURE

Clearinghouses are needed to enable a futures market and provide counterparty default protection. They should offer access to relevant data (e.g., open interest), for example through APIs. Meta-registries should provide custodian-like services for buyers and suppliers and enable the creation of

standardized issuance numbers for projects across existing registries (similar to the concept of ISINs in capital markets) (Exhibit 29). Meta-registries along with the underlying registries of the standards providers should apply suitable cybersecurity standards to prevent risk of hacking.

EXHIBIT 29: RECOMMENDED ARCHITECTURE FOR A META-REGISTRY



Source: McKinsey analysis, IHS Markit

RECOMMENDED ACTION 7:

IMPLEMENT ADVANCED DATA INFRASTRUCTURE

Sophisticated and timely data is essential to all environmental and capital markets. In particular, data providers should offer transparent reference and market data, which is not readily available today, due to limited registry data access and an opaque OTC market. Taskforce encourages that statements of retirement of credits and in which entity's name the credits were retired. Data providers should also collect and offer historic project or project developer performance and risk data to facilitate structured finance and the formulation of OTC contracts. New reporting

and analytics services (spanning across registries) need to be developed for buyers and suppliers. Implementation could be supported by meta-registries, which collect and structure all openly accessible reference data. A critical enabler is that all registries offer reference data through open APIs. Furthermore intermediaries (e.g., exchanges and clearinghouses) should include trading information in their existing data flows.

RECOMMENDED ACTION 8:

CATALYZE STRUCTURED FINANCE

Banks and other supply chain financiers should provide lending facilities for project developers (both capital expenditures and working capital) collateralized by carbon credits. In the medium to long term, a liquid spot and futures contracts market for carbon credits would provide a great foundation for structured finance offerings because it would provide clarity on pricing and facilitate risk transfer, improving the overall bankability of these projects. In particular, financing should

be provided based on expected cashflows from offtake agreements. This is an important way of bridging the gap between immediate investment / capital needs and expected future cashflows. However, since futures contracts will not materialize in the short term, additional structured finance solutions are required to provide a comprehensive suite of solutions for developers, for example to finance natural climate solutions in the short- to medium-term.

THE TASKFORCE RECOMMENDS THE FOLLOWING STEPS TO CATALYZE FINANCING:

- Develop data transparency on risk, including previous project/supplier performance.⁵⁹
- Equip and train financiers across the ecosystem to rapidly assess execution risk.
- Provide recognition for banks that finance offset projects (e.g., develop “green financier” label or extend existing labels).
- Encourage existing development banks and green investment banks to commit to increase lending facilities for suppliers, in particular for the smallest suppliers.
- Uphold transparency and continued high standards on AML/KYC.
- On the penultimate recommendation, the Taskforce’s aim over the long term is to create a market that can generate standalone funding for emissions reductions. Use of public finance should only be a bridge solution. Furthermore, the Taskforce recommends that banks check to ensure that projects meet or are on a path to meeting the CCPs before providing financing and/or claiming recognition.

IV. CONSENSUS ON THE LEGITIMACY OF OFFSETTING

There are potential misconceptions on the role of offsetting in supporting a 1.5°C degree pathway. A key issue facing development of voluntary carbon markets arises from a lack of shared vision of the role of offsetting in supporting achievement of net zero goals and the legitimacy of carbon offsetting as a corporate practice, especially

when considered in comparison to other decarbonization activities (e.g., reduction of a company’s own emissions). There are valid concerns regarding the robustness of carbon credits, stemming from past controversies, market failures, and the potential for offsetting to be misused. Some of these concerns pertain to the structure of carbon

⁵⁹ This could be done by data providers in the market.

credits themselves, including the additionality of certain types of projects. Other concerns relate to the use of offsetting, and whether or not offsetting may create unintended disincentives for corporate action to reduce emissions internally.

In its desire to shift public perceptions, the Taskforce has focused on principles to ensure that offsets are used credibly and on clarifying the claims that companies make about their use of them.

RECOMMENDED ACTION 9:

ESTABLISH PRINCIPLES ON THE USE OF OFFSETS

Offsetting can raise climate ambitions if pursued in conjunction with a company's efforts to reduce its own emissions. Establishing clear principles on the use of offsets is critical.

THE TASKFORCE PROPOSES THE FOLLOWING SET OF PRINCIPLES FOR NET ZERO-ALIGNED CORPORATE CLAIMS AND USE OF OFFSETS:

1. Companies should publicly disclose commitments, plans, and annual progress to decarbonize operations and value chains in line with science to limit warming to 1.5 °C as per the Paris Agreement, using best available data.⁶⁰ This includes making public (or subjecting to external audit) the basis on which claims are made.
2. They should measure and report Scope 1, Scope 2, and, wherever possible, Scope 3 greenhouse gas emissions⁶¹ on an annual basis using accepted third-party standards for corporate greenhouse gas accounting and reporting.
3. Companies are strongly encouraged to compensate a share of unabated emissions annually during the transition to net zero through the purchase and retirement of carbon credits generated under credible third-party standards.⁶²
4. These principles are meant to guide action and encourage "best practice." For example, Scope 3 coverage varies by sector and its accounting methodologies will continue to evolve. Companies should increase their Scope 3 coverage over time and follow the best available guidance for the sector (see sidebar, "Scope 3 Accounting in the Context of Offsetting").

⁶⁰ To be refined to include guidance on who may make the determination of "best available climate science" and guidance on grace periods as corporates adapt to changes.

⁶¹ Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company. Scope 3 includes all other indirect emissions that occur in a company's value chain.

⁶² Corporates do not have to commit to offsetting all emissions as long as offsets are part of a credible transition plan to net zero; these can be avoidance / reduction or removal/sequestration offsets.

SCOPE 3 ACCOUNTING IN THE CONTEXT OF OFFSETTING

The Taskforce recommends the measurement and reporting of Scope 1, Scope 2, and wherever possible, Scope 3 greenhouse gas emissions on an annual basis. Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company. Scope 3 includes all other indirect emissions that occur in a company's value chain. Broad Scope 3 guidelines are detailed in the GHG Protocol for all corporates, and it is the Taskforce's position that companies should complete Scope 3 inventory to the fullest extent.

CONSULTATION ACROSS THE TASKFORCE REVEALED A FEW KEY POINTS:

First, Scope 3 measurement is a powerful lever for companies to measure their decarbonization progress. For example, a consumer product company with products that when used create emissions would have significant Scope 3 implications. Measuring it allows companies to make more Paris-aligned decisions, including identifying residual emissions necessary to be offset. Similarly, for financial services, the measurement of Scope 3 would redirect fund flow from carbon-intensive assets to low-carbon assets, creating incentive for financiers to provide structured finance products for offset projects.

Second, guidance on measuring Scope 3 is evolving. The existing GHG Protocol provides broad coverage on Scope 3 accounting across sectors, and sector-specific Scope 3 guidance is emerging for industries where Scope 3 is difficult to measure. One such example is the Partnership for Carbon Accounting Financials (PCAF), which provides some guidance on how financial institutions can assess and disclose greenhouse gas emissions of loans and investments. Despite some progress, the Taskforce recognizes the complexity involved in Scope 3 measurement, the limitations on data availability, and the added accounting burden. Companies are encouraged to make their best effort on Scope 3 measurement as they adhere to the Principles for Net Zero-Aligned Corporate Claims and Use of Offsets.

Offsetting can also be offered by corporates as products or at the point of sale (POS). Offset products can include a range of offerings (e.g., for a commercial flight, as part of a credit card that offsets every purchase). Innovation and market evolution make it impossible and undesirable to anticipate every use case, but principles for the credible use of offsetting in products or at POS can help guide responsible action.

THE TASKFORCE PROPOSES THE FOLLOWING PRINCIPLES FOR CREDIBLE USE OF OFFSETS IN PRODUCTS OR AT POS:

Companies should follow the Principles for Net Zero-Aligned Corporate Claims and Use of Offsets. Offsetting in products or at POS similarly should not disincentivize their own emissions reduction.

1. Scope 3 emissions cover the use of products and services sold by the reporting company. Companies should be explicit about how they account for the offsets in products and at POS in their Scope 3 reporting and with the consumer on the consumer product label.⁶³
2. Companies should ensure minimum pricing and product transparency for their customers. Elements of such transparency could include:
 - a. Being clear about profits, if any, that companies are making from their offset products on the premise that consumers should have a choice of offsetting through a different channel if pricing is distorted from the market price⁶⁴
 - b. Informing consumers whether the credit or the offset product they purchase has any additional benefits (i.e., co-benefits) beyond emissions reductions.
 - c. Allowing end-consumers to access data that validates the retirement of their purchased credits (e.g., a gasoline customer's app tracks when the customer bought offset gasoline and provides the unique identifier of the credit tied to the purchase), or they seek third-party validation and auditing of POS products to demonstrate the use of funds against traded spot or future contracts and the delivery of the requisite credits.

RECOMMENDED ACTION 10:

ALIGN GUIDANCE ON OFFSETTING IN CORPORATE CLAIMS

An increasing number of corporates are making commitments to align business models with decarbonization goals, including in the form of time-bound decarbonization targets (e.g., targets for achieving net zero emissions for internal operations and supply chains by a certain date). Corporate commitments on climate action range from science-based targets via the Science-Based Targets Initiative (SBTi), to net zero, carbon neutral, and carbon negative (Exhibit 30). Frameworks for such commitments and claims are being put forward by multi-stakeholder

coalitions and initiatives, including the SBTi, which is in the process of developing standards for how net zero and climate positive claims should be set and monitored.⁶⁵ For example, while offsetting is not counted toward science-based (emissions reduction) targets, SBTi does recognize the role of offsetting toward net zero claims. ISO similarly has significant development underway for a new International Standard on Carbon Neutrality (ISO14068)⁶⁶, with over 20 countries participating.

⁶³ For example, if a customer uses a credit card that offsets every purchase, both the bank and the merchant may claim credit for the offset. This double counting, implicit in the way Scope 3 works (pending changes to this accounting framework), should be made clear to consumers.



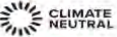


⁶⁴ Similar to the Seller's Pledge put forth by Richard and Dee Lawrence, the founders of the Cool Effects crowdfunding platform.

⁶⁵ *Foundations for Science-Based Net zero Target Setting in the Corporate Sector*, SBTi and CDP, September 2020, science-basedtargets.org.

⁶⁶ See ISO website for ISO14068 information alongside other initiatives: <https://www.iso.org/standard/43279.html>.

EXHIBIT 30: DIFFERENCES BETWEEN CORPORATE CLAIMS

NOT MUTUALLY EXHAUSTIVE

		Description	Treatment of offsetting	Offsets used	Reporting protocols/ standard setters
Increasing use of offsetting	Science-Based Target (SBT)	Target consistent with the level of decarbonization required to limit global temperature increase to less than 1.5 to 2°C above preindustrial levels	Offsetting is not counted towards SBTi targets; however, SBTi recognizes the use of offsets for net-zero claims	None	
	Net zero	Target to achieve a scale of value-chain reductions over time and to neutralize the impact of any residual emissions (not mutually exclusive with SBT)	Offsets used for the residual emissions at net zero or to compensate for emissions during the transition process	TBD (SBTi guidance on net-zero claims pending ¹)	None right now, SBTi in consultation process to set a net-zero protocol, incl. guidance on use of offsetting in net-zero claims
	Carbon neutral	Target for the company to compensate all emissions produced in a set period, usually evaluated on an annual basis	Offsets are used to balance against unabated emissions	All types	   
	Carbon negative	Target where the company goes beyond achieving net-zero emissions to create an environmental benefit by removing additional emissions	Offsets are required to achieve this target	TBD (Primarily removal for some ²)	None right now
	Carbon free	Target to use 100% clean energy or materials to directly power company operations (can be used as a bolt-on target to any previous claims)	n/a – offsetting does not apply here, primarily applied to energy currently	n/a	None right now

1. Subject to change in the SBTi consultation process; Under the preliminary report, all offset types are allowed as long as they are high-quality during the transition to net-zero and only removals are allowed for residual emissions at net-zero

2. e.g. Microsoft

Source: McKinsey analysis, SBTi, press search

Achieving greater alignment on the proper use of offsets in different types of corporate claims can help clarify and de-risk the target-setting and purchasing process for buyers. This applies to ongoing initiatives as well as the development of additional guidance. The following are some examples of ongoing initiatives (more details in the appendix) in broad thematic categories. Organizations like the SBTi, ISO, Client Earth⁶⁷, and others are seeking to define the role of offsetting in net zero claims. Climate Action 100+, the UN PRI, and NZAOA's guidance from investors to corporates on climate action can also shape the role of offsetting in corporate claims. For corporates, organizations such as the UNFCCC-led Race to Zero campaign and the WBCSD both have minimum criteria required for participation⁶⁸. The Taskforce notes the recent publication of the Oxford Principles for Net Zero Aligned Carbon Offsetting. The Oxford Offsetting Principles go one step beyond the Taskforce's Recommended action 9 in calling for a shift over time to carbon removal projects with long-term storage. It is the Taskforce's strong wish that guidance and principles put forward by key stakeholders will be aligned.

As noted, development of additional guidance may also be needed. Specifically, the Taskforce notes the need for more sectoral decarbonization pathways, especially for hard-to-abate sectors. The lack of corporate claim standards can deter hard-to-

abate sectors from offsetting while delivering emissions reduction. It also recommends the incorporation of aligned guidance on the use of offsets in corporate claims within national or international guidance on green finance (e.g., under the EU Taxonomy as part of the Action Plan on Financing Sustainable Growth).⁶⁹

Thus, the Taskforce recommends the adoption of a common narrative on the role of offsetting in corporate claims that balances the need to offset with the urgency in reducing a company's own emissions. This is critical to the legitimacy of offsetting.

The legitimacy of offsetting can be further bolstered by the rich and complex landscape of stakeholders in the voluntary carbon market. In addition to initiatives on the use of offsets, there are efforts led by WRI on carbon accounting. On the supply side, there are organizations defining minimum quality standards (e.g., ICROA, CORSIA/ICAO, WWF/EDF/Oeko-Institut) and treatment of natural climate solutions (e.g., ART⁷⁰, NCS Alliance). There are also ongoing efforts to clarify guidance on negative emissions technologies and land use from the UN PRI and the GHG Protocol⁷¹. These are all influential in shaping the overall consensus on the legitimacy of offsetting.

Finally, there is a conceptual connection between corporate use of offsetting to corporate deforestation targets. The Taskforce

67 Client Earth Principles for Net zero Claims (<https://www.clientearth.org/press/clientearth-publishes-key-principles-for-paris-aligned-strategies/>).

68 WBCSD (<https://www.wbcsd.org/Overview/News-Insights/General/News/New-membership-criteria>).

69 The Taskforce has also received suggestions to include offsetting as part of both fiscal and monetary "green" stimulus. We simply note this suggestion and refrain from engaging in regulatory discussions.

70 Also a standard for jurisdictional REDD+ projects.

71 We note that the GHG Protocol will be releasing updated guidance in 2022 on carbon removals, land, and bio-energy, which can have additional implications of how corporates account for land use impacts in their Scope 3 emissions. The guidance released can also have implications on other ways of financing removals projects and clarify how corporates can account for insetting in their GHG inventory.

encourages key stakeholder groups to find a way of bringing the two together. The logic is similar to that of “reduction first”: companies should reduce their deforestation activities first before offsetting.

All in all, the Taskforce does not opine on the respective validity of these initiatives,

but notes that the growth of the voluntary carbon market relies on their clear and timely guidance. The Taskforce recommends that these initiatives work to achieve aligned guidance at pace, as this is crucial to the successful adoption and scaling of the voluntary carbon market.

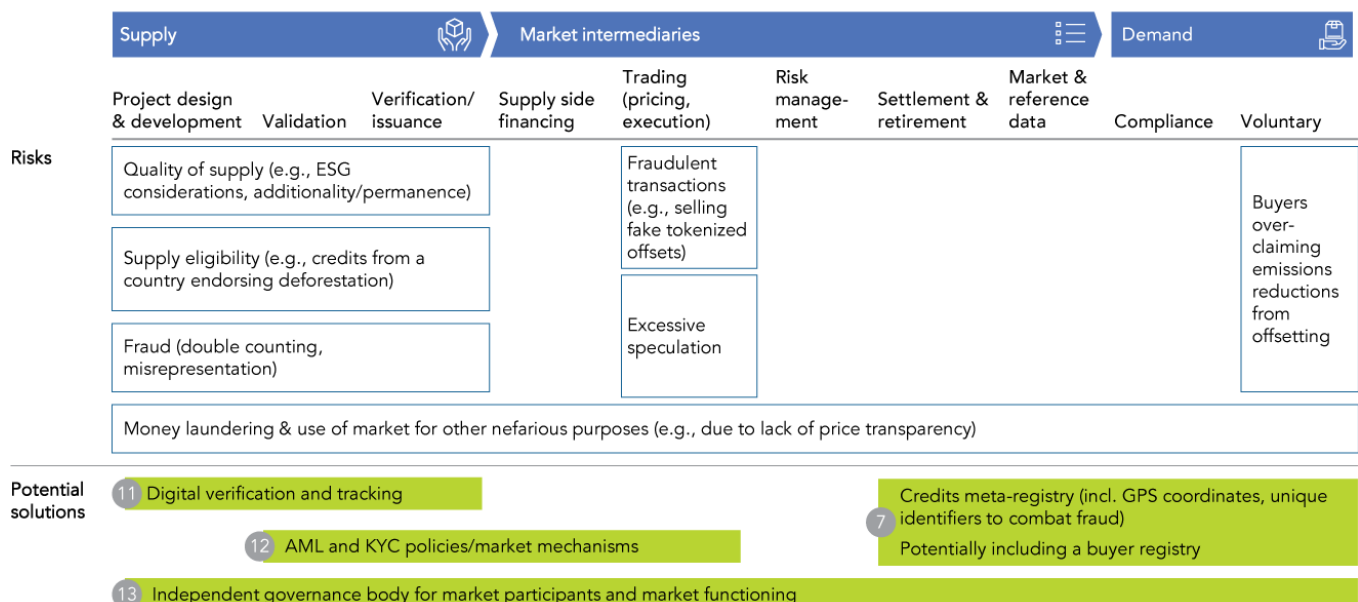
V. MARKET INTEGRITY ASSURANCE

Market integrity challenges affect the growth of voluntary carbon markets in a number of respects:

- The heterogeneous nature of supply creates potential for errors as well as fraud. Possible recommended actions include revamped verification procedures and development of meta-registries (which would use GPS coordinates or DLT to verify that credits are not being sold or counted twice). A system of unique identifiers for each carbon credit, no matter what standard it is developed under, would create further transparency and would lend itself to a DLT solution.
- There is potential for money laundering due to a lack of price transparency, leading to duplication of effort as various market participants independently screen counterparties. It would be beneficial if this could be done by one group, in the same way that banks conduct AML/KYC checks in other financial markets. The potential for fraud here is significant as well, as the voluntary carbon markets have seen scandals with credits sold off-registry multiple times as investments to individuals who do not understand the market.

The spectrum of market integrity concerns across the value chain is visualized in Exhibit 31.

EXHIBIT 31: MARKET INTEGRITY CONCERNS ACROSS THE VALUE CHAIN



The Taskforce has three recommended actions, in addition to the meta-registry with fraud protection features discussed in Recommended action 7. The Taskforce recommends a central, well-protocolized meta-registry that provides clear, effective accounting and seamless connectivity among governments, NGOs, and market participants.

RECOMMENDED ACTION 11:

INSTITUTE EFFICIENT AND ACCELERATED VERIFICATION

To speed up the verification process and to improve supply integrity, the Taskforce recommends a digital project cycle, including

- a shared data protocol that captures necessary project data digitally and protects its integrity during processing and transfer.
- an integrated process that allows verification entities to continuously monitor and validate integrity as projects are developed, rather than at the end of the process.

The design of such a system would need to ensure that the data is not faulty and cannot be falsified or altered for fraud. Critical functions of validation and verification bodies will still need to occur (e.g., meeting eligibility criteria set out by the standard, confirming data validity and the activities of the project, assessing additionality, ownership, baselines, crediting levels, and ESG safeguards). There will also invariably be constraints on how data protocols can be designed across different project types. Technology is rapidly evolving. The Taskforce recommends that the shared data protocol explore the use of satellite imaging, digital sensors, and DLT, to further improve speed, accuracy and integrity.

Further, we acknowledge that monitoring, reporting, and verification (MRV) involves a global community of assurance providers with overlaps between the compliance and voluntary markets. The verification process should be consistent across the markets for all

real-time issuance for some project types. The recommendation has two components:

carbon credits issued.⁷²

This recommendation could produce a number of benefits. It has the potential to reduce issuance costs, especially for small projects and for programs involving multiple parties or related to infrastructure. It could reduce payment terms from 15 months to approximately six weeks, and ultimately become the foundation for interoperable carbon markets. It could improve claim credibility, data traceability and integrity; allow interoperability; accelerate credit issuance and cash flow for project developers, partially resolving the financing gaps that exist now; and reduce costs. Transparency will bolster trust in voluntary credits.

An example of an accelerated project cycle can be seen in Exhibit 32. A number of existing initiatives are already implementing many of these suggestions and the Taskforce encourages, where necessary, development of interoperable systems.

72 See forthcoming EBRD publication, "A Protocol for Digital MRV," to inform further digitalization of the MRV process.

RECOMMENDED ACTION 12:

IMPLEMENT AML/KYC GUIDELINES

Implementation of AML and KYC guidelines and processes used within regulated markets should be extended to voluntary carbon markets to check against fraudulent actors who may take advantage of the maturing market. A review, which is beyond the scope of the Taskforce, should take place to assess what specific AML/KYC guidelines for the sector need to be developed and implemented. This would include standards

for applying AML/KYC to specific groups of market participants (e.g., suppliers, buyers, and intermediaries) as well as guidelines for which market participants are responsible for the AML/KYC screening. A governance body would need to host these, and keep them coordinated with other existing regulatory regimes at the international level (e.g., the Financial Action Task Force (FATF)).

RECOMMENDED ACTION 13:

INSTITUTE GOVERNANCE FOR MARKET PARTICIPANTS AND MARKET FUNCTIONING

An independent body is likely needed to provide guidance and perform key functions to ensure the high level of environmental and market integrity required for the success of voluntary carbon markets. It could be the same or a different organization as the one hosting and curating the CCPs.

This body will need to both make key decisions and perform necessary functions to ensure market integrity along three dimensions. The first dimension is on participant eligibility. This may include setting the principles for what buyers, suppliers, and intermediaries must adhere to in order to participate in voluntary carbon markets; establishing, hosting, and curating principles for the use of offsetting set out in recommended action 9; and developing and maintaining KYC guidelines as recommended by recommended action 12. If offsetting is (or is perceived to be) providing a disincentive for other climate action (e.g., companies reducing their own emissions to the extent possible), the governance body may consider

stipulating rules to mitigate this. Types of guidance on eligibility could include asking corporate buyers to show a valid claim before purchasing credits by registering their claims in the buyers' meta-registry,⁷³ ensuring a minimum level of supplier transparency, and so on.

The second dimension is on participant oversight. In particular, the Taskforce recommends developing principles to minimize conflicts of interest in the MRV process and providing accreditation, audit, and spot checks for the conduct of the validation and verification bodies (VVBs). One such rule to minimize conflicts of interest could be separation between the organization that validates versus verifies individual projects and their credits.

The third dimension is on overseeing market functioning. This may include developing principles to prevent fraud across the value chain, including ensuring good AML practices per recommended action 12.

73 Through a careful analysis of unintended or disproportionate burden on certain buyers rather than all buyers.

VI. CREATING A DEMAND SIGNAL

The growth of demand in voluntary carbon markets faces a number of challenges:

- Investor confidence is varied and at best limited: there is a need for education on the role of offsetting and need for standardized approaches that investors can adopt.
- Companies have been hesitant in developing POS offerings and are inconsistent in the types of claims they make about their products (e.g., carbon-neutral product).
- Industry collaboration has been piecemeal: consortia need to be established across sectors, especially for the hard-to-abate sectors, to set ambitious net zero goals, with the appropriate use of offsets identified.
- There is a distinct lack of transparent forward demand planning, leading to issues with supplier financing and limited data transparency.

Having considered how other markets developed, we believe that a clear demand signal from buyers could be one of the most

important drivers for the development of liquid markets and scaled-up supply. The demand signal should be sustained over time.

RECOMMENDED ACTION 14:

OFFER CONSISTENT INVESTOR GUIDANCE ON OFFSETTING

There is a need to align investors behind the use of voluntary carbon offsets in meeting climate targets. The Taskforce recommends that investors acknowledge that while internal emission reductions remain the priority for corporates, offsetting will play a limited but still vital role in achieving the Paris Agreement ambition. The recommended actions set out above in topics for action IV-V aim to address skepticism concerning the role of offsetting by clarifying their legitimacy in meeting

certain goals. Consequently, the Taskforce recommends that key investor alliances, such as the NZAOA, Climate Action 100+, and the IIGCC connect with the necessary reporting protocol bodies, eg, SBTi and others, to ensure consistent guidance on net zero and carbon offsetting. A desired aim of this work is to align investor alliances to produce clear and consistent guidance on the role and use of offsets, in conjunction with the reporting protocols and standard setters.

RECOMMENDED ACTION 15:

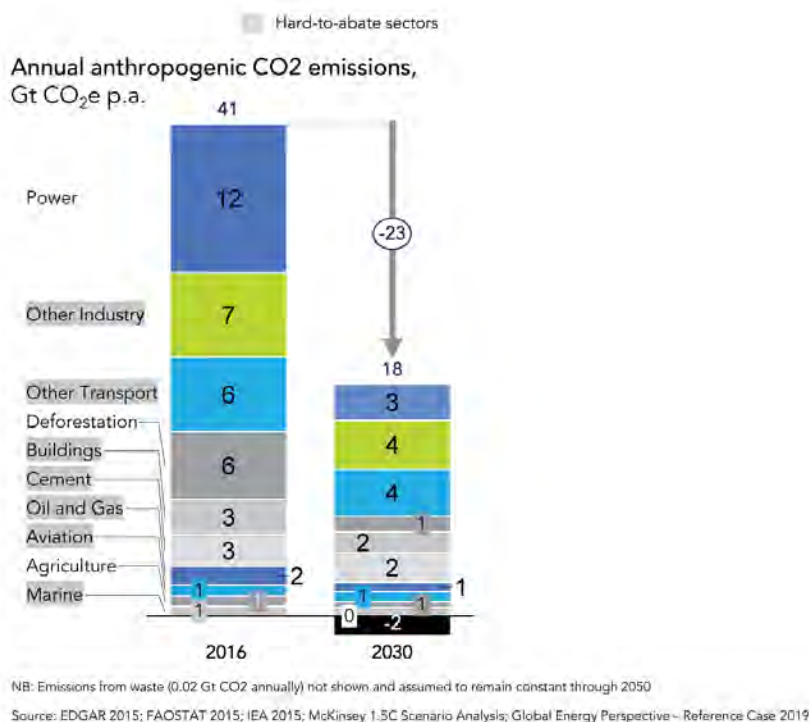
ENHANCE CONSUMER PRODUCT OFFERINGS, INCLUDING AT POINT-OF-SALE (POS)

There are a number of emerging consumer product offerings that present consumers with the ability to offset a purchase. Implementing consumer solutions across sectors could rapidly scale demand for voluntary credits, by improving the day-to-day ability for consumers to purchase voluntary credits

and make more informed choices. Having reviewed the current claims landscape, the Taskforce recommends implementing the following steps (in order of priority):

- 1. Requiring clear and consistent carbon claims.** Product-level carbon-neutrality claims need to be linked to accepted standards (e.g., PAS 2060 standard for carbon neutral products, PAS 2050 for calculating lifecycle emissions from a product, and the GHG Protocol Product Standard for reporting on such footprint). The Taskforce recommends further work by claims bodies to ensure consistency in the use of carbon credits, following the Taskforce principles on legitimacy in Recommended action 9. This will reinforce the credibility of the use of offsets by companies without confusing or misleading consumers, establish a level playing field for competition, and potentially encourage more companies to make carbon claim products.
- 2. Encouraging clear carbon labeling.** Carbon labeling could be a follow-on step to good claims. This could be developed in a similar way to Fairtrade International or traffic-light labeling on food. The Taskforce welcomes the sustainable markets initiative (SMI) that is analyzing how companies might use such an approach to influence purchasing behavior.
- 3. Expanding existing POS carbon offset offerings.** Working with industry associations, major retailers, and any other organization that may be interested in supporting the development of offset offerings will provide consumers with more options without forcing them to adopt new habits and, if furthered through work with e-commerce platforms, could help scale offset demand without creating a complex supply chain. In the future, as the market for offset products or credits establishes itself and consumer preferences change, the market should explore the possibility of offering POS offerings as the default choice for consumers (i.e., putting the onus on consumers to decide *not* to purchase offsets, as opposed to choosing to add them to their purchase).
- 4. Creating digital functionality to enable POS offset purchases.** Linking carbon credit registries to software that would allow micro-transactions of voluntary credits is a technical barrier to overcome. An example would be an app linked to credit card purchases that aggregates offsets into a balance for consumers. This will provide consumers with an easy way to offset but is likely to need significant investment and education to be a useful tool. Increasing consumers' awareness of their footprint can encourage a longer-term shift in consumer habits: this awareness can raise accountability as consumers reward those companies that have made progress on their decarbonization strategies.

EXHIBIT 33: DECARBONIZATION REQUIREMENTS BY SECTOR



RECOMMENDED ACTION 16:

INCREASE INDUSTRY COLLABORATION AND COMMITMENTS

Based on McKinsey analysis, the Taskforce has identified priority sectors where industry-wide collaboration (via consortia or sector coalitions) could support scaling of offset demand (Exhibit 33).

For three of the hard-to-abate sectors, cement, marine and aviation, industry-wide programs have been established to jointly commit to a number of net zero or emissions reductions goals. In other sectors, smaller company alliances, such as the Oil and Gas Climate Initiative (OGCI), have also formed in order to pursue sustainable goals, but the Taskforce thinks these efforts can go further.

Establishing industry-wide programs can significantly scale the demand for offsetting, as hard-to-abate sectors (illustrated by the gray shading in Exhibit 33) are likely to require offsetting not only during the transition to net zero, but also beyond it for any residual

emissions within their value chain. The Taskforce therefore welcomes these initiatives and strongly encourages similar sectors to do the same.

When considering the remaining hard-to-abate sectors, the Taskforce believes heavy industries such as oil and gas provide the next-best potential for bolstering emissions reduction activity and wider sustainability goals via greater industry collaboration. The hope is to further this ambition and create industry-wide programs with ambitious targets that meet the requirements set out in this Blueprint. The Taskforce also believes that, beyond “buyer coalitions” (coalitions of companies committing to net zero and/or buying credits), such collaborations can also play a role in establishing joint POS offerings which could further scale demand. The Taskforce believes it is necessary for private-sector participants to collaborate

ahead of regulation, i.e., on a voluntary basis, because the case for change in carbon markets is immediate, and delays risk serious consequences for the environment.

In addition to establishing industry-wide programs for select sectors, the Taskforce believes tailored sector wide standards on the

use of offsets, that build on the Taskforce's recommended criteria of CCPs, can improve industry best practices and aid the buyers' journey as they decarbonize. Such standards should help improve the legitimacy of offsetting, as well as the financial support necessary for product development.

RECOMMENDED ACTION 17:

CREATE MECHANISMS FOR DEMAND SIGNALING

Lastly, it is important to create solutions that can effectively signal demand from end buyers to enable better transparency and scaling of credit supply. This cannot be done prescriptively. Rather, the Taskforce encourages companies to send long-term demand signals (through long-term offtake agreements or reduction commitments, for example) and find ways to create more transparency on intermediate demand for the interim period before reaching net zero and the likely long-term demand (i.e.,

residual emissions) once this target date is reached. These demand signals could be aggregated through a buyer commitment registry, which could either be hosted by reporting protocols/standard setters (e.g., SBTi/CDP) or a data provider. Suppliers can facilitate this by being more transparent on their profit margins for projects to enhance the fairness of the markets. More refinement is needed on any additional mechanisms that would be required to make this a longer-term proposition.

6. PROCESS AND GOALS FOR PUBLIC CONSULTATION

We invite the public to provide input on the Consultation Document by submitting responses to the following set of consultation questions via the Consultation Survey. As indicated in the Executive Summary, we also invite parties interested in leading or driving a key action item for the blueprint to let us know via the consultation process. In January, we will refine and publish the final report, which will include a complete roadmap to

scaling the voluntary carbon market.

Please visit ScalingVCM.com to access a simple form to request the Consultation Survey. We will email you the link to the survey shortly after, where you can provide input on the blueprint and indicate interest in helping to scale the voluntary carbon market if relevant. The Consultation Period is open until December 10, 2020.

THE QUESTIONS FOR CONSULTATION INCLUDE THE FOLLOWING:

- Do you agree that the implementation of these six topics for action would significantly help to scale voluntary carbon markets?
- Is there anything not covered by these topics for action that we should consider?
- How could we be more ambitious / forward leaning?
- Do you agree with each of the recommended actions described in the blueprint?
- Should the “Core Carbon Principles” include a position on excluding projects of a certain vintage? If, yes should all projects beyond a certain vintage be excluded, or only certain methodologies or project types?
- Should any project types be excluded, or only be allowed with additional safeguards?
- For reference contracts, should we move towards more standardized or more customized contracts versus the Taskforce recommendation?
- To implement the transition to a more liquid marketplace, would you commit to purchasing credits via reference contracts?
- Of the principles for the credible use of offsets outlined, which ones would you be willing to adopt?
- Do you agree with the need for a governance body to ensure integrity of carbon credits? Do you have a suggestion for which body could be a good fit?
- Do you agree with the need for a governance body to ensure integrity of market participants and market functioning? Do you have a suggestion for which body could be a good fit?
- Are there any parallel initiatives you are aware of that the report does not mention? Please describe the initiative.
- Is there anything else in the report you would like to comment on (e.g. second- and third-order effects that we may not have anticipated in market scaling)?
- Would you endorse the blueprint report?

More granular questions related to each of the topics here are included in the Consultation Survey, as well as open text boxes intended for general comments and feedback, if you choose to provide input.

ROADMAP TO IMPLEMENTATION (TO BE INCLUDED IN FINAL REPORT)

Looking ahead, the Taskforce has started to identify a series of key action items that would need to take place to scale the VCM. We will develop a detailed roadmap for the January publication.

8. ACKNOWLEDGMENTS

TASKFORCE MEMBERS

- Abyd Karmali, Bank of America Merrill Lynch
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- Huw Van Steenis, UBS
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- Jeff Huang, AEX
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- Mikkel Larsen, DBS
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- Peter Zaman, Reed Smith
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9. APPENDIX ACRONYMS

ACR	American Carbon Registry
AML	Anti-money laundering
API	Application programming interface
ART	Architecture for REDD+ Transactions
BECCS	Bio-energy with carbon capture and storage
CAGR	Compound annual growth rate
CAR	Climate Action Reserve
CCP	Core Carbon Principles
CCS	Carbon capture and storage
CCUS	Carbon capture, utilization and storage
CCX	Chicago Carbon Exchange
CDM	Clean Development Mechanism
CDP	Carbon Disclosure Project
CDR	Carbon dioxide removal
CERs	Certified Emissions Reductions
CIFF	Children’s Investment Fund Foundation
COP	Conference of the Parties
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
DAC	Direct air capture
DACCS	Direct air capture with carbon storage
DLT	Distributed ledger technology
EDF	Environmental Defense Fund
ESG	Environment, social, governance
EU-ETS	EU emissions trading scheme
GEO	Global Emissions Offset
GHG	Greenhouse gas
GS	Gold Standard
ICAO	International Civil Aviation Organization
ICROA	International Carbon Reduction and Offset Alliance
IETA	International Emissions Trading Association
IIGCC	Institutional Investors Group on Climate Change

IIF	Institute of International Finance
IPCC	Intergovernmental Panel on Climate Change
ISDA	International Swaps and Derivatives Association
ISIN	International Securities Identification Number
KYC	Know-your-customer
LDC	Least-developed countries
MRV	Monitoring, reporting, and verification
NBS	Nature-based solution
NCS	Natural climate solution
NDCs	Nationally Determined Contributions
NGFS	The Network of Central Banks and Supervisors for Greening the Financial System
NGOs	Non-governmental organizations
NZAOA	Net Zero Asset Owner Alliance
OTC	Over-the-counter
PAS	Publicly Available Specification
PCAF	Partnership for Carbon Accounting
POS	Point of sale
PRI	Principles for Responsible Investment
R2Z	Race to Zero campaign
REDD	Reducing emissions from deforestation and forest degradation
REDD+	Reducing emissions from deforestation and forest degradation, conservation of existing forest carbon stocks, sustainable forest management and enhancement of forest carbon stocks
SBTi	Science Based Targets Initiative
SDG	Sustainable Development Goals
SMEs	Subject matter experts
SMI	Sustainable Markets Initiative
TCFD	Task Force on Climate-related Financial Disclosures
TSVCM	Taskforce on Scaling Voluntary Carbon Markets
UNFCCC	United Nations Framework Convention on Climate Change
VCM	Voluntary carbon market
VCS	Verified Carbon Standard

VVB	Verification and validation body
WEF	World Economic Forum
WRI	World Resources Institute
WWF	World Wildlife Fund

GLOSSARY OF TERMINOLOGY

TERMINOLOGY	DEFINITION
Additionality	The principle that only those projects that would not have happened anyway should be counted for carbon credits
Afforestation	The process of establishing and growing forests on bare or cultivated land, which has not been forested in recent history
Article 6	Article 6 of the Paris agreement defines an accounting framework for international cooperation. It establishes rules on which countries get to claim reductions in emissions from carbon credits retired
Baseline scenario	A scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases (GHG) that would occur in the absence of the proposed project activity
Carbon credit	Verifiable quantity of climate mitigation for which the buyer can claim an offset as a result of financing either reduction or avoidance of carbon emissions or the removal or sequestration of CO ₂ in the atmosphere
Carbon negative	Target where the company goes beyond achieving net-zero emissions to create an environmental benefit by removing additional emissions (also known as climate positive)
Carbon neutral	Target for the company to compensate all emissions produced in a set period, usually evaluated on an annual basis
Certified Emissions Reductions (CERs)	Tradable units issued by the UN through the Clean Development Mechanism for emission reduction projects in developing countries; each CER represents one metric ton of carbon emissions reduction; CERs can be used by countries to meet their emissions goals under the Kyoto Protocol
Clearinghouse	Financial institution standing between two firms to facilitate the exchange of payments, securities or derivatives transactions; Its aim is to reduce the risk of one participant of a trade not honoring their settlement obligations
Clean Development Mechanism (CDM)	A provision of the Kyoto Protocol that allows developed countries (Annex 1) to offset their emissions by funding emissions-reduction projects in developing countries (non-Annex 1)
Double counting	Double counting occurs when a carbon emissions reduction is counted toward multiple offsetting goals or targets (voluntary or regulated); an example would be if an energy efficiency project sold voluntarily credits to business owners, and the same project was counted toward meeting a national emissions reduction target

TERMINOLOGY	DEFINITION
Ex-ante	In terms of carbon offsets, ex-ante refers to reductions that are planned or forecasted but have not yet been achieved; the exact quantities of the reductions are therefore uncertain
Ex-post	As opposed to ex-ante offsets, ex-post reductions have already occurred and their quantities are certain
Futures trade	A trade wherein the participants agree on a sale at a predetermined price with delivery happening in a specified time in the future
Issuances	Total volume of offsets generated that are issued following project verification by a standard body (e.g., VCS); each offset receives a unique serial number and is listed in a registry to avoid double-counting
Leakage	Leakage is defined as the net change of anthropogenic emissions by sources of greenhouse gases (GHG) which occurs outside the project boundary, and which is measurable and attributable to the project activity
Net zero	Target to become carbon neutral by a certain date in the future (not mutually exclusive with SBTi)
Offtake agreement	An arrangement between a producer and a buyer to purchase or sell portions of the producer's upcoming goods
Permanence	The principle that carbon offsets must permanently remove the carbon dioxide or equivalent emissions from the atmosphere or oceans; for forest carbon, a reversal of carbon storage can happen from human activity (e.g., logging) or unforeseen natural events (e.g., forest fires, pest outbreaks)
Reduced Emissions from Deforestation and Forest Degradation (REDD+)	REDD+ projects are project types in areas where existing forests are at risk of land-use change or reduced carbon storage; the projects focus on conserving these forests before they are degraded or deforested, resulting in the avoidance of a business-as-usual scenario that would have produced higher emissions; emissions reductions occur primarily through avoided emissions; the + indicates the enhancement of forest carbon stocks, and under jurisdictional REDD+, there is a requirement to reduce emissions below the baseline
Reforestation	This process increases the capacity of the land to sequester carbon by replanting forest biomass in areas where forests have been previously harvested
Retirements	Total volume of offsets for which the impact has been claimed by the end buyer; once an offset has been retired it can no longer be traded

TERMINOLOGY	DEFINITION
Science-Based Target	Target consistent with the level of decarbonization required to keep global temperature increase within 1.5 to 2°C compared to preindustrial levels; offsets are not allowed for counting toward SBTi targets; however, SBTi recognizes the use of offsets for net-zero claims
Sequestration	The process of removing CO ₂ from the atmosphere either by natural or artificial means
Spot trade	A trade in which commodities are traded for immediate delivery; Settlement usually happens within two working days
Taskforce on Climate-related Financial Disclosure (TCFD)	Taskforce established by Mark Carney in 2015 to increase and improve the relevance of climate-related information disclosed voluntarily by corporations, to enable financial market players and the authorities to better understand and manage the risks they represent
Transaction value	Value of transacted volume of offsets traded between project developers, intermediaries, and end buyers; offsets can be traded indefinitely until they are retired
Vintage	The vintage of a carbon credit describes the year in which emissions reduction takes place; A project can generate credits of multiple vintages

CORE CARBON PRINCIPLE CRITERIA & DEFINITIONS

CRITERIA		DESCRIPTION
Minimum quality standards for the offset product	Clear and Transparent Accounting Standards and	<p>The GHG crediting program must publish accounting standards and methodologies that ensure that emission reductions and/or removals are:</p> <ul style="list-style-type: none"> ● Real: Measured, monitored and verified ex-post to have actually occurred ● Additional: Beyond GHG reductions or removals that would otherwise occur. Projects demonstrate a conservative business-as-usual scenario and must be surplus to regulatory requirements. Jurisdictional programs demonstrate additional reductions below the historical reference level. ● Based on realistic and credible baselines: Credited only beyond performance against a defensible, conservative baseline estimate of emissions that assumes the BAU trajectory in the absence of the activity. Baselines should be recalculated on a regular, conservative timeframe. ● Monitored, reported, and verified: Calculated in a conservative and transparent manner, based on accurate measurements and quantification methods. Must be verified by an accredited, third-party entity. MRV should be conducted at specified intervals. ● Permanent : Only issued for GHG reductions or removals that are permanent or, if they have a reversal risk, must have requirements for a multi-decadal term and a comprehensive risk mitigation and compensation mechanism in place, with a means to replace any units lost. ● Free of leakage : Assessed, mitigated, and calculated considering any potential increase in emissions outside of the boundary, including taking appropriate deductions. ● Only counted once : Not double-issued or sold.
	Do No Net Harm	The GHG crediting program must have requirements to ensure that all projects and programs comprehensively address and mitigate all potential environmental and social risks.
Minimum quality standards for the	Program Governance	<p>The GHG crediting program must be managed by a government or non-profit organization that sets out in a transparent manner the governance of the program, including:</p> <ul style="list-style-type: none"> ● Roles and responsibilities of the organization, management and staff that are responsible for the program, as well as the board that oversees the organization ● Enforcement of rules to guard against conflict of interest by the board, management, and staff ● Published grievance and redress mechanisms
	Program	<p>The GHG crediting program must have in place provisions for public stakeholder consultation on:</p> <ul style="list-style-type: none"> ● Development of program rules and procedures ● Accounting methodologies ● Projects and governmental programs (in the case of jurisdictional crediting) <p>Stakeholder comments should be transparently addressed.</p>

CORE CARBON PRINCIPLE CRITERIA & DEFINITIONS CONTINUED

Minimum quality standards for the	Clear & Transparent Requirements for Independent Third-Party Verification	The GHG crediting program must publish requirements for independent third-party verification, including provisions to assess and avoid conflicts of interest, and for accreditation and oversight of validation and verification bodies.
	Legal Underpinning	<p>The GHG crediting program has requirements to ensure that there is a robust legal framework underpinning the creation and ownership of all units issued, including:</p> <ul style="list-style-type: none"> • Requirements that project and program developers submit legal representations to accept legal responsibility for the documentation being submitted • A clear definition of the legal nature of the units issued, underpinned by appropriate legal opinions • Registry Terms of Use that set out further requirements in respect of interactions with the program’s registry
	Publicly Accessible Registry	<p>The GHG crediting program must have a publicly available registry that tracks the units issued and with the basic functionality to:</p> <ul style="list-style-type: none"> • Provide access to all underlying project/program information, including program documentation, verification statements, and legal representations • Transparently issue, retire, and cancel units • Individually identify units through unique serial numbers that contain sufficient information to avoid double counting (type, geography, vintage) • Identify unit status (issued, retired, canceled) • Track chain of custody, from creation to retirement
	Registry Operation	<p>The GHG crediting program must have rules and procedures in place to ensure that:</p> <ul style="list-style-type: none"> • All account holders: <ul style="list-style-type: none"> — Pass “know your customer” checks — Agree to the legal requirements regarding the use of the registry, as set out in Terms of Use • The registry: <ul style="list-style-type: none"> — Guards against Registry Service Provider conflicts of interest — Has robust registry security and provisions for regular security audits
Optional criteria that go beyond offset quality	Third-party Recognition	The GHG crediting program may be approved or endorsed by third parties, such as a compliance offset program (e.g., CORSIA) or a third-party evaluation against strict criteria (e.g., ICROA Code of Best Practice).
	Contributions to the UN Sustainable Development Goals	The GHG crediting program may provide mechanisms to enable registered projects and programs to demonstrate they are providing additional benefits beyond GHG emission reductions or removals, including contributing to the Sustainable Development Goals (SDGs).
	Linkages	The GHG crediting program may offer linkages with exchanges or trading platforms.

CLEAN DEVELOPMENT MECHANISM / CERS ANALYSIS

The CDM allows emission-reduction projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one metric ton of CO₂. These CERs can be traded and sold, and used by industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol.

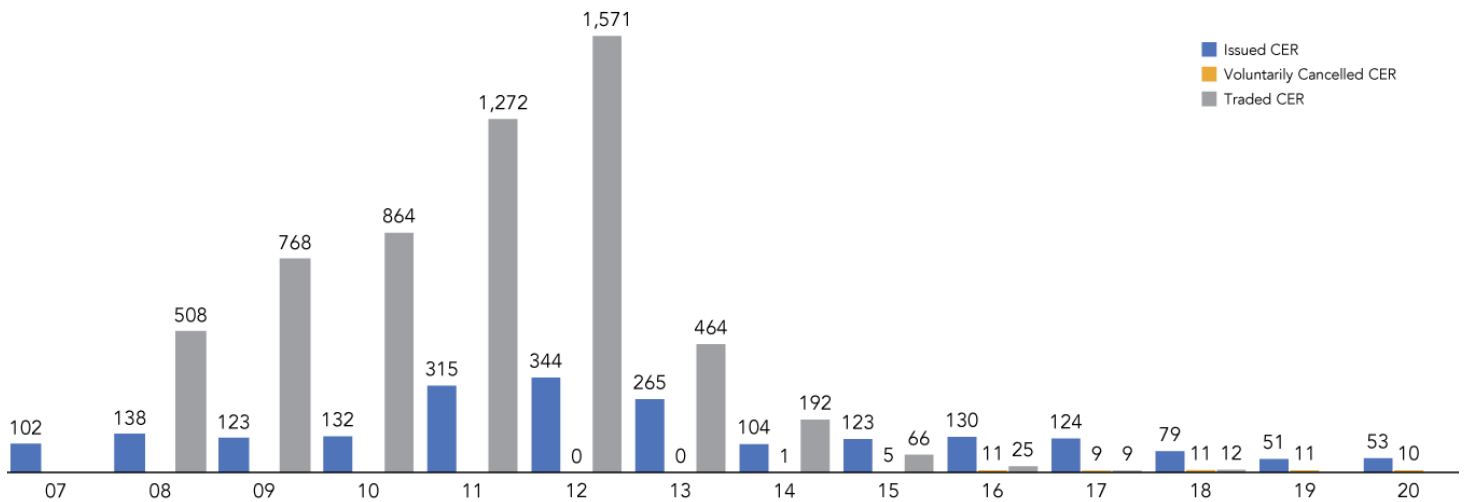
There are two types of CER, issued depending on the type of project. Long-term certified emission reduction (ICER) credits, and temporary certified emission reduction (tCER) credits. tCER expire at the end of the Kyoto protocol commitment period after the period they were issued in. The tCERs issued in the first commitment period are set to

expire at the end of 2020. ICER expire at the end of their crediting period of the respective project, which depends heavily on project type.

In addition to expiring, CERs can also be voluntarily cancelled prior to their expiration. This allows for a transparent way to use them as an offset mechanism, as cancelled certificates can no longer be used for regulatory purposes. Although use as offset via voluntary cancellation was not the original intended purpose, the roughly 10,000 CERs retired in 2019 represent 10 MtCO₂e. This is a significant amount, equal to 14% of the volume of retirements in the voluntary carbon market (Exhibit 34).

EXHIBIT 34: CLEAN DEVELOPMENT MECHANISM CREDITS BODIES

Annual volume of CERs issued/cancelled, MtCO₂e



Source: <https://cdm.unfccc.int/Registry/index.html>

AVAILABLE ACADEMIC LITERATURE AND ANALYSES

We have done a literature review across voluntary carbon markets supply, demand, and market architecture. For each, when relevant, we've gathered research on current value and trends, vision of future markets, interventions, and governance.

TOPIC	PUBLICATION
Supply: Current value and trends	IPBES report (2019)
	TEEB report (2010)
	WWF Global Futures Report (2020)
	Changes in the global value of ecosystem services (2014)
	The Climate and Biodiversity Nexus (forthcoming)
	UN "Meeting the 1.5°C Ambition"
	N4C Mapper (forthcoming update Spring 2020)
	ENCORE database by UNEP
Supply: Interventions	Natural climate solutions, PNAS (2017)
	Beyond the Source (2017)
	The Wealth of Nature (2017)
	CPI Global Landscape of Climate Finance (2019)
	Credit Suisse "Conservation Finance from Niche to Mainstream"
	WWF (2020) What makes a high quality carbon credit
	Campaign for Nature, Anthony Waldron (2017)
	IUCN Global Standard for nature-based solutions
	Goldstein et al 2020
Supply: Governance	NCS Alliance (ongoing)
	GCF's Results Management Framework (RMF)
Demand: Current value and trends	Sector specific action
	Natural Capital partners
	IPCC 2018
	Green Climate Fund
	Country specific small case studies
	Mission Possible
	IT.org
	IETA Markets for Natural Climate Solutions
	SystemIQ
	Conservation International
	CORSIA

TOPIC	PUBLICATION
Demand: Interventions	World Bank's Climate Change Fund
Demand: Governance	NCS Alliance
	Oxford Offsetting Principles
Market infrastructure: Current value and trends	Goldman Sachs (2020)
	Ecosystem Marketplace (2019)
	Michaelowa et al. (2019)
	Carbon market watch (2019)
	NCS Alliance Knowledge Bank (under development spring 2021)
Market infrastructure: Vision of future markets	NCS Alliance
	New Vision for Agriculture
	Architecture for REDD+ Transactions (ART)
	Verra's Jurisdictional and Nested REDD+ framework
	Natural Capital Market Design, Teytelboym, 2019
	World Bank (through the Forest Carbon Partnership Facility- FCPF) standard and registry (under development)
	Gold standard/ German Ministry for the Environment (2019)
	Natural Climate Solutions Report, WBCSD, 2019
	IETA/EDF Carbon Pricing: The Paris Agreements Key Ingredient
	Oxford Offsetting Principles

PARALLEL INITIATIVES

ORGANIZATION	SOLUTIONS DEVELOPED	NAMED PARTNERS
ICC Carbon Council	DLT-based AirCarbon exchange to provide access to best-in-class carbon projects worldwide	Perlin, AirCarbon Exchange
Air Carbon Exchange		ICC
NCS Alliance	Recommendations on Natural Climate Solutions to be released in early 2021 focusing on supply integrity, demand integrity and national & sub-national climate strategies	WEF, WBCSD

ORGANIZATION	SOLUTIONS DEVELOPED	NAMED PARTNERS
Sustainable markets initiative and council. Lead by Prince Charles	Facilitation of industry-wide consortia building through roundtables and council, no concrete consortia built yet	The council has members from: Pact, Meridiam, DNB, Rockefeller Capital, JP Morgan Chase, Roche, Heathrow Airport Established with the support of the World Economic Forum
South Pole	Individual solutions for their buyers, i.e., integrative carbon portfolio management, project selection, on-the-ground support, customized project design	Various small-scale credit producers
Gold Standard	Solutions on target setting, claims, and financing through guidance suite	VERRA, ICROA, WWF, CDP, WRI, The Nature Conservancy, Carbon Market Watch, World Bank
Environmental Defense Fund	Solutions on carbon pricing in sectors not yet covered by the EU ETS trading program	IETA
Verra	Options for avoiding double counting, reporting on sustainable development contributions, forest conservation at scale (by governments), others (forthcoming)	Participants in Verra-convened working groups; project developers across geographies and sectors
Oxford	Set out the Principles for Net Zero–Aligned Carbon Offsetting	N/A
International Emissions Trading Association (IETA)	Reports on carbon pricing and (country) policy developments Training suite on emission trading tools for businesses	N/A
International Carbon Reduction and Offset Alliance	Code of conduct for quality assurance and supplier audit Research papers on offset project development within supply chain	18 members, among which are ACT, Arbor Day Foundation, BP Target Neutral, Climatecare, Vertis
CORSA	Industry consortium adhering to common code of conduct Central registry for information, data, and implementation	ICAO

ORGANIZATION	SOLUTIONS DEVELOPED	NAMED PARTNERS
Ecosystem Market Trends	Information platform on carbon market developments Attempt to demonstrate innovative public-private financing solutions	N/A
Arbor Day Foundation	Facilitation and incentivization of the private sector and consumers for afforestation	N/A
InterWork Alliance	No specific solution focused on the carbon market so far DLT token taxonomy framework DLT interwork framework for contracts	Exchanges, banks, tech companies, other consortiums
German Ministry of the Environment	Support to promote and create supply in collaboration with Gold Standard, i.e., guidance suite, and training tools	Gold Standard, CDM Watch, UN Environment Programme, KfW development bank, etc.
Architecture for REDD+ Transactions (ART)	Standard and process guidance for registration, verification, and issuance of REDD+ credits ART registry associated	Rockefeller Foundation, Norwegian International Climate and Forest Initiative, Environmental Defense Fund, Climate and Land Use Alliance
Livelihoods Funds	Livelihoods carbon fund to finance large-scale implementation projects in return of carbon credits	Investors (e.g., Danone, SAP, Michelin)
The World Bank	DLT-based meta-registry system connecting country, regional and institutional databases to ensure tracking across different systems	Broad group of member governments and NGOs
Transform to Net Zero	TBD	Founding members incl. Microsoft, Maersk, Danone, Mercedes-Benz, Nike, Natura &Co, Starbucks, Unilever, Wipro, EDF
Avoiding Double Counting Working Group	Guidelines toward avoidance of double counting	Meridian Institute, Stockholm Environment Institute, EDF, ACR, Carbon Market Watch, CAR, IETA, Verra, Gold Standard, WWF

ORGANIZATION	SOLUTIONS DEVELOPED	NAMED PARTNERS
Dubai Carbon Centre of Excellence (DCCE)	Regional data-centric repository of economically viable sustainability business practices	Dubai Supreme Council of Energy (DSCE), United Nations Development Programme (UNDP), Dubai Electricity and Water Authority (DEWA)
Open Footprint Forum	No solution developed to date, although solutions for measuring and managing environmental footprint are planned	The Open Group members, plus 15 organizations from multiple industries (Accenture, BP, Chevron, Cognite, DNV GL, Emisoft, Equinor, Halliburton, Infosys, Intel, Microsoft, Schlumberger, Shell, University of Oslo, Wipro)