

What the Paris Agreement means for carbon pricing and natural climate solutions:

A business guide





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About this document

This report has been written by Zubair Zakir, Anthropocene.io and Christopher Webb, TNC.

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Front image: Celedonia Alvarado from the Sonora Institute plants cottonwood and willow seedlings at the Laguna Grande restoration site along the Colorado River in Mexico. Photo credit: © Nick Hall for The Nature Conservancy

Inner Image: As trees became more scarce in Haiti, villagers began crossing the border and collecting wood from the protected Sabana Clara Forest. Photo credit: © Bridget Besaw



Summary

We live in a time of both crisis and opportunity as the urgency and impetus to deal with climate change is upon us. The Paris Agreement allows countries to deliver on their NDCs through any number and type of domestic interventions—including implementing public policies and attracting private investments in low-carbon solutions. This paper looks at the potential of natural climate solutions—the climate potential derived from our farms, forests and ocean coastlines—in the context of carbon finance, corporate investment in climate solutions, and land sector offsets. Can natural climate solutions make a much greater contribution to corporate and governmental efforts to address global warming, and what is the role of carbon pricing initiatives in doing so?

Perhaps unsurprisingly, this paper finds that carbon pricing, which assigns a cost to the right to emit carbon and encourages actors to respond to the risks of climate change, can be a powerful lever to greatly increase ambition on tackling climate change. It also discusses how carbon ‘offsetting’, a form of carbon pricing, can be used to fund essential emissions reduction activities that would not otherwise occur—including natural climate solutions.

Over the course of the last 10 years, companies in sectors ranging from insurance, energy and banking through to consumer retail, manufacturing and food and beverage, have supported natural climate solution projects in sixty-five countries, through the purchase of carbon offsets for voluntary offsetting claims. Policymakers are also increasingly turning to natural climate solutions within carbon pricing regulation as a scalable and low-cost means of enabling them to go further and faster in tackling climate change.

The Paris Agreement opens-up enormous opportunities for offset projects and carbon pricing initiatives tailored to national requirements, but it also requires market participants to navigate potentially different systems across countries. Given the rapid and deep decarbonisation needed across economies to deliver net-zero by 2050, carbon offsets while not a long-term solution to global warming, can play an important transitional role in the near term to deepen cuts to greenhouse gases. The use of such offsets must therefore be part of a decarbonisation plan, and not be an avoidance strategy.

This paper suggests three key recommendations for leading businesses who wish to ensure natural climate solutions play a full role in their decarbonisation strategy, namely:

1. Adopt a robust and comprehensive climate strategy
2. Support strong public policies
3. Invest to learn and lead

This next decade may be the most important this century to slow the runaway effects of climate change. We need it all: emission cuts, energy transition and natural climate solutions at scale to give us every opportunity and chance to succeed.

Glossary

NCS—Natural climate solutions

NDCs—Nationally Determined Contributions

UNFCCC—United Nations Framework Convention on Climate Change

BECCS—Bioenergy with Carbon Capture and Storage

Introduction

“Rapid, far-reaching and unprecedented changes in all aspects of society.” The 2018 Special Report from the Intergovernmental Panel on Climate Change (IPCC) was emphatically clear that we have a limited window, perhaps 10-20 years, to avoid the worst impacts of climate change, but only if we start taking much stronger steps immediately.

As shocking as these findings have been for many, as surprising is that the world already has at its disposal some necessary, affordable ingredients to respond to the climate change threat.

This includes the Paris Agreement, which was negotiated by Parties (countries) to the United Nations Framework Convention on Climate Change (UNFCCC) as the successor to the Kyoto Protocol (which runs to 2020). The Paris Agreement was finalised in late 2015 and has since been ratified by 183 countries¹, entering into force as a triumph of international diplomacy and a clear sign of governments’ recognising the need for urgent action on climate change.

Robust multilateral support for the Paris Agreement was due, in part, to countries abandoning some of the Kyoto Protocol’s approaches to governance, while increasing accountability. Unlike Kyoto, which only included emission reduction targets for rich countries, the Paris Agreement encourages all countries to make contributions to climate change mitigation. And, unlike Kyoto, where rich countries mutually agreed to their respective share of contributions, under the Paris Agreement countries independently decide on the extent (and ambition) of their contributions, as contained in their Nationally Determined Contribution (NDC) submissions.

Countries will deliver on these NDCs through any number and type of domestic interventions—including implementing public policies and attracting private investments in low-carbon solutions.

The Paris Agreement’s bottom-up approach has brought a significantly larger number of countries to the table, including developing countries that proposed targets for emissions reductions for the first time, and outlined (to varying degrees of detail) the policies and measures they would introduce to meet them. On the flip side, the departure from the Kyoto Protocol’s centralised, ‘single-rule-set’ approach to international emissions trading, blurs what was once a clear and common framework for carbon markets and market-based finance.

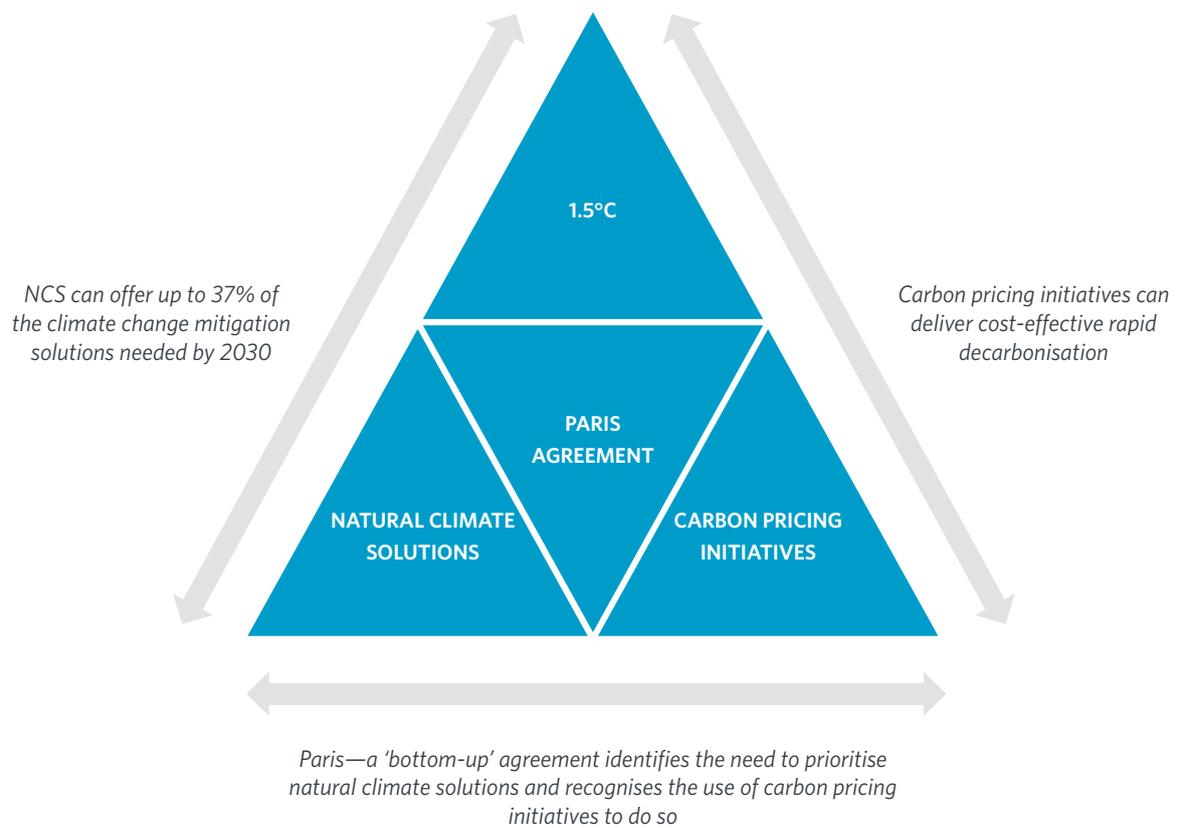
In this context, the landscape for carbon finance, corporate investment in climate solutions, and land sector offsets—the focus of this paper—will also necessarily change. It will be vitally important for companies wishing to navigate the low-carbon transition, and maximise the related business opportunities that will emerge, to properly understand this landscape and engage with critical stakeholders.

This paper sets out the potential for ‘natural climate solutions’ to make a much greater contribution to corporate and governmental efforts to address global warming, and the role of carbon pricing initiatives in doing so. In the context of the changes and uncertainties created by the Paris Climate Change Agreement, it also suggests three key steps business can take to maximise these opportunities as part of robust corporate ambition and action on tackling climate change.

¹ <https://unfccc.int/process/the-paris-agreement/status-of-ratification>

Figure 1.

The Paris Agreement, carbon pricing and natural climate solutions





The 17,351-acre Powderhorn Ranch in Calhoun County, one of the few remaining large tracts of intact native coastal prairie and wetlands on the Texas coast, will become a state park and wildlife management in the wake of a cooperative effort between the Conservancy, The Conservation Fund and the Texas Parks and Wildlife Foundation. Photo credit: © Jerod Foster for The Nature Conservancy

Natural climate solutions—a vital tool

What are natural climate solutions?

Natural climate solutions are activities that enhance or protect natural systems such as **forests, grasslands and wetlands**, thereby capturing and reducing carbon emissions. Examples include:

1. Better farming practices which have the potential to **reduce carbon emissions** associated with feeding the global population, while increasing food security.
2. Protecting forests and grasslands from conversion to other uses, which can **avoid the release of stored carbon**, while increased tree planting has the potential to **remove carbon** present in the atmosphere.
3. Protecting or restoring coastal wetlands, which can both avoid carbon emissions and help **protect coastal areas from flooding**.

These solutions comprise a variety of well-established and emerging practices to either protect, manage or restore our forests, grasslands, agricultural lands, and coastal wetlands (see figure 2).

Their importance was further underlined by the recent IPCC 1.5°C report which sees no possibility of keeping global temperatures below 1.5°C without the widespread adoption of sustainable land management.

Fundamental to natural climate solutions are the considerable environmental and social benefits they offer beyond climate change mitigation. The world's forests and agriculture support the livelihoods of 2.6 billion people and represent up to 60% of the GDP in many developing countries². Indeed, nature provides critical ecosystem services which humanity relies upon, from food and water supply to regulation of the global carbon cycle and climate. These are **estimated to be worth \$125 trillion annually**³. Natural climate solutions can also offer considerable commercial opportunity, with a recent report estimating that sustainable food and land-use business models could be worth up to \$2.3 trillion and create over 70 million jobs by 2030⁴.

Natural climate solutions offer a critical near-term opportunity

A recent peer-reviewed study led by scientists from The Nature Conservancy has shown that natural climate solutions can deliver up to 37% of the carbon dioxide mitigation needed by 2030 to deliver the climate change targets in the Paris climate agreement (approximately 11 billion gigatonnes (Gt) of carbon dioxide equivalent (CO₂e) per year by 2030—see figure 3).⁵ Furthermore, while this is based on a carbon price required to deliver the Paris Agreement in full (up to \$100/t CO₂e by 2030⁶), a high proportion is available at relatively low cost; around 3Gt CO₂e can be delivered for less than \$10/t CO₂e.

² <https://climatepolicyinitiative.org/wp-content/uploads/2015/07/Three-Tools-to-Unlock-Finance-for-Land-Use-Mitigation-and-Adaptation-Full-Report.pdf>

³ https://www.wwf.org.uk/sites/default/files/2018-10/wwfintl_livingplanet_full.pdf

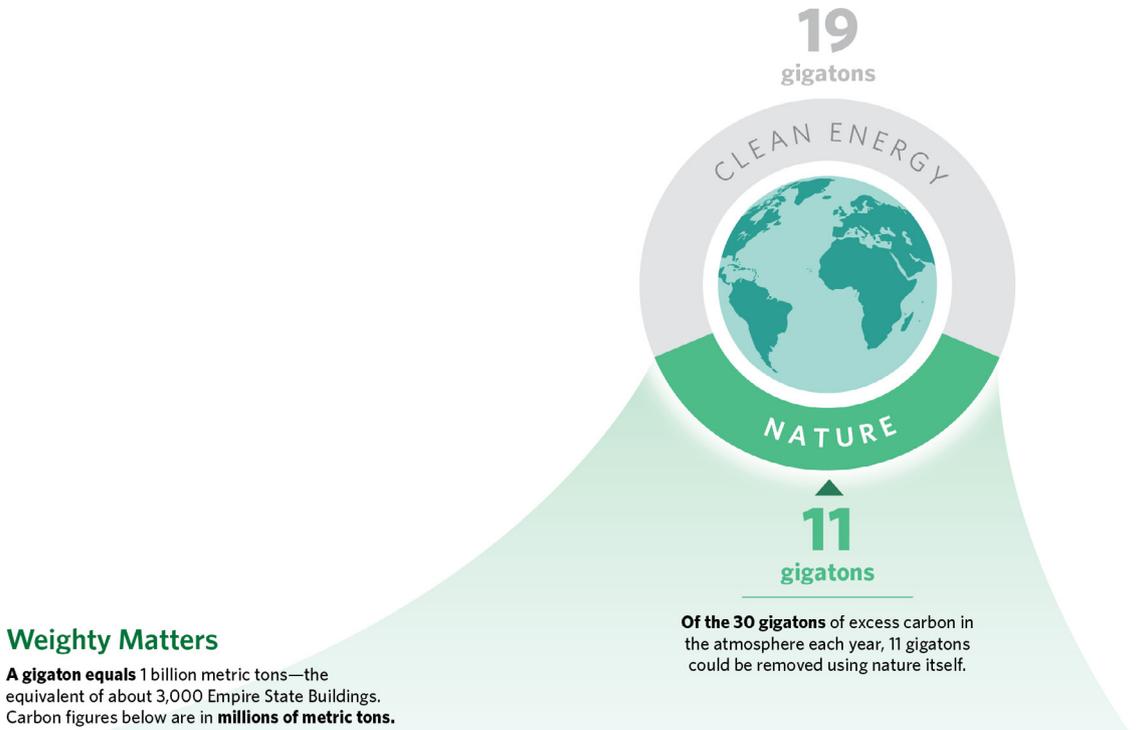
⁴ <https://newclimateeconomy.report/2018/food-and-land-use/>

⁵ Other institutions involved are the Ministry of Agriculture, Government of Brazil, Commonwealth Scientific and Industrial Research Organization (CSIRO), World Resources Institute, Woods Hole Research Center, Cary Institute of Ecosystem Studies, TerraCarbon LLC, Resources for the Future, Wetlands International, Ohio State University, Cornell University, Colorado State University, University of Minnesota, University of Maryland, University of Florida, James Madison University, CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), the Gund Institute for the Environment, University of Vermont, University of Aberdeen, The Ohio State University, Wetlands International. The study was generously funded by the Doris Duke Charitable Foundation.

⁶ <https://www.carbonpricingleadership.org/report-of-the-highlevel-commission-on-carbon-prices>

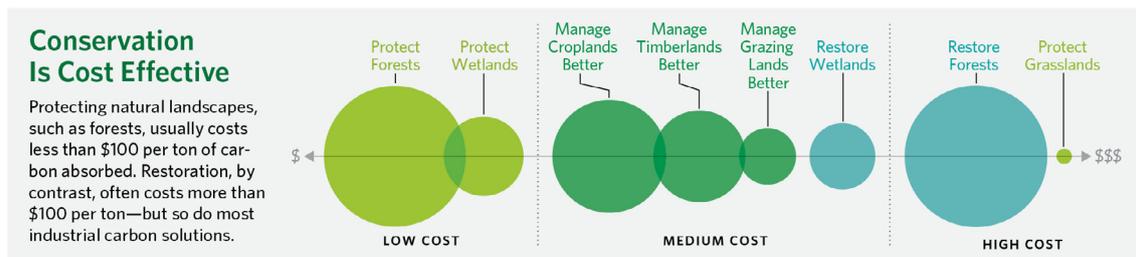
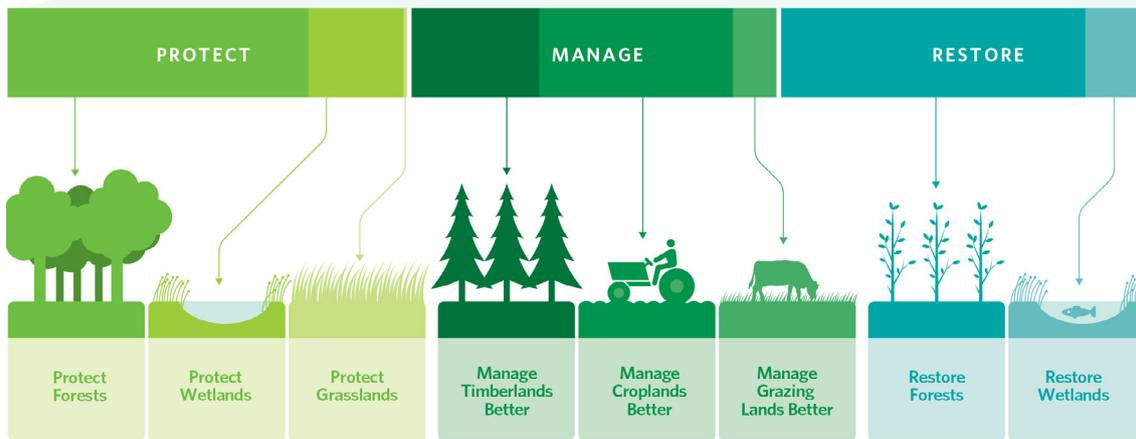
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Figure 2: Nature provides a broad range of climate solutions



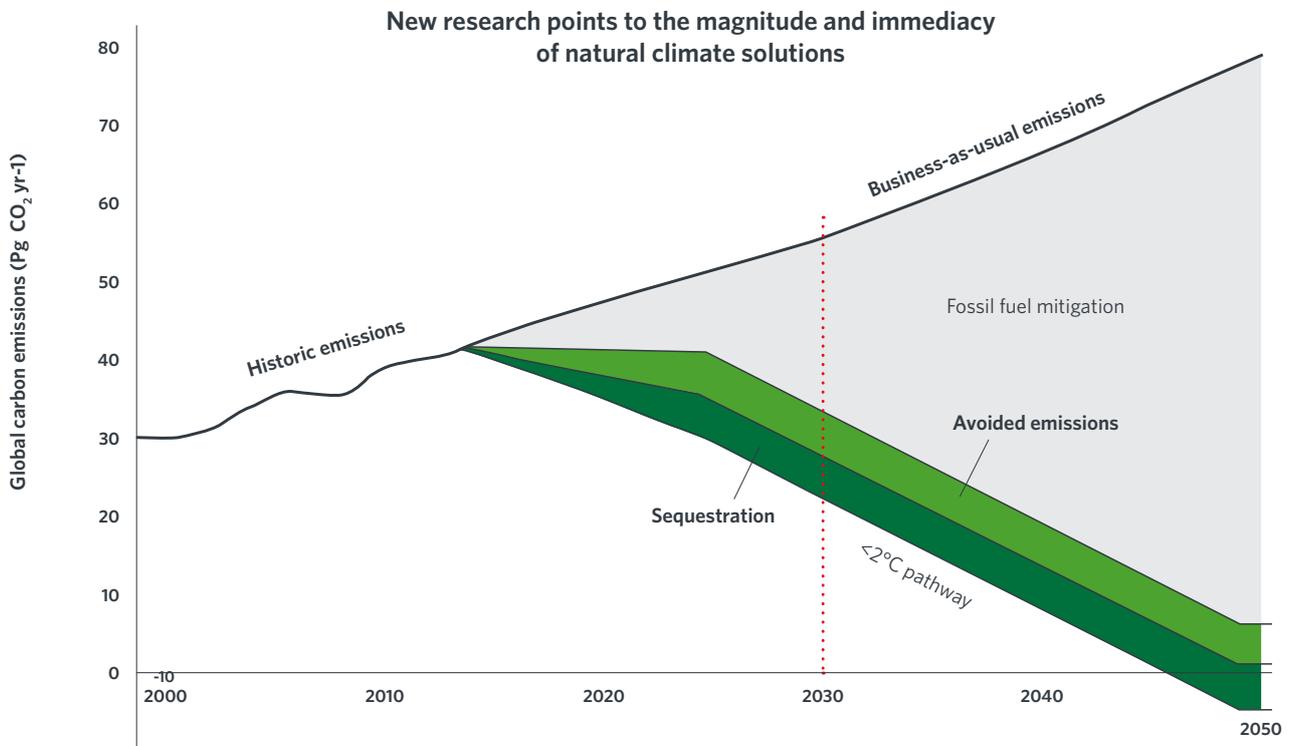
Weighty Matters

A gigaton equals 1 billion metric tons—the equivalent of about 3,000 Empire State Buildings. Carbon figures below are in millions of metric tons.



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Figure 3: Natural climate solutions - one third of the answer



Source: Griscom et al., PNAS (2017)

However, a crucial unanswered question is, how will natural climate solutions be financially incentivised on the scale required?

While comprehensive data on all sources of mitigation finance into the land-use sector remain limited, a 2015 study found that they receive less than 3%⁷ of public climate funding from tracked sources.

Without the right combination of investment and policies which create an enabling environment for these solutions, they risk becoming climate change's forgotten solution. Placing a value therefore on the carbon emissions these solutions can avoid and sequester, presents one powerful tool to incentivise their uptake.

⁷ <https://climatepolicyinitiative.org/wp-content/uploads/2015/11/Global-Landscape-of-Climate-Finance-2015.pdf>



The Conservancy purchased the entire watershed to protect old-growth forest, salmon, amphibians, birds and more. Working with partners Willapa National Wildlife Refuge, TNC implements common forest management goals and shares strategies and results. Photo credit: © Chris Crisman

Carbon pricing: gaining further momentum around the world

Given the scale of the climate challenge, it has long been recognised that alongside public sources of funding, large-scale private investment is required to deliver the low carbon solutions needed. Furthermore, delaying action not only increases the cost of abatement in future years but also the speed of decarbonisation required, risking economic disruption⁸.

Businesses responding to stakeholder pressure to act ahead of (and beyond) what is required of them by government, are finding new ways to do so. Recent examples include, the growing momentum of companies setting 'science based climate-action targets',—now at almost 500 companies signed-up⁹, and the proactive disclosure of climate risk by companies, being driven by the work of the 'Task Force on Climate-related Financial Disclosures' (TCFD).

As of the time of this report, TCFD supporters numbered over 500 organizations, include companies with a market capitalisation of \$7.9 trillion, and nearly \$100 trillion of assets under management¹⁰.

These companies are therefore looking for efficient and transparent frameworks within which they can take ambitious climate action. Putting a price on carbon, and enabling the transfer of measurable emission reductions, sits at the centre of many such proposals.

Carbon pricing initiatives are thus gaining momentum as an important tool among public and private actors alike. They present a critical opportunity to deliver collective ambition on tackling climate change while also catalysing corporate investment in natural climate solutions.

⁸ <https://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/a-cost-curve-for-greenhouse-gas-reduction>

⁹ <https://sciencebasedtargets.org/companies-taking-action/>

¹⁰ <https://www.fsb-tcfid.org/wp-content/uploads/2018/08/FINAL-2018-TCFD-Status-Report-092518.pdf>

What is carbon pricing?

Carbon pricing initiatives apply a cost to greenhouse gases emitted into the atmosphere, providing an economic incentive for those emissions to be reduced or avoided (see Table 1). They can also involve a (declining) cap on the total emissions permitted or be applied voluntarily by businesses operating outside of a capped sector.

- Carbon pricing assigns a cost to the right to emit carbon and encourages actors to respond to the risks of climate change.
- Carbon pricing initiatives are favoured as a cost-effective policy tool for their ability to lower the costs of reducing carbon emissions, through decentralising (in part) decisions on where it is most efficient to reduce emissions from government to business and stimulating innovation by providing an ongoing incentive to cut carbon¹¹.
- Such factors which increase confidence amongst both government and business that lower-cost reductions are accessible, can in turn be a powerful lever to greatly increase ambition to tackle climate change. Indeed, recent analysis suggests that with international carbon pricing and trading, it is possible to nearly double the climate ambition at the same overall cost as countries' complying with their Paris Agreement targets¹².
- Whilst, there is also some evidence that companies that use offsets have gone

significantly further in reducing their own carbon footprint than those who do not¹³.

- Carbon pricing initiatives are being utilised by governments at national (e.g. China), sub-national (e.g. California), and sectoral levels (e.g. aviation), and are implemented by some businesses internally, voluntarily ahead of regulation.
- National, regional and sub-national governments have fifty-three such carbon pricing initiatives (emission trading systems and carbon taxes), at various stages of implementation, covering 20% of all global greenhouse gas emissions¹⁴.

The value of all carbon pricing initiatives stood at \$82 billion in 2018, up \$30 billion from 2017, according to research by the World Bank¹⁵. The same study also found that carbon prices in implemented initiatives ranged from \$1 per metric tonne, up to \$139, with 46% of emissions priced below \$10. The single largest carbon pricing scheme to date (by % share of global greenhouse gases), the EU Emissions Trading Scheme, saw its carbon allowance price rise to over \$23 at the time of writing¹⁶.

In addition, internal carbon prices are being factored into business planning by over 1,400 companies worldwide¹⁷. While similarly, variable shadow carbon prices being used by business, up to \$919/tonne, are notably higher than those in mandated initiatives.

¹¹ https://read.oecd-ilibrary.org/taxation/effective-carbon-rates-2018_9789264305304-en#page15

¹² <http://blogs.edf.org/climate411/2018/08/01/international-trading-of-emissions-reductions-could-greatly-increase-global-climate-ambition/>

¹³ https://www.carbonfootprint.com/docs/cfp_carbon_offsetting_and_reduction_v10.pdf

^{13.2} https://www.forest-trends.org/wp-content/uploads/2018/01/doc_5715.pdf

¹⁴ World Bank Carbon Pricing Dashboard, <https://carbonpricingdashboard.worldbank.org/>, accessed 20 November 2018

¹⁵ World Bank Group (2018), State and Trends of Carbon Pricing 2018

¹⁶ <https://www.eex.com/en/market-data/environmental-markets/spot-market/european-emission-allowances#!/2018/12/07>

¹⁷ <https://www.cdp.net/en/campaigns/commit-to-action/price-on-carbon>

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Table 1: A taxonomy of carbon pricing initiatives

	Emissions trading scheme	Carbon tax	Internal carbon pricing	Shadow carbon pricing
Who applies it?	National or sub-national government	National or sub-national government	Businesses (self-applied / voluntarily)	Businesses (self-applied / voluntarily)
What is it?	Direct caps on carbon emissions from one or more sectors. Capped companies can buy and sell pollution allowances, which must be surrendered to match emissions produced	A fixed tax applied upon emitting a specified volume of greenhouse gases	Internally set price per volume of greenhouse gas emitted. Can be collected centrally or from business units	Nominal internal price. Not collected but used for accounting purposes
Role of offsets?	<ul style="list-style-type: none"> • Possible, alongside • Can be limited by the percentage of emissions allowed, type, when created and location 	<ul style="list-style-type: none"> • Possible, in place of • Can be limited by percentage of emissions allowed, type, when created and location 	<ul style="list-style-type: none"> • Possible, funds collected can be used to buy offsets • Limitations—at business discretion 	Not applicable
Who sets the price?	Market-based Can include price floors and/or caps	Government sets ceiling (tax), market sets offset price	Individual business	Individual business
Where does the money go?	<ul style="list-style-type: none"> • Government decides on use of allowances revenues • Offsets—depends on source 	<ul style="list-style-type: none"> • Government decides on use of tax revenues • Offsets—depends on source 	<ul style="list-style-type: none"> • Individual business decision • Examples include paying for offsets, internal reductions, efficiency measures, or renewable energy procurement 	Not applicable
How does it reduce GHG's?	<ul style="list-style-type: none"> • Direct—emissions are capped, with the cap decreasing over time • Indirect—cost incentive to lower emissions • Indirect—subject to use of revenue from allowances sold by government • Direct—via offset use 	<ul style="list-style-type: none"> • Indirect—cost incentive to reduce emissions • Indirect—subject to use of tax revenue by government • Direct—via offset use 	<ul style="list-style-type: none"> • Indirect—incentive to reduce costs • Direct—via offset use 	Not applicable



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The carbon pricing offset opportunity

Carbon pricing initiatives using carbon credits, or offsets, allow for channelling some of the value of a carbon price towards actions outside of a sector or organisational boundary, including toward natural climate solutions. Revenue from offsets can be used to fund emissions reduction activities that would not otherwise occur, creating a climate benefit that balances (or offsets) emissions from the buyer.

By offering an additional suite of greenhouse gas reduction options, offsets can provide an alternative price-point to meet an emissions target, whether that target is set by a regulator or voluntarily by a business itself.

Given the rapid and deep decarbonisation needed across economies to deliver net-zero by 2050, carbon offsets while not a long-term solution to global warming, can however, play an important transitional role in the near term. This is because many organisations, even after robustly doing all they can to avoid and reduce emissions where they can, often still have emissions more difficult or expensive to reduce in the short-term, given the solutions available today. Purchasing offsets allows these organisations to neutralise the climate impacts of these emissions by funding carbon-reducing activities that would not have occurred otherwise. Such offsets must be part of an overall long-term decarbonisation plan and not an avoidance strategy.

Natural climate solutions and the carbon markets

Between 2008 and the first quarter of 2018, companies in sectors ranging from insurance, energy and banking through consumer retail, manufacturing and food and beverage retired around 62.5 million natural climate solution credits in support of voluntary offsetting claims, representing around a quarter of voluntary retirements over the period¹⁸. According to not-profit group Forest Trends, transactions in such offsets were valued at just under \$1 billion between the early 2000s and 2016, with average price paid of \$5.2 per offset in 2016.¹⁹

These offsets have been generated by a diverse range of projects, ranging from those using well-established methodologies, such as reforestation projects, to more innovative ones, such as those focused on capturing carbon in soils. Other project types include protecting standing forests from deforestation or degradation (often referred to as 'REDD+'²⁰), restoring or protecting mangroves, climate-smart agriculture, reducing methane from rice cultivation, and coastal wetland restoration.

Such projects are attractive to corporate offset buyers because they typically offer compelling, communicable social and environmental stories that companies can present to stakeholders.

Meanwhile, the benefits to conservation and biodiversity offered by natural climate solutions projects have encouraged a growing number of leading conservation organisations to support the development of this segment of the market.²¹

The natural climate solution market now boasts a substantial track record of implementation and institutional knowledge. Concerns amongst a broad set of stakeholders have included topics such as the 'permanence' of carbon stored in natural systems, and 'leakage', that is whether a project would merely displace rather than reduce emissions. While innovation is ongoing, a series of sophisticated and robust tools and methodologies are available today which ensure environmental and social integrity.

Recognising this, regulators are increasingly turning to natural climate solutions as a scalable and low-cost means of enabling them to go further and faster in tackling climate change. The number of regulated carbon pricing markets which include, or plan to include, some element of natural climate solutions offsets is expected to grow dramatically in the coming years, including examples of demand for both domestic and internationally sourced offsets. Table 2 summarises which carbon-pricing initiatives allow for the use of natural climate solution offsets, and where their use is being considered.

¹⁸ https://www.forest-trends.org/wp-content/uploads/2018/09/VCM-Q1-Report_Full-Version-2.pdf

¹⁹ https://www.forest-trends.org/wp-content/uploads/2018/01/doc_5715.pdf

²⁰ REDD+ refers to reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks

²¹ Including The Nature Conservancy, Conservation International, Wildlife Conservation Society, WWF-International and the Royal Society for Protection of Birds

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Table 2: Natural climate solution use in current carbon pricing mechanisms²²

Scale	Carbon pricing initiative	Status	Type of carbon pricing initiative					Offset status	
		Implemented/ Under development	ETS	Tax-and-offset	Cap-and- offset	Central Fund	Voluntary	Domestic	International
Regulatory National	China	Implemented							
	South Africa	In development							
	Korea	Implemented							
	Taiwan	In development							
	Colombia	Implemented							
	Mexico	In development							
	Australia	Implemented							
	New Zealand	Implemented							
	Netherlands	In development							
	United Kingdom	Implemented							
	France	In development							
	Japan	Implemented							
Regulatory- Sub- National	California (US)	Implemented							
	Regional-Greenhouse-Gas-Initiative	Implemented							
	Quebec (Canada)	Implemented							
	Alberta (Canada)	Implemented							
	Tokyo-Saitama	Implemented							
Regulatory - Sectoral	Carbon Offsetting & Reduction Scheme for International Aviation CORSIA	In development							
Voluntary	Corporate voluntary carbon offsetting								

Carbon Offset and Reduction Scheme for International Aviation (CORSIA)

One emerging example of a new carbon pricing initiative is CORSIA, being implemented by the UN International Civil Aviation Organization (ICAO). CORSIA addresses the increase in total carbon dioxide (CO₂) emissions from international aviation above 2020 levels through a 'market-based measure' that enables aircraft operators to offset relevant emissions. CORSIA is expected to generate a significant additional source of demand for offsets: around 2.6 billion tonnes of CO₂ by 2035²³. Although the types of offset that will be admissible in the scheme have yet to be decided, natural climate solutions could play a major role in helping this industry sector address its climate impact over the coming years.

Where offset use from natural climate solutions is under consideration, the location of projects permitted to sell offsets is an increasingly important topic. Up until now, purchasing offsets internationally has been relatively straightforward.

However, as discussed in more detail below, the Paris climate change agreement may alter this fundamental dynamic, as well as altering some of the other parameters which influence how natural climate solutions are deployed within carbon pricing schemes.

²² Note this is a summary and may not be exhaustive

²³ <https://www.iata.org/publications/tracker/june-2018/Pages/corsia.aspx>



An aerial view showing Amazon rainforest cleared for cattle ranching at São Félix do Xingu, a municipality in the Brazilian Amazon that has one of the highest rates of deforestation in the country. Photo credit: ©Haroldo Palo, Jr.

Paris introduces a new landscape for business engagement

The Paris Agreement allows countries to make use of international carbon markets, including land-use sector offsets, in meeting their nationally determined goals. But whereas the Kyoto Protocol operated under a single framework, which set the rules dictating how carbon credits could be created, traded and tracked, rules under the Paris Agreement, (yet to be agreed), are expected to be less prescriptive, in line with the principle of 'bottom-up' implementation. Indeed, the Paris Agreement itself allows individual countries the ability to define domestically and between one-another much of their own rules. This opens-up enormous opportunities for offset projects and carbon pricing initiatives tailored to national requirements, but it also requires market participants to navigate potentially different systems across countries.

Raising ambition from the 'bottom-up'

- Bottom-up implementation: introduces a new theory-of-change for international cooperation on climate change
- Progression over time: provides a framework to address the 'ambition-gap' and an opportunity for broad-based business engagement with government

A fundamental difference between the Kyoto Protocol and the Paris Agreement is that the latter takes a voluntary, 'bottom-up' approach to emissions goals. Rather than setting targets centrally, and mandating countries to make emissions reductions, it allows countries (known as Parties to the agreement) to make NDCs towards the overall goal of holding

the average global temperature rise to "well below" 2°C above pre-industrial levels, whilst also recognising the need to pursue 1.5 °C.

This means that almost all countries have submitted NDCs that outline their mitigation and/or adaptation goals, and how they plan to meet them. While some common features exist, there are numerous differences, not least between developed and developing countries. The former are expected to maintain economy-wide, absolute targets (as they had under Kyoto) while developing countries are encouraged to move in this direction over time. Variations include the scope of sectors/emissions included in an NDC, the choice of baseline years from which targets are measured and the years by which these targets are to be met, and whether targets are quantifiable (i.e. in tonnes of CO₂e) or expressed as a set of policy actions which would lead to a reduction in greenhouse gas emissions.

This complex set of variations is not without its challenges, particularly as it relates to ensuring the robustness of commitments and how actions are reported. However, allowing for this complex, but pragmatic, mix of variations was a critical pillar to achieving the broad participation of countries.

While current contributions represent a 'gap' in ambition needed to meet the <2°C temperature goal, the Paris Agreement sets out an expectation that the efforts of all countries' will represent a "progression over time". In practice this means through a cycle of reviewing progress and re-submitting NDCs,

collectively countries' are expected to increase the ambition of their contributions in the coming years. Businesses should therefore be prepared for a tightening policy environment on climate change, and where necessary to engage and advocate amongst policy makers for greater ambition.

Natural climate solutions and NDCs

- Prioritised actions: uniquely recognised in the agreement for their critical role in tackling climate change mitigation and adaptation
- Room for growth: varying levels of detail in actions to be undertaken present engagement opportunities to identify and tackle specific implementation barriers

Natural climate solutions are explicitly promoted in the Paris Agreement: such solutions delivered through the forestry sector are given their own section within the agreement—the only sector recognised in this manner. The Agreement reaffirms existing definitions of solutions to include reducing emissions from deforestation and forest degradation (REDD+), plus the role of conservation, sustainable management of forests and enhancement of forest carbon stocks, and calls out these activities as a priority for countries to engage in.

The majority—around 70%—of current NDCs include some form of target and/or policy actions to address forestry, land-use change and agricultural emissions.

It is apparent therefore that countries do intend to reduce emissions from these sectors providing room for growth.²⁴ In some countries, policy makers faced with technical capacity constraints are seeking to understand their own forests better, before making informed decisions on targets, whereas in other countries, adaptation in forest environments is of greater concern. Indeed, countries face many real challenges, however those who proactively seek to create an enabling environment for solutions to be financed and implemented, stand to benefit the most.

Carbon markets

- Voluntary cooperation: provides countries with the choice over whether to make use of markets in achieving their nationally determined goals
- Carbon as a national asset class: introduces new opportunities for commercial business engagement with government

The Paris Agreement allows countries to voluntarily engage with one another to achieve mitigation outcomes under their NDCs, through internationally transferred mitigation outcomes (ITMOs). These are otherwise known as market-based transfers, whereby a mitigation outcome occurring in one country can be counted by a second country towards its NDC but cannot be claimed by both.

²⁴ Authors' own analysis

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There are a number of technical considerations around how these ITMOs are created, recognised, transferred and accounted for, and how they might be used by private sector entities. The agreement anticipated further guidance being developed by the end of 2018, but negotiations weren't conclusive and will take additional time beyond this to reach consensus. For more detail, please see Annex I.

Nonetheless, the Paris Agreement explicitly recognises the role of the private sector in delivering NDCs, and the need to incentivise and facilitate its participation.

Critical to this, is that through the act of drafting an NDC, and setting emissions objectives, has brought into focus the importance of carbon as a national asset. Many developing countries are, for the first time, presented with the choice of how to balance their own climate goals against potential demand for mitigation outcomes from other countries.

As countries undertake implementation of their NDC goals, such choices regarding the export of mitigation outcomes to other national governments and/or non-state private investors, will in turn therefore, have direct implications on the creation and supply of carbon 'offsets' for all.



Engagement strategies for business

The Paris Agreement sets an ambitious global context for climate action, and governments are responding by providing incentives and mechanisms, including carbon pricing, to achieve those goals. An opportunity exists to ensure that natural climate solutions are included in these mechanisms and appropriately leveraged to enable even stronger climate change action.

However, countries are at various stages of implementing regulations and policies to meet their contributions under the Paris Agreement, and of recognising the importance of carbon as a nationally relevant asset class. This creates a new paradigm for businesses seeking to engage with natural climate solution offsets, as they face a more diverse set of regulations and mechanisms at different stages of development.

This also creates opportunities for businesses to engage ahead of the introduction of regulations. The benefits of doing so can include price discovery, practical hands-on experience of evaluating investments, and cost management. Furthermore, experience shows that businesses that do so have been able to contribute not only to the development of industry infrastructure, but also to provide feedback to regulators that can inform market design.

Ambitious private sector leaders who help define this space early on will build the knowledge, networks and expertise necessary to commercially thrive in these future carbon markets. We suggest three steps companies should consider:

One: Adopt a robust 'natural climate solutions-inclusive' climate strategy

Establishing and maintaining a robust climate strategy, remains an ever-critical first step for businesses to take. Leading businesses who have embedded and maintain successively progressive climate strategies, have benefitted from the credibility and hands-on experience gained. As businesses either adopt or refine their strategies, they should ensure these are inclusive of natural climate solutions.

What actions to take?

Adopt low carbon strategies: companies should set greenhouse gas emission reduction targets in line with climate science and develop strategies to implement which robustly applies the 'mitigation hierarchy' (see Figure 4). Also critical is the role of maintaining and increasing transparent disclosure of climate-related risks, therefore companies should make use of emerging leading frameworks such as that recently released by TCFD.

High-integrity natural climate solutions can likely support a number of areas of a company's carbon reduction strategy, including as an offset to be used against unavoidable emissions. For many companies, understanding the dependency of their business model on the health of the natural world will provide an additional and complementary incentive to ensure natural climate solutions are adequately prioritised.

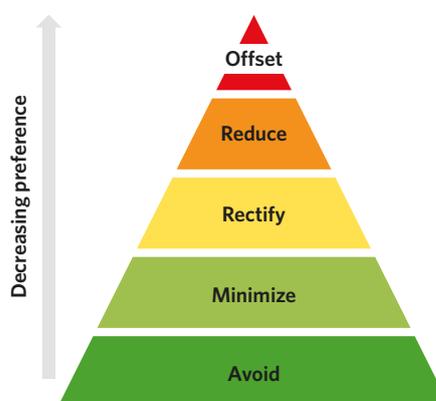
Signal long-term climate reduction targets:

in addition to specific, often relatively near-term targets and investments, there are significant benefits in businesses also making longer-term public commitments to support natural climate solutions via carbon markets. Similar industry commitments to renewable energy (e.g. the RE100 initiative) and sustainable supply chains (e.g. targeting zero deforestation), have helped mobilise support and recognition amongst a range of stakeholders, including customers and investors.

Consider how internal carbon pricing could support your business:

in 2017 almost 1,400 companies were factoring an internal carbon price into their business plans²⁵, representing an eight-fold leap over four years, and using it as an effective tool to help them deliver on their climate reduction targets.

Figure 4: Mitigation hierarchy



²⁵ <https://www.cdp.net/en/campaigns/commit-to-action/price-on-carbon>

Two: Support strong public policies

With the Paris Climate Agreement rendering carbon emissions a nationally relevant asset class for all countries, how countries will manage carbon reduction in the context of their economic priorities in the years to come will directly impact the private sector.

Similarly, the agreement sets up an expectation for all stakeholders, including private business, to engage governments from the 'bottom-up', as they weigh up their choices. Companies should use the role they can play by engaging in the public policy debate on climate change. That means supporting climate science and advocating for natural climate solutions, carbon pricing and government support for low carbon technologies.

The coming few years will be equally critical in shaping the carbon finance policies of the coming decade and beyond. The time to engage is therefore now.

What actions to take?

Define scope of engagement: by identifying the countries, regions and topics, of most policy relevance to their organisational footprint. This may include locations where subject to current, pending or potential future climate change-related regulation. It may also include where the business considers a relevant location for supporting natural climate solutions.

Advocate for NCS-inclusive carbon pricing initiatives: by supporting the potential for regulatory carbon pricing initiatives, and when doing so, also call on policymakers and other influencers to recognise the opportunity presented by high quality offsets generated from natural climate solutions. Where existing initiatives already recognise such offsets, companies should seek to maximise their potential by advocating for recognition of a broad range of sources.

Leverage initiatives that enable businesses to align and coordinate: in addition to engaging policymakers bilaterally, businesses should consider engagement through business-orientated platforms and initiatives, such as the World Business Council for Sustainable Development's natural climate solutions project group, or those within the International Emissions Trading Association, the World Economic Forum, and others. These enable both knowledge sharing between companies and collective engagement and advocacy with relevant policymakers and other stakeholders.

Three: Invest to learn and lead

Leading companies taking action today are often meeting their ambition to drive towards their 'net-zero' goals by investing in carbon-removal activities, including in the form of offsets generated from natural climate solutions.

Whilst some of the value drivers and technical design parameters for an offset are likely to evolve, in part driven by the changes brought in under the Paris Climate Agreement, it is important for businesses to recognise that now is the time to step-up their engagement. As this will allow them to both build their capacity and networks (which will be critical to their continued success), but also learn and problem-solve, often in partnership with others such as governments—which will be critical to enabling the emergence of optimised solutions.

What actions to take?

Work in partnership with governments:

business should work closely with governments to anchor investments within their NDCs, and that any internationally traded offsets are formally recognised and accounted for by the relevant government.

Ensure investments are in high quality assets:

companies should ensure high environmental and social integrity of any carbon credits that use robust carbon accounting and strong social safeguards.

Consider your investment structure:

to share risks and build experience businesses could consider investing alongside or in partnership with other companies, or through a growing number of relevant investment funds. These offer the opportunity to pool resources, and share risk, across a number of investors.

Finally, businesses who are informed, actively engage stakeholders, and contribute to the development of new approaches, stand to be among those best prepared to benefit in the low-carbon transition. However, it is important to recognise that new opportunities and best practice approaches will emerge and evolve over time. Flexibility will be needed to apply lessons learned and for ongoing and iterative engagement with policymakers.

Furthermore, over the coming years it is likely that all businesses will need to iterate and update their own climate change targets and strategies, perhaps multiple times. This may be driven by:

Governments, which are expected to come forward with enhanced NDCs over the coming 5 or so years. With current NDCs containing insufficient ambition to meet the climate change targets of the Paris Agreement this is both likely and necessary.

Businesses, who may move independently of a policy requirement and in response to other factors such as investor pressure or customer demands, where in these instances they may then want to engage and push policymakers to ensure alignment between the private and public sectors.

This is of course a dynamic consistent with the Paris Agreement: where businesses are integral to a 'bottom-up' and nationally determined process of determining and delivering a country's climate change target and strategy.

Detailed analysis of the Paris Climate agreement

1. It's global—all countries are covered

A key feature of the Paris Agreement, and departure from the Kyoto protocol, is that all 'Parties' (countries), make Nationally Determined Contributions (NDCs) towards the goals of the agreement; while still acknowledging in some regards the differences in capacity between richer and poorer countries and their individual circumstances.

	WHAT IS KNOWN	UNCERTAIN
Aims and ambition	<ul style="list-style-type: none"> Aims to hold global temperature increase to 'well below 2 °C above pre-industrial levels', recognising the need to pursue 1.5 °C. Aims are not legally binding requirements, rather provide a common direction and expectations of action from all. Countries are called upon to increase the 'ambition' of their NDC's. Particularly relevant as all current NDCs would result in 3-4°C of temperature rise, falling far short of the goal. 	<ul style="list-style-type: none"> How, and if, the findings of the IPCC 2018 special report on the impacts of global warming will affect the temperature goal at the end of the day (2°C vs 1.5 °C). How successful countries will be in achieving current pledges, and whether collective ambition will increase over time in future updates to NDC's, including in scope and scale.
Nationally Determined Contributions (NDCs)	<ul style="list-style-type: none"> NDC's are documents capturing voluntary pledges made by each country, outlining their mitigation and adaptation goals, under the agreement. Developed 'bottom-up' by a country, NDCs are based on what each government is willing to pledge, versus taking on a proportional share of a goal developed through a top-down process. Domestically, each country determines the precise method, timing and extent to which commitments under an NDC are captured within regulation and policy. NDCs will be updated every 5 years in an effort to close the gap with the Paris temperature goals. 	<ul style="list-style-type: none"> How effective the 'bottom-up' approach of NDCs will be in directing collective action where most effective and within the timeframe needed. How countries will implement their current NDCs, particularly in those countries with complex domestic rule-making processes. If and how regulatory differences between countries will be harmonised over time, or if they will present regulatory loopholes, leading to displacement over net reductions in emissions. Whether countries will prioritize other concerns over meeting their NDC targets (economic growth, energy security, etc.)
Scope / Type	<ul style="list-style-type: none"> NDCs are, by design, variable in how they are written by each country. While some common features exist, there are numerous variables. Developed countries are expected to maintain economy-wide, absolute NDC targets while developing countries are encouraged to move in this direction over time. Variations include scope of sectors/emissions covered, (i.e. economy-wide or only certain sectors); choice of baseline years and target years (i.e. the level below which a reduction is planned, and by when it will be met, either all by a single future year or with milestones in between), through how goals are expressed (i.e. 'quantified' in tonnes of CO₂e, or as a set of policy actions which would lead to mitigation). Furthermore, when quantified, some are described as absolute reductions of GHG's and some as intensity targets linked to emissions per unit of GDP. Some developing nation countries chose to express some of their contributions as 'conditional' to certain factors, such as receipt of international support in the form of finance, capacity and technology transfer. Inclusion of this complex, but pragmatic 'mix' of approaches was crucial in the run up to 2015 to ensure broad participation of both developed and developing countries. 	<ul style="list-style-type: none"> How national reporting of contributions will work in a consistent and comparable manner given these differences. Whether more countries will move toward broader 'economy-wide', absolute NDC targets over time, and what factors might influence such decision making at a national level. How the scope and type of a country's NDC may affect the ability of a country to access international carbon finance. Whether the developed country goal of jointly mobilising commitments of \$100Bn/yr (by 2020) in climate finance for developing countries, will be realised.

Detailed analysis of the Paris Climate agreement

2. Role of markets

A highly anticipated and key feature of the Paris Agreement is the role of markets. Referred to in the agreement as ‘voluntary cooperation’, it allows countries to voluntarily engage with one another in order to help meet their NDC’s. The rules for which are expected to be agreed upon at the end of 2018.

	WHAT IS KNOWN	UNCERTAIN
Voluntary cooperation between countries	<ul style="list-style-type: none"> • Unlike under Kyoto, where the role of markets in meeting goals was highly prescribed and centralised, Paris recognises the need to allow countries with greater discretion and choice to develop approaches relevant for them. • Countries can voluntarily engage with one another to achieve mitigation outcomes under their NDC, through ‘Internationally transferred mitigation outcomes’ (ITMOs). Otherwise known as ‘market-based-transfers’, whereby a mitigation outcome occurring in one country can be counted by a second country towards their NDC, but not by both. • Also being developed is a UN administered ‘mechanism’ intended to contribute to emission reductions, sustainable development, and an overall mitigation in global emissions. Potentially similar to the Clean Development Mechanism (CDM) under the Kyoto Protocol, which created standardised, tradable, certified emission reductions, (a source of ‘offsets’), it is widely considered to be a potential replacement of the CDM. 	<ul style="list-style-type: none"> • The need to ensure integrity of actions while balancing the underlying ‘bottom up’ nature of the Paris Agreement remains a delicate balance. • Whether negotiators will take it upon themselves to choose to provide restrictions upon ITMO creation or use, choices which are perhaps better left to countries themselves and market participants to decide upon. • Whether all countries will allow unrestricted use of their mitigation outcomes toward a purpose other than an NDC, i.e. use toward voluntary/non-regulatory offsetting, emissions outside the scope of Paris altogether (international aviation/maritime). • How the ‘mechanism’ might differ from the CDM, and what new opportunities it might provide to facilitate mitigation between countries and private actors. • How and whether trade in mitigation outcomes may influence the development and growth of related and emerging environmental and impact markets, (i.e. possibly linked to metrics under the 17 Sustainable Development Goals).
Carbon as a national asset	<ul style="list-style-type: none"> • Whereas Kyoto introduced carbon as an asset valued just by developed countries with ‘absolute’ commitments to reduce emissions, under Paris where all have commitments, any country can in theory be both a buyer and/or seller. • Many countries will therefore for the first time be presented with the choice of how to balance meeting their own goals, alongside potential demand for mitigation outcomes from other countries. • The majority of NDC’s anticipate making use of market mechanisms toward meeting their goals. 	<ul style="list-style-type: none"> • Developed and developing countries alike now face a key economic and political choice in how they recognise, value and make use of carbon as a national asset class, the implications of which are yet to unfold. • Whether countries make use of reductions towards their NDC goals, or allow for their ‘export’ to other national governments and/or non-state private investors, will have inevitable economic and political implications. • It remains uncertain how countries will make such critical valuation decisions in the absence of clear price and demand signals, and in turn therefore how the price of carbon assets will evolve. • How and when demand amongst countries will evolve for market-based transfers to help meet their NDCs.

Detailed analysis of the Paris Climate agreement

3. Role of accounting for NDCs and market-transfers in a post-Paris world

Reporting against an NDC commitment and results achieved is critical to ensuring the integrity and aims of the agreement are met. Countries are required to report on their NDCs every 5 years, in accordance with the rules of reporting currently being negotiated.

	WHAT IS KNOWN	UNCERTAIN
Accounting for markets under Paris	<ul style="list-style-type: none"> Transfers of mitigation outcomes between countries are expected to be captured by both, to ensure no double counting / dual claims are made. A key topic that negotiators have been engaged in, is to agree how transfers of mitigation should be captured by countries from an accounting standpoint. Particularly relevant given variations in the scope and type of NDC's, alongside the overall need to ensure transparency. It is expected that the process of transferring out, or exporting a mitigation outcome would involve a step of national authorisation/approval . Differences in NDCs mean that some mitigation actions are currently captured in units other than 'tonnes of CO₂e', (i.e. hectares reforested). 	<ul style="list-style-type: none"> How reporting for accounting of market-based transfers between countries will work in practice, particularly in those countries with lower capacity . Whether countries agree that all transfers of mitigation outcomes will be subject to the same accounting and reporting requirements, or if there may be some exceptions (i.e. certain sectors, LDC's). How transaction costs for capturing and reporting transfers may differ between countries and influence overall availability and prices. How countries will implement 'approval processes' for authorising international transfer, and whether they will be standardised, transparent and traceable enough to encourage investment.
Influence on carbon pricing initiatives and offset standards	<ul style="list-style-type: none"> The need to incentivise and facilitate participation of private entities (authorised by countries) is directly recognised in the agreement. Countries with carbon pricing initiatives which allow for (or are considering) the use of international offsets will need to ensure alignment of rules and provide businesses being regulated with clear parameters of offset eligibility. Many national and independent carbon offset verification standards may need to adapt (and align) existing rules governing the creation of an offset, particularly if intended to be recognised as facilitating an international transfer of mitigation. 	<ul style="list-style-type: none"> Whether rules created under Paris will encourage or discourage inclusion of internationally sourced carbon offsets in carbon pricing initiatives. Whether countries will provide investors with certainty for the type of mitigation they are willing to authorise the international transfer of (export), as well as the quantity, timing of approvals, and how decisions will be made. How some carbon offset verification standards, currently being applied across multiple countries, will adapt to the changing landscape under Paris, and whether changes may lead to a proliferation of more such standards, or consolidation over time. How existing international carbon market linkages (e.g. California-Quebec) may be impacted.
Influence on private sector offsetting claims	<ul style="list-style-type: none"> The agreement itself (including requirements to avoid double counting - which would affect claims), is first and foremost directly applicable upon countries, not private businesses engaged in voluntary offsetting. Host country governments are therefore a key stakeholder for businesses to engage when seeking to make non-double counted offsetting claims. Current rules under development include the option of specifically 'providing' private businesses with the ability to voluntarily retire/cancel a carbon offset created under the SDM. 	<ul style="list-style-type: none"> Whether businesses will be able to voluntarily use an ITMO toward an offsetting claim, and if so how. Whether the nature and type of claims businesses seek to make when engaging in offsetting will evolve to include 'contributions' toward national contributions that do not include transfer of title. Whether authorizations to transfer, account and report mitigation outcomes, will be a subject of sovereign risk between reporting cycles that private investors will be exposed to, and if so what that might mean for 'traditional' offsetting claims.

Detailed analysis of the Paris Climate agreement

4. Role of land-use change, agriculture

Specifically called out as a priority for countries, the agreement ‘reaffirms’ existing definitions of solutions to include reducing emissions from deforestation and forest degradation (REDD+), plus the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

	WHAT IS KNOWN	UNCERTAIN
Recognition	<ul style="list-style-type: none"> Natural Climate Solutions are called out uniquely as a sector that countries should prioritise in the national contributions, the only such sector recognised in this manner. 	<ul style="list-style-type: none"> It remains to be seen therefore how rules developed may act to encourage NCS, and how eager some key forest countries will be to ‘export’ such mitigation outcomes.
Inclusion of land sector in NDCs:	<ul style="list-style-type: none"> ~ 70% of all current NDCs include land-use change and agricultural emissions, meaning countries do intend to reduce emissions from these sectors, albeit the level of detail and ambition in goals remain low. Inclusion of these sectors rises to above 80% for those countries who intend to make use of markets. 	<ul style="list-style-type: none"> Whether all countries will include land-use and agriculture within their NDC’s in the future, with robust, detailed targets utilising NCS to their full potential. Whether countries will collectively utilise the potential of NCS, or look to their forests primarily as a ‘carbon sink’ used toward ‘balancing’ growth in emissions elsewhere in their economies.

