AUGUST 2023

COMMERCIAL IN CONFIDENCE

POLLINATION

FINANCING BLUE CARBON IN AUSTRALIA

Private sector perspectives and recommendations to policymakers on financing non-carbon benefits of blue carbon in Australia

This report was prepared by our team living and working on the lands of the Turrbal & Yuggera / Jagera People, and the Eora and Kulin Nations.

We acknowledge that for more than 60,000 years Aboriginal and Torres Strait Islander people sustainably cared for country, and that we all benefit from their continuing role in protecting the nature and biodiversity of our lands and seas.

We recognise that this always was, and always will be, Aboriginal land.

Wayne Quilliam, 2022

CSIRO ADVISORY COMMITTEE

This report has been prepared for the Advisory Committee of the 'Mapping the blue carbon mitigation opportunity in Australia' project led by CSIRO and supported by BHP ('**Advisory Committee**'), which aims to map and estimate the climate change mitigation potential (measured as CO2-e) of blue carbon ecosystems in Australia, and further develop the science required for estimating other non-carbon benefits.

The Advisory Committee's membership includes representatives from CSIRO's research activities, as well as representatives from the State and Commonwealth governments, BHP, the Nature Conservancy, the Carbon Market Institute and the Indigenous Land and Sea Corporation. Its purpose is to provide advice to a project being conducted jointly by CSIRO and BHP that aims to quantify the carbon and non-carbon benefits potential of possible blue carbon methods in Australia. The Committee's advice is used by the project team to inform the direction of its research activities, including how they inform and can be informed by policy development and engagement with stakeholders.

AUTHOR

SUPPORTER

This report was produced by Pollination. We are grateful for the funding provided by BHP to support the development of this report, and for providing insights into private sector perspectives on financing blue carbon project.

All the views, thoughts and opinions expressed in this report are of the authors alone. They do not necessarily reflect the views, thoughts or opinions of BHP or any other persons who contributed to this report.

Terminology used in this space is nuanced. The following terms are used in this report:

KEY CONCEPTS

NON-CARBON BENEFIT

"Non-carbon benefit" is used to describe the benefits beyond carbon delivered by blue carbon projects including biodiversity, fisheries, community, and coastal risk reduction benefits. In this report, "non-carbon benefit" is used to encompass both benefits that give rise to a "co-benefit" to a carbon credit and a "standalone benefit unit".

CO-BENEFIT

Co-benefit" is used in this report to describe non-carbon benefits resulting from blue carbon project activities that are – for the purpose of claims – an attribute of the carbon credit.

STANDALONE BENEFIT PRODUCT

"Standalone benefit product" is used in this report to describe benefits resulting from blue carbon project activities that are certified as a tradeable unit, independent of a carbon credit. Biodiversity credits and coastal resilience assets are examples of this form of unit.

DEFINTIONS

Additionality	Emissions reductions and removals from a mitigation activity are additional if the mitigation activity would not have taken place without the incentive created by the carbon credits.
Blue carbon	The organic carbon sequestered in vegetated coastal ecosystems, especially mangroves, seagrass and tidal marshes.
Carbon credit	A unit representing emissions reductions or removals of GHGs, usually representative of a tCO2e per year. Carbon credits can also be referred to as a 'carbon offset'.
Permanence	Permanence refers to the maintenance storage of carbon sequestration or avoidance of reversal of the emission reduction.

TERMINOLOGY DISTINCTIONS

We note that though these terms have been defined to provide clarity to this report, in practice the distinctions between these terms are somewhat blurred.

ACRONYMS

ACCUs	Australian Carbon Credit Units
ERF	Emissions Reduction Fund
FIPs	Fishery Improvement Projects
FPIC	Free, prior and informed consent
GHGs	Greenhouse gases
MRV	Monitoring, reporting and verification
NBS	Nature-based solutions
VCM	Voluntary carbon market
VCMI	Voluntary Carbon Markets Integrity Initiative
VCS	Verified Carbon Standard

The purpose of this report is to provide the CSIRO Advisory Committee with recommendations on how to facilitate financing of the non-carbon benefits of blue carbon projects, and thus scale blue carbon projects in Australia.

BACKGROUND

Blue carbon ecosystems in Australia have significant carbon sequestration potential.[1] Beyond carbon abatement, blue carbon projects also have the potential to deliver a range of non-carbon benefits, including biodiversity, fisheries and coastal risk reduction benefits, as well as economic and non-economic benefits for First Nations and local communities. Blue carbon projects provide a means to direct private finance to the protection and restoration of Australia's blue carbon ecosystems – an outcome required for Australian governments to achieve their climate and nature goals.

However, blue carbon projects have high establishment and implementation costs and economic viability is a challenge for the early projects emerging in Australia. Accordingly, having viable revenue streams from non-carbon benefits additional to the sale of carbon credits will likely be critical for blue carbon projects to occur in Australia at the scale desired.

While non-carbon benefits of blue carbon projects are often used as examples of potential additional revenue streams to support financial viability, Pollination identified that there has not yet been a clear articulation of how these non-carbon benefits are currently valued and financed by the private sector.

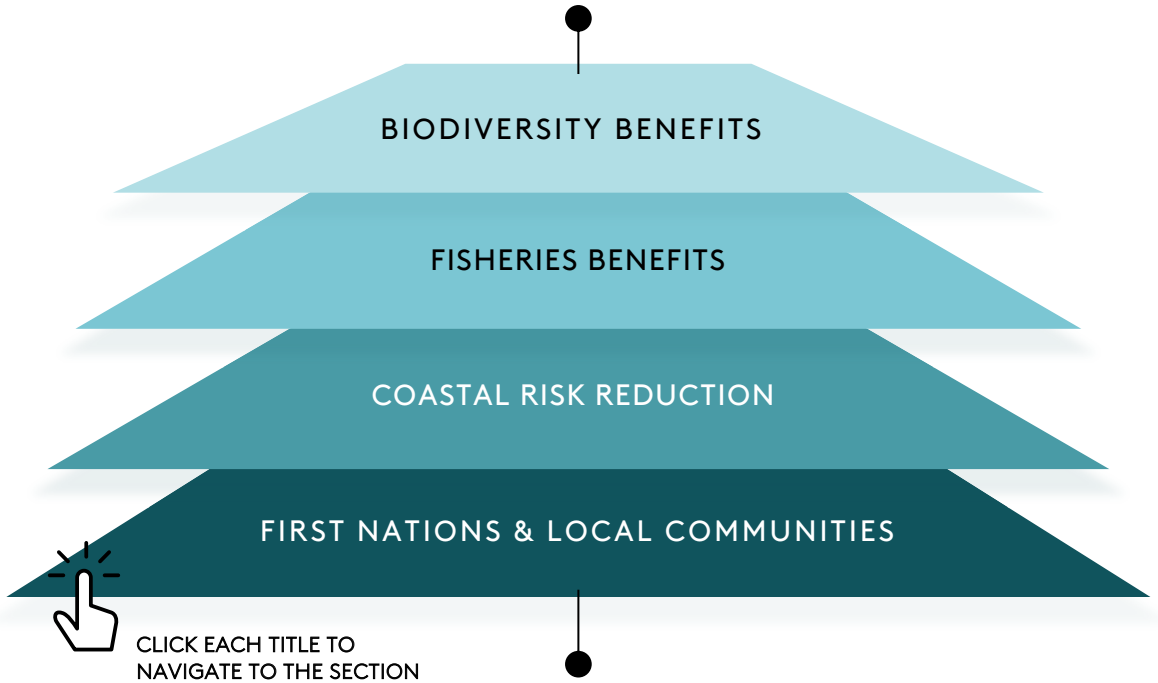
This report seeks to provide those insights across four core non-carbon benefits to blue carbon to the Advisory Committee and the policymakers it consists of.

Given that blue carbon projects generating carbon credits under the Emission Reduction Fund are yet to come online in Australia, there are not yet a set of clear market norms regarding the pricing of blue carbon credits, and their non-carbon benefits.

Accordingly, this report reflects the current state of blue carbon projects in Australia, likely market dynamics for non-carbon benefits and the outcomes of a targeted, though not extensive, stakeholder engagement. We would recommend further stakeholder engagement is undertaken with both demand and supply side actors as the market norms regarding Australian blue carbon projects are further established.

1. Davis et al. (2023). Investigating the potential for a blue carbon economy on Australia's northern coastline; DCCEEW. (2022). Coastal Blue Carbon Ecosystems.

This report focuses on **four core non-carbon benefits** of blue carbon projects. Our analysis of each non-carbon benefit includes key demand-side and supply-side considerations, and recommendations for policymakers to facilitate private sector finance flows.



ACROSS EACH NON-CARBON BENEFIT OUR ANALYSIS CONSIDERS:

1. **Market dynamics** including:
    A. **Demand-side considerations:** including willingness to pay and business case for investment for purchasers.
    B. **Supply-side considerations:** existing frameworks to certify each form of non-carbon benefit.
    C. **Gaps and limitations** of existing models for supporting financial recognition of the non-carbon benefit.
2. **Recommendations for policymakers** to facilitate recognition of the non-carbon benefit and thereby drive private sector investment into blue carbon projects.

Note that our analysis in the First Nations and Local Communities section considers both the transactional benefits that blue carbon projects can *deliver to First Nations and local communities*, and the benefits that the involvement of *First Nations communities provides to* carbon projects.

We unpack the reciprocal and mutually reinforcing beneficial relationship that can exist where First Nations communities are owners or co-owners of blue carbon projects.

As a result, a slightly different structure to the above is adopted in the First Nations and local communities section.

GAPS & LIMITATIONS

There is evidence of private sector demand for non-carbon benefits of nature-based carbon credits. However, we consider that there are currently several **gaps and limitations** that constrain the capacity of these non-carbon benefits to deliver additional revenue to Australian blue carbon projects.

Through our analysis across all four non-carbon benefit categories the following common gaps and limitations emerged:

- Lack of appropriate or dominant certification frameworks for the non-carbon benefits of blue carbon projects, creating challenges for both demand and supply side actors. Certification must be fit for purpose and not unduly onerous for project developers, while also meeting the needs of buyers to make robust claims.
- Cost of additional MRV and certification must be covered by carbon credit price uplift. Given the nascency of blue carbon projects in Australia, there are not yet clear market norms to inform demand and supply side actors' decision-making.
- Further data and education on the nexus between blue carbon projects and the benefits they deliver are required to support demand-side willingness to pay for the non-carbon benefits of blue carbon.

RECOMMENDATIONS

Governments have a key role to play in improving overall blue carbon project viability by addressing these gaps and creating the enabling conditions that will drive private capital into the non-carbon benefits delivered by blue carbon projects.

Across all four non-carbon benefit types, Australian governments can play a valuable role by:

- Developing or supporting the development of publicly available and culturally-appropriate frameworks for the certification of non-carbon benefits of blue carbon projects. These frameworks could embed the Principles for High Quality Blue Carbon Credits, to ensure that in project design, balanced consideration is given to the full suite of benefits that could be delivered by a blue carbon project.
- Supporting supply side pricing confidence and demand side pricing expectations, through offtake contracts targeting blue carbon projects with certified non-carbon benefits and/or First Nations provenance.
- Targeted education campaigns to ensure the benefits delivered by blue carbon projects in Australia are well understood, particularly for fisheries and coastal risk reduction benefits.
- Relatedly, supporting research and accessible data sets that will underpin the recognition and certification of non-carbon benefits of blue carbon.

Demand and willingness to pay varies significantly between non-carbon benefits. Where the rationale for investment is stronger and more established, finance is flowing.

	BIODIVERSITY BENEFITS	FISHERIES BENEFITS	COASTAL RISK REDUCTION	FIRST NATIONS & LOCAL COMMUNITIES
MARKET DYNAMICS	With the increased focus globally on nature loss, there is strong recognition of the role that environmental markets can play in directing private capital into biodiversity restoration and protection activities. As such, biodiversity benefits have a clear and comparatively well-established rationale for payment by demand-side actors.	The fishing industry is a potentially key beneficiary of blue carbon projects given these ecosystems function as nurseries for 95 per cent of commercial fish species.[1] Despite this, a limited engagement with stakeholders indicates players in the fisheries industry are either not willing to pay a premium for blue carbon credits with quantified fisheries co-benefits or would only do so if the project can demonstrate a direct beneficial link to their operations. This may however also reflect the early stage of blue carbon projects in Australia.	Blue carbon ecosystems act as a critical natural buffer to periodic flooding from storm surges and incremental tidal flooding from sea-level rise. The demand profile, while not yet well established, is likely to be comprised of actors that are the most exposed to damages from these events and thus have the most to gain from the coastal protection capacity of mangroves. Finance is not yet flowing at scale.	There is evidence of demand side actors valuing – and paying a premium for – the provenance of carbon credits from First Nations-owned projects. Nevertheless, broadly speaking, there is a lack of sophistication in the way demand side actors consider and value the relationship between First Nations communities and carbon projects.
GAPS & LIMITATIONS CONSTRAINING DEMAND FOR NON-CARBON BENEFITS	• Lack of market trends to inform pricing trends • Clarity in claims from established certification frameworks for blue carbon projects.	• Business case for investment in blue carbon projects not yet proved out. Further data and industry education required. • Potentially need direct beneficial link to compel purchase, which may be challenging. • Seafood sustainability certification scheme do not consider contribution to coastal and marine ecosystems	• Limited public awareness of the coastal risk reduction benefits of blue carbon, which could be limiting demand by risk-affected parties including developers, asset owners (public and private) and insurers. • Greater data needed to support business case for investment, especially as compared with grey infrastructure.	• Education and capability uplift likely required for purchasers to adequately value First Nation involvement in carbon projects and to distinguish between forms of certification that are nuanced and sophisticated and those that are more tokenistic.
DEMAND				
EVIDENCE OF FINANCE FLOWING				

KEY

 No evidence

 Limited evidence

 Strong evidence

1. Lellis-Dibble et al, (2008)
2. Mapping Ocean Wealth, (2023), Fisheries.

A lack of certification frameworks applicable to blue carbon projects in Australia will constrain **supply** of projects with certified non-carbon benefits.

	BIODIVERSITY BENEFITS	FISHERIES BENEFITS	COASTAL RISK REDUCTION	FIRST NATIONS & LOCAL COMMUNITIES
MARKET DYNAMICS	There are a range of frameworks available to project proponents to measure and certify biodiversity co-benefits to carbon projects, but no clear or dominant methodology applicable to Australian blue carbon projects. Likewise, though a range of standalone biodiversity credit frameworks are emerging in Australia, none are currently applicable to blue carbon projects. This diversity in certification frameworks creates uncertainty on both the supply and demand side of the market.	Though there is fairly strong evidence linking healthy blue carbon ecosystems to an uplift of fish stocks, the quantification and certification of benefits attributable to a blue carbon project specifically is challenging. Though scientific methods exist, there is no readily available framework for Australian blue carbon projects to quantify and certify project-level uplift in fish stock to form part of an environmental markets transaction.	There is currently no clear or well-established framework for certifying the risk reduction benefits for blue carbon projects in Australia (though a methodology under Verra's SD VISta program is under development). Given this, there is potential for variation in approaches taken to measurement certification.	Though a range of models and frameworks for benefit recognition currently exist, these are mostly not currently geared to adequately recognise the reciprocal and mutually reinforcing relationship between First Nations communities and carbon projects. Though a number of existing frameworks appear likely to be applicable in the blue carbon context, applicability is not explicit and warrants further investigation. Institutional capacity and specialised capability in First Nations organisations is needed to support implementation of certification frameworks. **Note that certification of benefits may not be required to support pricing premium, especially for First Nations-owned projects.**
GAPS & LIMITATIONS CONSTRAINING SUPPLY OF CERTIFIED NON-CARBON BENEFITS	• Lack of market trends to inform pricing trends, and therefore provide rationale for certification. • Potential need for significant baselining of biodiversity values to underpin certification. Costs potentially prohibitive unless offset by significant credit premiums	• Lack of applicable certification framework • Data challenges to attribute project-level benefits to fisheries. Costs need to be offset by demand, which is not currently present.	• Lack of applicable certification framework • Requirement for and lack of large-scale spatial data on weather events, ecosystem extent and condition, population density and value of infrastructure. • Public awareness and business case for demand required to underpin supply.	• Need for culturally appropriate certification framework applicable to blue carbon projects. • Pressures on First Nations organisations and industry groups' resources limits their capacity to leverage opportunities presented by carbon markets.
AVAILABILITY OF CERTIFICATION FRAMEWORK				

KEY

 No evidence

 Limited evidence

 Strong evidence

1. Lellis-Dibble et al, (2008)
2. Mapping Ocean Wealth, (2023), Fisheries.

We have developed a set of **targeted recommendations** for Australian policymakers to address core barriers to finance flowing for each non-carbon benefit assessed.

BIODIVERSITY BENEFITS

Governments could play a valuable role developing or **supporting the development of publicly available frameworks** (potentially via methodologies under the proposed Nature Repair Market) for the certification of biodiversity co-benefits to blue carbon projects. This would support both demand and supply side confidence in certification approaches.

At this stage, the credit price uplift via certification of biodiversity benefits to blue carbon projects is uncertain. Governments could support supply side pricing confidence and demand side pricing expectations, as well as contribute to biodiversity-related policy goals, through **offtake contracts targeting blue carbon projects with certified biodiversity benefit**s.

As the cost of certification is high and data accessibility is low, governments could provide **financial support for biodiversity benefit certification and for measurement and monitoring technology**, as well as enable access to governments' datasets.

Finally, governments could financially support the **incorporation of First Nations knowledge** into blue carbon biodiversity benefit certification schemes.

FISHERIES BENEFITS

There are a range of mechanisms governments could pursue to drive fisheries sector investment into blue carbon projects.

This could include requiring **fisheries to finance blue carbon as a condition of their fishing licence**s, by requiring evidence of investment into blue carbon activities directly, or the purchase of blue carbon credits with fisheries co-benefits. Through these funds gathered from fishing licence fees, the **government could establish a blue carbon investment facility**.

Before this can occur, frameworks to quantify and schemes to certify the benefits Australian blue carbon projects deliver for fisheries are required. Given that, though scientific methods exist, there is no readily available framework for Australian blue carbon projects to quantify and certify project-level uplift in fish stock, Governments could **seek to expedite DCCEEW and CSIRO's efforts to develop the metrics** that would underpin such a certification framework.

Finally, governments could **collaborate with domestic and international fisheries sustainability certification bodies** to integrate investment into blue carbon ecosystems that support fish stocks into existing certification schemes.

COASTAL RISK REDUCTION

There is an opportunity for governments to play a strong advocacy role and develop policy settings that enable education, standardisation and innovation in valuing the coastal risk reduction benefits provided by blue carbon in Australia.

Governments could develop **targeted information campaigns** for local communities and asset owners to increase public awareness of the protective benefits of blue carbon ecosystems, and help build capacity of coastal asset owners to integrate costs and benefits of blue carbon in infrastructure assessments and valuations.

To address the lack of a clear certification framework for quantifying coastal risk reduction benefits from Australian blue carbon projects, governments could develop a more standardised approach. This could **involve endorsing certification frameworks** that are applicable to Australian blue carbon ecosystem types, providing access to robust and consistent data and metrics, and aligning with established understandings of physical climate risk.

Finally, governments could partner with the insurance industry to **pilot innovative insurance models** that facilitate investment into blue carbon ecosystems.

FIRST NATIONS & LOCAL COMMUNITIES

Governments at all levels can help to enable market norms that ensure that the beneficial relationships between blue carbon projects and First Nations and local communities are properly understood and financially valued by carbon market participants.

It would be valuable for governments to **enable First Nations organisations to convene** Indigenous communities, carbon market actors and policy makers to design market-led solutions to scale the Indigenous carbon industry, including blue carbon.

Governments can also play an important role in **supporting capability and cultural awareness uplift in demand side carbon market actors** to build sophistication in market norms.

Further, governments could s**upport and promote culturally appropriate models for benefit recognition**, including the development and endorsement of First Nations-led certification frameworks relevant to blue carbon projects.

Targeted grants or concessional finance to de-risk First Nations-owned blue carbon projects would help to facilitate private sector investment.

Finally, there are a range of initiatives governments could fund or pursue to ensure First Nations organisations and industry groups have the institutional capacity to leverage the potential of carbon markets to grow the intergenerational wealth and wellbeing of First Nations communities.

Our assessment has been focused blue carbon project activities in Australia, but there is an opportunity for the Australian governments to demonstrate global leadership on non-carbon benefits to blue carbon projects.

GLOBAL LEADERSHIP

Australian governments, particularly the Federal government, could leverage existing initiatives to support global progress and knowledge sharing on financing non-carbon benefits to blue carbon projects. These initiatives could include:

1. Blue Carbon Accelerator Fund

The Blue Carbon Accelerator Fund, established by Australia and the IUCN, supports the development of blue carbon restoration and conservation projects in countries outside Australia, and would be a valuable avenue for knowledge sharing on financing non-carbon benefits of blue carbon projects.

2. International Partnership for Blue Carbon

The International Partnership for Blue Carbon connects government agencies with non-governmental organisations, intergovernmental organisations and research institutions globally.

3. Global Ocean Accounts Partnership

Australia is a member of the Global Ocean Accounts Partnership and could help to ensure that the social, economic and environmental baseline and outcome data compiled under the partnership seeks to fully account for non-carbon benefits to blue carbon projects, particularly those relating to First Nations communities.

Introduction.

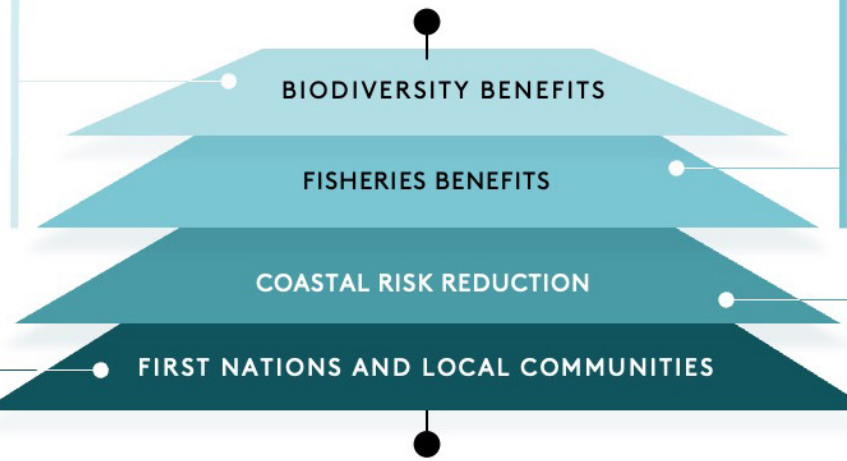
CONTENTS

WHAT ARE THE NON-CARBON BENEFITS OF BLUE CARBON?

Blue carbon projects offer a range of benefits, providing the potential to activate multiple revenue streams beyond carbon sequestration.

BIODIVERSITY BENEFITS

The first section in this report will focus on financing mechanisms for the biodiversity benefits associated with blue carbon projects. As nature and biodiversity are further mainstreamed as corporate sustainability concerns, we expect to see growing corporate willingness to finance nature and biodiversity-focused projects.



FISHERIES BENEFITS

The second section in this report will focus on the potential for alternate revenue streams derived from the fisheries benefits provided by blue carbon projects. This paper will consider the efficacy of market-based mechanisms to drive finance into these kinds of benefits.

FIRST NATIONS AND LOCAL COMMUNITIES

The fourth and final section in this report will focus on the nexus between blue carbon projects and benefits to First Nations communities and local communities and economies.

COASTAL RISK REDUCTION

Blue carbon ecosystems play a crucial role in asset protection and community resilience, acting as a natural buffer for severe weather events. The third section in this report will focus on how these benefits from blue carbon projects can be measured and valued.

WHAT ARE THE NON-CARBON BENEFITS OF BLUE CARBON?

OTHER BLUE CARBON BENEFITS

This report focuses on the non-carbon benefits set out on the previous slide. These four benefit types have been chosen as they are the most prominent in discussions regarding the potential alternate revenue streams available to finance blue carbon projects. However, it is recognised that there are a range of other benefits provided by blue carbon ecosystems outside of these, including:

1. **Sediment and aquatic chemistry regulation and human nutrition**
   Research also suggests that mangroves in particular have a positive impact on human nutrition through the aggravated bioaccumulation of harmful substances – e.g., mangrove roots can act as barriers to prevent free heavy metal movement to other more sensitive parts of the mangrove, such as the leaves, thereby reducing the risk of bioaccumulation in mangrove food chains (including fauna within these food chains which are eventually consumed by people).[1]

2. **Water filtration and quality**
   Coastal wetlands also improve water quality from land run-off through nutrient retention in sediments, plant uptake for production, and denitrification. There is also evidence that kelp forests can provide significant nitrogen removal services.[2]

3. **Medicinal benefits**
   Research has shown that mangroves, in particular, can be used for a multitude of medicinal purposes, including antifungal, antibacterial, anti-inflammatory, antioxidant, antidiabetic and anticancer applications (among others).[3] This is reflected in the plentiful accounts of the medicinal properties of mangroves from different Indigenous knowledge sources.[4]

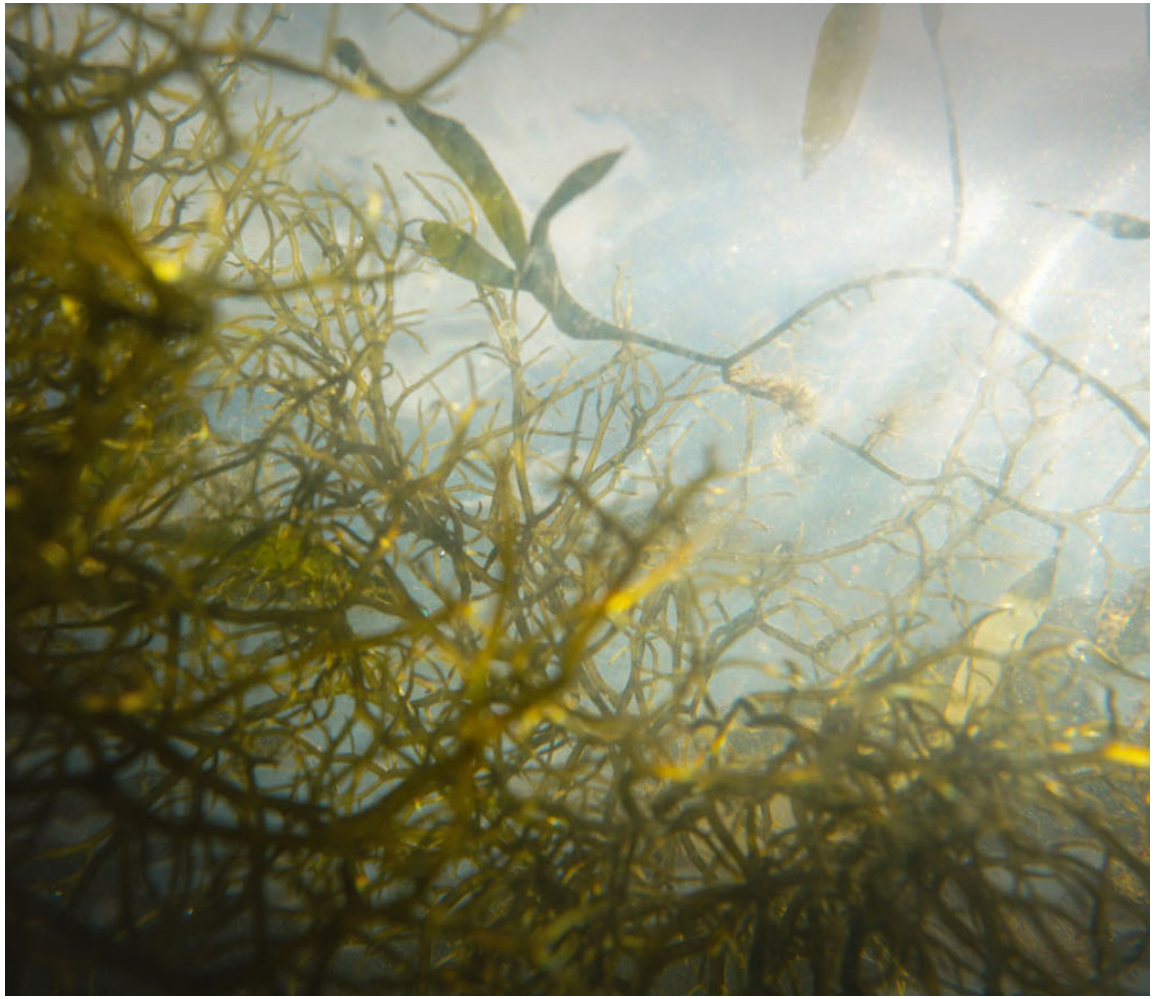
1. Awuku-Sowah et al. (2022). Investigating mangrove-human health relationships: A review of recently reported physiological benefits;
2. Eger et al. (2023). The value of ecosystem services in global marine kelp forests;
3. W.M. Bandaranayake, (2002). Bioactivities, bioactive compounds and chemical constituents of mangrove plants;
4. See, for example: Rangasamy et al., (2019). Therapeutic and Traditional Uses of Mangrove Plants.

FOCUS ON MARKET-BASED MECHANISMS

Though there are a range of potential mechanisms to finance blue carbon projects and their biodiversity benefits, this report focuses in particular on *market-based* mechanisms.

With the right demand and supply drivers in place, markets can provide a valuable mechanism to drive investment – particularly private sector investment – into on-ground projects that would not otherwise occur.

The architecture of the market, the unitised nature of environmental outcomes and, particularly, the underpinning MRV requirements, provide private sector actors with confidence to invest. A clear use case and clarity in the appropriate claims that private sector actors can make also underpin private sector involvement and investment in environmental markets.



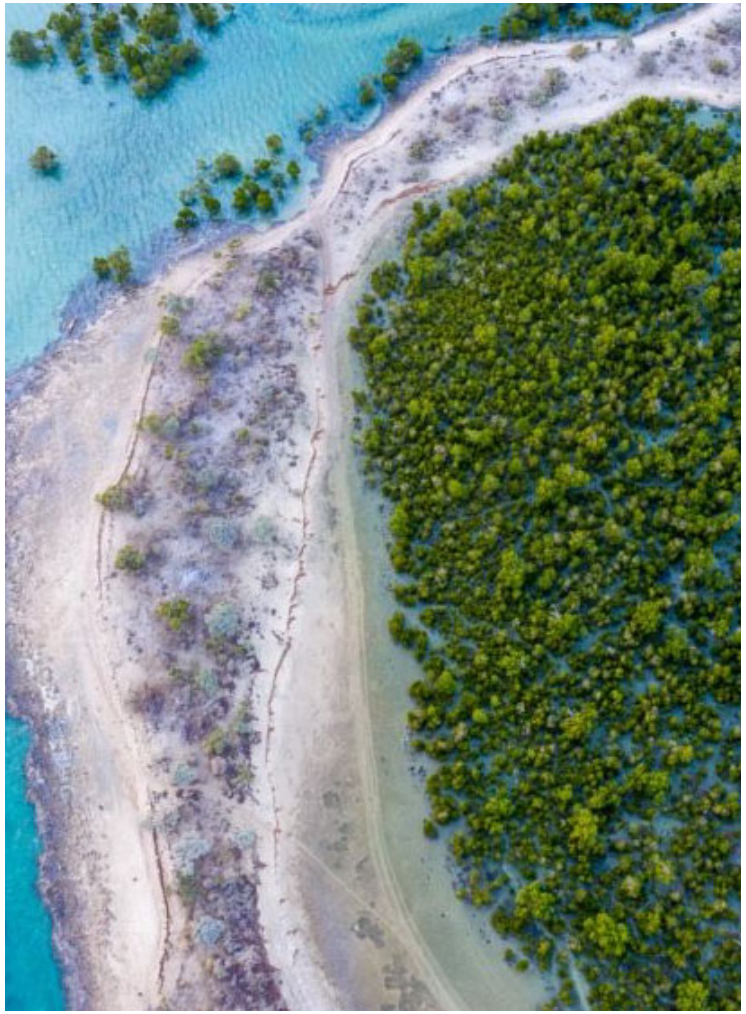
WHY ARE NON-CARBON BENEFITS IMPORTANT FOR BLUE CARBON PROJECTS?

For project proponents, financing mechanisms for non-carbon benefits provide additional revenue streams.

Increasing the availability of financing for non-carbon benefits will likely be vital for blue carbon projects to achieve economic viability at scale in Australia

There are several reasons the financing of non-carbon benefits are important, particularly in the Australian context:

- **Economic viability – project costs:** Costs for Australian blue carbon projects can vary considerably depending on the type of ecosystem, the methods used and the approach to ongoing operational and MRV requirements, but generally they require high upfront investment compared with other nature-based methods. Valuation of non-carbon benefits can provide alternate revenue streams that improve a project's economic viability.
- **Carbon credit yield:** Australia's first blue carbon ERF method relies on modelled abatement. Though this brings down MRV costs, the estimates of carbon sequestration are conservative. This adds to the economic viability challenge as fewer carbon credits are issued per hectare, and additional revenue streams are likely required. Further, for new methods, there are valuable blue carbon activities – such as the restoration of seagrass meadows – that are unlikely to deliver high carbon credit yields given the nature of carbon accumulation in these ecosystems. The financing of the non-carbon benefits delivered through these projects will likely be vital for market-based mechanisms to be a viable means to finance these projects.



WHY ARE NON-CARBON BENEFITS IMPORTANT FOR BLUE CARBON PROJECTS?

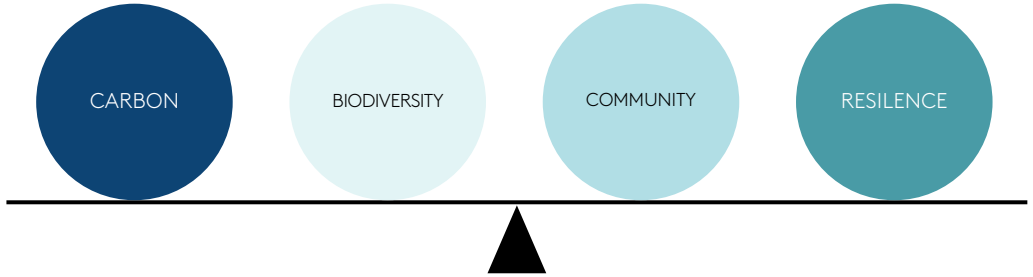
The attribution of financial value to non-carbon benefits can also enable balanced project design.

Financing of non-carbon benefits can help to ensure that decisions on project design appropriately consider the trade-offs between benefits

The Principles for High Quality Blue Carbon Credits, released at COP27 in 2022, highlight the need for projects to be designed to deliver outcomes across a suite of benefit-types, with a "high-quality blue carbon project" defined as follows:

> *"In addition to generating high-quality blue carbon credits, high-quality blue carbon projects deliver biodiversity, social, and economic benefits that often have more immediate relevance to local communities.*
>
> *Benefits for local and Indigenous communities, ecosystem integrity, and biodiversity are integral elements of a high-quality blue carbon project.*
>
> *Carbon projects that provide measurable reductions or that prioritise these positive outcomes are (1) designed with participation from Indigenous Peoples and local communities, (2) adaptively managed, and (3) verified under established standards.*[1]"

Figure 1: Blue carbon projects deliver a range of benefits across multiple pillars



Although strong projects will often deliver beneficial outcomes across multiple pillars, these outcomes can, at times, be in tension with one another. In the terrestrial space, there have been instances of projects being geared towards carbon benefits to the detriment of other potential benefits such as biodiversity (for example, fast-growing non-native species being selected in forestry projects in lieu of biodiverse planting with a more slowly realised carbon sequestration benefit).

Consideration of the full suite of benefits that could be delivered by a blue carbon project is required to ensure decisions on project design are balanced, well-considered and align with international guidance on producing high-quality carbon credits. As emissions reduction and sequestration is clearly the environmental benefit which has the most substantial demand, the financing of non-carbon benefits will help to support balance in these decisions.

1. Conservation International, Friends of the Ocean, WEF, ORRAA, SalesForce, TNC & Meridian Institute. (2022). High-quality blue carbon principles and guidance.

WHY ARE NON-CARBON BENEFITS IMPORTANT FOR GOVERNMENTS?

For policymakers, blue carbon projects have significant public benefits that can support a broad range of policy goals. Governments have an important role to play in creating mechanisms and incentives that support private financing of these benefits.

Non-carbon benefits and public goods

Blue carbon projects generate a range of public benefits of interest to policymakers including environmental, health, cultural, recreational and economic benefits. A number of these benefits can be thought of as public goods. That is, by their nature they are available to, and can be enjoyed by, many groups of people. For example, increased biodiversity and water quality in coastal areas increase the enjoyment and use of these areas by local communities and visitors to the area.

In addition, blue carbon ecosystems provide benefits that extend beyond local communities that exist in proximity to these ecosystems and include private enterprises that benefit financially from the ecosystem services provided by blue carbon environments. The economic value of these benefits can be most clearly quantified where it is directly linked to goods that are already traded in a market (and so have already been economically valued).

For example, fisheries and their retail customers benefit from increased numbers and quality of fish stocks which result from the improved habitat, breeding grounds and water quality provided by blue carbon ecosystems.

Depending on the type of beneficiary, these benefits are usually freely available – the exception being fishers who may need to pay a licence to fish in certain areas. However, these licencing regimes, where they exist, do not always reflect the full economic value provided by these ecosystem services, nor the financial value lost as a result of the fishing activities undertaken. Similarly, the costs associated with replacing the ecosystem services provided by blue carbon environments, which might be lost through private enterprise activities such as agriculture and land-use changes, are not priced into traditional financial decision-making frameworks.

As such, absent legislative or regulatory changes, there is no incentive for private enterprise to carry out operations in a way that manages these public benefits efficiently and sustainably. Therefore, these public benefits are typically managed and administered by governments and paid for collectively through taxation – or in some cases can be the subject of philanthropic funding.

WHY ARE NON-CARBON BENEFITS IMPORTANT FOR GOVERNMENTS?

Incentivising private sector investment in the generation of public goods

From a project proponent or investor perspective, the generation of public goods does not generally improve the financial viability of a project – as they are non-rivalrous and non-exclusive, they cannot be sold for a return to finance project activities. This is despite many businesses benefiting from the ecosystem services that blue carbon provides.

Thus, from a policy perspective, there is a question of how policymakers incentivise support for these public goods through private sector financing in order to relieve the burden on government spending and to recognise there is a significant and unrecognised benefit being obtained by businesses from the generation of these public goods.

From a project perspective, this could be achieved either through financial incentives which specifically target project activities that generate public benefits, such as additional funding made available to eligible projects, or through policy restrictions requiring proponents to meet certain eligibility standards or criteria, including the generation of public benefits, in order for them to carry out projects in the relevant jurisdiction. Alternatively, investment in these benefits can be generated by targeting corporates through the creation of market mechanisms that measure and place a value on these benefits and create exclusivity in them, such as through certified assets, thereby ensuring corporate decision-making frameworks are more holistic.

The question that this report seeks, in part, to resolve is whether there are any such mechanisms which currently exist to incentivise private sector financing of non-carbon benefits, and, with respect to market mechanisms, the further question of whether the right market conditions currently exist to incentivise the flow of private capital.

This will help to inform where government policy can and should be targeted to increase private sector investment into activities that generate these public benefits.

WHY ARE NON-CARBON BENEFITS IMPORTANT FOR PURCHASERS?

For purchasers, non-carbon benefits play an important role in determining the quality of carbon credits

Why are carbon credit purchasers interested in non-carbon benefits?

As carbon markets come under greater global scrutiny, purchasers are increasingly concerned with ensuring their carbon credit supply is of high integrity and quality, in order to manage reputational risks.

One of the ways in which this has manifested in the market is that purchasers are taking a more holistic view of what constitutes a high-quality carbon credit and, as a result, are valuing the broader environmental, social, cultural and economic benefits produced by carbon projects and, importantly, ensuring projects do not have associated detrimental impacts on other sustainable development goals.

For example, the VCMI Provisional Claims Code of Practice requires that all credits used as the basis for credible claims must be of high quality and meet basic criteria, including that they (amongst other things) be from activities that promote equity, apply social safeguards, and demonstrate positive socio-economic impacts and which, wherever possible, maximise co-benefits across the Sustainable Development Goals.[1]

In particular, and as discussed, the Principles For High-quality Blue Carbon Credits released at COP27 in 2022 also highlight that carbon credits generated by blue carbon projects should be considered 'high quality' by end users where they optimise outcomes for people, nature, and climate in a transparent and equitable way.[2]

Non-carbon benefits of carbon projects also enhance the value derived from credit buyers' investments by allowing them to simultaneously achieve multiple company priorities and goals, which is likely to lead to greater reputational outcomes for the company. Where carbon credits are associated with a consumer-facing product, companies are particularly motivated to ensure there is a positive narrative around the underlying credit project, including by reference to local elements and tangible co-benefits. For example, Qantas purchases credits from the North Kimberley Fire Abatement Project (which utilises the Savanna Burning Methodology) as a way of integrating its Reconciliation Action Plan goals with its carbon offsetting program.

Pollination is of the view that purchasers seeking ACCUs to meet their compliance obligations under the reformed Safeguard Mechanism will likely be seeking lowest-cost ACCUs and thus may not pay a premium for ACCUs with non-carbon benefits.

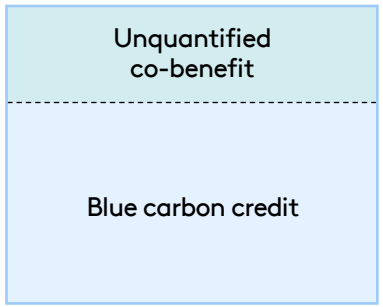
1. VCMI. (2022). VCMI Claims Code of Practice;
2. Conservation International, Friends of the Ocean, WEF, ORRAA, SalesForce, TNC & Meridian Institute. (2022). High-quality blue carbon principles and guidance.

STRUCTURING NON-CARBON BENEFITS IN ENVIRONMENTAL MARKETS

There are several ways the non-carbon benefits of blue carbon projects can be structured via environmental market mechanisms.

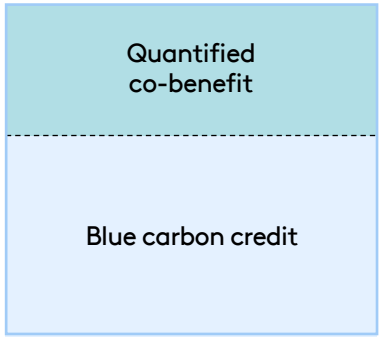
Demand considerations for each product structure are unpacked below here.

BLUE CARBON CREDITS WITH CO-BENEFITS



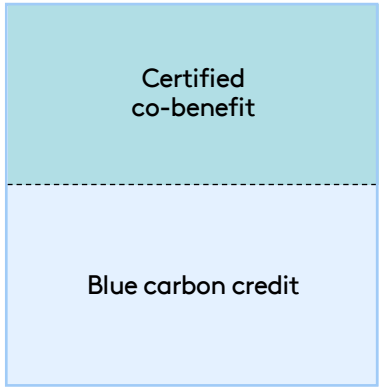
UNQUANTIFIED

The non-carbon co-benefit is assumed by virtue of the nature of the blue carbon activity undertaken; for example, biodiverse mangrove restoration projects.



QUANTIFIED

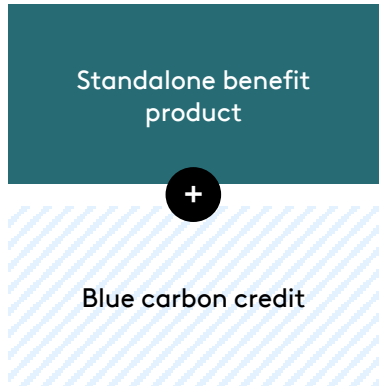
The non-carbon co-benefit is quantified as an additional benefit to the carbon mitigation achieved through the project.



CERTIFIED

The non-carbon co-benefit is quantified and certified under a standard as an additional benefit to the carbon benefits achieved through the project. There are a range of certification schemes than can be used for different non-carbon benefits.

STANDALONE BENEFIT PRODUCTS



STANDALONE BENEFIT PRODUCT

For some non-carbon benefits of blue carbon projects methodologies are available to generate a standalone, independently fungible unit. Biodiversity credits and coastal resilience assets are examples of this model.

Standalone products could be stacked or bundled with carbon credits or sold separately, where demand exists.

STRUCTURING NON-CARBON BENEFITS IN ENVIRONMENTAL MARKETS

Is quantification and/or certification of non-carbon benefits necessary?

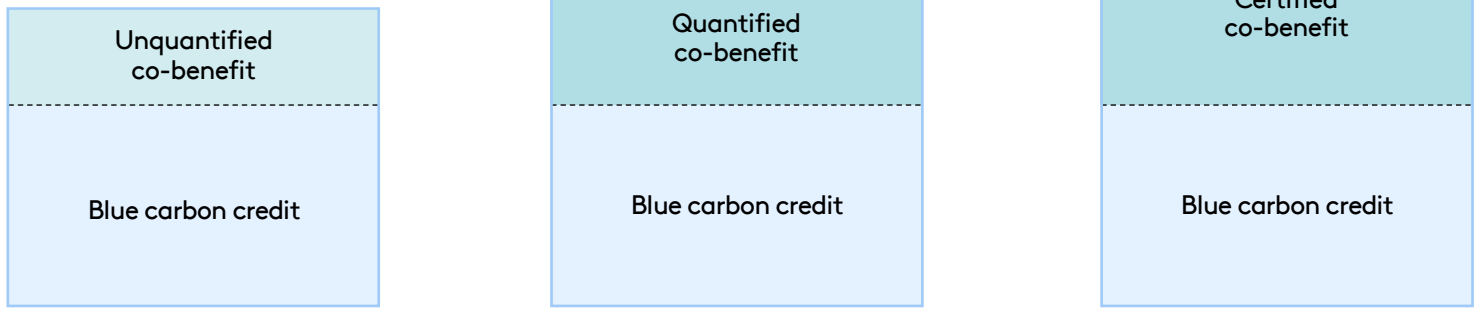
As noted, the quantification and certification of non-carbon benefits provides a means for environmental credit purchasers to have confidence in the claims they make about a credit purchase. However, certification may not be necessary where there is clear evidence that a blue carbon project will deliver particular non-carbon benefits, or the purchaser will directly benefit from the blue carbon project.

- For instance, where a blue carbon project is financed by a beneficiary on the basis of the coastal risk reduction benefits it will deliver, that beneficiary may not require separate additional certification of the coastal risk reduction benefits.
- Likewise, where there is a sufficiently close nexus between a blue carbon project and the benefits it delivers to a fisher, separate certification of benefits to fish stocks may not required. However, certification of benefits to fishers may help to establish the business case for investment in blue carbon projects or credits by fishers, and may be important in the communication of benefits through to more indirect actors in the seafood value chain.
- The desirability of certification is particularly nuanced for First Nations benefits. Where a project is First Nations-owned, separate certification of benefits delivered by the project may not be required. There is evidence of credit premiums on the basis of First Nations provenance. See here for a more detailed explanation.

STRUCTURING NON-CARBON BENEFITS IN ENVIRONMENTAL MARKETS

The demand profile varies for different forms of non-carbon benefit products.

BLUE CARBON CREDITS WITH CO-BENEFITS



DEMAND FOR CO-BENEFITS

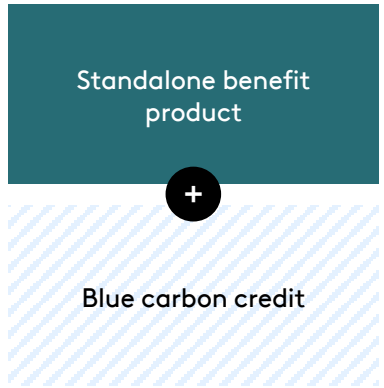
At this stage, the primary way to finance non-carbon benefits is as a co-benefit to carbon credits which have a known demand profile.

There is evidence of credits with strong co-benefits attracting a premium price from the market compared to credits with limited evidence of achieving co-benefits.

Given the nascency of blue carbon projects generally, and particularly in Australia, it remains to be seen how co-benefits will be valued in this context; however, it can be expected that credits generated from blue carbon projects will follow this trend.

Purchasers' willingness to pay a premium for quantified and certified co-benefits is likely to be tied to their risk appetite and desire for third party certification to underpin claims made.

STANDALONE BENEFIT PRODUCTS



DEMAND FOR STANDALONE BENEFIT PRODUCTS

As environmental markets mature, mechanisms to generate standalone benefit products are emerging. If the proposed Nature Repair Market is legislated, the biodiversity certificates generated under its methodologies will be an example of a 'standalone benefit product'. The demand profile for these products is significantly more nascent than for carbon credits.

While there is growing demand from the private sector to engage with non-carbon benefits, programs that measure and verify non-carbon benefit outcomes alone are nascent, and standalone markets (for example, biodiversity credit markets) are not yet liquid. However, to the extent possible, claims regarding non-carbon benefits should be underpinned by robust measurement to ensure claims are not misleading or considered to be 'greenwashing'.

1. Biodiversity.

1.1 Key terms and overview of biodiversity benefits.

BIODIVERSITY BENEFITS

Blue carbon ecosystems provide a range of services that support biodiversity, benefiting a broad range of users, from local communities to fisheries and the private sector more broadly.

This section considers the biodiversity benefits delivered by blue carbon projects, the market dynamics in financing them, gaps and limitations in existing models and recommendations for policy makers to incentivise private sector finance for biodiversity co-benefits to blue carbon projects. Key concepts and findings are outlined below.

1. There are a range of possible product structures that can be used to generate and market biodiversity benefits to blue carbon projects.

Mechanisms considered include possible product structures (biodiversity co-benefits to carbon credits, standalone biodiversity units and stacked and stapled hybrid units) and the demand drivers behind different product structures. Refer to terminology here for distinction between terms.

2. Aligned with these project structures, there are a range of existing frameworks for certifying these benefits, however there is no clear or dominant currently-available framework for use by Australian blue carbon projects.

Cases studies include both Australian and international examples and market trends, challenges and opportunities emerging.

3. Policy settings and targeted government funding could enable the certification of biodiversity benefits and drive private sector investment into these benefits for blue carbon projects.

There is an important role for governments to play in creating an enabling environment for private sector investment in biodiversity benefits to blue carbon projects. These recommendations focus on biodiversity co-benefits (as opposed to standalone biodiversity units).

BLUE CARBON BIODIVERSITY BENEFITS

Blue carbon ecosystems provide range of important biodiversity benefits, including:

1. **Habitats for fish and bird populations**
   Coastal blue carbon ecosystems provide essential breeding grounds for fish and shellfish, as well as feeding and staging grounds for migratory birds.[1]
2. **Role in the food chain, including for threatened marine species**
   Blue carbon ecosystems provide significant positive second-order effects on corals, algae and marine biodiversity, which is particularly important for threatened marine species such as turtles and dugongs.[2]
3. **Pollution filter: water filtration and quality**
   Coastal wetlands provide additional ecosystem services, such as improving water quality from land run-off through nutrient retention in sediments, plant uptake for production, and denitrification, which in turn support biodiversity.[3]

1. Hilmi et al., (2021). The Role of Blue Carbon in Climate Change Mitigation and Carbon Stock Conservation.
2. Luypaert et al., (2019). Status of Marine Biodiversity in the Anthropocene;
3. Stutter et al., (2019). Current Insights into the Effectiveness of Riparian Management, Attainment of Multiple Benefits, and Potential Technical Enhancements.

WHO ARE THE BENEFICIARIES OF BIODIVERSITY BENEFITS?

Enhancement of biodiversity can provide a range of environmental, social, and economic benefits at every scale – from within blue ecosystems and throughout wider society

Biological diversity is the "variability among living organisms from terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems".[1] Biodiversity underpins the functioning of all ecosystems and is essential for the health and wellbeing of people and the planet, and as such is a 'supporting' service as it provides ecosystem stability and resilience. Conservation efforts and the preservation of biodiversity benefits not only the individuals directly impacted but also future generations and wider society. Consequently, many of the benefits of biodiversity are 'public goods', meaning they cannot be restricted to certain individuals or diminished through use.

The value biodiversity provides is often categorised as either a 'use value' - encompassing the tangible and direct benefits humans derive from biodiversity including contributing to the production of various goods and resources such as food, timber, fibres, and medicinal plants - and 'non-use' values which refer to the intrinsic worth and indirect benefits that biodiversity provides, irrespective of human use. Balancing these values is essential for achieving a harmonious and sustainable relationship between humans and the natural world.

NON-EXCLUSIVE BENEFITS (Public goods)

Enhanced biodiversity supported by blue carbon ecosystems provides a range of goods which benefit many groups across different areas of society, including:

- **Benefits to society :** The biodiversity supported by blue carbon ecosystems can have positive impacts for civil society and local communities. These benefits include increased climate resiliency in local areas, increased quality of the local living environment, health benefits through, for example, supporting water quality outcomes, and recreational and cultural benefits.

- **Benefits to businesses:** Biodiversity supported by blue carbon ecosystems across Australia supports ecosystem productivity and resilience which underpins the goods and services that a range of economic activities rely upon. For instance, wetlands provide habitat for a diverse range of birds, which can play an important role in helping to control pests on nearby farms.[2] Straw-necked ibis frequently forage for grasshoppers and other leaf-eating insects in crops such as lucerne, reducing the need for costly and polluting chemical spraying to control insect pests.[3]

1. The Convention on Biological Diversity, (2006).
2. NSW Department of Planning and Environment.
3. As above.

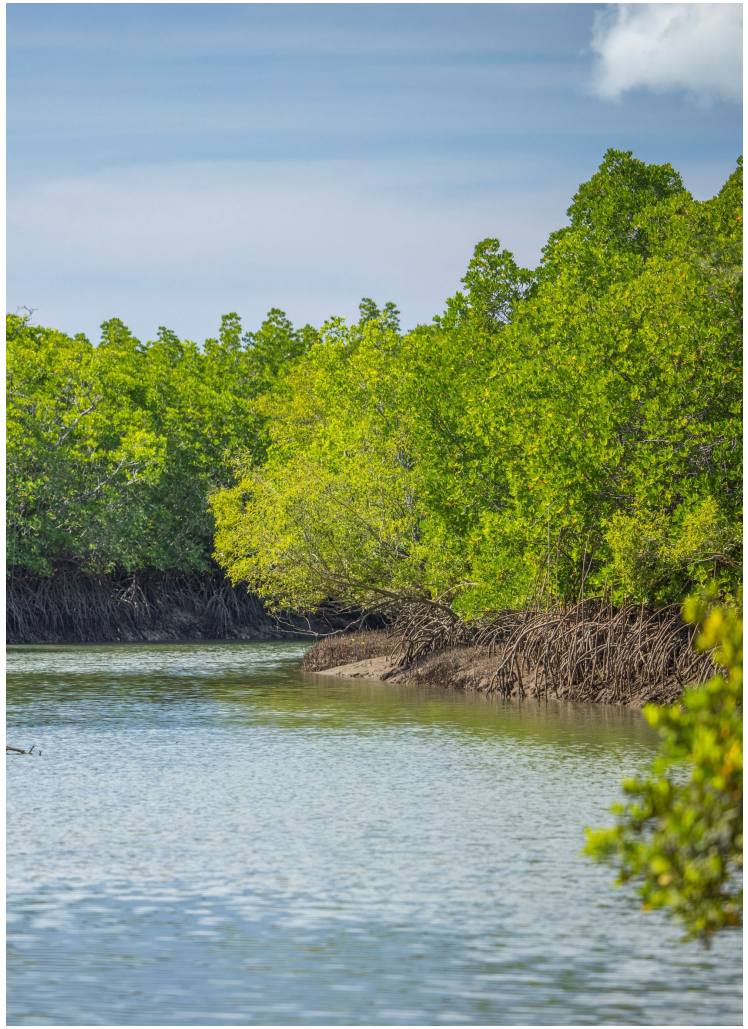
EXCLUSIVE BENEFITS

The biodiversity supported by blue carbon ecosystems provides a range of exclusive benefits to private operators including seafood harvested under quotas and licensed tourist charter boats such as those visiting reefs.[1] Exclusivity occurs when users can be denied goods unless they meet the conditions of the supplier or owner who, in many instances in Australia, will be governments.

POSITIVE BIODIVERSITY CLAIMS

Though nascent, there are an increasing number of credit markets or certification schemes that put a specific economic value on the generation of positive biodiversity outcomes in a particular area.

While the ultimate beneficiaries of these positive outcomes may be broad, the process of certification creates a separate private good, being a certificate or 'credit' that enables the purchaser to make a particular claim about their contribution to enhancing biodiversity within the particular area. Typically, schemes are designed to ensure only one purchaser has the right to make this claim, and once it has been made the relevant certificate or credit is 'retired' and cannot be re-used by another. This results in a 'rivalrous and excludable' benefit enjoyed only by the relevant purchaser. These evolving valuation and unitisation frameworks are discussed further in the following sub-sections of this report.



1. Ban et al, (2015), Interplay of multiple goods, ecosystem services, and property rights in large social-ecological marine protected areas.

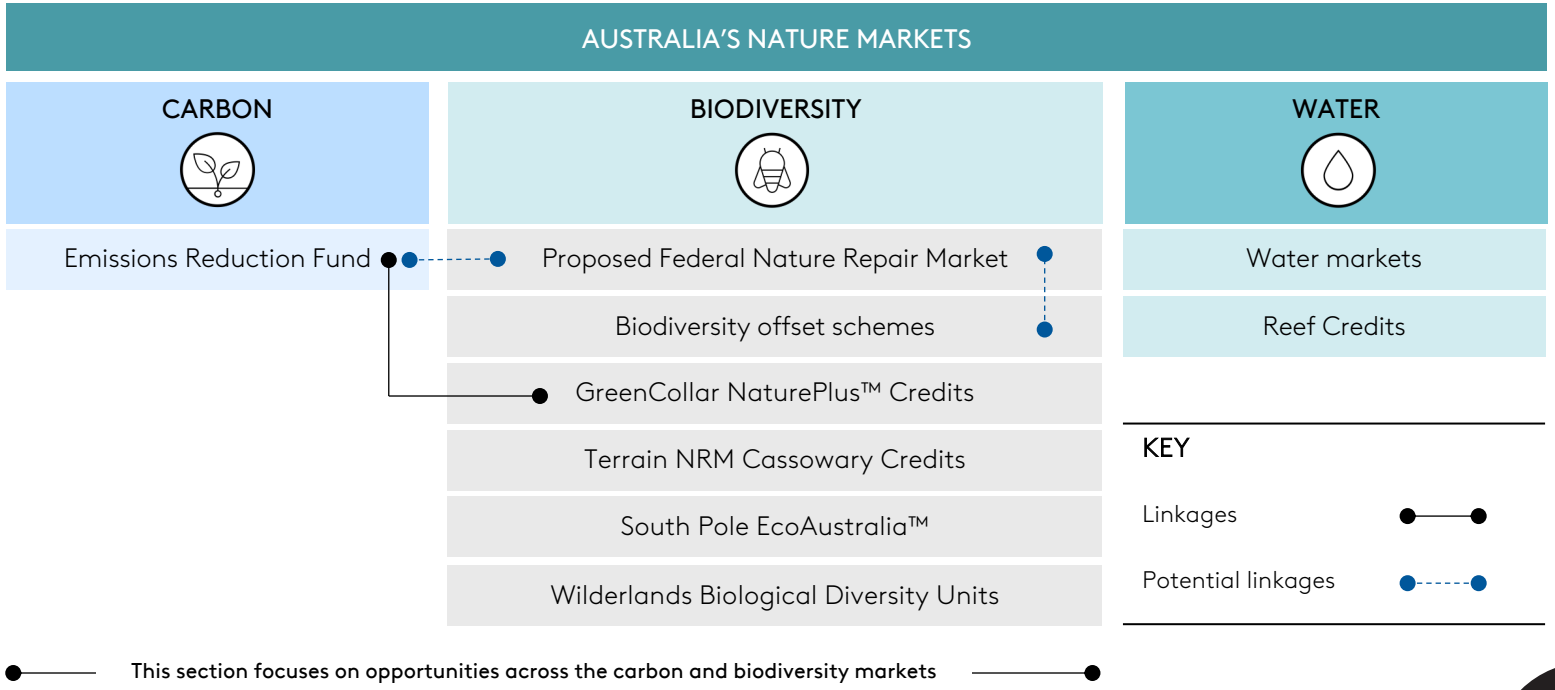
EXISTING FRAMEWORKS

In Australia, there are a range of market-based mechanisms that facilitate the flow of private capital into environmental benefits that can be considered collectively as a series of *nature markets*.

NATURE MARKETS have two essential characteristics:

1. monetary value specifically attributed to nature/its functions (i.e., **ecosystem services** that it can provide); and
2. nature-specific revenues generated as an integral part of the trade.

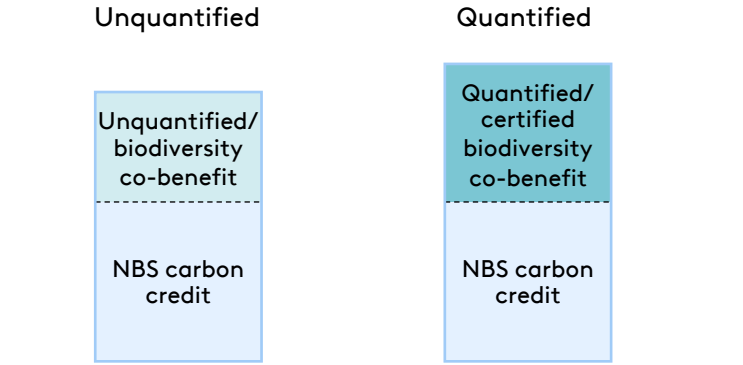
Figure 2: Landscape view of Australia's nature markets



There are several models for financing positive biodiversity outcomes through environmental markets, including nature-based carbon and biodiversity-credit markets.

Note that financing for biodiversity offsets is not considered as part of this report.

CO-BENEFITS TO CARBON



Biodiversity co-benefits to carbon credits can be:

- **Unquantified** – the biodiversity co-benefit is assumed by virtue of the nature of the NBS activity undertaken, for example biodiverse mangrove restoration projects; or
- **Quantified/certified** – the biodiversity co-benefit is quantified and/or certified as an additional benefit to the carbon mitigation achieved through the project (e.g., the Climate, Community and Biodiversity Standards administered by Verra).

STANDALONE BIODIVERSITY UNITS

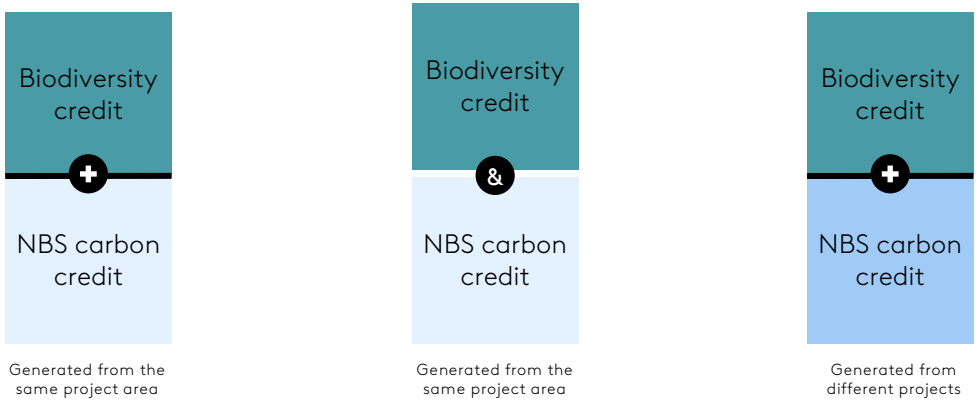
Standalone voluntary biodiversity credits are an emerging unit type.

Early guidance on best practice principles for biodiversity credit design recommends biodiversity credits are not intended to facilitate buyers 'offsetting' a negative impact on biodiversity, but instead to facilitate private investment solely for the protection and regeneration of nature.[1]

Standalone biodiversity offsets are biodiversity units used to compensate for direct negative impacts on nature. Historically biodiversity offsets have been used for compliance purposes under planning and development regulations, though they could potentially be used for voluntary purposes.

1. See further: World Economic Forum. (2022). High-level Governance and Integrity Principles for Emerging Voluntary Biodiversity Credit Market – Consultation Paper; and, Plan Vivo Foundation. (2023). High-level integrity principles developed to steer emerging biodiversity credits market.

HYBRID MODELS



- **Bundled products** involve multiple benefits produced by nature-based projects within a project area being sold as a single product to a single buyer.[1]
- **Stacked products** involve various ecosystem services provided by nature-based projects within a project area being sold as a range of different credit types or units of trade that together form a stack (for example, separate carbon credit and biodiversity credits). The components of the stack can then be sold individually to different buyers and separate payments received for each set of services.[2]
- **Stapled products** involve the pairing of various benefits achieved through different projects being sold together as a single unit (for example, a carbon credit and a biodiversity credit from different projects).

1. Global Environment Facility, (2023), Innovative Finance for Nature and People: Opportunities and Challenges for Biodiversity-Positive Carbon Credits and Nature Certificates.
2. As above.

1.2 | Market dynamics.

1.2.1 Demand considerations.

DEMAND PROFILE

Globally, there is an increasing focus on nature and biodiversity loss and the role environmental markets can play in directing private capital into biodiversity restoration, protection, and stewardship activities.

Globally, the private sector's focus on nature and biodiversity has rapidly increased since 2020. This shift has largely been precipitated by a greater acknowledgement of the economic risks posed by nature and biodiversity loss.

As companies look to take action to halt and reverse nature loss, and contribute to a trajectory orientated towards a 'nature positive' future, alongside their carbon commitments, demand for carbon projects with a biodiversity benefit and potentially standalone biodiversity credits, is likely to grow.

This is being recognised in international frameworks and agreements around biodiversity loss, for example, target 19 of the Global Biodiversity Framework expressly calls out biodiversity credits (as distinct from offsets) as an innovative way of stimulating investment into nature and biodiversity.

As a result, attention is now shifting to the set of levers available to rapidly scale up investment – particularly private sector investment – in nature.

The Kunming-Montreal Global Biodiversity Framework was adopted during the fifteenth meeting of the Conference of the Parties, which sets out an ambitious pathway to reach the global vision of a world living in harmony with nature by 2050.

SCIENCE BASED TARGETS NETWORK
GLOBAL COMMONS ALLIANCE

The Science Based Targets Network is currently piloting the first release of science-based targets ahead of the general launch expected in 2024.

TNFD Taskforce on Nature-related Financial Disclosures

The Taskforce on Nature-related Financial Disclosures framework will be finalised in September 2023 and the first TNFD-aligned disclosures are expected shortly thereafter.

Nature Action 100

"Nature Action 100+", launched at COP15, is a global investor engagement initiative focused on driving greater corporate ambition and action to reduce nature and biodiversity loss.

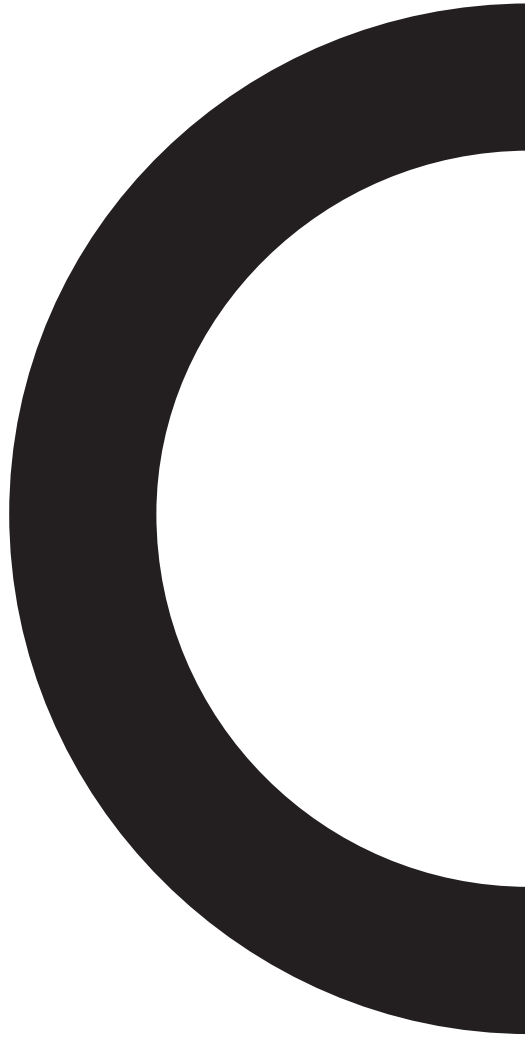
EU's Corporate Sustainable Reporting Directive, which came into force in January this year, will require ~50,000 companies to report on nature-related impacts, risks and opportunities.

EXISTING FRAMEWORKS

The below table sets out a high-level overview of the different demand profiles and investment drivers for each of these existing frameworks. We note these markets are rapidly evolving, and so norms may be subject to change.

		CO-BENEFITS TO CARBON		STANDALONE BIODIVERSITY UNITS	HYBRID MODELS
		Quantified/certified biodiversity co-benefit	Unquantified biodiversity co-benefit	Standalone biodiversity credits	Bundled, Stacked & Stapled
INVESTMENT DRIVER	DEMAND	There are market signals that there is demand for certified co-benefits, particularly as scrutiny on the integrity of carbon markets is heightened.	While there is generally strong interest in projects intended to deliver uncertified biodiversity co-benefits, such as NBS projects, it is difficult to quantify demand given the variation in quality and price across these project types.	Given the nascency of these markets, it is currently difficult to predict and quantify demand. However, there is evidence of genuine interest from the private sector in the role that biodiversity credits can play in corporate strategy to align with the nature positive transition.	See left. The demand profile for hybrid units is informed, in part, by demand for NBS carbon credits and biodiversity credits.
	MOTIVATION	Meet voluntary or compliance GHG targets or goals while also making claims about carbon credit purchase supporting quantified/certified biodiversity benefits.	Meet voluntary or compliance GHG targets or goals while also making claims about carbon credit purchase supporting (generalised) biodiversity benefits.	Fulfil a voluntary corporate commitment to contribute to a nature positive future and demonstrate positive action towards the mitigation of systemic nature-related risks associated with biodiversity loss.	Meet voluntary GHG targets or compliance-related caps and/or fulfill voluntary nature commitment.
	CLAIM	Claim to have financed certain quantified/certified biodiversity benefits. Nature of the benefit dependent on the certification scheme and benefit certified.	Claim to have financed biodiversity benefits likely to result from the carbon project.	Specific claim will depend upon the nature of the biodiversity credit certification scheme. Indicative claims include contribution to a nature positive future and positive action towards mitigation of systemic nature-related risks. Under emerging best practice guidance, should not be claimed as a biodiversity 'offset'.	For stacked models, where the credits are purchased separately, the carbon credit purchaser would not be entitled to make claims about the biodiversity benefits derived from the activities carried out on the land, and vice versa. For bundled and stapled models, the purchaser is entitled to make claims about both the carbon and biodiversity benefits associated with the carbon and biodiversity credits respectively.
	INTEGRITY (MRV)	Higher integrity vis-à-vis unquantified co-benefits. Biodiversity benefits subject to MRV to support quantification/certification.	Potentially lower integrity vis-à-vis quantified /certified co-benefits Biodiversity benefits assumed from the nature of the project activity but not subject to MRV.	Dependent on the particular scheme. Some MRV underpinning quantification and certification of the biodiversity credit would be required.	See left. Additionality must be carefully managed to avoid integrity issues.
	COST	Varies by methodology, but these credits can be priced at a premium to carbon credits without quantified/certified co-benefits (for example, price premiums for CCB label carbon credits).	Varies by methodology, though can generally be expected to be priced at a premium to carbon credits without any co-benefits (though likely lower than quantified co-benefits).	Dependent on the particular scheme. Given the nascency of the market – with most existing schemes at piloting stage - pricing trends are yet to be established.	Dependent on the particular scheme. For stacked models, there will be separate pricing for the carbon and biodiversity units respectively. For bundled and stapled models, the price is likely to be more than individual carbon or biodiversity credits.

1.2.2 Supply considerations: *certification frameworks*.



CASE STUDIES

There are a range of existing schemes that fall across the spectrum of market mechanisms to direct finance to biodiversity benefits. The case studies set out and depicted below provide an indicative, *though not exhaustive*, landscape view of existing and proposed schemes.

CO-BENEFITS TO CARBON

Quantified

Accounting for Nature™

Queensland Government

CCB Standards – The Climate, Community & Biodiversity Alliance

Unquantified

Typically exist in marketing claims of carbon credit sellers.

STANDALONE BIODIVERSITY UNITS

Standalone biodiversity credits

Australian Schemes

greencollar™ valuing the environment

Australian Government *

*The units in the proposed Nature Repair Market are certificates, not unitised biodiversity credits.

International Schemes

CLIMATE TRADE

TERRASOS

THE WALLACEA TRUST

PLAN VIVO For nature, climate and communities

NB: It is unclear whether international schemes will operate in Australia.

KEY

SCHEMES' APPLICABILITY TO THE BLUE CARBON CONTEXT

Scheme is currently applicable in the blue carbon context

Scheme may become applicable in the blue carbon context, but further developments are required

Scheme is not applicable in the blue carbon context

The majority of credit schemes are not currently being used in the blue carbon context; however, CCB Standard is used internationally to certify blue carbon credits, and the Commonwealth's proposed Nature Repair Market is intended to cover both terrestrial and marine environments.

ACCOUNTING FOR NATURE® (AfN)

Scheme uses Accounting for Nature® (AfN) methodology

CASE STUDIES

Accounting for Nature® is currently in the early planning and scoping phase for methodologies applicable to a variety of coastal and marine assets.

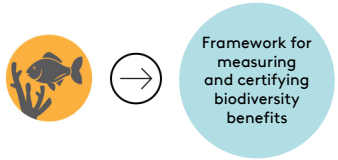
Accounting for Nature

Accounting for Nature® (AfN) is an accounting framework developed in order to inform better investment, policy and management decisions in natural capital.

AfN works with partners to implement the framework, which uses a standardised and scientifically rigorous methodology that measures the condition of the environment.

The AfN framework is relied on by the LRF Co-benefits Standard and underpins GreenCollar's NaturePlus™ Scheme, but could also be used directly by project proponents as a biodiversity co-benefit certification standard.

A Queensland NRM Group is developing a number of AfN methods applicable to the coastal/marine space.



APPLICABILITY TO BLUE CARBON CONTEXT

USED FOR BIODIVERISTY CO-BENEFIT CERTIFICATION	USED FOR STANDALONE BIODIVERSITY CREDIT GENERATION

Farmers, landholders, conservation land managers and carbon offset developers, investors, corporates and governments all need to increasingly prove their sustainability claims.

→

They build and register environmental accounts with AfN based on the AfN Certification Standard and approved scientific methods and guidelines.

→

Environmental Accounts are then third-party certified or self-verified, and awarded the use of a trust mark by AfN Ltd.

→

AfN trust marks give confidence to publicly communicate sustainability claims – whether for carbon and environmental co-benefits, corporate social responsibility, green bonds, impact investment etc.

The AfN Framework measures the environmental condition ('Econd') of assets (for example, native vegetation, soils, freshwater, native fauna, marine) in a project area. An Econd is a number between 0 and 100, where 100 indicates the asset is in the same condition as it was prior to significant human alteration, and 0 indicates system function is absent.

Methods certified by AfN are proponent driven. The most prospective coastal and marine methods under development are through a Queensland NRM Group, which has secured funding to develop methodologies for five regional marine assets:
(1) seagrass; (2) shore birds; (3) in-shore reefs; (4) turtles; and, (5) dugongs.

Pollination understands this is planned to be completed over the next ~ twelve months, with AfN seeking to integrate long-standing monitoring protocols for method development such that historic data can be used in these accounts.

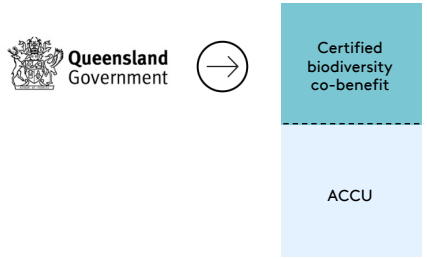
CASE STUDIES

The **Queensland Government's Land Restoration Fund (LRF)** is an example of governments leveraging the carbon market to incentivise land-sector carbon projects that deliver additional co-benefits. It has not invested in blue carbon projects to date.

Queensland Government

The LRF invests in Queensland carbon farming projects that:

- **generate ACCUs; and**
- **generate environmental, socio-economic or First Nations co-benefits as defined in the LRF Co-benefits Standard.**



LRF projects may seek to claim co-benefits from one of three co-benefit categories: environmental, socio-economic or First Nations.

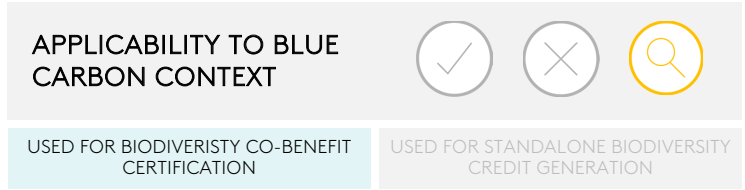
VERIFICATION:

The LRF has established its own 'Co-benefits Standard' to ensure LRF projects have a strong evidence-base for measuring, reporting and verifying co-benefits.

Depending on the carbon method and co-benefits to be claimed, LRF projects may verify co-benefits using either:

- Proponent assurance – Co-benefits are verified based on annual reporting of basic information and photo points to the LRF. This option is only available for carbon methods assessed as having clear links to specific co-benefits.
- Third party assurance – Co-benefits are verified based on evidence certified by an approved third-party framework, with reports provided to the LRF.

The AfN Framework is the only third-party framework currently approved for assurance of environmental co-benefits.



ADDITIONALITY:

Co-benefits need to be in addition to the benefits produced by a business-as-usual scenario, meaning they would not have occurred but for the carbon farming project. The LRF requires that co-benefits satisfy eligibility criteria and must be reported and verified before they are accepted.

STATUS:

The average price per ACCU with co-benefits in LRF Round 1 = $49 per unit.[1] On average, the value of the co-benefit was equivalent to the value of the ACCU. There were 18 contracted projects, $92 million of potential investment, and 1.8 million tonnes of carbon emissions sequestered or abated. Round 2 closed on 25 February 2022. There are five new projects under the second round, providing long-term protection for more than 6,000 hectares of land and representing an LRF investment of $11.5 million, with more projects under this round being finalised.

The LRF has funded research and development in the blue carbon space through its pilot rounds. However, it is yet to support any credits from blue carbon projects, since Round 2 occurred before the ERF method was finalised in 2022.

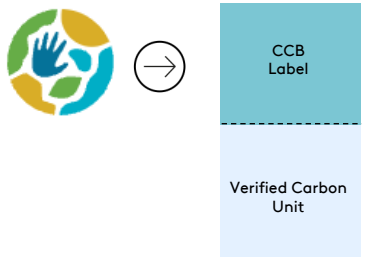
1. Queensland Government, (2021), Land Restoration Fund.

CASE STUDIES

The **Climate, Community & Biodiversity (CCB) Standards** verify projects that simultaneously address climate change, support local communities and smallholders, and conserve biodiversity. It is used internationally to certify blue carbon projects.

CCB Standard credits consist of a:

- VCS international credit; and
- CCB label, which indicates that an emission reduction unit was generated during a CCB-verified period.



CCB Standards is a Verra program that was developed by the CCB Alliance. The CCB Standards are intended to be applied early in a project's design phase. The Standards focus on agriculture, forestry and land use projects, and can be used with blue carbon methodologies. It requires demonstration of net positive social and environmental benefits, and robust stakeholder participation.

Pollination is aware of market participants who perceive certification through CCB Standards to be a baseline requirement for nature-based carbon projects.

VERIFICATION:

CCB projects are subject to desk and field audits by independent third parties and Verra staff to ensure that standards are met and methodologies are properly applied. Though these processes increase costs, third-party validation of co-benefits is valued by market participants. Pollination has received market feedback that carbon credit buyers are generally satisfied with the CCB verification and are not, at this stage, requesting more robust measurement or quantification of those benefit delivered.

Verra tracks all data on all CCB projects. The registry system tracks the generation, retirement and cancellation of all Verified Carbon Units that bear a CCB label.

APPLICABILITY TO BLUE CARBON CONTEXT

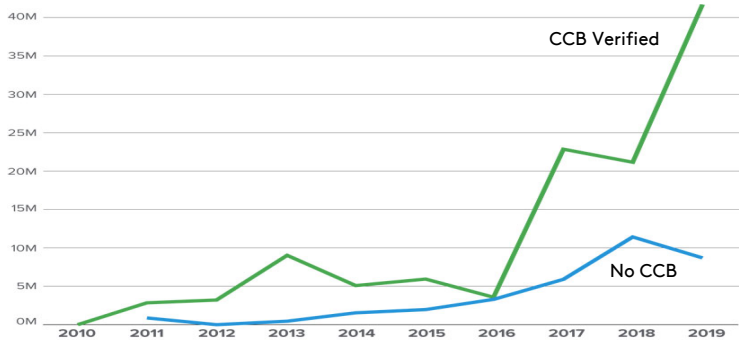
USED FOR BIODIVERISTY CO-BENEFIT CERTIFICATION	USED FOR STANDALONE BIODIVERSITY CREDIT GENERATION

STATUS:

Almost 200 projects have been validated to the CCB Standards spanning over 60 countries, over 50 of which have achieved full verification.[1] Of the ten+ blue carbon projects registered under Verra standards, at least two have CCB verification approved and a further two are under validation and verification.

Pollination is not aware of the CCB Standards being applied to projects in Australia.

Figure 3: Global increase in VCS CCB Verified projects[2]



1. Verra, (2023), Verra Registry.
2. Conservation International analysis.

CASE STUDIES

GreenCollar's NaturePlus™ Credit Scheme is intended to improve the environmental condition for ecosystems, habitat and threatened species based on measured results that are third-party verified under the environmental accounting framework, Accounting for Nature®.

GreenCollar's NaturePlusTM Credit consists of a single credit that represents 1 hectare of measured and verified improvement or maintenance of environmental condition over the monitoring period.

It is designed to support the stacking of a biodiversity credit on an Australian Carbon Credit Unit.

In early November 2022, GreenCollar launched the NaturePlus™ biodiversity conservation scheme.

GreenCollar has developed two methods that have been accredited by Accounting for Nature®[2]:

- the GreenCollar Native Vegetation Condition Monitoring Method; and
- the Koala Population and Habitat Condition Method, which was co-developed with Queensland Trust for Nature and WWF Australia.

GreenCollar's NaturePlus™ Credits will be issued at a project level based on the following types of activities:

- reducing loss and degradation of natural habitats;
- improving connectivity and resilience of ecosystems; and
- maintaining and improving native habitat.

APPLICABILITY TO BLUE CARBON CONTEXT

USED FOR BIODIVERISTY CO-BENEFIT CERTIFICATION	USED FOR STANDALONE BIODIVERSITY CREDIT GENERATION

VERIFICATION:

Environmental condition is benchmarked, measured and tracked using the AfN Framework®, and each project is underpinned by a publicly available environmental account.[1] Projects are monitored for change in environmental condition periodically. Reported outcomes are third party audited and verified before NaturePlus™ credits are issued. Credits purchased are retired in an audited registry.

ADDITIONALITY:

GreenCollar has not yet released details on its additionality requirements.

STATUS:

GreenCollar is currently piloting and validating twenty NaturePlus™ Credit projects and will continue to build project numbers in different locations and landscapes, but no credits have been generated yet.[2]

The initial AfN methodologies being piloted by GreenCollar do not appear to be applicable to blue carbon ecosystems. However, it appears the NaturePlus™ Credit Standard could be applied to the coastal and marine context in the future.

1. GreenCollar, (2023), NaturePlus™: Rewarding the positive biodiversity outcomes of good land stewardship;
2. GreenCollar, (2022), Real, measured, verified results for nature: World-first scheme delivers biodiversity credits from vegetation and koala projects.

CASE STUDIES

The **Australian Government** is seeking to legislate a **Nature Repair Market** to facilitate investment in projects that protect, restore and manage nature. The scheme is intended to cover both terrestrial and marine environments, so could apply to a blue carbon project.

Australian Government

The scheme is intended to recognise landholders who restore or manage local habitat.

Each certificate issued under the scheme will be tradeable personal property and will be issued at a whole-of-project level, by method (i.e., one property could have multiple projects under different methods).

If legislated, the scheme will cover both terrestrial and marine environments, so could apply to a blue carbon project.

The Commonwealth Government is seeking to legislate a national Nature Repair Market, which is intended to allow landholders who restore and protect nature to receive biodiversity certificates which can be sold to other parties. Eligible projects include projects that protect waterways, provide habitat, reduce erosion, protect topsoil and improve drought resilience.

The Clean Energy Regulator would administer many elements of the framework, including issuing the certificates which can be sold or traded to businesses, organisations, governments or individuals. The Department of Climate Change, Energy, the Environment and Water (DCCEEW) would be responsible for ongoing policy development.

Projects under the scheme would need to enhance or protect native biodiversity. Certificates will be issued where projects undertake certain activities, such as:

- improving or restoring existing native vegetation by activities such as fencing or weeding;
- planting a mix of local species on a previously cleared area; and
- protecting rare grasslands that provide habitat for an endangered species.

APPLICABILITY TO BLUE CARBON CONTEXT

USED FOR BIODIVERISTY CO-BENEFIT CERTIFICATION	USED FOR STANDALONE BIODIVERSITY CREDIT GENERATION

VERIFICATION:

The Minister (and DCCEEW), with the advice of an independent expert advisory committee, will develop biodiversity methods under the legislation to define eligible projects and requirements. Methodology determinations will need to meet statutory biodiversity integrity standards, including additionality and permanence requirements, and comply with any biodiversity assessment instrument prescribed by the Minister. Proponents will be required to provide regular project reports and the Clean Energy Regulator will have broad monitoring, compliance and enforcement powers.

ADDITIONALITY AND PERMANENCE:

A project should result in enhancement or protection of biodiversity in native species that would be unlikely to occur if the project was not carried out. This broad test for additionality is flexible and aligned to the international discourse on this issue. The permanence period for a registered project is 25 years (or another period ascertained in accordance with the methodology determination). This is a similar approach to carbon markets.

STATUS:

The *Nature Repair Market Bill 2023* was introduced into Parliament on 29 March this year and was referred to the Senate Environment and Communications Legislation Committee for inquiry. The reporting date for that Committee, originally 1 August 2023, has been extended until 1 November 2023.

CASE STUDIES

Further existing or proposed standalone biodiversity credit schemes internationally:

	CLIMATETRADE AND TERRASOS[1]	WALLACEA TRUST[3]	PLAN VIVO[4]	VERRA[5]
Status	Existing, early stage though transacting credits.[2]	Existing, early stage.	Under development.	Under development.
Background	ClimateTrade and Terrasos launched their biodiversity product in May 2022, and have issued voluntary biodiversity credits generated from a project in Colombia.	The Wallacea Trust, and its partners, launched a biodiversity credit methodology in early 2022.	In January 2023, Plan Vivo (PV) launched the public consultation process for its Biodiversity Standard (PV Nature), after twelve months of development.	Verra is developing a nature crediting framework and biodiversity methodology under its Sustainable Development Verified Impact Standard (SD VISta) Program.
Applicability to blue carbon	Not applicable currently.	Not specifically applicable to blue carbon; however, it is designed to apply in all ecoregions and habitats (including marine environments).	Not specifically applicable to blue carbon; however, the ecoregions under this methodology include terrestrial, freshwater and marine ecosystems.	Not specifically applicable to blue carbon; however, these nature credits are designed to enable investment in biodiversity projects across geographies and ecosystems (including marine).
What does the unit represent	Each biodiversity unit from the initial project – priced at US$30 – corresponds to 30 years of conservation and/or restoration of 10 square metres of the Bosque de Niebla Forest.	A biodiversity credit is defined as a 1 per cent uplift or avoided loss in the median value of the basket of metrics per hectare.	PV Nature uses the Wallacea trust methodology, so one PV Biodiversity Certificate (PVBC) represents a 1 per cent uplift or avoided loss in the median value of the basket of metrics per hectare.	While the unit specifications will not be published until Q4 2023, it is intended that the methodology will enable projects to issue standalone, transactable, and standardised nature credits by certifying projects' high-quality conservation and restoration outcomes.
Potential for hybrid products	The credits are not intended to compete with carbon offsets; instead, they are designed to work alongside the carbon market.	The biodiversity credit can be stacked with carbon credits to fund biodiversity uplift or avoided loss projects, provided that the biodiversity benefits can be considered additional.	Projects may only stack PVBC's with carbon certificates if the project: (1) is not already issuing carbon credits; (2) is being managed by the same developer; and (3) can demonstrate they are doing additional activities over and above what they are doing for carbon.	The units are nature credits, in which biodiversity is just one element: the framework seeks to encompass other components such as soil, water, carbon and other ecosystem services. It is also intended these credits will be able to stack with units from other programs.

1. ClimateTrade. (2022). ClimateTrade and Terrasos jointly promote Voluntary Biodiversity Credits to support biodiversity conservation;
2. Carbon Pulse. (2023). Colombian habitat bank sells out biodiversity credits;
3. rePLANET. (2022). rePLANET Biodiversity Credits;
4. Plan Vivo. (2023). About PV Nature;
5. Verra. (2022). New Biodiversity Methodology.

1.2.3 Gaps and limitations.

GAPS AND LIMITATIONS IN EXISTING FRAMEWORKS

While several schemes to verify biodiversity co-benefits currently exist, or are emerging, there remain key barriers to their widespread adoption, particularly in the Australian blue carbon context.

Given the nascency of standalone biodiversity credit markets, and the centrality of the proposed Nature Repair Market to the Australian context, the gaps and limitations below focus mechanisms to support investment in biodiversity benefits as a **co-benefit** to carbon credit generation.

1 Scheme diversity

As can be seen from this landscape review, there is currently no clear or dominant methodology for Australian blue carbon project proponents to adopt in order to certify the biodiversity co-benefits to their carbon projects. Rather, proponents are utilising a range of diverse frameworks to measure and certify biodiversity co-benefits.

Though the Federal Nature Repair Market is intended to be designed to be able to be stacked with ERF methodologies, there are several practical challenges with a single biodiversity certificate for a project being divided to align with ACCU issuance.

This diversity in scheme design creates significant uncertainty on both the supply and demand side of the market, preventing the take-up and scaling of biodiversity co-benefit certification in blue carbon projects in Australia.

2 Price uncertainty

While there are several existing schemes for the certification of biodiversity co-benefits to blue carbon projects, none of them have been used in relation to a blue carbon project in Australia. This likely reflects the nascency of blue carbon project implementation itself.

Accordingly, there is not yet a body of market trends to inform both demand and supply side actors on the appropriate pricing of biodiversity benefits, including the financial uplift the certification of these benefits may deliver.

The diversity of schemes and how they interact with one another, including comparability in claims and outcomes, also creates uncertainty in the demand pool which impacts supply uptake.

3 Cost of certification and access to data

The certification of biodiversity benefits will, inevitably, add to blue carbon project implementation costs.

Certification costs will be influenced by access to reliable biodiversity condition data relevant to project data. Some projects will need to undertake significant data collection and baselining before the biodiversity benefits delivered by project activities can be assessed.

Further, depending on the scheme, project proponents may need to contribute to certification methodology development prior to utilisation.

For example, while generally considered to be of high integrity from an accounting perspective, the AfN methodologies are proponent-led, potentially creating significant upfront costs for projects looking to use AfN to verify biodiversity.

The business case for project proponents to carry certification costs is linked to, and must be informed by, certainty in pricing uplift.

1.3 Recommendations for policymakers.

RECOMMENDATIONS FOR POLICYMAKERS

Australian governments have a key role to play in driving private investment into biodiversity benefits delivered by Australian blue carbon projects

Given the nascency of standalone biodiversity credit markets, and the centrality of the proposed Nature Repair Market to the Australian context, the recommendations below focus mechanisms to support investment in biodiversity benefits as a **co-benefit** to carbon credit generation.

Measures to support market-based approaches to valuing biodiversity co-benefits

Broadscale take-up of blue carbon projects across Australia will likely require the aggregation of smaller landholdings to create sufficient project scale and manage hydrological changes, and, potentially, novel entrants to the carbon market.

In the context of this additional complexity, there is a valuable role for governments to pursue implementing policy settings that will make it reasonably straightforward for blue carbon project proponents to certify the biodiversity co-benefits to their blue carbon projects, so they can attract additional finance.

The role and appropriate policy response for governments will differ depending on whether they choose to drive investment into biodiversity benefits as a co-benefit to a carbon project, or standalone biodiversity credit. The following recommendations focus on financing biodiversity co-benefits to blue carbon projects. A much broader set of recommendations could be made regarding the latter approach.

Scheme diversity

1 **Develop or support publicly available methodologies for the certification of biodiversity co-benefits to blue carbon projects**

As discussed, the diversity in schemes and methodologies for certifying biodiversity benefits to carbon projects (and the lack of clarity regarding the application of some of these schemes to blue carbon projects specifically), creates uncertainty for project proponents, who may be unsure as to what scheme is most likely to be applicable to their project, as well as appealing to purchasers.

On the demand side, purchasers are faced with uncertainty around the integrity of different schemes, their interoperability and comparability. This uncertainty is mutually reinforcing and can restrict the scaling of biodiversity co-benefit certification schemes.

As such, there is a role for governments to play in developing or supporting the development of publicly available methodologies (such as through AfN or, potentially, connected with Nature Repair Market methodologies) for the certification of biodiversity co-benefits to blue carbon projects. Doing so would help to support both demand and supply side confidence in certification approaches.

Price uncertainty

2 **Implement financial measures to support the scaling of biodiversity co-benefits**

As discussed, one of the key challenges for project proponents in undertaking certification of biodiversity co-benefits is uncertainty in pricing uplift the certification is likely to deliver.

To address this, governments could implement mechanisms to help provide additional price certainty, for example, offtake and options contracts for blue carbon projects with specific co-benefit certification or implementing policies for government credit purchases which require a certain amount of credits purchased be from blue carbon projects certified as having biodiversity co-benefits.

State-based regulatory requirements, such as those administered by state Environmental Protection Agencies could be leveraged for this purpose. For example, developments in the coastal zone carrying state-based offsetting obligations could require a portion of offsets to be from blue carbon projects with certified biodiversity co-benefits.

RECOMMENDATIONS FOR POLICYMAKERS

Cost of certification and access to data

3 Financial support for biodiversity measurement and certification

As discussed, the costs associated with biodiversity co-benefit certification can be challenging for project proponents.

Governments could provide financial support for projects to have their biodiversity benefits measured and certified. This could take the form of targeted grants to build market practice, low/no interest loans or forward payments as part of offtake agreements.

4 Make available government data on blue carbon ecosystems and local biodiversity

A key component of the costs associated with biodiversity co-benefit certification are related to data gathering and management, including developing baseline data for project areas. All levels of Australian governments can contribute to making historic and current data held on biodiversity in local blue carbon ecosystems easily assessable to project proponents. This would help to alleviate some upfront project costs.

5 Support for biodiversity measurement and monitoring technology

Australian governments can support the development and operationalisation of technologies that facilitate the collection and interpretation of biodiversity data for blue carbon ecosystems.

This could involve incubating new technologies appropriate to the coastal/marine context or grant funding to support the trialling of technologies on selected blue carbon projects.

Enabling and leveraging First Nations expertise

6 Convene First Nations carbon market players to ensure policy positions are well-informed and support the incorporation of First Nations knowledge and practices into biodiversity co-benefit certification schemes.

Australian governments should seek to inform themselves of what is needed for First Nations groups to access funding to develop and test blue carbon projects and to access and utilise biodiversity certification schemes.

Convening First Nations carbon market players to ensure policy positioning is well-informed would be highly valuable.

As biodiversity co-benefit certification schemes are scaled, Australian governments can play a valuable role in supporting the incorporation of First Nations knowledge and practices into methodologies. Further, certification frameworks must be developed in a way that recognises the limitations of monitoring technology in remote landscapes and seascapes.

Australian governments should consider providing funding to First Nations entities to support early blue carbon projects testing and executing on biodiversity benefit certification frameworks to ensure they are fit for purpose.

2. Fisheries.

2.1 Key terms and overview of fisheries benefits.

FISHERIES BENEFITS

Benefits to fisheries are frequently touted as one of the major non-carbon benefits of blue carbon restoration.

This section considers the fisheries benefits delivered by blue carbon projects, the market dynamics in financing them, gaps and limitations in existing models and recommendations for policy makers to incentivise private sector finance for fisheries benefits to blue carbon projects. Key concepts and findings are outlined below:

1. The most likely source of demand for fisheries benefits is from fishing industry players that are proximate to blue carbon project sites because they derive a direct benefit in the form of enhanced fish stocks

While the fish stock benefits delivered by blue carbon projects are well recognised, it is unlikely that benefits to fisheries alone will incentivise many buyers of blue carbon credits other than those entities that receive a direct benefit.

The case studies provide examples of various entities across the seafood value chain that are engaging in blue carbon markets; however, across the value chain there are limited examples of demand for blue carbon credits with fisheries benefits.

2. There are currently no credit methodologies or schemes that quantify or certify the ecological benefits of blue carbon ecosystems to fisheries, whether as a co-benefit to a blue carbon credit or for a standalone fisheries credit

As demand for these benefits is currently limited, it is unlikely a certification scheme for standalone fisheries credits will be developed soon.

Further, blue carbon projects generating credits may need to be able to quantify the benefit of increased fish populations in order to derive a value from the fisheries benefit delivered. While The Nature Conservancy's Fish Production Calculator® quantifies fish enhancement from blue carbon ecosystems, this methodology has not been integrated into blue carbon projects generating carbon credits.

The case studies also show there are blue carbon project developers whose primary intention for their project is to increase fish stocks for fishing purposes. It is worth noting these projects are not currently generating carbon credits.

3. Governments can play a role in creating conditions to engage the seafood sector and support measurement and quantification of fisheries benefits

Despite the benefits of blue carbon ecosystems to fisheries and the broader seafood value chain, existing engagement and demand from commercial fisheries is limited. As such, there is a role for policymakers to create the conditions that will enable players in the seafood value chain to more actively participate in blue carbon markets, including by stimulating finance and engagement from the seafood sector more broadly.

For this to succeed there is a need for fisheries benefits to be more clearly measured and quantified, and governments can also play a role in supporting this.

HOW DO WE DEFINE FISHERIES?

In this section, we use the term 'fisheries' to include both commercial and recreational fishing activities.

However, the term does not include increased marine life for biodiversity purposes (which was considered in the previous section), nor benefits to tourism that may result from increased marine life.

BLUE CARBON FISHERIES BENEFITS

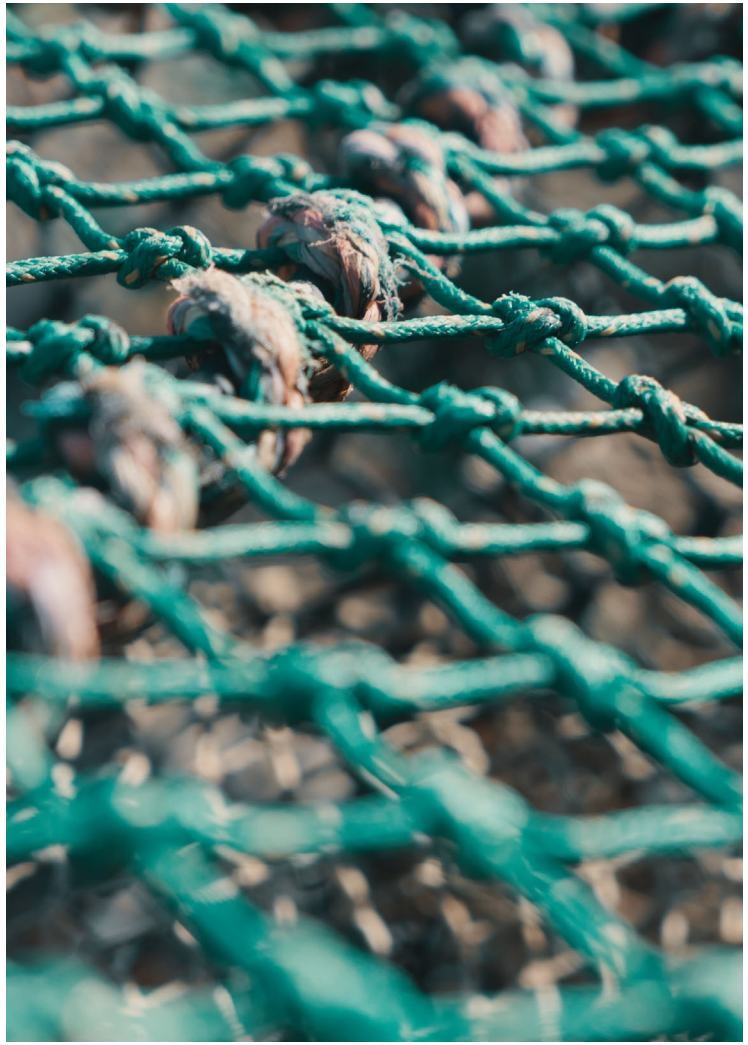
The conservation and restoration of blue carbon ecosystems have a multitude of benefits beyond carbon mitigation, including boosting the yield of fisheries through increased fish stocks. This is because approximately 95 per cent of commercial fish species depend upon coastal habitats at some point during their life.[1] Fish use coastal habitats differently depending on a range of factors including species, life stage, time of year, and tidal range; as such, various types of blue carbon ecosystems support the fish stocks that underpin commercial and recreational fisheries.[2]

Estimates suggest, for example, that 1 ha of seagrass in south-eastern Australia can produce on average 207kg more fish per year than the equivalent area of seafloor without seagrass.[3] Further, it is estimated that south-eastern Australia's seagrass meadows contribute an estimated $25,364/ha/year to wildcatch fisheries.[4]

In addition, protected blue carbon ecosystems also provide indirect benefits to fishers given their contribution to sector resilience by providing a buffer to changing environmental conditions.

It is worth highlighting that there can be a tension between maximising fish as a product against the ocean's role in carbon sequestration: fisheries can contribute massively to carbon emissions through bottom trawling which causes extensive physical disturbance to seabed communities and sediments (the largest pool of organic carbon globally), as well as removal of large marine animals that are themselves massive carbon sinks.[5] Further, overfishing does not allow fish stocks to recover, which further compromises the ocean's sequestration potential: 1.02 billion tonnes of CO2 is released annually from degraded marine ecosystems, of which fisheries contribute the most significant part.[6]

1. Mapping Ocean Wealth, (2023), Fisheries;
2. McCormick et al., (2021),;
3. Deakin University and the Nature Conservancy, (2019) Mapping Ocean Australia;
4. As above;
5. Marigni et al., (2020), Fisheries prevent blue carbon sequestration;
6. Marine Conservation Institute, (2023), The Marine Protection Atlas.



2.2 Market dynamics.

2.2.1 Demand considerations.

DEMAND PROFILE FOR FISHERIES BENEFITS

Who would be the likely buyer of fisheries benefits?

Demand for fisheries benefits from blue carbon projects is likely to be primarily driven by beneficiaries along the seafood value chain

The buyer of a blue carbon credit that has a fisheries benefit (whether a co-benefit or standalone benefit product) is likely to be an actor that derives value from the particular provision of increasing fish stocks – this includes fishing operators (either commercial or recreational), a government body interested in supporting the fishing industry, private companies such as seafood retailers, as well as seafood consumers concerned with their sustainability footprint.

The seafood sector has already demonstrated a willingness to support the transition to more sustainable fishing practices through corporate social responsibility programs and involvement in fisheries improvement projects, certification schemes and eco-labelling. Driving investment into blue carbon projects that generate carbon credits with a quantified fisheries co-benefit could capitalise on this existing market practice, and thereby strengthen supply chain accountability. Providing fisheries with visibility on the quantified benefits a blue carbon project delivers to their operations may incentivise private companies to invest in the natural capital of this habitat: that is, the fish stocks and the flow of ecosystem services that support these stocks.

Different species of fish use coastal habitats at different life stages (e.g., juvenile, adult) and for different purposes (e.g., feeding, reproduction).[1] Given this, purchasers interested in increasing specific species that breed or feed in these environments may preference supporting fisheries benefits produced from projects restoring particular types of blue carbon ecosystems.

1. McCormick et al., (2021). Using a residency index to estimate the economic value of coastal habitat provisioning services for commercially important fish species.

DEMAND PROFILE FOR FISHERIES BENEFITS

Direct beneficiaries

Indirect beneficiaries

There are several direct and indirect beneficiaries of increased fish stocks from blue carbon projects, and each has different motivations for engaging in blue carbon projects:

COMMERCIAL AND RECREATIONAL FISHERS

- Fisheries are the direct beneficiary of increased fish stocks that result from restored blue carbon ecosystems, and therefore commercial and recreational fishers are the most likely buyer of credits that quantify this type of benefit given the direct value to fishing operations of increased fish yields.
- Despite commercial and recreational fishers being the main beneficiary, there are limited instances of these players financing blue carbon activities.

SEAFOOD RETAILERS

- Companies operating in the sale and distribution of seafood products are indirect beneficiaries of increased fish stocks that result from restored blue carbon ecosystems.
- The uptake of mechanisms for incentivising and certifying sustainable fishing practices may provide an indication of industry demand given there are myriad certification schemes in operation.

SEAFOOD CONSUMERS

- Seafood consumers concerned with their sustainability footprint benefit from blue carbon restoration projects, due to increased fish stocks which effectively help to restore the balance of marine ecosystems.
- More than three billion people globally rely on seafood as their primary source of protein: a recent survey of 23 countries demonstrated a marked increase in people connecting ocean health and their own buying habits, with two-thirds of people believing their own choices could make a positive difference.[1]

GOVERNMENTS

- Governments are grappling with the impacts of over-fishing and consequent disruptions to the delicate marine ecosystems caused by fishing operations.
- While much regulation has been enacted in Australia to better manage fisheries, including restricting the amount of seafood fished in Australian waters, governments would indirectly benefit from blue carbon restoration projects that bolster the reserves of fish stocks.

1. Marine Stewardship Council. (2022). Globescan Global Seafood Consumer Perceptions Study 2022.

NEEDS OF POTENTIAL BUYER TYPES

Each potential buyer type has different needs when it comes to purchasing blue carbon credits with explicit fisheries benefits.

The most direct beneficiary of fisheries benefits from blue carbon are the fishing industry which derive a commercial benefit in the form of enhanced fish stocks, particularly fisheries operating in areas proximate to the project site. Across the value chain there are limited examples of demand for credits with fisheries benefits, and potential buyers have a range of needs for data in order to invest:

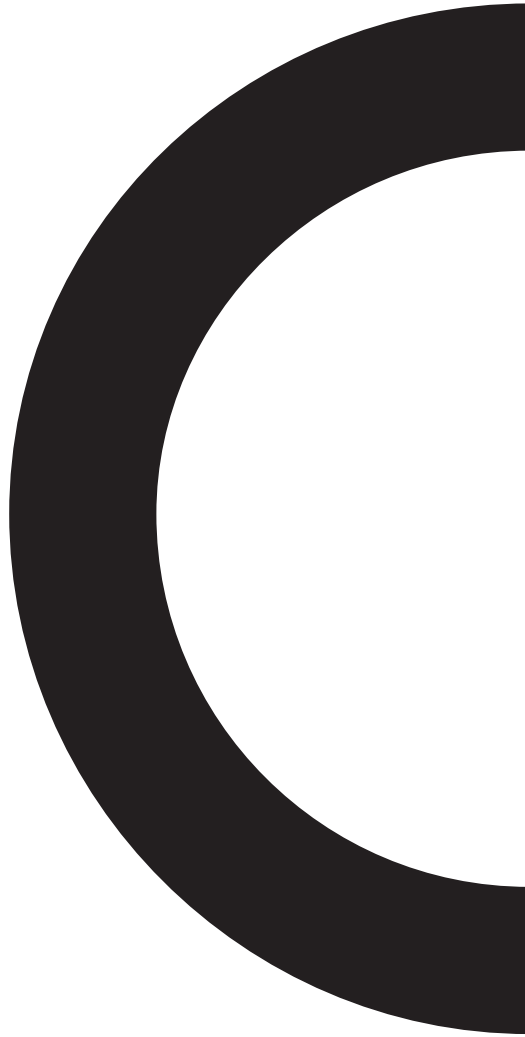
Direct beneficiaries

Indirect beneficiaries

Blue carbon project with fisheries benefits

POTENTIAL BUYER TYPE	BUYER NEEDS FOR INVESTMENT IN FISHERIES BENEFITS
COMMERCIAL FISHERS	Evidence demonstrating a tangible benefit from the blue carbon restoration activities to their own fishing operations. For example, Sealord, the largest commercial fishery in the Southern Hemisphere, recognises blue carbon credits are generally preferable compared to credits generated from other NBS project types; however, they are less inclined to purchase at a premium unless there is a strong link to their operations.
RECREATIONAL FISHERS	Localised data demonstrating the direct benefit of blue carbon to the fish stocks in their own fishing location, as well as an available opportunity to engage in the market collectively.
SEAFOOD RETAILERS	Certified or robust assurance the blue carbon credits have a benefit for the fish they are sourcing, ideally integrated into sustainability metrics they already monitor through existing certification schemes.
SEAFOOD CONSUMERS	A compelling narrative of the benefits of blue carbon to sustainable fish stocks, to justify paying a premium.
GOVERNMENTS	National and localised data on the link between protected or restored blue carbon ecosystems and enhanced fish stocks, to justify continued policy measures and/or financial support.

2.2.2 Supply considerations: *certification frameworks*.



STRUCTURING FISHERIES BENEFITS

Methods and metrics for financing fisheries benefits.

There are currently no schemes that certify fisheries benefits either for a standalone credit or as a co-benefit to a blue carbon credit. Although the quantification and certification of benefits to fisheries attributable to a blue carbon project specifically has not been developed to date, there is scientific evidence linking healthy blue carbon ecosystems to an uplift of fish stocks (see for example estimates above here).

In order to develop appropriate frameworks, CSIRO is developing the underpinning technical measurements required for a certification scheme. This involves considering how best to quantify the number of fish produced or present in a blue carbon ecosystem, and particularly the proportion of fish that make up the catch composition, building on The Nature Conservancy's Fish Production Calculator®. As different species of fish use coastal habitats at different life stages and for different purposes, a species-specific approach to quantifying fisheries value is necessary.[1] If CSIRO can successfully develop a methodology that quantifies the proportion of increased fish stock attributable to a blue carbon ecosystem, this could contribute to the evidence needed to support a business case for the fisheries industry to finance blue carbon conservation and restoration projects. However, measuring the causality between blue carbon projects and increased fish stock is complex.

Complexity of linking blue carbon ecosystems to fisheries

The cost of investing in blue carbon can be compared with the monetary value of its benefits, provided the market value of all the services can be reliably identified and measured. Valuing fisheries benefits for this purpose is difficult.

This is particularly due to issues with property rights which are often unclear in fisheries; even when rights are defined and enforced, the high mobility of marine resources makes it difficult to prevent others from accessing them which might compromise the perceived value of the fisheries benefit delivered by a blue carbon project. Further, demonstrating additionality presents unique challenges for blue carbon projects that aim to increase fish stocks given the overlap between blue carbon ecosystems and declared marine protection areas, national conservation priorities and sustainable coastal wetland management (where protections may focus on fisheries management rather than maintaining ecosystems).

Understanding of the value of blue carbon restoration depends heavily on where a fisheries' operations occur: fisheries operating in estuaries are, for example, likely to better understand the intrinsic link between healthy blue carbon ecosystems and benefits to their operations than offshore tuna fishers in deep ocean zones. Given this, CSIRO is currently scoping how closely linked these business activities must be, with consideration for specific fish species and different types of blue carbon ecosystems.

1. McCormick et al., (2021). Using a residency index to estimate the economic value of coastal habitat provisioning services for commercially important fish species.

STRUCTURING FISHERIES BENEFITS

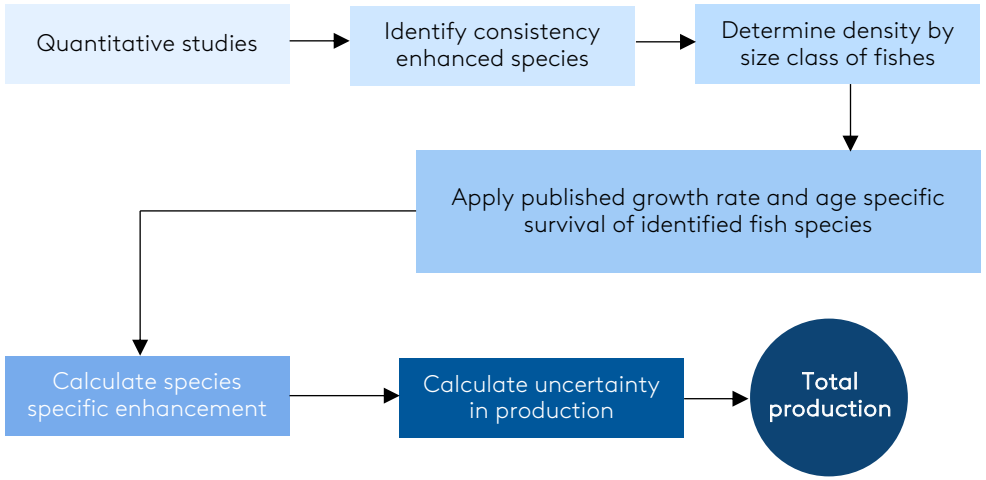
THE NATURE CONSERVANCY'S FISH PRODUCTION CALCULATOR® FOR COASTAL HABITATS

With the recognition that the tools to quantify enhanced fisheries production from coastal habitat restoration projects are lacking, The Nature Conservancy (TNC) developed a 'Fish Production Calculator' to obtain estimates of the fish enhancement attributable to seagrasses and salt marshes in the Gulf of Mexico.

Enhanced production is calculated by first identifying which fish species are consistently present in higher densities as juveniles in these two habitats compared to unstructured control groups. Therefore, the values the tool gives is the number of new fish "made" each year that can be attributed to that habitat.

Steps taken by TNC's Fish Production Calculator® to develop estimates of fish production by threatened and declining blue carbon ecosystems[1]

Figure 4: TNC's Fish Production Calculator® fish production estimation process



Application of the TNC Fish Calculator® in the Australian context

TNC's Fish Production Calculator® is ecoregion-specific and is currently only available for estimating fish enhancement in two coastal habitats in the Gulf of Mexico. Therefore, at this stage, it could not be used – without significant adaptation – by Australian blue carbon project proponents to estimate or quantify the fisheries benefits delivered by that project.

CSIRO has advised that DCCEEW is considering how to adapt the Fish Calculator for application in Australia. Further, CSIRO is considering how to measure fish outside of blue carbon ecosystems to determine whether they can be attributed to enhanced production from restored coastal habitats in order to inform such a tool that could be used during project development. Seafood Positive has outlined their intention to use an adapted version of the Fish Calculator for their forthcoming marine biodiversity credit.

1. Mapping Ocean Wealth. (2023). TNC Fish Production Calculator'.

WITHOUT CREDITS, WHAT IS BEING DONE TO PROMOTE SUSTAINABILITY IN FISHERIES?

Sustainable fishing certification schemes could provide a framework to leverage finance for blue carbon activities from the fishing industry.

There are more than 400 wild-capture fisheries around the world that are Marine Stewardship Council (MSC) certified, which is over 19 per cent of global marine wild catch.[1] Many alternative fisheries certification schemes now exist, although the MSC is the largest in number and geographical spread.[2] This uptake and the myriad certification schemes currently in operation demonstrates appetite in the sector to move towards more sustainable practices, which may provide a good starting point for prompting industry engagement with blue carbon (i.e., integrating investments in blue carbon ecosystems into certification schemes) . These schemes enable fisheries to signal their compliance with sustainable fishing practices, in addition to Fishery Improvement Projects (FIPs) which enable investment from across the fishery supply chain to improve sustainability.

These mechanisms are often interlinked, with industry standards forming the improvement benchmarks in a FIP. While mechanisms do not utilise the trading of environmental market products such as blue carbon credits, they provide a pathway for industry participants to realise commercial value from investment in sustainable fishing through, for example, signalling superior product quality that can support price premiums and increased customer loyalty. FIPs enable operators to seek private investment for sustainability improvements, while investors, particularly retailers and suppliers, can realise a benefit from addressing sustainability issues within their supply chain in a way that is direct, measurable and impactful.

SUSTAINABLE FISHING CERTIFICATION SCHEMES

Others: ISSF International Seafood Sustainability Foundation; Friend of the Sea

Fair Trade USA Capture Fisheries Certification

- Strong focus on human rights, empowerment and community development.
- Certification does include a module on resource management, including requirements to prevent & eliminate overfishing.

MSC Blue Label Certification

- Assesses a fishery against the three principles: (1) Stock health; (2) Environmental impacts; and (3) Effective management.
- Fishing operations are certified (not individual fishers or vessels). An MSC certificate covers a vessel, fleet or individual operator using a certain gear type, fishing on a particular stock.

Aquaculture Stewardship Council Certification

- Standard for responsibly farmed fish and seafood with certification done on a per-species basis.
- Standards focus on both active minimisation of environmental impact (including management of fish health and resources) and social aspects of farms (e.g., community engagement, workers' rights).

1. Cheney, (2022) The MSC standard under review;
2. Putten et. al., (2020), Shifting focus: The impacts of sustainable seafood certification.

DEEP DIVE: FISHERY IMPROVEMENT PROJECT (FIP)

A FIP is a multi-stakeholder effort to improve fishing practices and management. FIPs are strategic work plans agreed between multiple participants that enable fisheries to become more sustainable and which seek to harness the power of the private sector to incentivise positive changes toward sustainability in a fishery. A FIP requires the active participation of seafood companies in the supply chain, as well a as public commitment to the FIP and investment (monetary or in-kind) in its execution. To date, FIPs have been implemented in over 70 countries and include local to multinational fisheries, and have been led by either industry, NGOs, consultants or governments.[1] There are now more than 150 active FIPs registered across the world in the FIP Directory.[2]

FIP participants generally fall into the following categories: producers (for example fishers), supply chain actors (for example processors, intermediaries, exporters, importers, distributors, foodservice providers, and retailers) and NGOs. Governments can also be active participants, particularly where the FIP requires significant changes in fishery management. In turn, FIPs can provide access to private sector financing that supports scientific work and research towards improving fisheries.

FIPs could provide a useful framework for engaging the seafood value chain in financing blue carbon projects, noting that:

- Financing structures for FIPs are highly flexible and participants can provide support through finance, in-kind contributions and/or through purchasing products produced from the relevant fishery.

- The benefit generated is generally in the form of measured improvement in fishery operations (usually tied to the Marine Stewardship Council's Fisheries Standard and Certification). No unit of tradeable personal property is created, and the relevant claims are generally product-based (i.e., they apply to the fish produced from certain fishing operations), rather than to a vessel or company more widely.

- As the desired outcome (usually Marine Stewardship Council certification) is linked to the product produced out of the relevant fishery, there is usually a direct and clear link between the activities of the FIP and the commercial benefits which can be realised by participants. For example, a retailer can sell fish produced from the relevant fishery with the Marine Stewardship Council certification.

1. Keystone Dialogue. (2020). Fishery Improvement Projects (FIPs): Introduction and global overview:
2. IP Directory. (2023). Fishery Progress.

2.2.3 Case studies.

CASE STUDIES

There are a range of actors across the seafood value chain that are demonstrating the link between blue carbon projects and benefits to fisheries.

There are currently no credit methodologies or schemes that quantify or certify the ecological benefits of blue carbon ecosystems to fisheries.

Instead, there are blue carbon restoration projects that have the primary motivation of increasing fish stocks for fishing purposes. At this stage, these projects are either not generating credits at all, or not generating carbon credits.

Given this, the case studies outlined below encompass a range of actors across the seafood value chain that are demonstrating the link between blue carbon ecosystem restoration and benefits to fisheries. This includes blue carbon project developers, investors and credit purchasers. The case studies considered include the entities depicted below.

PROJECT DEVELOPERS

Not generating credits

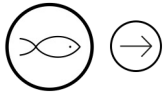
Not generating carbon credits

PROJECT FINANCIER

PURCHASERS OF CREDITS

CASE STUDY: BLUE CARBON PROJECT DEVELOPER

In 2018, **OzFish launched their Seeds for Snapper project**, which involves the restoration of seagrass meadows in Cockburn Sound – the project is now the largest of its kind in Australia.



This is an example of a **project developer** working on blue carbon restoration in order to increase fish stocks for fishing purposes.

Seeds for Snapper is Australia's largest seagrass restoration project, and involves two parts:

1. Marine scientists from the University of Western Australia have spent the last decade researching seagrass restoration and developed a cost-effective method of direct seeding seagrass; and,
2. Volunteers spread millions of seagrass seeds in line with this methodology to restore seagrass meadows in Cockburn Sound.

Seeds for Snapper is a community-driven project that involves a group of recreational fishers restoring seagrass meadows in Cockburn Sound off the Western Australian coast. In 2022, over 1.2 million seagrass seeds were spread in Cockburn Sound, which has lost 85 per cent of its seagrass meadows since the 1960s (decreased from 4000 hectares down to 900 hectares today).

OzFish has outlined the intent of the project is for "fishers to understand that the seagrass meadows of Cockburn Sound are critical foraging and nursery grounds for Pink Snapper and plenty of other fish species, and that they are a part of initiatives to help fix the problem."[1] The project is funded by the WA Government's Recreational Fishing Initiative Fund, and supported by recreational fishing bodies; however, to date there has been no engagement from commercial fishers. The project is supported by:

Following the success of this program, OzFish has expanded into seagrass restoration projects with the assistance of recreational fisher volunteers in Mourilyan Harbour, Queensland; Adelaide, South Australia; and, Fleurieu Peninsula, South Australia.

OzFish also oversees mangrove and saltmarsh restoration projects for the same purpose in Lake Macquarie, NSW; Orielton Lagoon, Tasmania; Burrill Lake, NSW; Western Port, Victoria; Cairns, Queensland; Richmond River, NSW; and, Tuckean Swamp, NSW. The project scope and intervention required differs depending on the project; for example, in some cases, OzFish will simply work with farmers to keep livestock out of a saltmarsh, whereas in other more heavily damaged areas, volunteers will work to plant thousands of seedlings in order to rejuvenate the habitats for fish.

Although these projects are not generating credits, this case study highlights there are blue carbon project proponents working to restore these ecosystems in order to enhance fish stocks for fishing. If such projects can demonstrate enhancement of fish populations, this will provide evidence of the strength of the connection between restored blue carbon ecosystems and fishing activities.

1. OzFish. (2018). Restoring the seagrass meadows of Cockburn Sound.

CASE STUDY: BLUE CARBON PROJECT FINANCIER

In 2022, **Seafood Positive** launched their **OneFish TwoFish Program**, which channels funding into blue carbon restoration projects that have the express purpose of improving fish nurseries.

ONEFISH TWOFISH

ONE FOR YOU, TWO FOR THE SEA.

Despite a variety of regulation focused on restricting the amount of seafood fished in Australian waters, there is little on the supply side of bolstering reserves of seafood stock.

Seafood Positive's method of 'replacing' a fish with two more is done through coastal habitat restoration, in order to improve the size and quality of fish nurseries.

Their strategy is to move towards a circular seafood economy, where fish stocks are regularly replenished, and harvest is balanced with production.

This is an example of a conservation organisation playing the role of a **project financier** of blue carbon projects that focus on increasing fish stock.

OneFish TwoFish was formed in mid-2022 to encourage businesses and consumers to replace the fish they consume with new ones. For every one fish consumed, they "return" two fish to the ocean by driving private investment into pre-existing blue carbon restoration projects with the specific intention of increasing fish stock for both recreational and commercial fishing purposes. These projects, including Seeds for Snapper in Western Australia, are selected based on their ability to grow fish and support marine life, which have immense scope and scale.

Founder of Seafood Positive, Dr Chris Gillies, when launching the program outlined that: "it is entirely possible to reverse biodiversity loss in the oceans within our lifetime... About 95 per cent of all commercial fish species have a life stage or some sort of dependency on these kelp forests or seagrass beds."[1]

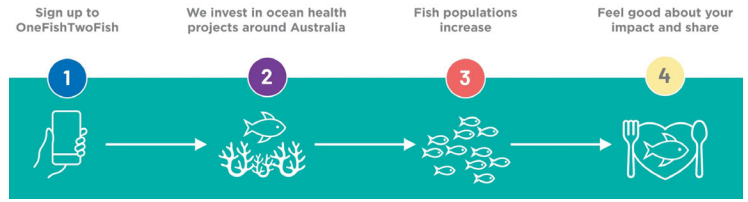
> "At this stage, fisheries are less interested in financing blue carbon projects than the other end of the supply chain. Down the other end is the retailers, like hotels, restaurants, pet food operators, and even supermarket chains, where there may be a real opportunity as, at this point in time, they care the most."
>
> **Dr Chris Gillies, Founder and Managing Director of Seafood Positive**

The intention is for the program to eventually generate tradeable marine biodiversity credits, which Seafood Positive sees as a 'halfway house' given it would need to involve a broader definition of biodiversity that encompasses fish production, as well as utilise an expanded blue carbon methodology that quantifies fish production for commercial fishing purposes.

Seafood is sold on volume, so one kilogram would represent one credit. In this way, consumers purchasing these credits could personally offset their seafood consumption on a per person per year basis. Quantification underpinning the credit would rely on an adapted version of Nature Conservancy's Fish Calculator®.

Seafood Positive outlines that in order to drive capital into blue carbon projects, the need is largely around aggregating upfront investment as well as simplifying the legal and regulatory environment, which would result in a strong uptick of blue carbon projects being developed.

Figure 5: Seafood Positive's OneFish TwoFish Program[2]



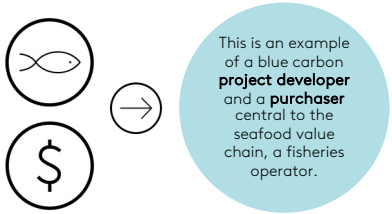
1. ABC News, (2023), Seafood Positive's OneFish TwoFish Program;
2. OneFish TwoFish, (2023), One for you, two for the sea.

CASE STUDY: CREDIT PURCHASER

In 2023, **Austral Fisheries** purchased **Kelp Restoration Credits** generated by project developer **Canopy Blue**, which is restoring almost 100,000 hectares of kelp forest off the coast of Western Australia.

In March 2023, Perth-based project developer Canopy Blue sold its first batch of Kelp Restoration Credits (KRC) to Austral Fisheries, one of Australia's biggest commercial fishing operations.

Each KRC represents one kelp plant grown at the Indian Ocean Marine Research Centre in Western Australia and planted at the restoration site, stapled to an international carbon credit.



This is an example of a blue carbon **project developer** and a **purchaser** central to the seafood value chain, a fisheries operator.

In 2016, Austral Fisheries became the world's first seafood sector company to become carbon neutral and have been offsetting approximately 40,000 tonnes of carbon each year since. As part of its ongoing carbon neutral certification, Austral recently purchased KRCs generated by Canopy Blue's almost 100,000-hectare kelp forest restoration project off the coast of Western Australia that was devastated by a 2011 El Niño marine heatwave.

Under the deal, each KRC came stapled to an international carbon credit – sourced by Canopy Blue – eligible to contribute to Austral's carbon neutral status. The arrangement means Austral can offset its carbon footprint, while also helping to fund a project which seeks to increase fish stocks. We understand Canopy Blue is intending to develop a carbon crediting methodology for kelp that will allow it to generate a carbon credit for each tonne of CO2 sequestered by the kelp.

CEO of Austral Fisheries, David Carter, expressed his preference to source carbon offsets from blue carbon projects, outlining that investing in blue carbon credits will: "both increase the overall supply of credits to the voluntary carbon market and allow us to invest in offsets to directly benefit the marine systems upon which our business relies. The caveat is that these credits need to be broadly price-competitive with other sources of offsets available."[1]

Austal Fisheries have also pursued block-chained enabled sustainability product labelling through global platform Open SC.[2] These consumer-facing innovations could provide a means to position investment in blue carbon as part of a product offering.

Austral is not investing in blue carbon projects as a philanthropic endeavour; instead, they want to be able to brand their products as sustainable, both for their consumers as well as for attracting investors and talent.

When selecting from a 'menu of blue carbon projects', Austral outlined projects need to demonstrate both substance and story: their preference is for carbon credits with quantified fisheries co-benefits. Project developers would need to be able to demonstrate a strong link between the project activities and fish that are caught by Austral operations.

Austral outlined that their proposition as a luxury seafood brand enables a price premium that covers the sustainability element; however, while chefs and individual consumers understand the price difference, they outlined major commodities and supermarket chains still preference lowest cost options.

> "The main challenge from an investor perspective is that most of the blue carbon methodologies being developed are currently only small-scale projects, and it is legally complex in terms of ownership of both the carbon sequestered and the project site being offshore as well."
>
> **David Carter, CEO of Austral Fisheries**

1. Fisheries Research and Development Corporation. (2023). Australia's blue diamond.
2. Austral Fisheries. (2019). Austral partner with WWF, BCGDV to launch OpenSC

2.2.4 | Gaps and limitations.

GAPS AND / OR LIMITATIONS IN EXISTING FRAMEWORKS

Tools that quantify benefits of blue carbon to fisheries are still under development, and more is needed to engage the fishing value chain in financing blue carbon (1 of 2).

1 Engagement of the seafood value chain in financing blue carbon is low

There is currently little evidence of the fisheries industry financing blue carbon restoration projects, despite being the most direct beneficiary. This is likely because the fisheries industry, as outlined by two of the largest fisheries in the Southern Hemisphere (Austral and Sealord), would only do so if the project can demonstrate a strong link to their operations.

There is some limited engagement of recreational fishing organisations and other actors in the seafood value chain supporting blue carbon projects; however, the engagement does not reflect the scale of the value these players are likely to attain from blue carbon activities.

Although less directly impacted, there is little engagement from (although massive opportunity for) downstream retailers in the seafood industry, including for example restaurants, hotels, and pet food operators, and particularly for those that offer premium products.

2 Need for evidence connecting blue carbon restoration projects to uplift in fish stocks

The link between healthy blue carbon ecosystems and fish stocks is well-established and is being demonstrated in practice by blue carbon project developers whose goal is to boost fish stocks for fishing (such as the Seeds for Snapper project). However, most of these projects are demonstrating their impact in terms of project outcomes through seeds planted or area restored, as opposed to the increased number of fish stocks in a coastal habitat, and they aren't focused on developing broadly applicable tools that can quantify this uplift with specificity in a way that would meet the needs of the buyers.

While TNC's Fish Production Calculator® estimates the number of fish produced in blue carbon ecosystems, the tool is research-intensive and relies upon thousands of samples, which is only applicable for two areas in the Gulf of Mexico.

While initiatives such as OneFishTwoFish are valuable for mobilising finance from the fishing value chain, in our view the quantification identifying the uplift in specific fish stocks attributable to restoration efforts is key to creating the business case for the fisheries sector to invest in blue carbon. Ideally this quantification would be in a form that is able to provide a verified or certified outcome, thus providing confidence to buyers and enabling the scaling of financing of fisheries benefits from its beneficiaries.

GAPS AND / OR LIMITATIONS IN EXISTING FRAMEWORKS

Tools that quantify benefits of blue carbon to fisheries are still under development, and more is needed to engage the fishing value chain in financing blue carbon (2 of 2).

3 **Existing sustainability certification schemes for the seafood industry do not incorporate blue carbon activities**

There are a myriad of seafood sustainability certification schemes in operation working to improve the sustainability of fisheries. Those commercial fisheries seeking to signal their sustainability credentials, including Austral Fisheries and Sealord, are already engaged with a multitude of these schemes including international third-party certifications and benchmarks, as well as complying with domestic fishing practices and regulations in Australia and New Zealand.

While these existing schemes are indicative of a shift in the industry towards sustainability, they do not incorporate recognition of a company's investment into blue carbon activities or purchase of blue carbon credits. Given this, the frameworks in their current forms do not incentivise the fishing industry to drive investment into blue carbon projects. As such, mechanisms and conditions that enable greater financing of blue carbon from the industry, and thereby more accurately reflect the benefit fisheries receive, is needed.

2.3 Recommendations for policymakers.

RECOMMENDATIONS FOR POLICYMAKERS

Australian governments have a key role to play in driving the fisheries industry to meaningfully invest in Australian blue carbon projects, given their position as direct beneficiaries of these activities.

1 Engagement of the seafood value chain in financing blue carbon is low

Create the conditions that will encourage or require the fisheries industry to finance blue carbon activities.

Governments could consider taking a 'stick' approach to compel engagement in blue carbon markets by requiring commercial and recreational fishers to finance blue carbon activities as a condition of their fishing licences.

They could do this by requiring a certain amount of finance to be invested into blue carbon activities, a certain volume of blue carbon credits with fisheries benefits to be purchased, or governments could establish a blue carbon investment facility that is capitalised with funds from a portion of fishers' licence fees.

This latter approach would reduce the barriers to entry of the fishing industry and individual recreational fishers who may find it difficult to manage their own investments into blue carbon activities or credits. To reduce the burden on governments to manage such a facility, this could be outsourced to a private sector fund manager to source blue carbon projects and distribute finance.

As similar approach could also be taken towards other players in the fisheries value chain, such as imposing a levy on seafood retailers or premium restaurants.

2 Need for evidence connecting blue carbon restoration projects to uplift in fish stocks

Support the efforts of CSIRO and DCCEEW to develop an easy-to-use, open-source tool that quantifies the fish stock uplift in blue carbon projects in Australia.

An accessible, intuitive and open-source tool designed for application in the Australian context is a prerequisite for quantifying the fisheries benefits of a blue carbon project.

Given the Fish Production Calculator® requires thousands of samples for each of the two coastal areas in the Gulf of Mexico where it is currently in use, developing a comparative tool that is designed for use throughout the entirety of blue carbon habitats across the Australian coastline for different species is a very substantial undertaking.

Accordingly, state governments should consider contributing to expedite the efforts of DCCEEW and CSIRO in developing this tool for the Australian context through, for example, the provision of data and expertise. Beyond allowing for the quantification of the benefit to fisheries to be measured and integrated into a blue carbon credit framework, measuring this uplift would provide hard data on the strengthened resilience of fish stocks and blue carbon as an important climate change mitigation tool.

Further, until the uplift in fish stocks can be linked through such a tool, there is a role for government to play in coordinating the flow of finance such as through a blue carbon investment pool that works to conserve and restore blue carbon ecosystems covering a large geographic area. This approach would overcome the information failure (by maximising the likelihood of improved yields to a specific localised fishing industry despite the uncertainty associated with mobile fish stocks and their dependency on a specific blue carbon asset as a nursery ground) as well as provide economies-of-scale (cost efficiencies associated with large investments across vast geographic areas).

RECOMMENDATIONS FOR POLICYMAKERS

Australian governments have a key role to play in driving the fisheries industry to meaningfully invest in Australian blue carbon projects, given their position as direct beneficiaries of these activities.

3 Existing sustainability certification schemes for the seafood industry do not incorporate blue carbon activities

Collaborate with domestic and international sustainability certification bodies to integrate investing into blue carbon projects into existing certification schemes.

The uptake of existing sustainability certification schemes reflects the fisheries sector's willingness to engage with sustainability, and thus presents an opportunity to steer fisheries towards greater investment in blue carbon projects.

Governments could work with domestic and international certification bodies to integrate recognition of a fisheries' investment into blue carbon projects, or their purchase of blue carbon credits, into existing certification schemes (and particularly for those claims that are labelled on-pack).

The benefits of this could be two-fold: (1) the credits could potentially be counted as carbon offsets towards the fishery's decarbonisation efforts (depending on which entity has the right to claim the use of the offsets); and (2) other players in the seafood value chain that see value in these certifications such as consumers and retailers could become engaged in blue carbon markets through exposure to the efforts being made by fisheries.

3. Costal risk reduction.

3.1 Key terms and overview of coastal risk reduction benefits.

COASTAL RISK REDUCTION BENEFITS

The protection and restoration of blue carbon ecosystems reduces the risk exposure of coastal communities to climate-related hazards and natural disasters.

This section considers the coastal risk reduction benefits delivered by blue carbon projects, the market dynamics in financing them, gaps and limitations in existing models and recommendations for policy makers to incentivise private sector finance for costal risk reduction benefits of blue carbon projects. Key concepts and findings are outlined below:

1. The demand profile for coastal resilience benefits consists of those that are most exposed to coastal flood damages

While the demand base is still relatively nascent, there is evidence that it is likely to be primarily comprised of beneficiaries that are the most exposed to coastal flood damages and therefore stand to benefit the most from the coastal protection services of blue carbon ecosystems.

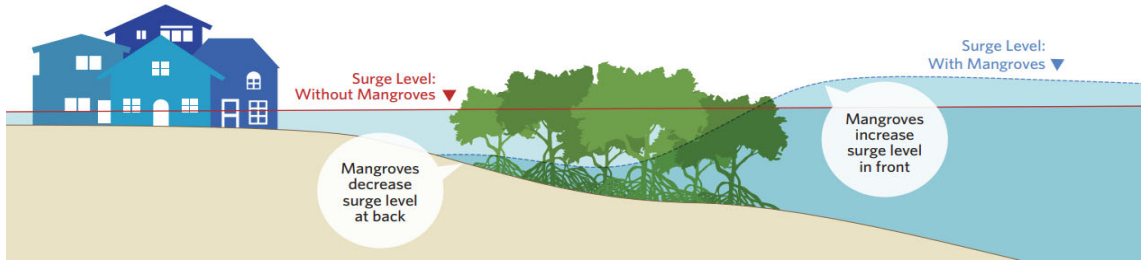
2. A framework to certify coastal risk reduction benefits exists but is not yet utilised and its influence on demand is not clear

A range of other approaches have been adopted by public and private sector actors to quantify blue carbon risk reduction potential, which are based on varying data points and metrics.

3. Governments can support private financing of coastal risk reduction benefits by facilitating knowledge and capacity building and developing an approach to valuing benefits

While there is a clear causal link between blue carbon and coastal risk reduction, public awareness of this is limited. As such, there is an opportunity for governments to play a strong advocacy role to facilitate knowledge and capacity building, as well as to develop a more standardised approach to valuing benefits.

Figure 6: High-level depiction of mangroves effect on surge level[1]



HOW DO WE DEFINE COASTAL RISK REDUCTION?

We use the term coastal risk reduction to refer to the reduced flood risk from coastal inundation to communities and their physical assets that is attributable to the protection or restoration of blue carbon ecosystems, including mangroves, seagrasses and marshes.

BLUE CARBON COASTAL RISK REDUCTION BENEFITS

With more than 40 per cent of the world's population living within 100 kilometers of the coast, coastal communities and their physical assets are disproportionately impacted by climate-related hazards, including sea-level rise and natural disasters.[2] These stressors are changing in severity, frequency and intensity as the impacts of climate change are felt, the population continues to grow, and more coastal areas are developed for commercial use.

A business-as-usual trajectory entails great risk to our economy, potentially costing up to US$8.4 trillion over the next 15 years from damage to coastal real estate, ports, shipping, marine renewable energy and seafood due to climate change. If no action is taken, damage to coastal infrastructure and global fisheries could cost up to US$3.98 and US$3 trillion, respectively.[3]

Blue carbon ecosystems are at the frontlines of coastal protection. When restored and protected, they act as a critical natural buffer to flooding and erosion from storm surges and sea level rise, thereby strengthening the resilience of communities and reducing their exposure to coastal risk globally.

Mangroves specifically prevent more than US$65 billion in property damages and reduce flood risk for approximately 15 million people globally.[4] According to the Global Commission on Adaptation, protecting and restoring mangroves globally, at a total cost of less than US$100 billion, could create US$1 trillion in net benefits by 2030.[5]

1. Narayan et al., (2020). Valuing the flood risk reduction benefits of Florida's mangroves;
2. The Nature Conservancy, (2018). Investing in blue carbon for a resilient future;
3. UNFCCC, (2022). A guide to private sector investment in coastal resilience;
4. Menendez et al (2020). The Global Flood Protection Benefits of mangroves;
5. Global Commission on Adaptation, (2019). Adapt now: a global call for leadership on climate resilience.

3.2 Market dynamics.

3.2.1 | Demand considerations.

DEMAND PROFILE FOR COASTAL RISK REDUCTION

What is the demand profile for coastal risk reduction benefits?

Demand for coastal risk reduction benefits from blue carbon projects is likely to be primarily driven by beneficiaries

Natural catastrophes, including flooding induced by storm surges and waves, as well as tidal erosion from sea level rises represent an increasingly prevalent economic challenge, particularly for developing nations. Losses from these events can be extremely burdensome for exposed individuals and businesses, as well as jeopardise national development goals. The use of blue carbon, including mangroves, seagrasses and tidal marshes, for adaptation and risk reduction is gaining traction globally as a viable strategy to mitigate coastal risk and strengthen long-term resilience of coastlines.

As such, while still nascent, there is evidence that the demand profile for blue carbon credits with measurable outcomes for coastal risk reduction, is likely to be primarily comprised of actors that are the most exposed to losses and therefore benefit the most from blue carbon protection and restoration efforts – these include physical asset owners (including ports), local communities, insurance companies, as well as the federal government and state governments in coastal regions.

There may be other sources of VCM demand to meet compliance and voluntary targets

While the value is likely to be highest for actors that see a direct benefit, there may be other potential VCM buyers, such as corporates and not-for-profits that are incentivised to purchase a blue carbon credit with a coastal risk reduction benefit. Without established legal and policy settings for these outcomes, this demand is likely to be relatively low and driven by a desire to communicate a clear narrative around the benefits.

DEMAND PROFILE FOR COASTAL RISK REDUCTION

Direct beneficiaries

Indirect beneficiaries

There are several direct and indirect beneficiaries of reduced coastal risk exposure benefits, and each has different motivations for engaging in blue carbon projects with explicit benefits of this kind:

ASSET OWNERS

- Coastal asset owners are incentivised to protect physical infrastructure from risks of degradation and destruction due to extreme weather events.
- Global infrastructure developers and investors are increasingly recognising the cost-effectiveness of blue carbon ecosystems as a viable coastal protection investment, and are scaling up capital for risk mitigation and adaptation (see further here).

LOCAL COMMUNITIES

- Blue carbon ecosystems are being lost and degraded at an accelerating rate in many regions,[2] creating significant risk exposure of people in coastal regions.
- There is evidence that communities are starting to engage directly in blue carbon projects in developed regions susceptible to disasters, like Florida (see further here). However, the greatest benefits are in densely populated, lowland areas in developing nations where willingness to pay is likely to be low.

INSURERS

- Insurers have paid out more than US$300b for coastal storm damage in the past 10 years.[1] Risk reduction benefits of mangroves can underpin the development of innovative insurance models that present new business opportunities and reduce premiums for lower payouts.
- These models are already being deployed for coral reefs in Mexico and across the Caribbean, and are starting to be adapted to target mangroves (see further here).

GOVERNMENTS

- Local and national governments, particularly in developing states, are grappling with disaster management costs that are growing nearly exponentially worldwide.[2]
- Government engagement in blue carbon projects globally reflects the recognition of blue carbon as a viable economic strategy to mitigate disaster risks as well as the imperative to contribute to the protection and conservation of public goods.

1. Earth Security. (2020). Financing the earth's assets: the case for mangroves as a nature-based climate solution;
2. For example, IUCN. (2020). Coastal blue carbon stocks in Tanzania and Mozambique
3. Beck & Menéndez. (2020). Mangroves save us from billions of dollars of flood damage a year.

NEEDS OF POTENTIAL BUYER TYPES

Each potential buyer type has different needs when it comes to purchasing credits from blue carbon projects with explicit coastal risk reduction benefits.

Coastal risk reduction benefits can be described as "public goods" and investments in the protection or restoration of blue carbon assets for coastal risk reduction purposes have traditionally been under the remit of governments due to limited incentives for other actors that could be potential buyers. Potential buyers of blue carbon credits with coastal risk reduction benefits will typically require strong narratives and/or robust data points on measurable coastal risk reduction outcomes that they benefit from to justify investment:

Direct beneficiaries

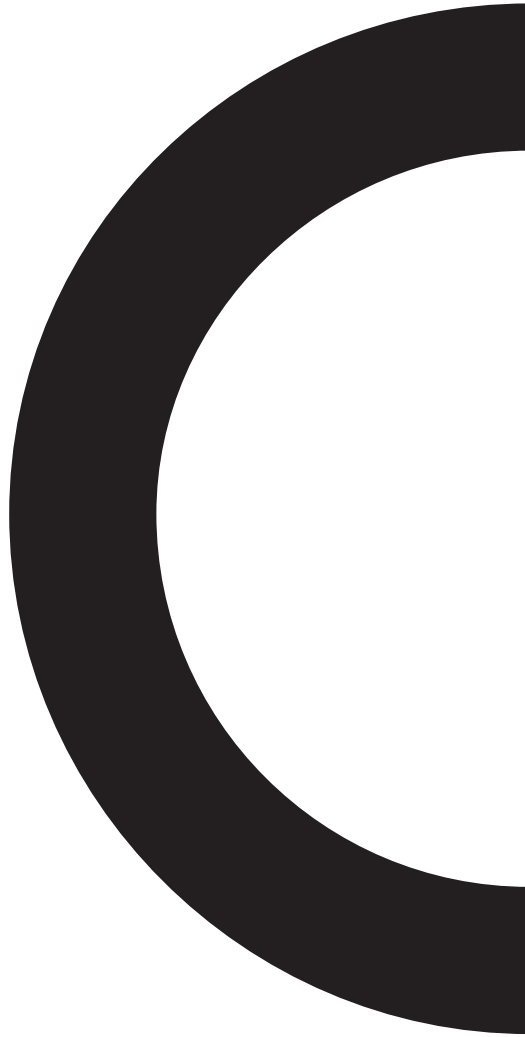
Indirect beneficiaries

VCM buyers

Blue carbon project with CRR benefits

POTENTIAL BUYER TYPE	BUYER NEEDS FOR INVESTMENT IN COASTAL RISK REDUCTION BENEFITS
ASSET OWNERS	Localised data that quantifies the risk reduction potential in the form of avoided flood damages ($ value) to property and physical infrastructure (compared with a scenario that assumes degraded blue carbon ecosystems, or compared to using grey infrastructure to protect the assets). It is likely asset owners will be most inclined to invest in projects that are co-located with their assets so that they can experience the direct benefit.
LOCAL COMMUNITIES	Compelling communications around the direct link between the protection of coastal ecosystems, including blue carbon, and the safety of people living in coastal areas. It is likely communities will be most inclined to invest in projects that are in close proximity to them so that they can experience the direct benefit.
INSURERS	Localised data that quantifies the risk reduction potential in the form of avoided flood damages ($ value) to property and physical infrastructure, and number of people impacted (compared with a scenario that assumes degraded blue carbon ecosystems).
GOVERNMENT	National and localised data on the link between protected or restored blue carbon ecosystems and the density of people and/or economic value of assets that are protected.
GENERAL VCM BUYERS	Evidence of a suite of co-benefits for making robust claims as part of ESG commitments, rather than an explicit focus on coastal protection given low likelihood of the direct benefits of reduced exposure to physical risk.

3.2.2 Supply considerations: *certification frameworks*.



EXISTING CERTIFICATION FRAMEWORKS

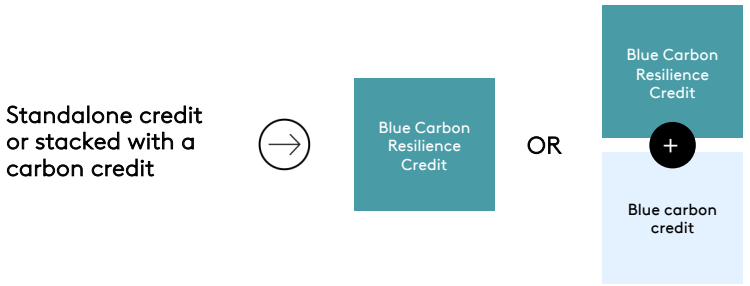
The Blue Carbon Resilience Credit is the only established, albeit still relatively nascent, third-party verified framework that values and certifies the coastal risk reduction benefits of blue carbon.

HOW BLUE CARBON RESILIENCE CREDITS WORK

Blue Carbon Resilience Credits are an emerging financial mechanism designed by TNC and AXA XL to capture and value the combined carbon sequestration and coastal protection benefits of coastal wetlands. The Credit, which can be purchased together with a blue carbon credit or separately, will quantify the risk reduction benefits derived from protecting and restoring coastal ecosystems that act as natural flood barriers. As corporate demand grows over time, TNC estimates that the Credits could mobilise up to US$320million per year for coastal conservation and restoration projects that reduce greenhouse gas emissions while supporting long-term community resilience to the adverse impacts of climate change.[1]

CURRENT STATUS

The initiative to develop the Blue Carbon Resilience Credits, which is supported by the Ocean Risk and Resilience Action Alliance, was first established in the Bahamas with plans to scale globally. A pre-feasibility study has been completed for both carbon and coastal resilience project development across two sites covering 10,000 hectares of mangroves. It is estimated that by restoring these sites alone, more than US$140 million annually in property damages could be avoided and over 750 people would be at reduced risk of flooding impacts.[2]



1. Earth Security. (2020). Financing the earth's assets: the case for mangroves as a nature-based climate solution referencing Climate Finance Lab, (2019), Blue carbon resilience credit; and
2. Ocean Risk and Resilience Action Alliance. (2023). Capturing the value of coastal wetlands through Blue Carbon Resilience Credits.

METHODOLOGY FOR COASTAL RESILIENCE BENEFITS FROM RESTORATION AND PROTECTION OF TIDAL WETLANDS

- The Blue Carbon Resilience Credit is underpinned by a new methodology that is under development by Verra to ensure buyers can trust the resilience value of the credit they purchase.[1]
- This methodology seeks to quantify the number of individuals that are experiencing reduced flood risk due to the restoration or protection of coastal ecosystems. Optionally, the method can also be used to assess the economic benefits of reduced flood risk.
- These benefits will be certified as coastal resiliency assets. It is envisaged these assets will be an independently fungible unit (not necessarily as an attribute to the carbon credit generated under a Verra method) and will be recorded in the Verra registry.
- The emergence of these market mechanisms, which could be applicable for ecosystem types in Australia, are expected to increase buyer confidence to invest.

1. Verra. (2023). Methodology for Coastal Resilience Benefits from Restoration and Protection of Tidal Wetlands.

APPROACHES FOR QUANTIFYING BENEFITS

Despite the nascency of certification frameworks, many private and public sector actors have adopted approaches to quantify the coastal risk reduction benefits in the form of avoided losses.

Most approaches appear to focus on the avoided expected damages costs to people and infrastructure, whereby the benefits are estimated based on their avoided flood damages.[1] This broadly involves the following steps; however, there are nuances in the data and metrics used to quantify the avoided damages depending on the type of actor (examples below):

	Climate-related event (for example, storm surge/natural disaster)	**Socioeconomic exposure**	**Vulnerability**	**Risk**
KEY CONSIDERATIONS	*How severe and frequent is the climate-related event?*	*What is the profile of people and assets that may be exposed?*	*To what extent are people and assets vulnerable to adverse impacts from the event?*	*What is the risk of damage to people and assets (with and without ecosystem)*
	• Calculate wind strength and / or wave height for each climate-related event	• Identify number of people in exposed coastal areas based on census data; and / or • Identify density and dollar value of physical infrastructure in exposed coastal areas based on economic census data	• Identify damages from historical events for comparison point • Calculate flood damages for two scenarios (with and without protected / restored blue carbon ecosystems)	• Calculate risk reduction benefit as the difference in damages between two scenarios (with and without protected / restored blue carbon ecosystem)
METRICS	• Reduced / avoided CAPEX infrastructure construction	• Reduced / avoided OPEX infrastructure maintenance compared to doing nothing or using green infrastructure	• Reduced / avoided number of people impacted	• Reduced insurance costs due to lower risk

The value of blue carbon ecosystems for the people and services that rely on them for coastal protection is typically not included in national budgets or wealth accounts.

However, many local governments, insurers, asset owners and academia have adopted approaches for quantifying the value of blue carbon for protecting coastlines at both a local and national level. These approaches could underpin market mechanisms for attracting demand.

1. Notable examples of this logic being applied include: UC Santa Cruz and TNC's study on the risk reduction benefits of Florida's mangroves; An assessment of the performance of nature-based defences by infrastructure firm, CHM2 and UC Santa Cruz; Innovative insurance models; and An evaluation of the risk reduction benefits of the Mesoamerican Reef in Mexico.

3.2.3 Case studies.

CASE STUDIES

There are a range of different actors that are already participating in blue carbon projects with explicit coastal risk reduction benefits through market and non-market mechanisms.

There is a diverse ecosystem of actors that are, or may be incentivised to, engage in financing of blue carbon projects where they are likely to benefit from reduced exposure to coastal risk. Given the nascency of certification frameworks, most of these projects are likely to have unquantified or quantified coastal risk reduction benefits, but not necessarily certified benefits.

The case studies on the following slides highlight the diversity of actors and models of engagement, and importantly, approaches adopted to conserve other natural asset classes (for example, coral reefs) that could be adapted for blue carbon ecosystems.

ASSET OWNERS

Zephyr

Renewable energy asset owners

INSURANCE

CONSERVATION INTERNATIONAL

Social enterprises in insurance

Swiss Re

Insurers and reinsurers

GOVERNMENTS

Local and state governments

CDC Investment works

FEMA

USNA UNITED STATES NAVAL ACADEMY

Federal government agencies

CASE STUDIES

LOCAL COMMUNITIES

Blue Heart
SUNSHINE COAST

MONROE COUNTY
FLORIDA

Property owners, business owners and renters in coastal regions

GENERAL VCM BUYERS

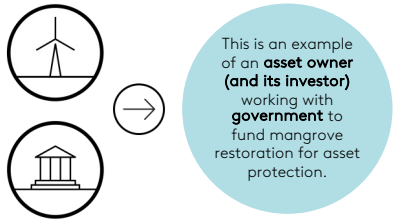
While there may be appetite from corporates and other organisations in the voluntary carbon market to purchase credits with explicit coastal risk reduction benefits, this profile is not yet well established and has therefore not been reflected in the case studies.

CASE STUDY: ASSET OWNER

In 2021, **CDC Group** engaged **Earth Security** to assess the economic value that mangrove restoration could provide to **Zephyr Power Limited's** wind power plant in Pakistan.

Earth Security worked with Zephyr Power Limited and its investor, CDC Group, to assess the value of mangroves for the asset protection of a wind farm investment in Pakistan.[1]

The group estimated that the project's investment in the restoration and protection of mangroves can return up to 20 times its value in the protection of physical assets against coastal erosion. This would save the developer and its investors up to US$7 million over the 25-year project timeframe.



In 2017, Zephyr Power Limited (ZPL) commenced development of a 50 MW wind power project with 25 turbines near Bhambore, Pakistan. The wind power plant, which became operational in 2019, is located on the Indus River Delta, which is the 5th largest delta system and the 7th largest mangrove system in the world.

The project's assets are situated in an area of degraded coastal marshes, which had been over-harvested for firewood, fishing, crabbing and camel grazing by local communities over many years. The area is regularly inundated during high tides and highly susceptible to sea level rise, increased flooding and erosion from climate change. This posed significant risks of damage of infrastructure on site, including roads and wind turbine platforms, which would require regular servicing and maintenance.

At project commencement, CDC Group and ZPL recognised the role of mangroves in increasing the climate resilience of the wind power plant and bringing broader benefits to local communities.

ZPL, in partnership with the local government, developed a mangrove protection and rehabilitation programme to protect what remained of the ecosystem and to strategically plant new mangroves around the site to help bring the area back to its original state.

The programme, coupled with a community involvement plan, has enabled the wind farm to mitigate its social and environmental impact, and safeguard physical assets. Increased mangrove coverage has provided site stability and reduced soil erosion, and protected the wind turbines from regular tidal erosion as well as extreme storms and sea level rise, which has saved US$35,000 – US$40,000 per year in maintenance costs.

The investment is reflective of the strong causal link between robust mangrove ecosystems and climate resilient assets, and could be influential in incentivising further asset owner investment in blue carbon restoration and protection.

> "We know that nature-based solutions have a tangible value in helping protect assets to become more resilient to climate change. Our partnership... is showing other global investors how they can benefit from integrating nature-based approaches in their projects"
>
> **Nik Stone, ESG manager, British International Investments (formerly CDC Group)**

1. Earth Security, (2020), Financing the earth's assets: the case for mangroves as a nature-based climate solution.

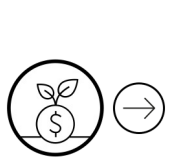
CASE STUDY: SOCIAL ENTERPRISE IN INSURANCE

Restoration Insurance Service Company (RISCO) seeks to create new revenue streams for mangrove conservation and restoration by incorporating the risk reduction value of mangroves in insurance products.

CONSERVATION INTERNATIONAL

RISCO is a world-first social enterprise that invests in mangrove conservation and restoration in areas with high-value coastal assets to reduce flooding and property damage risk. RISCO will partner with local communities to select sites where mangroves provide high flood reduction benefits and model that value. Insurance companies will then pay an annual fee for these services.

RISCO will also generate and sell blue carbon credits for meeting voluntary targets.



This is an example of a **social enterprise** working with **insurers** to price the physical risk reduction from protected mangroves.

RISCO is an insurance model that has been developed by Conservation International with the intention to support mangroves in developing nations with significant blue carbon potential, high exposure to storms and flooding, and with people and assets located close to the shoreline.

The mechanism is in the conceptual phase, with a pilot planned for the Philippines that will cover 4,600 hectares of mangrove forest to reduce flood risks for 7,000 people, which is expected to generate more than US$10 million in revenue from the insurance sector and blue carbon markets.

RISCO's model will be self-financing through two primary revenue streams; (1) indemnity insurance (see figure on right); and (2) the sale of blue carbon credits.

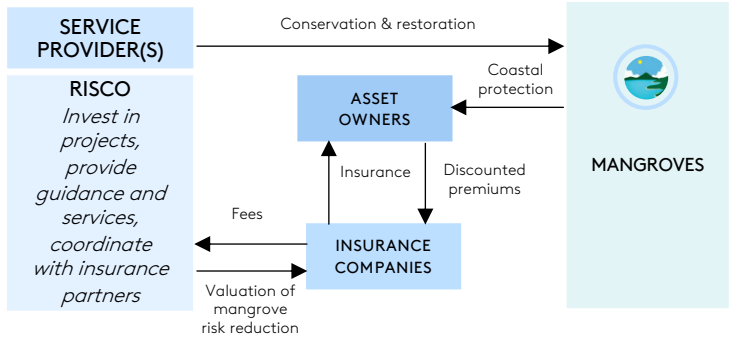
For insurance, RISCO will engage with insurance companies and risk modelling companies to quantify the flood reduction benefits provided by mangroves for a selected site. It will subsequently help insurance partners embed mangrove risk reduction models into their models and negotiate contracts to pay for the risk reduction benefits.

Additionally, RISCO will apply Verra methodologies for Wetlands Restoration and Conservation to generate and sell blue carbon credits to corporates for their voluntary climate targets.

While still nascent, this model highlights how the coastal protection benefits of mangroves, if properly valued, can be connected with direct beneficiaries, most of whom have limited capacity to protect mangroves.

Coastal asset owners are expected to benefit from the role of mangroves in safeguarding infrastructure from flooding and erosion, and from access to discounted insurance that accounts for the protection provided by the mangroves. Whereas insurers will benefit primarily from lower risk exposure profiles and payouts to cover damage from weather events.

Figure 7: High-level depiction of RISCO insurance model[1]



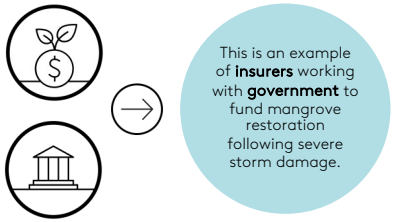
1. Climate Finance Lab. (2019). Restoration Insurance Company (RISCO).

CASE STUDY: INSURER

There are some notable examples of **parametric insurance** being deployed by insurers to protect ocean ecosystems in the interests of governments and local communities (1/2).

Parametric insurance a type of insurance that pays out a pre-agreed amount to a policyholder according to pre-defined, objective, independent and verifiable event characteristics (e.g., peak wind speed). If triggered, it ensures that liquidity is available for post-event response, such as the rapid restoration of coral reef ecosystems.

In 2019, supported The Nature Conservancy (TNC), working with global re/insurer Swiss Re, facilitated deployment of a world-first parametric insurance coverage for the reefs and beaches of Quintana Roo State in northeastern Mexico, where both local communities and especially the tourism industry benefit greatly from healthy coastal ecosystems.



The MAR Insurance Programme covers 1,000km of coral reef ecosystem. Like mangroves, coral reefs provide coastal protection benefits by reducing wave energy before it hits the shore, mitigating daily coastal erosion and storm-related damages; home to 65 species of coral and more than 500 species of fish, over 2 million people depend on the reefs for their livelihoods, nutrition, and coastal protection. Further, reef health is directly correlated to the functioning of blue carbon ecosystems and their storage capacity, such as seagrass whose ability to absorb carbon is diminished when coral reefs are damaged.[1]

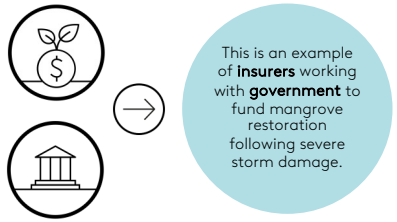
The MAR Insurance Programme was triggered during a category 1 hurricane that passed through the Turneffe Atoll Marine Reserve in Belize in November 2022. Calculations completed by WTW as the Calculation Agent confirmed that the wind intensity reached 70 knots, triggering a US$175,000 pay-out, which MAR Fund received in full within just 2 weeks of the event. Within 48 hours of receiving the pay-out, MAR Fund transferred funds out to reef response brigades, coordinated by Turneffe Atoll Sustainability Association (TASA). Within 15 days of the event, the first brigade members entered the water. Brigade members were deployed to two Turneffe Atoll sites to rapidly assess damage to the reef and subsequently carry out the first phases of response activities, stabilising and repositioning almost 200 fragments of staghorn and elkhorn coral as well as boulder and soft corals.[2]

1. Guerra-Vargas et al. (2020). Stronger Together: Do Coral Reefs Enhance Seagrass Meadows "Blue Carbon" Potential?
2. WTW. (2023) 'WTW announces third renewal and expansion of coral reef insurance programme'

CASE STUDY: INSURER

There are some notable examples of **parametric insurance** being deployed by insurers to protect ocean ecosystems in the interests of governments and local communities (2/2).

Since then, the Mesoamerican Reef (MAR) Fund, working in collaboration with WTW, a leading global advisory, broking, and risk solutions company, has designed a ground-breaking, bespoke parametric insurance programme across the full extent of the Mesoamerican Reef, from southern Mexico through Belize, Guatemala and Honduras.



Given its success in disaster risk mitigation and adaptation, the gridded parametric structure of the MAR Insurance Programme has since been replicated for the first time in the United States. In late 2022, WTW and TNC designed a parametric coverage for the state of Hawai'i. Munich Re provided the cover, following a competitive placement process. It is triggered at windspeeds of 50 knots (57 mph) if sufficiently close to reefs and provides pay-outs up to US$2 million within days to allow rapid reef repair and restoration after storm damage, and to facilitate emergency care. The Hawai'i policy, supported by funders including the Bank of America Foundation and Howden Group Foundation, covered the latter part of the 2022 hurricane season and will be in place during the entire 2023 season.

Further, BHP has partnered with insurance company WTW to design a parametric insurance product for the Northern Lau region in Fiji. As well as coastal resilience benefits, the coral reefs in this region provide livelihoods for the local communities in fishing and tourism, highlighting the need for a rapid response following a cyclone event. The insurance policy is expected to be in place for the 2023-24 cyclone season, and the premiums will be funded by BHP during this period, with the potential to expand in geographic coverage following the first year pilot. Its structure is based on the MAR Insurance Programme but is bespoke to these sites, having used historical and stochastic storm datasets and information on the costs of past events in the region. The intended policyholder, a local environmental organisation, has conducted planning activities for its reef response activities, with significant involvement from the local community, further supporting long-term resilience and community ownership.

This broadly reflects the effectiveness of parametric insurance in deploying resources to repair critical natural capital and reinstate ecosystem services, with strong applicability for blue carbon ecosystems given the coastal resilience benefits they provide.

1. Guerra-Vargas et al. (2020). Stronger Together: Do Coral Reefs Enhance Seagrass Meadows "Blue Carbon" Potential?
2. WTW. (2023) 'WTW announces third renewal and expansion of coral reef insurance programme'

CASE STUDY: GOVERNMENTS AND LOCAL COMMUNITIES

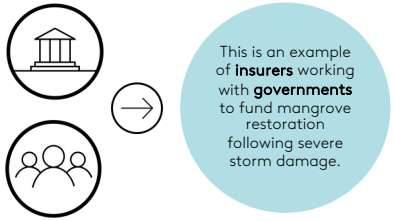
US federal government **departments** are supporting **local communities** to engage in conservation and restoration of mangroves for coastal protection across the United States,

USNA UNITED STATES NAVAL ACADEMY

MONROE COUNTY FLORIDA

The United States Naval Academy has supported community research and conservation efforts for mangrove protection in the Florida Keys, particularly since the widespread damage to the region caused by Hurricane Irma in 2017.

The outcomes of this work demonstrate that mangrove forests in Florida have significant flood damage reduction benefits during catastrophic events like Hurricane Irma, providing strong incentives for community engagement in restoration.



States like Florida on the United States Gulf Coast are particularly vulnerable to storm surges due to the high frequency and severity of hurricanes and rising sea levels. This was evidenced by the extensive flooding and damage in the Florida Keys caused by Hurricane Irma. The hurricane contributed to one of the costliest years on record for the United States in terms of hurricane-related damages to livelihoods and infrastructure, with initial economic damage estimated at around US$50 billion.[1]

As the likelihood and costs of hurricanes continues to rise, there is increasing pressure on local governments and communities to identify cost-effective strategies for reducing their flood risk. Traditionally, coastal development in the region has been accompanied by the construction of artificial grey infrastructure for coastal protection, including storm surge barriers and seawalls. These structures often disrupt the natural environment, which can aggravate coastal risks and adversely impact the resilience of coastal communities. The United States Naval Academy has worked with local communities to build the evidence base for the protective capacity of mangroves, finding that they are a viable cost-effective alternative to grey infrastructure. This is reflective of a motivation to protect naval infrastructure and contribute to public goods by ensuring the long-term resilience of communities.

1. Narayan et al., (2020). Valuing the flood risk reduction benefits of Florida's mangroves;
2. The Nature Conservancy. (2021). Community incentives for nature-based flood solutions.

FEMA

Community engagement in mangrove restoration and protection in Florida

Research and advocacy by federal and state governments are critical for incentivising widespread community engagement in nature-based solutions that reduce flood risk. The Federal Emergency Management Agency (FEMA) has established a Community Rating System to incentivise local communities to plan and design nature-based solutions in areas exposed to flood risk, like the Florida Keys.[2]

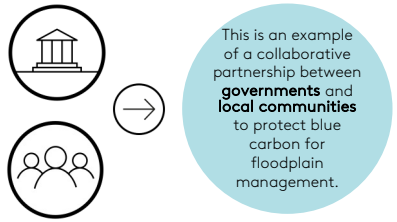
The initiative is part of FEMA's National Flood Insurance Program, which offers government-backed flood insurance to property owners, renters and businesses and by encouraging communities to adopt floodplain management. The Community Rating System recognises and rewards highly effective floodplain management activities including coastal wetland protection, with discounted flood insurance premiums. This provides a strong incentive for communities to combine restoration with risk reduction.

CASE STUDY: GOVERNMENTS AND LOCAL COMMUNITIES

Blue Heart Sunshine Coast is a pioneering initiative led by Australian state and local governments and The Nature Conservancy that will leverage blue carbon for sustainable floodplain management.

The Blue Heart project is an innovative partnership between Sunshine Coast Council, the Queensland Department of Environment and Science, local water and sewerage services provider, Unitywater, and TNC.

The project will protect critical areas of natural floodplain in the Maroochy River catchment and establish a regionally-significant complex of wetland and floodplain ecosystems that will be critical for the protection of coastal communities from the flooding impacts of storm surges and sea level rise.



Blue Heart, an area of more than 5,000 hectares on a natural floodplain in the Maroochy River catchment on the Sunshine Coast, provides critical flood storage for the catchment. Coastal wetlands that once covered the area have largely been cleared and drained, increasing the area's susceptibility to periodic flooding and incremental tidal floods from rising sea levels.

The Blue Heart project will protect and conserve the most critical areas of the Maroochy floodplain, with an initial focus on restoring degraded or destroyed blue carbon ecosystems on public lands. This will involve implementing a range of ecosystem restoration activities, including introducing tidal waters onto selected public lands and transitioning former farming land to productive blue carbon ecosystems. Project partners will also engage with private landowners to explore suitable land management options for their properties.

Last year, the project secured funding through the Federal Government's Blue Carbon Ecosystem Restoration Grant, which is in addition to significant funding and support provided by The Nature Conservancy to build on the project foundation.

The funding will support feasibility assessments for the entire Blue Heart project area (5,000 hectares) and specific feasibility assessments and registration of the first blue carbon pilot projects.

Importantly, this funding will in part be used for exploring innovative partnerships with insurers to price the flood mitigation potential of protected blue carbon, and opportunities to generate coastal resilience credits.

While still early stage, the project is already starting to build a strong evidence base around the link between robust blue carbon ecosystems and resilient coastal communities with low coastal risk exposure. Once established, Blue Heart will be a compelling example of the coastal risk reduction benefit playing out in the Australian context.

> "Blue Heart will contribute to further progressing our collective understanding of blue carbon ecosystems and the benefits they provide to biodiversity, fishing, water quality, recreation and coastal protection...[The project] is another way council is planning and taking action in response to climate change as the Blue Heart project area will be further impacted by sea level rise."[1]
>
> **Sunshine Coast Council Mayor, Mark Jamieson**

1. Sunshine Coast Council. (2022). Council receives multimillion dollar Blue Carbon grant.

3.2.4 Gaps and limitations.

LIMITATIONS OF EXISTING FRAMEWORKS

There is no standardised approach to value the coastal risk reduction benefits of blue carbon, and public awareness of the criticality of blue carbon ecosystems as a first line of coastal defence is low.

1 Low levels of public awareness of the risk reduction potential of blue carbon

While the coastal protective functions of blue carbon are well understood in government and academia, there appears to be limited public knowledge of the link between protecting these ecosystems and reducing the exposure of people and infrastructure to coastal risk.

This is likely in part because the risk reduction benefits of blue carbon have mostly been explored through scientific research to date, which may not be readily accessible or understandable for vulnerable people in coastal areas.

Importantly, there also appears to be relatively low awareness amongst owners of physical infrastructure on the coast. This is reflective of a broader tendency to use grey infrastructure as the protective benefits of nature-based infrastructure are not yet widely understood nor integrated into traditional assessments of infrastructure projects in Australia.[1] This could in part be due to the challenge of modelling blue (and green) infrastructure compared to grey infrastructure, due to variability in natural systems which can mean greater uncertainty in the level and timing of benefit (at least compared to what would seem to be a definitive figure calculated for grey infrastructure). This 'cultural' preference for certainty, along with the lack of information mentioned in this paragraph, contributes to the tendency to use grey infrastructure. To complicate things further, there is also a growing body of research on green-grey infrastructure which mixes the two, including in coastal settings.[2]

1. International Institute for Sustainable Development. (2021). How can investment in nature close the infrastructure gap?

LIMITATIONS OF EXISTING FRAMEWORKS

There is no standardised approach to value the coastal risk reduction benefits of blue carbon, and public awareness of the criticality of blue carbon ecosystems as a first line of coastal defence is low.

2 Limited access to high-quality data for benefit quantification

Valuing the effectiveness of blue carbon ecosystems in protecting coastlines requires access to large-scale spatial data on severity and frequency of weather events, mangrove extent and condition, population density and economic value of infrastructure.

The lack of robust and consistent data has significantly hampered national and regional-scale policies, and solutions for blue carbon management and rehabilitation to date.[2]

This is likely to be particularly challenging for insurers and asset owners in Australia. New parametric insurance models that facilitate restoration efforts need a strong baseline of data to price in the effect of blue carbon ecosystems on flood risk, which is not yet readily available. Similarly, asset owners will require high-quality data on the costs and benefits of blue carbon ecosystems to support the business case for project investment, which may be difficult to access.

3 Lack of clarity of applicable methodologies for quantifying coastal risk reduction benefits in Australia

In the absence of a well-established certification framework, there is significant potential for variation in methodologies that seek to quantify the coastal risk reduction benefits of blue carbon. This can undermine trust and confidence of potential buyers in the viability of coastal protection outcomes.

While these approaches broadly follow a similar logic (quantifying avoided flood losses), there can be significant variations in the underpinning data and value metrics assessed (for example, avoided infrastructure costs), which can create significant uncertainty on the demand side of the market.

Further, it is also not clear which methodologies are appropriate for blue carbon ecosystem types in Australia. The nascency of the SD Vista methodology makes it challenging to determine where and how the methodology could be applied in the Australian context.

1. Worthington et al., (2020). Harnessing big data to support the conservation and rehabilitation of mangrove forests globally.

3.3 Recommendations for policymakers.

RECOMMENDATIONS FOR POLICYMAKERS

Australian governments have a critical role to play in creating market conditions that will drive private capital into, and facilitate scaling of, blue carbon projects that protect Australian coastlines.

Initiatives to support approaches for coastal risk reduction benefits

Effectively scaling blue carbon projects that protect Australian coastlines from the increasing impacts of climate change will require a concerted government effort to engage a diverse group of stakeholders.

The following recommendations highlight that there is critical role for governments to play in advocacy and developing strong policy settings that will:

- Educate potentially vulnerable communities and companies with exposed physical assets on the effectiveness of blue carbon for coastal defence;
- Make it relatively simple and efficient for prospective project proponents to quantify and ultimately certify the coastal risk reduction benefits of blue carbon projects; and
- Incentivise innovation, and enhanced risk mitigation and adaptability to climate change through new business models

Knowledge and capability building

1 Develop targeted information campaign to increase public awareness

There is a valuable role for governments to play in closing the public knowledge gap on the effectiveness of blue carbon ecosystems as a first line of coastal defence. Governments could explore targeted information campaigns with simple messaging and share success stories from established Australian blue carbon projects that highlight the direct benefits to people and infrastructure in coastal regions. This will help to create a compelling narrative around the imperative to protect and conserve blue carbon ecosystems along Australian coastlines.

2 Undertake capacity building for sustainable infrastructure valuations

As discussed above, traditional assessments of infrastructure projects tend to overlook nature-based infrastructure, leading to decisions in favour of grey infrastructure. There is an opportunity to advocate for more comprehensive assessments that incorporate the cost savings and added benefits of nature-based infrastructure options, like mangroves. This could involve developing practical guidelines around the Sustainable Asset Valuation methodology[1], which captures the full economic costs and benefits of infrastructure and accounts for environmental risks that are typically overlooked.

As this capacity matures, governments could consider the evolution of regulations that support investment into green infrastructure options.

1. International Institute for Sustainable Development. (2021). How can investment in nature close the infrastructure gap?.

RECOMMENDATIONS FOR POLICYMAKERS

Development of a standardised approach for measuring and valuing coastal risk reduction benefits of blue carbon projects in Australia

3 Endorse methodologies for the certification of coastal risk reduction benefits to blue carbon projects

The diversity in methodologies and approaches for quantifying coastal risk reduction benefits can create uncertainty for project proponents and potential buyers of blue carbon credits with coastal risk reduction benefits. As an increasing number of blue carbon projects are developed in Australia, governments should focus on endorsing methodologies that are applicable for the Australian ecosystem types and coastal environment. As a starting point, governments could examine the applicability and appropriateness of endorsing the new SD Vista Coastal Resilience methodology in Australia.

4 Increase availability and consistency of global, national and local-level datasets and metrics

Governments can build the evidence base for coastal protection by providing relevant actors with equitable access to data products to inform investment decision-making. There is an opportunity to integrate global timeseries data (for example, Global Mangrove Watch),[1] with regional and local datasets, and economic census information for accurate quantification of the risk reduction potential. Governments should also identify common metrics for valuing risk reduction benefits (for example, property value) and consistently apply them.

Governments should seek to align with resilience and adaptation-related government agencies on this work.

5 Lobby the International Sustainable Standards Board to integrate coastal risk in physical risk disclosure requirements

In June 2023, the ISSB issued the IFRS S2 Climate-related Disclosures,[2] which sets out requirements for companies to disclose information about their climate-related risks and opportunities, and specifically physical risk. As the standard does not drill down into the dimensions of physical risk, there is an opportunity for governments to shape the development of a more comprehensive assessment of the drivers, types and assessment metrics. This could involve aligning coastal risk reduction metrics with ISSB metrics to facilitate a more holistic understanding of physical risk amongst Australian companies that disclose.

Facilitate innovation through new business models

6 Partner with insurers to integrate mangrove protection in innovative insurance models

Innovative insurance models have an important role to play in directing finance to blue carbon protection. Governments should seek to explore and better understand innovative insurance finance models and the way they could be designed to both deliver for coastal communities impacted by severe weather events and support blue carbon ecosystems.

Governments could pilot a community-based insurance model in areas such as cyclone-prone regions of tropical North Queensland to spread flood risks across a broad base of individuals. While early stage, there is evidence that models like this can generate savings on flood insurance which can subsequently be directed to nature-based flood mitigation through mangrove conservation.

1. Worthington et al., (2020). Harnessing big data to support the conservation and rehabilitation of mangrove forests globally;
2. IFRS (2023). IFRS S2: Sustainability Disclosure Standard: Climate-related Disclosures.

4. First Nations and local communities.

Wayne Quilliam, 2022

4.1 Key terms and overview of First Nations and local community benefits.


Wayne Quilliam, 2022

OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

In the following analysis, we will examine the reciprocal and mutually reinforcing benefits that can exist between blue carbon projects and First Nations communities, and models for recognition of benefits delivered to local communities.

This section explores the relationship between blue carbon projects and First Nations and local communities, the way it is understood and valued by the private sector, and the resultant recommendations for policymakers. Key concepts and findings are outlined below.

1. The beneficial relationship between blue carbon projects and First Nations and local communities is nuanced and will depend, in part, on the governance structure adopted by a project.

There are various models for structuring community involvement in blue carbon projects. The model adopted will influence the benefits delivered by the project, the way it is structured and communicated.

Where First Nations communities are owners or co-owners of blue carbon projects, a reciprocal and mutually reinforcing beneficial relationship can exist.

2. Though there is evidence of financial recognition of the benefits from First Nations and local communities' involvement in carbon projects, proper financial recognition will likely require education on the part of purchasers

There is some evidence of carbon market stakeholders valuing the benefits associated with First Nations and local community involvement in carbon projects. The Clean Energy Regulator reports, for example, that "Savanna fire management ACCUs attracted premiums up to $23.50 compared to generic ACCUs, though reported trades of these units are infrequent".[1] Data specific to blue carbon projects in Australia is not yet available.

Proper financial recognition of the reciprocal and mutually reinforcing beneficial relationship between First Nations communities and nature-based carbon projects will require a broadening of understanding from demand-side carbon market participants.

3. There are a range of models and frameworks for benefit recognition including certification. There is scope for these to mature to support better recognition of reciprocal benefits.

There are a range of frameworks designed to certify the benefits associated with First Nations and local community involvement in carbon projects. These existing frameworks are, broadly speaking, geared towards transactional benefits.

When considering the reciprocal beneficial relationship between First Nations communities and carbon projects, a more nuanced approach is needed from demand-side market participants.

4. There is a valuable role for governments to play in enabling First Nations communities to build the institutional capacity to leverage the opportunity presented carbon markets, and blue carbon specifically.

There are a range of valuable initiatives Australian governments could pursue to facilitate market recognition of the reciprocal and mutually beneficial relationship that can exist between First Nations communities and blue carbon projects. These include supporting First Nations entities to convene relevant stakeholders, support capability and cultural awareness uplift in demand-side actors, and funding First Nations organisations and industry groups to ensure they have the institutional capacity to leverage the potential of blue carbon, and carbon markets more generally, to serve First Nations communities.

NOTE

The framing of this section is focused on blue carbon given the scope of this report, but the views and insights provided are applicable to land-based carbon and nature projects more broadly.

1. Clean Energy Regulator, (2023), Quarterly Carbon Market Report – December Quarter 2022.

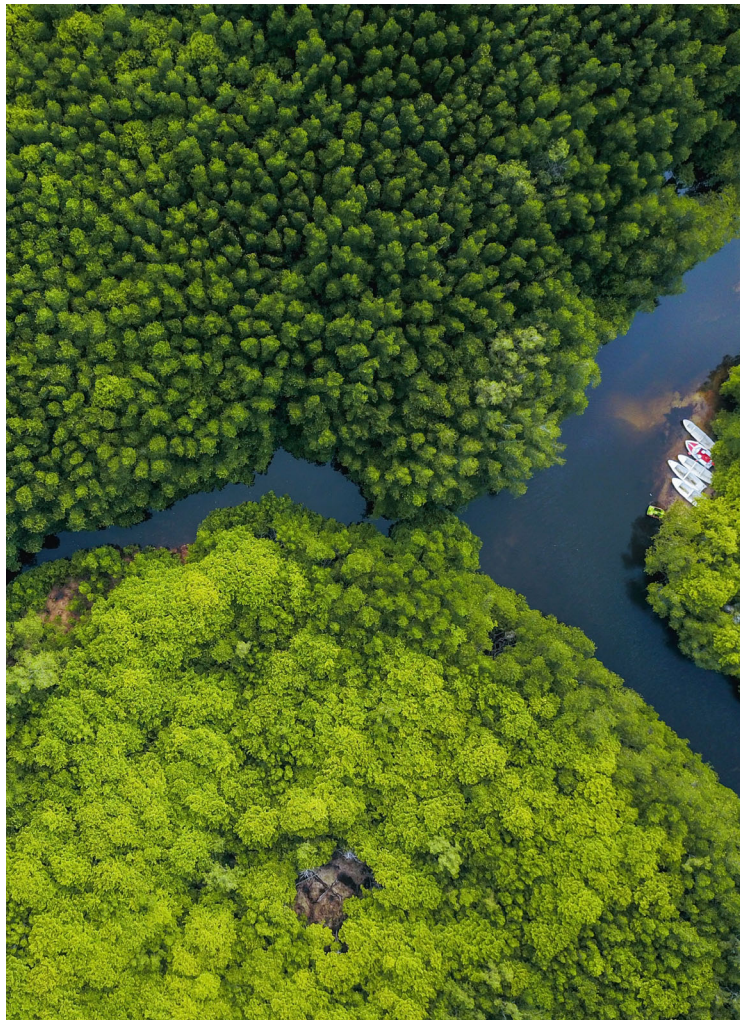
OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

COMMON LENS: TRANSACTIONAL VIEW OF BENEFITS

The Western lens of understanding the relationship between carbon projects and communities is most often characterised as transactional. This approach separately aims to measure and quantify social outcomes (i.e., financial benefits, jobs, education and training) to underpin a western-oriented lens.

First Nations see humans as part of nature, a transformational view that means that nature and people are interlinked and benefit each other. This is a reciprocal lens.

In this analysis we take a more holistic view that captures the wider benefits that communities and, in this report, specifically, First Nations communities, provide to carbon projects and their eventual purchasers.



OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

STAKEHOLDER ENGAGEMENT

Concepts, market insights and recommendations contained in this report are informed by Pollination and Pollination Foundation's market knowledge and experience.

Upon careful consideration, Pollination has not undertaken stakeholder consultation in developing this section. Several of the First Nations-led organisations that are relevant stakeholders for this work are operating under substantial capacity constraints. It is our view that First Nations organisations should be financially supported to contribute their insights as experts.

Accordingly, this section of the Report is intended as a thought leadership reframe, and we do not purport to reflect the views of all stakeholders operating in this space, knowing co-design is critically important to give effect to these concepts.

We would strongly recommend that further workshopping and consultation with First Nations experts is undertaken to validate and further develop the concepts, market insights and recommendations in this section, and that this process is financially supported.

OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

There are a few models which demonstrate a range of ways to engage First Nations and local communities in blue carbon projects. The approach adopted influences the benefit profile from the project and benefits structure.

Approaches include the following:

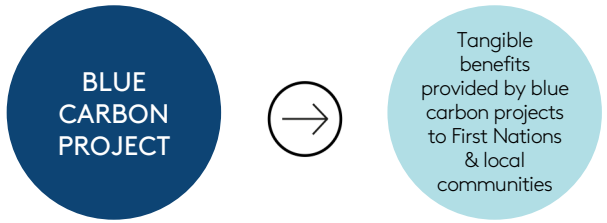
- A — Stakeholder model
- B — First Nations co-ownership model
- C — First Nations ownership model

A STAKEHOLDER MODEL

A blue carbon project is developed by a non-Indigenous entity and First Nations and local communities are involved in the project as stakeholders. Project proponents may engage with First Nations communities to seek consent. This can occur as a transactional and discrete negotiation for the free, prior and informed consent of First Nations in return for some consideration (financial, training, jobs).

BENEFITS UNDER A STAKEHOLDER MODEL

As stakeholders, First Nations and local communities may receive a range of tangible benefits from a blue carbon project. These benefits are discussed in detail below here.



There is also the potential for a range of risks under a stakeholder model, especially where First Nations and local communities are not meaningfully involved in project design and receiving equitable financial benefits from project revenue. These risks may manifest as reputational issues, the withdrawal of community support, a reduction in credit prices and community dis-harmony. In all instances, this has the potential to put the project and its economic viability at risk.

OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

Approaches include the following:

- A — Stakeholder model
- B — First Nations co-ownership model
- C — First Nations ownership model

B C OWNERSHIP AND CO-OWNERSHIP MODELS

Under an ownership or co-ownership model First Nations communities are directly involved in the control and operation of a blue carbon project, sharing risk and reward including revenue from the sale of carbon credits from a project.

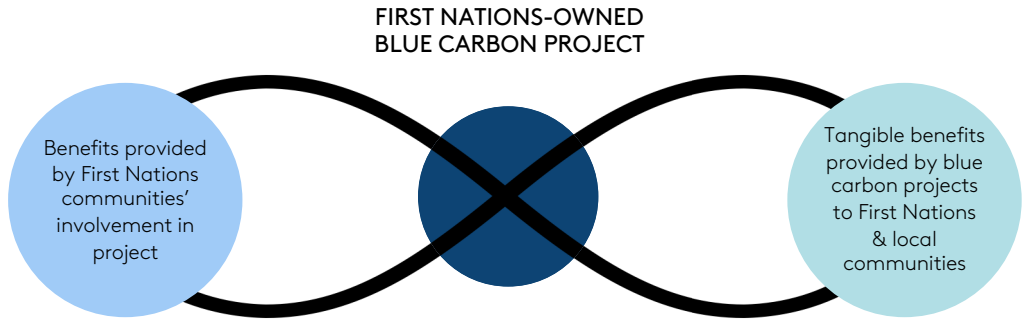
Ideally, projects on Indigenous lands and seas will be majority or wholly First Nations-owned.

NOTE

Our analysis of the ownership and co-ownership models will focus specifically on First Nations communities.

BENEFITS UNDER OWNERSHIP AND CO-OWNERSHIP MODELS

The benefits delivered by blue carbon projects having First Nations communities as owners or co-owners are multi-directional, with projects both delivering tangible benefits to First Nations and local communities and being benefited by the involvement of First Nations community in the project.



As will be discussed, this benefit profile can be reciprocal and mutually beneficial.

OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

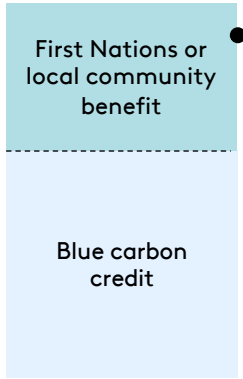
Under a **stakeholder model**, a project proponent may seek to quantify and/or certify the benefits the blue carbon project delivers to First Nations and local community stakeholders.

A STRUCTURING BENEFITS UNDER A STAKEHOLDER MODEL

Benefits delivered to First Nations and local communities under a stakeholder model are often structured and communicated as unidirectional "co-benefits", flowing from the project to community beneficiaries.

THESE CO-BENEFITS CAN TAKE THE FOLLOWING FORMS:

- **Unquantified**: The benefit to First Nations or local communities is assumed but these benefits are not quantified or certified.
- **Quantified**: The benefits to First Nations or local communities is quantified using a quantification framework.
- **Certified**: The benefits to First Nations or local communities are quantified and certified under an established standard. This may involve third-party verification.[1]



Carbon projects can deliver a range of tangible benefits for communities, including:[2]

Direct benefits such as:

- Direct financial benefits;
- Increased local and Indigenous employment;
- Education and training opportunities;
- Protection of Indigenous cultural sites;
- Social benefits from the investment of carbon revenue;
- Improved community resilience from natural infrastructure provided by blue carbon project; and
- Public amenity.

Indirect benefits flowing from the direct benefits such as "stronger and more functioning communities because of increased revenue flows."

1. Note that First Nations communities have been subject to various forms of 'anthropological measurement' as part of native title processes. This has, in some instances, caused damage to relationships in communities. As a result, there is high sensitivity in First Nations communities to third-party involvement in these kinds of processes.

2. The above list is inspired by the Indigenous Carbon Industry Network. (2022). Indigenous Carbon Projects Guide. Section 10 'Understanding co-benefits', with a few additions.

OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

Where First Nations communities are involved in blue carbon projects as **owners or co-owners**, a broader *reciprocal* and potentially *mutually reinforcing* benefit profile emerges.

B C BENEFITS UNDER A FIRST NATIONS OWNERSHIP OR CO-OWNERSHIP MODEL

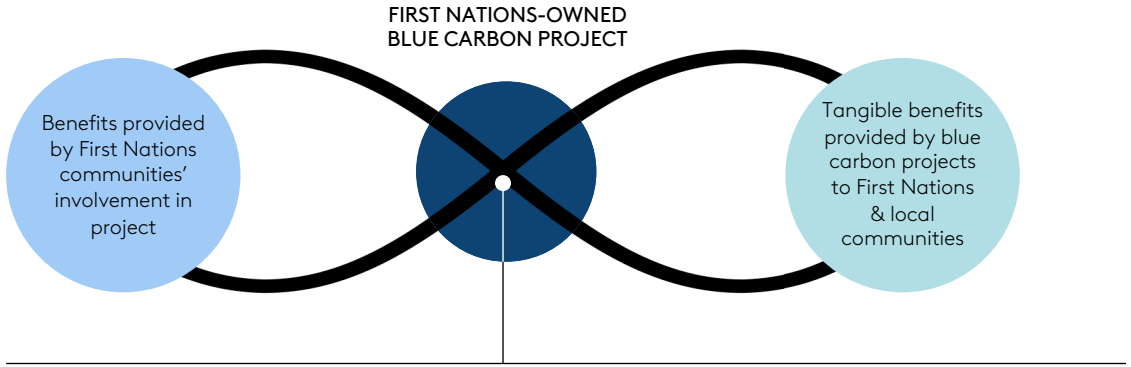
As noted, projects with First Nations community as owners and co-owners can deliver both benefits to First Nations and local communities (as set out on the previous slide) and be benefited by the involvement of First Nations community in the project. These benefits can be **reciprocal** and **mutually reinforcing**.

WHAT IS MEANT BY AN OWNERSHIP OR CO-OWNERSHIP MODEL?

Under these models, First Nations either self-originate projects (for example as seen in savanna fire management projects in northern Australia) or are involved from the start of project development as equity shareholders. The projects are co-designed from concept, to feasibility, to implementation and close.

The model reframes the unique ecological expertise of First Nations and places a high value on it, as well as the integrity and permanence that First Nations bring through millennia of observations of Country which will continue well beyond the scope of the project.

It amplifies western science with Indigenous wisdom and offers the highest standard of consent and provenance, supporting a just transition.



RECIPROCAL RELATIONSHIP BETWEEN FIRST NATIONS COMMUNITIES & BLUE CARBON PROJECTS

First Nations community equity participation in blue carbon projects has the potential to be positively reinforcing, with the benefits community provide to carbon projects in turn supporting the benefits carbon projects deliver for community.

Likewise, the capability development and empowerment from owning and managing the project can lead to just transition outcomes for First Nations communities.

Ideally, it is a mutually reinforcing model of reciprocity: the project couples western and Indigenous capabilities to create mutual reward.

This benefit profile, and the way it is structured and communicated is unpacked over the forthcoming slides.

OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

This broader reciprocal and potentially mutually reinforcing benefit profile that emerges under a **First Nations ownership or co-ownership model** influences the way that benefits are structured and communicated.

B C STRUCTURING BENEFITS UNDER AN OWNERSHIP OR CO-OWNERSHIP MODEL

A recent statement from the Indigenous Carbon Industry Network (ICIN) is helpful for understanding the benefit profile in First Nations-owned carbon projects and the way it is structured and communicated to the market.

> "Importantly, what carbon buyers typically refer to as 'co-benefits' are not interchangeable with Indigenous 'provenance' (origin) of carbon credits, i.e. where and how the carbon credits are generated.
>
> Currently, many Indigenous-owned carbon projects are successfully marketing and selling their carbon credits for a premium price based on provenance alone, in recognition of the value of supporting Indigenous-led enterprise and self-determination of Indigenous communities.
>
> These sales do not, however, recognise additional and specific co-benefits, such as improved outcomes for wildlife, or the social benefit from the sale of carbon credits resulting in investment in remote community infrastructure."[1]
>
> ICIN Indigenous Carbon Industry Network

To help clarify the difference between co-benefits and Indigenous carbon credits, ICIN Members formulated the following statement:[2]

Carbon credits of Indigenous origin provide a premium value climate action product, delivering Indigenous led outcomes that are good for people and good for country.

Indigenous carbon projects are absolutely unique and one-of-a-kind. From Indigenous-led governance and design, through to implementation informed by thousands of years of land management experience, Indigenous carbon projects are implemented with a goal not just of generating carbon credits, but to increase the health and resilience of people and country in line with customary obligations of traditional owners.

Strong partnerships with organisations which recognise the premium value of Indigenous carbon will strengthen the industry, ensuring Indigenous provenance is synonymous with high quality carbon credits supporting healthy people and healthy country.

Indigenous carbon projects are accompanied by a multitude of positive environmental, socioeconomic and/or cultural outcomes. Recognising and valuing these outcomes in addition to carbon is essential if offset markets are to continue to successfully support Indigenous land management activities. Across the board, Indigenous carbon projects result in not only greenhouse gas abatement, but a multitude of direct and indirect beneficial environmental, socio-economic, and cultural outcomes.

While they may be related to a carbon project, it is important to recognise that these benefits are standalone outcomes with a distinct value.

Recognising the difference between Indigenous carbon credits and other beneficial outcomes, and the additional financial value of these outcomes will help to ensure that Indigenous carbon credits are not undervalued, while also supporting the opportunity for other offset markets.

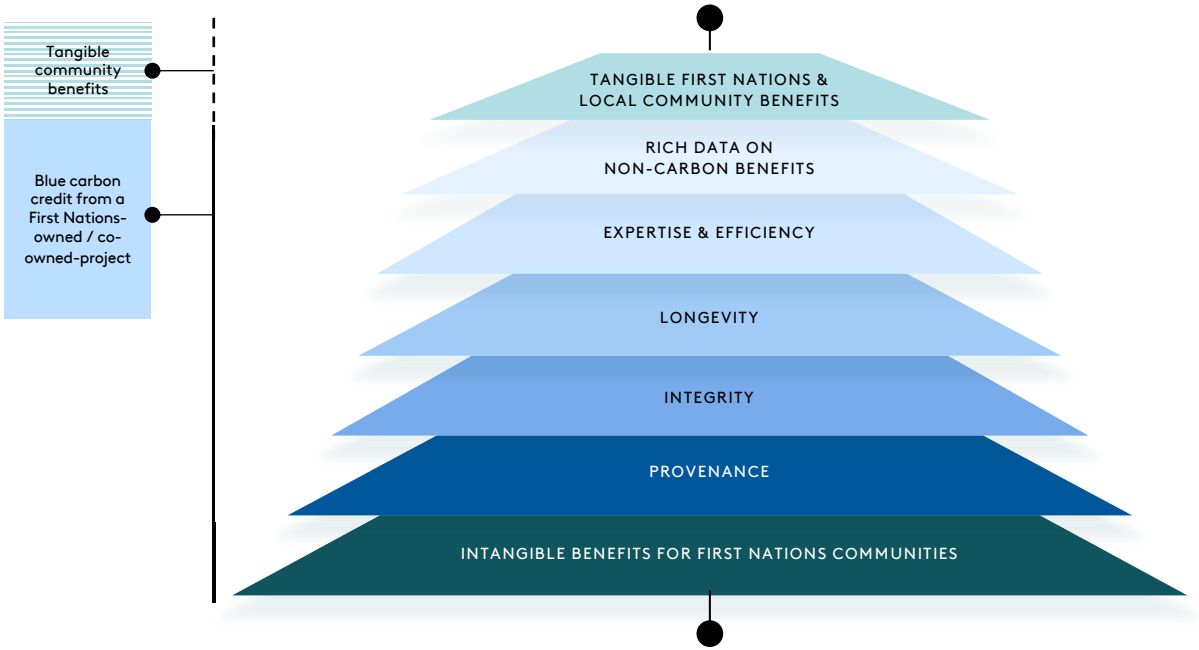
1-2. Indigenous Carbon Industry Network. (2022). Submission to the ACCU Review.

OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

This broader reciprocal and potentially mutually reinforcing benefit profile that emerges under a **First Nations ownership or co-ownership model** influences the way that benefits are structured and communicated.

B C STRUCTURING BENEFITS UNDER AN OWNERSHIP OR CO-OWNERSHIP MODEL *continued*

Intrinsic to a blue carbon credit generated through a First Nations-owned project are a suite of benefits and positive characteristics. As such, project proponents may or may not separately certify the tangible community benefits provided by the project.



INTANGIBLE BENEFITS FOR FIRST NATIONS COMMUNITIES

Carbon projects can support **non-marketable intangible benefits** for First Nations communities that **are** unquantifiable and invaluable, such as:

- intergenerational transfer of cultural knowledge and language; and
- connection to Country.

As the Indigenous Carbon Industry Network identifies, 'As these intangible benefits are economically unqualifiable and invaluable, it is important that tangible and intangible benefits are not conflated'.[1]

PROVENANCE

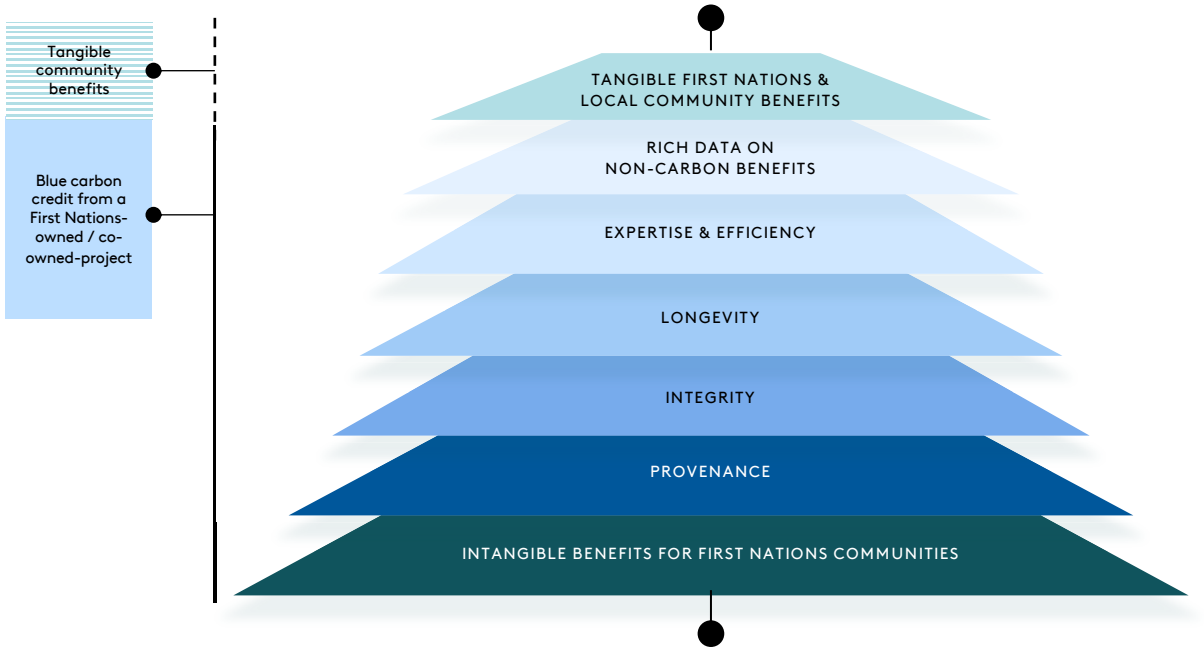
As ICIN note, "Currently, many Indigenous-owned carbon projects are successfully marketing and selling their carbon credits for a premium price based on provenance alone, in recognition of the value of supporting Indigenous-led enterprise and self-determination of Indigenous communities." [2]

1. Indigenous Carbon Industry Network, (2022), Indigenous Carbon Projects Guide, Section 10 'Understanding co-benefits'; and
2. Indigenous Carbon Industry Network, (2022), Submission to the ACCU Review.

OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

This broader reciprocal and potentially mutually reinforcing benefit profile that emerges under a **First Nations ownership or co-ownership model** influences the way that benefits are structured and communicated.

B C STRUCTURING BENEFITS UNDER AN OWNERSHIP OR CO-OWNERSHIP MODEL *continued*



INTEGRITY

- Where First Nations communities are actively involved in, and benefitting from, blue carbon projects, community support and buy-in, and fair and equitable benefit distribution is more likely to be established.
- Dynamics in the process of securing free, prior and informed consent (**FPIC**) are immediately changed where First Nations communities hold an ownership position in a carbon project. Further, where this model is pursued, a carbon project is more likely to promote self-determination for First Nations, rather than point- in- time FPIC.
- This can improve purchaser confidence of core social integrity considerations in due diligence (**DD**) processes such as the administration of benefit sharing, potentially allowing for streamlined DD processes.

LONGEVITY

Blue carbon projects using the ERF method are subject to either 25 or 100 year permanence period. First Nations project proponents may have the social architecture to support on-going project management activities during the permanence period (thereby managing regulatory and environmental integrity risks), as well as past the conclusion of the permanence period.

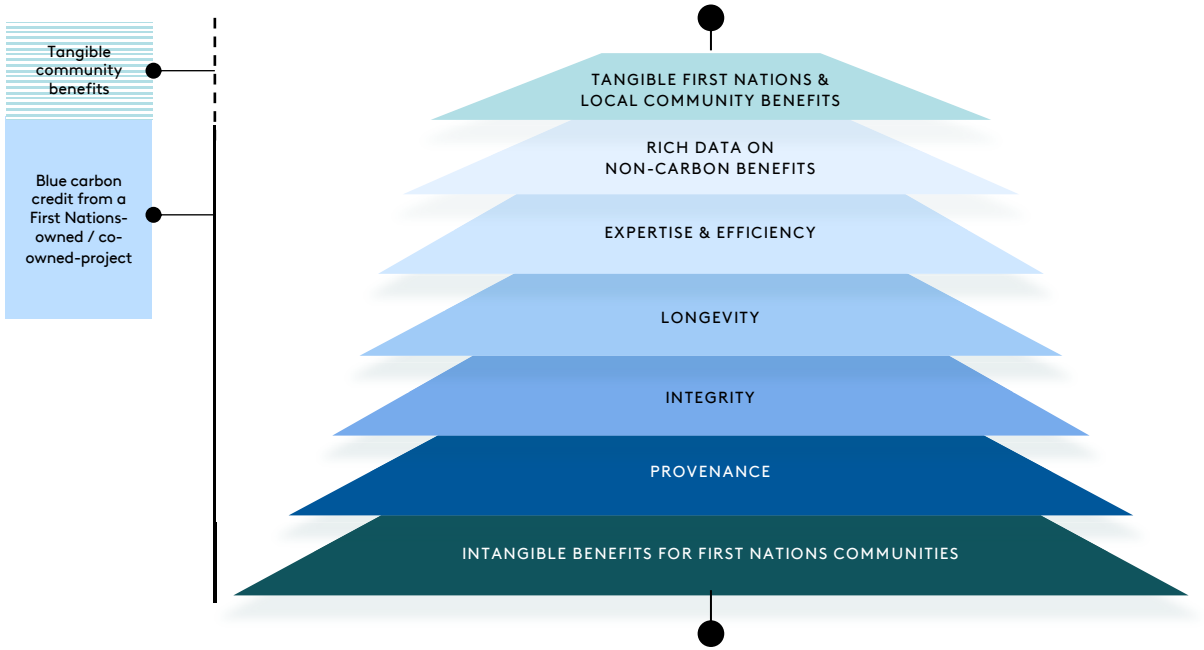
EXPERTISE AND EFFICIENCY

First Nations communities have deep traditional ecological expertise informed by millennia of ecosystem observation and interaction and stewardship. This invaluable expertise supports ecologically-informed and efficient project design to underpin robust carbon outcomes.

OVERVIEW OF FIRST NATIONS & LOCAL COMMUNTIY BENEFITS

This broader reciprocal and potentially mutually reinforcing benefit profile that emerges under a **First Nations ownership or co-ownership model** influences the way that benefits are structured and communicated.

B C STRUCTURING BENEFITS UNDER AN OWNERSHIP OR CO-OWNERSHIP MODEL *continued*



DEEP OBSERVATION TO INFORM RICH DATA ON NON-CARBON BENEFITS

The deep traditional ecological expertise provided by First Nation project proponents can support rich data sets on non-carbon benefits of blue carbon projects such as biodiversity. Anecdotally, this data can be much richer and regularly collected than the data obtained through retaining fly-in, fly-out researchers.

FIRST NATIONS AND LOCAL COMMUNITY BENEFITS

- As discussed above, carbon projects can deliver a range of tangible (direct and indirect) benefits to First Nations communities.
- Project proponents may or may not seek to separately certify these benefits for additional financial value. This is unpacked further below.

Note that, though not focused on in this section of the report, First Nations-owned blue carbon projects are likely to also deliver a range of further non-carbon benefits, including biodiversity, fisheries and coastal risk reduction.

4.2 | Market dynamics.

4.2.1 Demand considerations: *Financial recognition of benefits.*

FINANCIAL RECOGNITION OF FIRST NATIONS & LOCAL COMMUNITY BENFITS

Carbon markets, and western science more generally, are inherently geared differently to First Nations worldview and motivations.

Proper financial recognition of the *reciprocal* and *mutually reinforcing* beneficial relationship between First Nations communities and nature-based carbon projects will require a broadening of understanding from demand-side carbon market participants.

For many market participants, carbon transactions are motivated primarily by carbon offset procurement to meet voluntary targets and compliance requirements; and secondarily, the social impact narrative associated with non-carbon benefits.

First Nations project proponents' motivations for undertaking carbon projects are altogether different. See right an explanation provided by the Aboriginal Carbon Foundation on this.

Demand-side carbon market participants need to engage with First Nations ways of thinking in order properly value the reciprocal and mutually reinforcing beneficial relationship between First Nations communities and nature-based carbon projects. This is most likely achieved by demand-side actors investing in long-term partnerships with First Nations-led organisations.

ABORIGINAL CARBON FOUNDATION

firesticks
Cultural burning: healthy communities, healthy landscapes

The Aboriginal Carbon Foundation explains this inherent difference in motivations in their explanation of their use of the term "core-benefits" for non-carbon benefits:[1]

"The intention of carbon farming projects is primarily concerned with the abatement and sequestration of carbon emissions. Any environmental, social, economic and cultural benefits relating to this activity are often termed 'co-benefits' by the Carbon Farming Industry. This is because the act of carbon farming is seen as the primary benefit.

However, for Indigenous carbon farmers, the community outcomes – being on Country, practising culture, increased employment as rangers through the sales of ACCU, etc. – are often more important."

1. Aboriginal Carbon Foundation and Firesticks Alliance. (2022). Cultural Fire Credits Philosophy and Guidelines. page 7.

FINANCIAL RECOGNITION OF FIRST NATIONS & LOCAL COMMUNITY BENFITS

There is evidence of market differentiation of carbon projects with community benefits, particularly First Nations community benefits. The demand profile for each form of unit and benefit is slightly different.

A

STAKEHOLDER MODEL

Local community benefit

Blue carbon credit

Demand is likely to come from purchasers who value the narrative associated with the local community benefits delivered by their carbon credit procurement strategy.

Whether purchasers seek quantified or certified benefits or are satisfied with un-quantified benefits will generally depend on the budget available and the entity's risk tolerance in making claims. Generally, credits with higher integrity quantification and certification will be priced at a premium.

First Nations community benefit

Blue carbon credit

Demand is likely to come from purchasers who value the narrative associated with the First Nations community benefits delivered by their carbon credit procurement strategy.

Some purchasers may seek to link the procurement of carbon credits with First Nations benefits to corporate commitments such as those made in Reconciliation Action Plans.

Whether purchasers seek quantified or certified benefits or are satisfied with un-quantified benefits will generally depend on the budget available, the cost of units and their risk tolerance in making claims. Generally, credits with higher integrity quantification and certification will be priced at a premium.

Pollination is aware that in 2022 credit prices for carbon projects with First Nations partners were in the order of ~$45/ACCU.

B

OWNERSHIP OR CO-OWNERSHIP MODEL

Tangible community benefits

Blue carbon credit from a First Nations-owned blue carbon project

Pollination is aware that in 2022 credit prices for First Nations-owned projects were in the order of $51-57/ACCU.

Demand is likely to come from purchasers who highly value the **provenance** of carbon credits generated from a First-Nations owned project.

Some purchasers may seek to link the procurement of the carbon credits to their reputation and brand regarding their commitment to First Nations communities.

Purchasers may also be motivated to purchase from First-Nations led blue carbon projects as a means to streamline due diligence processes and mitigate reputational and operational risk associated with carbon projects that do not have sufficient community and Traditional owner support.

Some purchasers may also be willing to pay an additional premium for certified tangible community benefits.

FINANCIAL RECOGNITION OF FIRST NATIONS & LOCAL COMMUNITY BENFITS

WILLINGESS TO PAY

The Clean Energy Regulator reports that "In 2022, stratified pricing was first reported for ACCUs where some buyers were prepared to pay an increased premium for units with social, environmental and economic co-benefits."[1]

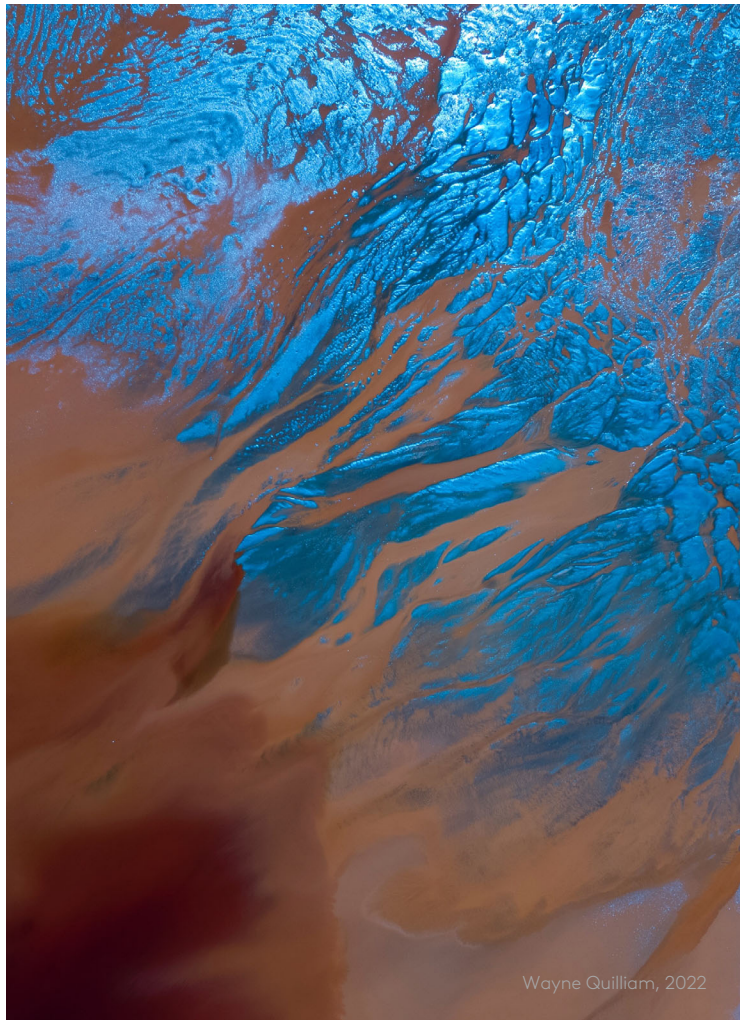
"Savanna fire management ACCUs attracted premiums up to $23.50 compared to generic ACCUs, though reported trades of these units are infrequent.

ACCUs from projects with First Nations People co-benefits, attracted the highest premiums."[2]

Further detail on the nature of these "co-benefits" is not provided.

The Quarterly Carbon market report for the March 2023 does not cover these premium and thus it is difficult to determine if the premiums have continued.

1-2. Clean Energy Regulator. (2022). Quarterly Carbon Market Report – December Quarter 2022 (updated 14 June 2023).

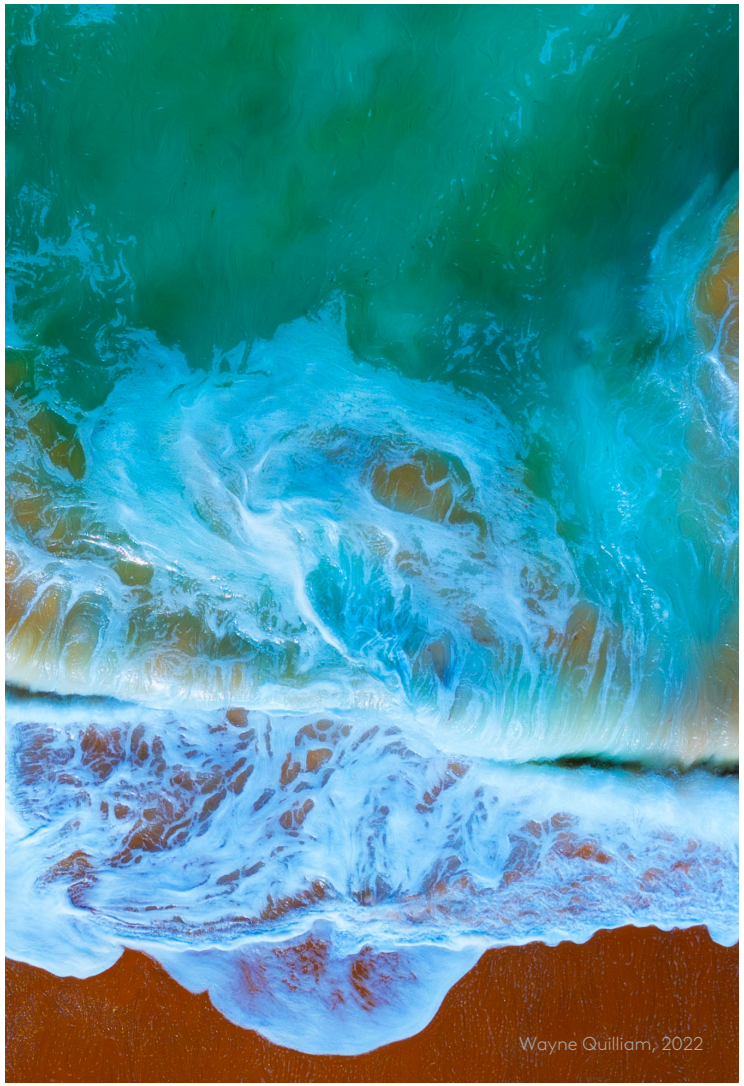


Wayne Quilliam, 2022

4.2.2

Supply considerations:

Models for benefit recognition.


Wayne Quilliam, 2022

MODELS FOR BENEFIT RECOGNITION

A nuanced approach is required when considering the models for benefit recognition in this space.

Demand-side carbon market participants have become accustomed to certification to give confidence in claims made about additional benefits through carbon credit procurement.

However, especially when considering the reciprocal beneficial relationship between First Nations communities and carbon projects, a more nuanced approach is required.

1. First Nations ownership is currently operating like a form of 'certification', providing buyers with confidence in the intrinsic benefits and unique provenance and characteristics of carbon credits from First Nations-owned projects.

2. The costs and time of obtaining certification is onerous for projects and can be culturally fraught for First Nations entities. Purchasers should critically consider the value and need for third-party certification, particularly for First Nations-owned projects. Ideally, purchasers should seek to build strong, ongoing relationships with First Nations project proponents, and in that context additional certification may not be necessary to underpin the attribution of financial value to those tangible non-carbon benefits. Building this kind of relationship with First Nations entities may require capability uplift by purchasers to equip them to meaningfully engage.

MODELS FOR BENEFIT RECOGNITION

3. The measurement and verification of community benefits is sensitive and must be approached in a culturally-aware manner. Where certification of tangible benefits occurs, the certification of benefits to First-Nations communities should be conducted by First Nations people against First Nations-led certification schemes into which community have input. See statement right from ICIN.

4. Blue carbon projects that are not First Nations-owned or co-owned should critically consider the appropriateness of marketing, and ultimately seeking financial recognition for, claims associated with First Nations community benefits delivered by the project. Strong and equitable benefit sharing measures with First Nations communities would be very important for this to occur in a way that is appropriate and equitable.

1. Indigenous Carbon Industry Network. (2022). Submission to the ACCU Review.

In discussions with non-Indigenous and mainstream carbon companies, it is increasingly apparent that Indigenous organisations are motivated by an entirely different set of values, more altruistic and holistic than their non-Indigenous for-profit counterparts. This difference sets them apart in the marketplace.

Many ICIN member organisations assert that they, and only they, have the right to communicate what outcomes their project is seeking to generate, and how this could be measured or evaluated.

Therefore, it is vital that Indigenous companies can articulate these drivers and the outcomes of these projects in a clear way that is determined by them.

To help clarify expectations in relation to the use of Indigenous media and narratives in carbon sales, ICIN Members formulated the following statement:

ICIN Indigenous Carbon Industry Network

Stories shared by Indigenous organisations to explain their activities, values, experience, and knowledge have a discrete and significant value.

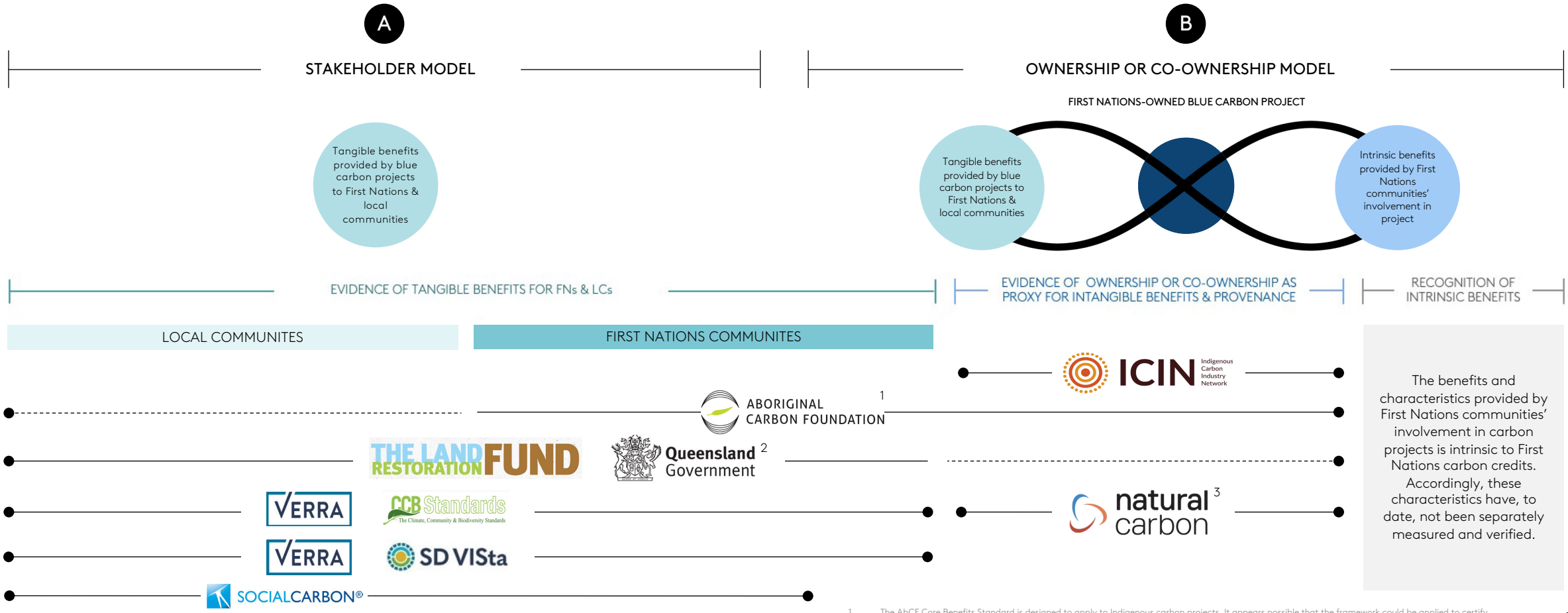
Indigenous organisations have a right to self-determine what part of their story they are prepared to share publicly to support a corporate partnership.

The stories of Indigenous organisations that own or produce carbon credits are often shared as part of carbon sales. These narratives have the potential to provide investors with significant value that is distinct and additional to the value of the carbon credit, and any other beneficial outcomes.

Partners seeking to use Indigenous stories, need to engage appropriately with Indigenous groups for agreed access to these resources, recognising and respecting the value of indigenous culture, obligations, and history.[1]

MODELS FOR BENEFIT RECOGNITION

There are a range of existing frameworks that adopt different models for recognising the beneficial relationship between carbon projects and First Nations and local communities.



The benefits and characteristics provided by First Nations communities' involvement in carbon projects is intrinsic to First Nations carbon credits. Accordingly, these characteristics have, to date, not been separately measured and verified.

1. The AbCF Core Benefits Standard is designed to apply to Indigenous carbon projects. It appears possible that the framework could be applied to certify benefits First Nations projects deliver to local (non-Indigenous) communities, but this is not explicitly stated.
2. Under the LRF Co-Benefits Standard, to claim First Nations benefits based on participation, projects must be owned by First Nations peoples or directly involve First Nations participation, such as through the provision of Indigenous fire management services or the involvement of Indigenous Rangers.
3. Natural Carbon is in a piloting phase and limited information is publicly available. Accordingly, it is currently unclear whether ORRU Standard will also certify tangible carbon project benefits. Note that Natural Carbon certify "effective" control by First Nations communities, not "ownership".

CASE STUDIES

The Indigenous Carbon Industry Network (**ICIN**) is Australia's peak body supporting First Nations engagement in the carbon industry and **is Indigenous-owned/led**. Its members are Indigenous producers or proponents.

Membership of ICIN can function as a proxy for 'certification' of the provenance of First Nations-owned and led carbon project. As discussed, this provenance profile carries with it indicators of intrinsic benefits and characteristics.

MODEL FOR BENEFIT RECOGNITION:

An organisation is entitled to become a full member of ICIN if they are:[1]

- an Indigenous producer; or
- an Indigenous proponent.

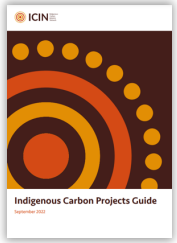
"Indigenous producer" means an Indigenous organisation or Indigenous producer group that can demonstrate ICIN's satisfaction that they undertake land and sea management practices that produce carbon credits.

"Indigenous proponent" means, in relation to a carbon project, the Indigenous organisation who is responsible for and has the legal right to carry out the project.

Full members must provide written evidence of their status as an Indigenous producer or Indigenous proponent.

INDIGENOUS 'PROVENANCE' VS. CO-BENEFITS

According to ICIN's guide, many Indigenous-owned carbon projects are already successfully marketing and selling their carbon credits for a premium price based on provenance alone (i.e. where and how the carbon credits are generated), but that currently carbon credit sales do not recognise the additional and specific environmental, economic, social, or cultural benefits provided by these projects.



As referenced in this report, ICIN has created an 'Indigenous Carbon Projects Guide'[2] with a chapter on understanding co-benefits to support First Nations Carbon projects maximising the non-carbon benefits from their projects.

APPLICABILITY TO BLUE CARBON CONTEXT

Scheme is currently applicable in the blue carbon context

Scheme is not applicable in the blue carbon context

Scheme may become applicable in the blue carbon context but further developments and/or clarity on applicability are required

GEOGRAPHIC APPLICABILITY	Australia

ICIN'S GUIDE CATEGORISES CARBON CO-BENEFITS AS:

- Marketable (tangible) benefits. Example benefits include increased Indigenous employment, protection of Indigenous cultural sites and social benefits from investment in carbon revenue. These benefits can be further categorised as direct marketable benefits and indirect marketable benefits.
- Non-marketable (intangible) benefits. Example benefits include intergenerational transfer of cultural knowledge/language and connection to country.

1. Indigenous Carbon Industry Network. (2021). Constitution of Indigenous Carbon Industry Network Ltd.; and
2. Indigenous Carbon Industry Network. (2022). Indigenous Carbon Projects Guide.

CASE STUDIES

Aboriginal Carbon Foundation's Core Benefits Verification Framework provides for the identification of 'Core-benefits' at the local level for Indigenous-led and managed carbon farming projects, verified using an Indigenous-led peer-to-peer review approach (1/2).

ABORIGINAL CARBON FOUNDATION

Core-benefits are grouped into the following domains relevant to First Nations and local communities:

- **Social | Cultural | Economic | Health**
- **Political/self-determination**

The Framework intentionally does not prescribe specific indicators and instead promotes agency around measurement through ranger groups and community members deciding what is most important to measure.

The Framework appears applicable to blue carbon projects, however, this is not explicitly stated.

CORE BENEFITS VERIFICATION APPROACH

The Framework establishes a 5-day verification process with 7 key steps:[1]

1. Welcome and smoking ceremony (Day 1).
2. Verifiers and Aboriginal carbon farmers identify key core-benefits together, and create a 'verification tree' outlining who to speak with, what data exists to draw on, what cultural protocols need to be followed, data sovereignty considerations, and protocols for data sharing (Day 1).
3. Data collection, through interviews/focus groups with key stakeholders and access existing qualitative and quantitative data for triangulation purposes. Sites also visited for direct observation (Days 2 & 3).
4. Data analysis (Day 4).
5. Validation of analysis with community to confirm with community and key stakeholders that the interpretation of findings is correct (Day 4).
6. Construction of visual report by verifiers, Aboriginal carbon farmers and community members (Day 5).
7. Farewell BBQ (Day 5).

An 'Indigenous to Indigenous' philosophy: verifiers under the Framework are trained Aboriginal experts, including rangers, Traditional Owners and community members from across projects.

1. Aboriginal Carbon Foundation. (2019). Core Benefits Verification Framework, page 30;
2. The Framework appears applicable to blue carbon projects, however, this is not explicitly stated. The key is explained above here.

APPLICABILITY TO BLUE CARBON CONTEXT[2]

GEOGRAPHIC APPLICABILITY

- Envisioned global utilisation by Indigenous peoples.
- Currently used for carbon projects in Australia.

AbCF & FIRESTICKS CULTURAL FIRE CREDIT PROGRAM

- The Cultural Fire Credit has been developed through a collaboration between the Firesticks Alliance Indigenous Corporation (Firesticks) and AbCF.
- The Program utilises AbCF's Core-benefits Framework, with its Indigenous-to-Indigenous verification approach.
- Whilst not applicable to blue carbon projects, this Program illustrates the practical application of AbCF's Framework.

firesticks

CASE STUDIES

Aboriginal Carbon Foundation's Core Benefits Verification Framework provides for the identification of 'Core-benefits' at the local level for Indigenous-led and managed carbon farming projects, verified using an Indigenous-led peer-to-peer review approach (2/2).

ABORIGINAL CARBON FOUNDATION

Core-benefits are grouped into the following domains relevant to First Nations and local communities:

- **Social | Cultural | Economic | Health**
- **Political/self-determination**

The Framework intentionally does not prescribe specific indicators and instead promotes agency around measurement through ranger groups and community members deciding what is most important to measure.

The Framework appears applicable to blue carbon projects, however, this is not explicitly stated.

EXAMPLE CORE BENEFITS:

Social

- Increased social capital as community members work together on projects.
- Increased opportunities for women to participate and benefit from project.

Cultural

- Protection of sacred sites (men's and women's business).
- Increased retention of language and identity.
- Maintenance and passing on of traditional ecological knowledge.
- Education of children by Elders in traditional knowledge, especially caring for country.

Economic

- Secure employment for people living in remote communities.

Health

- Increased exercise and physical activity by working on the land.
- Increased nutrition through more regular sharing of traditional foods with family and others.

Political/Self-determination

- Increased control over finances through economic independence.
- Increase in leadership skills.

1. The key is explained above here.

APPLICABILITY TO BLUE CARBON CONTEXT[1]

GEOGRAPHIC APPLICABILITY

- Envisioned global utilisation by Indigenous peoples.
- Currently used for carbon projects in Australia.

AbCF & FIRESTICKS CULTURAL FIRE CREDIT PROGRAM

- The Cultural Fire Credit has been developed through a collaboration between the Firesticks Alliance Indigenous Corporation (Firesticks) and AbCF.
- The Program utilises AbCF's Core-benefits Framework, with its Indigenous-to-Indigenous verification approach.
- Whilst not applicable to blue carbon projects, this Program illustrates the practical application of AbCF's Framework.

firesticks

CASE STUDIES

Queensland's Land Restoration Fund (LRF) has created 'The Land Restoration Fund Co-benefits Standard' which specifies how co-benefits generated from a carbon project are to be measured, reported, and verified for the purposes of the LRF (1/2).

Co-benefit categories under the LRF's Co-benefits Standard relevant to First Nations and local communities include:

- **Socio-economic co-benefits –** improving the resilience and prosperity of regional communities by supporting jobs and skills and generating economic.
- **First Nations co-benefits –** a broad range of co-benefits including customary, cultural, economic and business development benefits, such as providing new on-country and service delivery business opportunities and supporting cultural and customary connections.

The average price per ACCU with co-benefits in LRF Round 1 was $49 per unit.[1] On average, the value of the co-benefit was equivalent to the value of the ACCU.

CO-BENEFITS CERTIFICATION APPROACH

- The LRF's Co-benefits Standard adopts a two-step process for certification: assurance and verification.
- Co-benefits are verified based on annual Co-benefit Reports provided to the LRF and by independent assessors appointed by the LRF.
- Under the Co-benefits Standard, proponent assurance is the only level of assurance required for verifying Socio-economic and First Nations co-benefits.
- In relation to First Nations co-benefits, project proponents can elect instead to use the Aboriginal Carbon Foundation's Core Benefit Verification Framework to provide third-party assurance of First Nations co-benefits.

INDICATORS: SOCIO-ECONOMIC CO-BENEFITS

The LRF Co-benefits Standard describes this category of co-benefits as:

"positive direct or indirect benefits for a person, community or regional economy resulting from a carbon farming project located close to that person or community or within that region". [2]

These co-benefits are separated into two classes (however projects can claim co-benefits under both classes):

1. employment and skills benefits,
2. local community benefits.

APPLICABILITY TO BLUE CARBON CONTEXT[3]	✓	✗	🔍
GEOGRAPHIC APPLICABILITY	Queensland		

To claim employment and skills benefits, projects must:

- result in the employment of regional workers; and/or
- deliver skills training to regional workers.

To claim local community co-benefits, projects must:

- be located in an area broadly defined as an area of relative socio-economic disadvantage, taking into account people's access to material and social resources, and their ability to participate in society, and
- generate economic and social co-benefits for the local community.

1. Land Restoration Fund (LRF), (2021), Queensland Government's Land Restoration Fund - Approved Adviser Webinar;
2. LRF, (2023), Land Restoration Fund Co-benefits Standard (version 1.4), s.4.1;
3. LRF, (2023), Land Restoration Fund Co-benefits Standard (version 1.4), s.5.1. The key is explained above here; and
4. LRF's Co-benefits Standard appears applicable to blue carbon projects, however, this is not explicitly stated.

CASE STUDIES

Queensland's Land Restoration Fund (LRF) has created 'The Land Restoration Fund Co-benefits Standard' which specifies how co-benefits generated from a carbon project are to be measured, reported, and verified for the purposes of the LRF (2/2).

Co-benefit categories under the LRF's Co-benefits Standard relevant to First Nations and local communities include:

- **Socio-economic co-benefits –** improving the resilience and prosperity of regional communities by supporting jobs and skills and generating economic.
- **First Nations co-benefits –** a broad range of co-benefits including customary, cultural, economic and business development benefits, such as providing new on-country and service delivery business opportunities and supporting cultural and customary connections.

The average price per ACCU with co-benefits in LRF Round 1 was $49 per unit.[1] On average, the value of the co-benefit was equivalent to the value of the ACCU.

INDICATORS: FIRST NATIONS CO-BENEFITS

The LRF Co-benefits Standard describes this category of co-benefits as encompassing a broad range of benefits including customary, cultural, business development and economic.[1]

These co-benefits are separated into two classes (however, projects can claim co-benefits under both classes):

1. First Nations benefits based on location,
2. First Nations benefits based on participation.

To claim First Nations benefits based on location, projects must:

- take place on Indigenous land; and
- provide benefits to the relevant First Nations peoples for the land (i.e. aligns with the priorities, and contributes to achieving the outcomes, of the relevant Healthy Country Plan or other community plans; allows for First Nations, participation/co-design/service etc.)

To claim First Nations benefits based on participation, projects must:

- be owned by First Nations peoples or directly involve First Nations participation, such as through the provision of Indigenous fire management services or the involvement of Indigenous Rangers.

APPLICABILITY TO BLUE CARBON CONTEXT[2]	✓ ✗ 🔍
GEOGRAPHIC APPLICABILITY	Queensland

1. LRF. (2023). Land Restoration Fund Co-benefits Standard (version 1.4), s.5.1; and
2. LRF's Co-benefits Standard appears applicable to blue carbon projects, however, this is not explicitly stated. The key is explained above here.

CASE STUDIES

Natural Carbon has developed a Standard – the ORRU Carbon Project Standard – that certifies carbon projects developed on Indigenous lands "in a way that is fair to those communities".

natural carbon

The ORRU Standard sits as an overlay to established carbon methodologies.

As part of certifying that fairness and equity are built into carbon project design and implementation, the ORRU Standard considers, amongst other considerations:

- **the effective control the relevant First Nations community is given over the project and the credits generated,**
- **the integrity and robustness of the contractual arrangements between the First Nations community and service providers.**

CERTIFICATION APPROACH

- The pilot version of the ORRU Standard is not publicly available, and the specific approach that will be taken for verification of co-benefits is unclear.
- For a current pilot project, a certification committee with more than 50% members independent from Natural Carbon (including an independent Chair) is being used to determine qualification of the project against each of the principles of the pilot ORRU Standard.

KEY PRINCIPLES CERTIFIED BY THE ORRU STANDARD

The ORRU Standard certifies 5 principles regarding a project and the carbon credits that it generates, specifically:[1]

1. That the First Nations community has effective control over the management of the project.
2. That the First Nations community has effective control over the creation and management of their credits.
3. That the contracts that the First Nations community enters with service providers are fair and equitable.
4. That formal frameworks are in place to support the project and the carbon credit revenue from sales to positively benefit the First Nations community.
5. That the project makes a robust contribution to climate mitigation and/or contributions to nature.

It is unclear from publicly available information the types of specific indicators that projects will be certified against to determine whether the above principles have been achieved.

1. Natural Carbon, (2022), Certifying fairness in carbon and nature-based project design and implementation;
2. It is unclear on publicly available information if the Standard will apply to blue carbon projects; however, it appears that it could be applicable to these types of carbon projects. The key is explained above here;
3. This information was provided in the document 'Making carbon markets fair for Indigenous peoples and local communities' by Natural Carbon which was provided to Pollination by Natural Carbon in June 2023.

APPLICABILITY TO BLUE CARBON CONTEXT[2]

GEOGRAPHIC APPLICABILITY

- Currently applies to Australian First Nations carbon projects that utilise the support of a carbon service provider.
- International coverage is envisioned.

PILOT PROJECT: FIRST NATIONS SAVANNA BURNING CARBON PROJECT IN NORTHERN AUSTRALIA[3]

- Natural Carbon has indicated that the first set of certified credits will soon be issued under the pilot ORRU Standard for a First Nations savanna burning carbon project in northern Australia.
- The pilot Standard was co-designed with the community operating the project and the pilot includes third party assurance by KPMG.
- According to Natural Carbon, the next phase is to pilot the ORRU Standard on several more Australian projects and obtain recognition as an accreditation tool by relevant Indigenous and carbon peak bodies, before rolling out the ORRU Standard internationally.

CASE STUDIES

Verra's Climate, Community and Biodiversity Standards (CCB Standards) provide a basis for evaluating a project's impacts on community, including First Nations and other local communities. 77 CCB projects have been verified globally to date (1/2).[1]

Verra's CCB Standards, which can be combined with other Standards such as Verra's Verified Carbon Standard, outline four mandatory criterion and a fifth optional criterion for assessing a project's impacts on community.[2]

Each criterion includes 'indicators', which are quantitative or qualitative parameters that allow the assessment of whether the associated criterion is met.

The CCB Program applies to agriculture, forestry, and land use projects, unlike SD VISta which applies to any project that wishes to demonstrate contributions to the Sustainable Development Goals.[3]

CERTIFICATION APPROACH

- Projects using the CCB Standards must be certified through a two-step process: validation and verification. This process is performed by independent, third-party auditors.
- Validation requires demonstrating the project is designed to meet the requirements of the CCB Standards and, relevantly, will generate significant community benefits.
- Verification ensures that a project is being implemented according to the project design and, relevantly, has as a result provided community benefits.
- Validation/verification is based on the review of documents provided by the project proponent and information gained from a project site visit.

COMMUNITY CRITERION

With-out project community scenario - original wellbeing conditions for communities and expected changes under the without-project land use scenario are described.

Net positive community impacts – the project generates net positive impacts on the well-being of communities and the community groups within them over the project lifetime. The project maintains or enhances the high conservation values in the project zone that are of importance to the wellbeing of communities.

Other stakeholder impacts - project activities at least 'do no harm' to the wellbeing of other stakeholders.

Community impact monitoring - community impact monitoring assesses changes in wellbeing resulting from the project activities for community groups and other stakeholders.

Exceptional community benefits – relates to a smallholder/community-led project implemented on land that is owned or managed by the project proponent and/or is explicitly pro-poor in terms of targeting benefits to globally poorer communities.

APPLICABILITY TO BLUE CARBON CONTEXT[4]

GEOGRAPHIC APPLICABILITY

- International coverage. Of the ten+ blue carbon projects registered under Verra methods, at least two have CCB verification approved and a further two are under validation and verification.
- Pollination is not aware of the CCB Standards being applied to projects in Australia.

1. Verra, (n.d.), Climate, Community & Biodiversity Standards – Project and Credit Summary;
2. Verra, (2017), The Climate, Community & Biodiversity Standards (version 3.1);
3. Verra, (n.d.), SD VISta Frequently Asked Questions; and
4. The registry indicates that the CCB Standard has been applied to a number of blue carbon projects globally. The key is explained above here.

CASE STUDIES

Verra's Climate, Community and Biodiversity Standards (CCB Standards) provide a basis for evaluating a project's impacts on community, including First Nations and other local communities. 77 CCB projects have been verified globally to date (2/2).[1]

Verra's CCB Standards, which can be combined with other Standards such as Verra's Verified Carbon Standard, outline four mandatory criterion and a fifth optional criterion for assessing a project's impacts on community.[2]

Each criterion includes 'indicators', which are quantitative or qualitative parameters that allow the assessment of whether the associated criterion is met.

The CCB Program applies to agriculture, forestry, and land use projects, unlike SD VISta which applies to any project that wishes to demonstrate contributions to the Sustainable Development Goals.[3]

COMMUNITY CRITERION INDICATORS

- Each criterion includes between 3-4 indicators.
- The indicators are fairly flexible in terms of how they must be satisfied and include, for example, in relation to Criterion 2:
  1. Assessing impacts on identified community groups resulting from project activities using 'appropriate methodologies',
  2. Describing measures needed and taken to mitigate any negative wellbeing impacts on community groups and for maintenance or enhancement of identified high conservation value (HCV) attributes,
  3. Demonstrating the net wellbeing impacts of the project are positive for all identified community groups compared with anticipated wellbeing conditions under a without-project land use scenario,
  4. Demonstrating that no HCVs are negatively affected by the project.
- There are no indicators specific to First Nations communities.

APPLICABILITY TO BLUE CARBON CONTEXT[4]

GEOGRAPHIC APPLICABILITY

- International coverage. Of the ten+ blue carbon projects registered under Verra methods, at least two have CCB verification approved and a further two are under validation and verification.
- Pollination is not aware of the CCB Standards being applied to projects in Australia.

1. Verra. (n.d.). Climate, Community & Biodiversity Standards – Project and Credit Summary;
2. Verra. (2017). The Climate, Community & Biodiversity Standards (version 3.1);
3. Verra. (n.d.). SD VISta Frequently Asked Questions; and
4. The registry indicates that the CCB Standard has been applied to a number of blue carbon projects globally. The key is explained above here.

CASE STUDIES

Verra's Sustainable Development Verified Impact Standard (SD VISta) can also be used to certify the benefits of projects on 'people and their prosperity'.[1]

SD VISta applies to any project that wishes to demonstrate contributions to the Sustainable Development Goals (SDG).[2]

- **SD VISta projects can demonstrate their impact on SDG targets or other sustainable development benefits through:**
- **an SD VISta claim – a verified statement in relation to a project's measured benefits directly resulting from project design and implementation,**
- **An SD VISta label – a marker affixed to a social/environmental credit,**
- **an SD VISta asset – a tradeable credit representing a unique sustainable development benefit that has been quantified through an SD VISta methodology, which can be traded or retired.**

According to Verra, it will soon offer the option for projects to be certified via Verra's SD VISta and CCB Programs.[3]

SDGs VERIFICATION APPROACH

- SD VISta uses expert, third-party auditors to verify that a project advances the global SDGs outlined by the United Nations. The process outlined in SD VISta is comprehensive.
- There are two methods for assessment of SD VISta projects: validation/verification and independent expert evaluation (IEE).
- Validation / verification requires the assessment of the project by an accredited and approved validation / verification body (VVB). VVBs evaluate SD VISta projects against the SD VISta Standards and Program Rules. Successful verification means a project's unique sustainable development benefits for a specific period of time have been certified.
- Projects that are not developed enough to undergo validation/verification, or will not issue SD VISta assets, may instead use an IEE.

BENEFITS TO PEOPLE & THEIR PROSPERITY

- SD VISta is structured hierarchically into 'principles' and 'criteria'.
- 'Principles' are described as "fundamental goals towards broad sustainability outcomes that incorporate scientific understanding as well as social ethics and values".
- 'Criteria' are described as "the conditions that must be met in order to achieve the principles".
- The overarching principle for 'People and Their Prosperity' under SD VISta is:

  "The project proponent demonstrates net positive well-being impacts for all stakeholders directly affected by their project's activities".

APPLICABILITY TO BLUE CARBON CONTEXT[4]	✓	✗	🔍

GEOGRAPHIC APPLICABILITY	• International coverage. • Pollination is not aware of the SD VISta being applied to projects in Australia.

- There are a range of requirements for projects to meet as part of the criteria related to this principle, including that the net stakeholder well-being impacts of the project shall be positive for all stakeholder groups.
- However, no further detail is provided in SD VISta regarding the characteristics or circumstances required for this to be satisfied.
- **There are no indicators specific to First Nations communities.**

1. Verra. (2019). Sustainable Development Verified Impact Standard (version 1.0);
2. Verra. (n.d.). SD VISta Frequently Asked Questions;
3. Verra. (n.d.). SD VISta Frequently Asked Questions; and
4. The key is explained above here.

CASE STUDIES

The SOCIALCARBON Standard embeds social and economic benefits into projects, with approved indicators created by SOCIALCARBON used to monitor the benefits and impacts of projects on six different resource types.

SOCIALCARBON®

SOCIALCARBON's approved indicators for SOCIALCARBON projects are outlined in the document 'SOCIALCARBON Indicators'.[1]

Of the six resource types monitored under the standard, the following are relevant to First Nations and local communities:

- **Social Resource - the working networks, the social duties, social relations, relationships of trust, affiliations, and associations.**
- **Human Resource - the skills, knowledge, capacities for work and good health that people have.**
- **Financial Resource - the basic capital in the form of cash, credit/debt and other economic goods which are available or potential.**

CERTIFICATION APPROACH

- The relevant indicators are outlined in the project description and monitoring reports.
- A baseline ('Point Zero') for a project's broader sustainability impacts is assessed and documented in the project description and this is the first assessment of the indicators.
- A project must periodically monitor according to the approved indicators and included in the respective verification report for the monitoring period.
- To assess the indicators, they are scored from level 1 to level 6. Level 1 represents the worst scenario in terms of use of a resource and Level 6 represents the 'ideal situation' (i.e. sustainable use of a resource).
- Most of the data used to score the indicators is collected through participatory methods (i.e., questionnaires, interviews, meetings with stakeholders and working groups).
- Indicators must demonstrate continual improvement during periodic verifications before validation by a validator.

SOCIALCARBON INDICATORS

- SOCIALCARBON has approved indicators for projects but projects can adapt existing indicators or create new ones.
- The relevant indicators will depend on the project. The number of indicators will also depend on the needs of the individual project; however, 3-10 indicators is recommended for each resource type.
- For each indicator, SOCIALCARBON provides a description of what needs to be evaluated as well as suggested approaches to undertaking the evaluation.
- **There are no existing indicators specific to First Nations communities, however a project could create indicators directly relating to First Nations communities.**

1. SOCIALCARBON. (2023). SOCIALCARBON Indicators (version 1.0); and
2. The SOCIALCARBON Standard applies to AFOLU projects; 2. The key is explained above here.

APPLICABILITY TO BLUE CARBON CONTEXT[2]

GEOGRAPHIC APPLICABILITY

- International coverage.
- Pollination is not aware of the SOCIALCARBON Standard being applied to projects in Australia.

EXAMPLE INDICATORS

- Social Resource (total number of indicators: 20)
  - Communication with Stakeholders
  - Extent of community activities, community education/training and alternative income sources
  - Social impact, inclusion, research and satisfaction
- Human Resource (total number of indicators: 26)
  - Access to credit
  - Community education and training
  - Conflict management
  - Quality of working conditions
- Financial Resource (total number of indicators: 15)
  - Accessibility (e.g. roads)
  - Alternative income sources
  - Competitive advantage
  - Economic impact
  - Electrification

4.2.3 Gaps and limitations.

GAPS AND / OR LIMITATIONS IN EXISTING FRAMEWORKS

Existing frameworks for benefit recognition are, broadly speaking, geared towards transactional benefits.

For First Nations-owned and co-owned blue carbon projects, a more sophisticated and nuanced approach is needed to support more adequate recognition of the reciprocal and potentially mutually reinforcing relationship between First Nations communities and carbon projects.

1 **Lack of sophistication in the way demand-side actors consider and value the relationship between First Nations communities and carbon projects.**

Recognition of intangible benefits to First Nations communities & intrinsic benefits from First Nations ownership

There is evidence of demand side actors valuing – and paying a premium for – the provenance of carbon credits from First Nations-owned projects.

Nevertheless, across the market there is not yet strong and widespread appreciation of the unique intrinsic benefits the involvement of First Nations communities provides to nature-based carbon projects.

There is need for demand-side market participants to build cultural competency and sensitivity to align their expectations with First Nations norms:

- Cultural differences mean that across cultures, different things are valued and care must be taken by the dominant culture (usually western) to understand these differences and not dominate.
- The history of colonisation has created deep attunement in Indigenous communities to the differences in western worldviews however the corresponding awareness is not as high.

Through the co-creation of solutions and building long-term relationships with First Nations-led organisations, demand-side actors can pursue a relational model that goes beyond simply paying community to offset the entity's carbon impacts.

Recognition of tangible benefits to First Nations communities

Certification is onerous for projects. There is a need for demand-side market actors to critically consider the value of third-party certification for First Nations-owned projects. Ideally, purchasers should seek to build strong, ongoing relationships with First Nations project proponents and, in that context, additional certification may not be necessary for to attribute value to tangible community benefits.

Where certification is desired, purchasers must be willing to support credit prices that cover the capex and opex of certification.

Further, the sophistication of frameworks to certify community benefits vary substantially. Demand-side actors will likely require greater education and capability uplift to properly distinguish between forms of certification that are nuanced and sophisticated (for example, First Nations benefits being certified by First Nations verifiers against culturally-appropriate frameworks) and those that are more tokenistic.

GAPS AND / OR LIMITATIONS IN EXISTING FRAMEWORKS

Existing frameworks for benefit recognition are, broadly speaking, geared towards transactional benefits.

For First Nations-owned and co-owned blue carbon projects, a more sophisticated and nuanced approach is needed to support more adequate recognition of the reciprocal and potentially mutually reinforcing relationship between First Nations communities and carbon projects.

2 **Models and frameworks for benefit recognition are not currently geared to adequately recognise the reciprocal and mutually reinforcing relationship between First Nations communities and carbon projects.**

Recognition of intrinsic benefits from First Nations ownership

- Currently most existing frameworks do not attempt to recognise and value the intrinsic benefits First Nations add to a carbon project. The Aboriginal Carbon Foundation's Core Benefits Standard is the exception. This means that, for the most part, the Australian carbon market may not be recognising the true underlying value of First Nations-led projects.
- As noted, currently First Nations ownership is acting like a form of 'certification', providing buyers with confidence in the intrinsic benefits and unique provenance and characteristics of carbon credits from First Nations-owned projects.

Recognition of tangible benefits to First Nations communities

- It is important that what is considered a "benefit" should be in line with Indigenous values and determinants and decided and agreed by First Nations communities. Due to the structure of First Nations communities, knowledge is disaggregated across the community, and without what is a "benefit" being agreed, challenges may arise.
- For instance, The AbCF Core Benefits Standard, requires verifiers and Aboriginal carbon farmers to identify key core-benefits together prior to verification processes commencing. Many other existing certification frameworks do not establish processes for the involvement of First Nations communities in determining the relevant benefits and indicators.
- The measurement and verification of community benefits is sensitive and must be approached in a culturally-aware manner. Where certification of tangible benefits occurs, the certification of benefits to First-Nations communities should be conducted by First Nations people against First Nations-led certification schemes into which community have input.
- Flexibility is important given variability across communities. As noted above, AbCF framework does not prescribe specific indicators. Similarly, SOCIALCARBON allows projects to create their own indicators.
- First Nations people in Australia are resistant to use of external surveyors and data collectors, particularly on sensitivities such as measuring personal data. It must be critically considered whether data points sought from First Nations communities exceed those required to certify local community benefits more generally.
- It is important that data collected in measuring and verifying benefits remains sovereign (owned) by First Nations people. This is only addressed in the AbCF's Core Benefits Standard.

Recognition of tangible benefits to local communities

- Existing frameworks such as the Land Restoration Fund (those note its applicability to Queensland only) are likely sufficient for certifying benefits blue carbon projects deliver to local communities.
- Nevertheless, for both project proponents and demand-side actors there is a lack of clarity in the appropriate framework for certification and the appropriate financial value to attribute to the certification of these benefits.

GAPS AND / OR LIMITATIONS IN EXISTING FRAMEWORKS

Existing frameworks for benefit recognition are, broadly speaking, geared towards transactional benefits.

For First Nations-owned and co-owned blue carbon projects, a more sophisticated and nuanced approach is needed to support more adequate recognition of the reciprocal and potentially mutually reinforcing relationship between First Nations communities and carbon projects.

3 **Lean resourcing in First Nations organisations and industry groups limits the potential of carbon markets to serve First Nations communities**

Institutional capacity & capability within First Nations project proponents

- The range of benefits that may be sought to be measured and verified from blue carbon projects could potentially be wide-ranging across political, social, economic, technological and environmental domains. Expertise and investment into First Nations communities and project proponents is important to ensure they are adequately resourced to respond to and leverage certification standards.

Industry groups

- As citations in this report indicate, the work of the Indigenous Carbon Industry Network is highly valuable in advancing market recognition of both value creation from the provenance of carbon credits from First Nations-owned projects and means to drive financial recognition for tangible benefits delivered by these projects.
- The Indigenous Carbon Industry Network is a not-for-profit public company established as a charity and currently relies on membership funding and donations. Its capacity to continue operating on current budgets is uncertain.
- Without the ongoing contributions of peak First Nations bodies such as ICIN, the capacity of the carbon market to address limitations 1 and 2 would be severely hampered.

4.3 Recommendations for policymakers.

RECOMMENDATIONS FOR POLICYMAKERS

Australian governments at all levels have a key role to play in ensuring that beneficial relationships between blue carbon projects and First Nations and local communities are properly understood and financially valued by carbon market participants.

Some of the recommendations below relate to achieving broader carbon market settings and dynamics. Though not specific to blue carbon projects, these foundational elements are a necessary precursor to attracting appropriate financial recognition for the beneficial relationship between blue carbon projects and First Nations and local communities.

1 Convene First Nations communities, scientists, land managers and carbon market actors

Governments can play a highly valuable role in providing financial support for a First Nations organisation (or organisations) to convene First Nations communities, scientists, land managers, carbon market actors, social impact investors and public policy makers to collectively design what is needed to scale the Indigenous carbon industry. This could include the development of appropriate methods, MRV tools, standards, positioning on government policy and programs.

This could also include testing and validating the concepts unpacked in this report. As noted at the outset, upon careful consideration, Pollination has not undertaken stakeholder consultation in developing this report (see further here). We would strongly recommend that further workshopping and consultation is undertaken.

A number of the First Nations-led organisations that are relevant stakeholders for this work are operating under substantial capacity constraints. In our view, First Nations organisations should, ideally, be financially supported to contribute their insights as experts. Governments have a key role to play in providing this financial support

A non-exhaustive list of stakeholders is provided below. Noting that the list is non-exhaustive, we recommend that any consultation is proceeded with a broad expression of interest process to invite all relevant bodies to be involved.

2 Support capability and cultural awareness in demand-side carbon market actors

Governments can play a valuable role in setting market norms and supporting education amongst demand side actors. As noted in this report (see further here) a more nuanced approach is required from demand-side market participants to more fully appreciate and value the reciprocal beneficial relationship between First Nations communities and carbon projects

State and local governments can send important market signals by supporting First Nations-owned projects through their own carbon procurement choices and paying an appropriate premium for projects with culturally-appropriate certification of tangible benefits to First Nations and local communities.

The private and public sector can jointly and separately fund research into the intrinsic benefits provided to carbon projects and the credits they generate from the involvement of First Nations and local communities, whether as valued stakeholders and co-designers or project owners/co-owners.

RECOMMENDATIONS FOR POLICYMAKERS

Australian governments at all levels have a key role to play in ensuring that beneficial relationships between blue carbon projects and First Nations and local communities are properly understood and financially valued by carbon market participants. *Recommendations continued.*

Some of the recommendations below relate to achieving broader carbon market settings and dynamics. Though not specific to blue carbon projects, these foundational elements are a necessary precursor to attracting appropriate financial recognition for the beneficial relationship between blue carbon projects and First Nations and local communities.

3 Support and promote culturally appropriate models for benefit recognition

Governments could play a valuable role in financially supporting the development of First Nations-led certification frameworks, including frameworks relevant to blue carbon projects.

Given the potential for blue carbon projects on First Nations lands and sea country (especially as further blue carbon methodologies are developed), governments could support piloting First Nations-led certification frameworks on blue carbon projects to both test the framework and stimulate, ideally, First Nations-owned blue carbon projects. Lessons learned through this process would be likely to have more general applicability to First Nations carbon projects.

4 Provide targeted grants or concessional finance to de-risk First Nations-owned blue carbon projects

Government provision of targeted grants or concessional finance to de-risk First Nations owned blue carbon projects would be valuable to crowd in private capital and/or social impact investment that may otherwise hesitate to invest without the guarantee of government funding. These concessional or blended finance streams could be designed to taper as projects become financially viable, and institutional capacity is built in First Nations carbon farming entities.

RECOMMENDATIONS FOR POLICYMAKERS

Australian governments at all levels have a key role to play in ensuring that beneficial relationships between blue carbon projects and First Nations and local communities are properly understood and financially valued by carbon market participants. *Recommendations continued.*

Some of the recommendations below relate to achieving broader carbon market settings and dynamics. Though not specific to blue carbon projects, these foundational elements are a necessary precursor to attracting appropriate financial recognition for the beneficial relationship between blue carbon projects and First Nations and local communities.

5 Fund First Nations organisations and industry groups to ensure they have the institutional capacity to leverage the potential of blue carbon, and carbon markets more generally, to serve First Nations communities

Institutional capacity within First Nations organisations and industry groups is a vital precursor to the establishment of First Nations owned/led blue carbon projects and meaningful engagement as stakeholders, and the certification of non-carbon benefits to these projects. Governments can provide a highly impactful role in providing targeted financial support and training as First Nations organisations build out this capability and capacity. As noted on the previous page, funding models can be designed to taper as this institutional capacity is achieved.

- **First Nations market actors' capability and capacity**: Both blue carbon projects and the certification of non-carbon benefits requires specialised capability and substantial capacity within carbon farming organisations. The success of savanna fire management projects has been built upon the legacy of long-term investment in ranger programs. For the potential of blue carbon for First Nations communities to be fully realised, a similar level and model of investment in the coastal zone would be valuable. As identified in the Chubb Review, "*Capacity and capability building programs should be appropriate for the target audience and developed in close collaboration with communities. A holistic approach that includes, but extends beyond, direct support to (potential) scheme participants and builds expertise and enterprise across the carbon farming supply chain should be prioritised.*"[1]
- **Access to independent strategic advice to inform participation in market opportunities**: For First Nations organisations newly entering the carbon markets, access to balanced and independent strategic advice would be highly valuable.
- **Capturing and communicating best practice models:** Given the evolving nature of Indigenous carbon farming, and blue carbon projects more generally, there is substantial value in supporting First Nations-led organisations to capture and communicate best practice models in project design and implementation, including technical, project governance and cultural components.
- **Funding peak industry and Native Title Representative bodies:** Further, long term and sustainable funding for peak Indigenous carbon farming and Native Title Representative bodies is critical. Industry bodies, such as ICIN, play a vital role in educating carbon market participants on the value of First Nations projects and informing governments on enabling policy conditions. Without these peak industry bodies, the potential of carbon markets to serve First Nations communities and deliver positive outcomes would be severely hampered. Native Title Representative Bodies are critical to monitor and support Native Title consent processes for carbon farming projects to ensure processes and approaches are equitable.

1. Independent Review of Australian Carbon Credit Units ('Chubb Review'), (December 2022), *Final Report*, page 29

4.4 Directory for further consultation.

DIRECTORY

We would strongly recommend that further workshopping and consultation is undertaken to develop further and validate the concepts, market insights and recommendations in this report.

Right is a non-exhaustive list of Indigenous organisations that could be considered in consultation. Given the below list is non-exhaustive, we would recommend that any consultation is proceeded with a broad expression of interest process to invite all relevant bodies to be involved.

- ABORIGINAL BIODIVERSITY CONSERVATION FOUNDATION
- ABORIGINAL CARBON FOUNDATION
- ADJUMARLLARL RANGERS
- ANINDILYAKWA LAND COUNCIL
- APN CAPE YORK
- ARAFURA SWAMP RANGERS ABORIGINAL CORPORATION
- ARNHEM LAND FIRE ABATEMENT
- BALANGGARRA ABORIGINAL CORPORATION
- BALKANU DEVELOPMENT CORPORATION
- BAWINANGA ABORIGINAL CORPORATION
- CAPE YORK LAND COUNCIL
- CENTRAL LAND COUNCIL
- DAMBIMANGARI ABORIGINAL CORPORATION
- DEMED ABORIGINAL CORPORATION
- FEDERATION OF VICTORIAN TRADITIONAL OWNER CORPORATIONS
- INDIGENOUS DESERT ALLIANCE
- INDIGENOUS LAND AND SEA CORPORATION
- JAWOYN ASSOCIATION ABORIGINAL CORPORATION
- KIMBERLEY LAND COUNCIL
- KOWANYAMA LAND MANAGEMENT OFFICE
- LAYNHAPUY HOMELANDS AC (YIRRALKA RANGERS)
- LOWITJA INSTITUTE
- MIMAL LAND MANAGEMENT LTD
- NAILSMA
- NATIONAL NATIVE TITLE COUNCIL
- NORTHERN LAND COUNCIL
- NUMBULWAR NUMBURINDI RANGERS
- NYALIGA ABORIGINAL CORPORATION
- OLKOLA ABORIGINAL CORPORATIONWAANYI GARAWA RANGERS
- THAMARRURR DEVELOPMENT CORPORATION
- TIDAL MOON, SHARK BAY
- TIWI RESOURCES
- WARDDEKEN LAND MANAGEMENT LTD
- WILINGGIN ABORIGINAL CORPORATION
- WUNAMBAL GAAMBERA ABORIGINAL CORPORATION
- YAMATJI MARLPA ABORIGINAL CORPORATION
- YUGUL MANGI RANGERS
- YUMBANGKU ABORIGINAL CULTURAL HERITAGE & TOURISM DEVELOPMENT ABORIGINAL CORPORATION

Conclusion

GAPS & LIMITATIONS

There is evidence of private sector demand for non-carbon benefits of nature-based carbon credits. However, we consider that there are currently several **gaps and limitations** that constrain the capacity of these non-carbon benefits to deliver additional revenue to Australian blue carbon projects.

Through our analysis across all four non-carbon benefit categories the following common gaps and limitations emerged:

- Lack of appropriate or dominant certification frameworks for the non-carbon benefits of blue carbon projects, creating challenges for both demand and supply side actors. Certification must be fit for purpose and not unduly onerous for project developers, while also meeting the needs of buyers to make robust claims.
- Cost of additional MRV and certification must be covered by carbon credit price uplift. Given the nascency of blue carbon projects in Australia, there are not yet clear market norms to inform demand and supply side actors' decision-making.
- Further data and education on the nexus between blue carbon projects and the benefits they deliver are required to support demand-side willingness to pay for the non-carbon benefits of blue carbon.

RECOMMENDATIONS

Governments have a key role to play in improving overall blue carbon project viability by addressing these gaps and creating the enabling conditions that will drive private capital into the non-carbon benefits delivered by blue carbon projects.

Across all four non-carbon benefit types, Australian governments can play a valuable role by:

- Developing or supporting the development of publicly available and culturally-appropriate frameworks for the certification of non-carbon benefits of blue carbon projects. These frameworks could embed the Principles for High Quality Blue Carbon Credits, to ensure that in project design, balanced consideration is given to the full suite of benefits that could be delivered by a blue carbon project.
- Supporting supply side pricing confidence and demand side pricing expectations, through offtake contracts targeting blue carbon projects with certified non-carbon benefits and/or First Nations provenance.
- Targeted education campaigns to ensure the benefits delivered by blue carbon projects in Australia are well understood, particularly for fisheries and coastal risk reduction benefits.
- Relatedly, supporting research and accessible data sets that will underpin the recognition and certification of non-carbon benefits of blue carbon.

Demand and willingness to pay varies significantly between non-carbon benefits. Where the rationale for investment is stronger and more established, finance is flowing.

	BIODIVERSITY BENEFITS	FISHERIES BENEFITS	COASTAL RISK REDUCTION	FIRST NATIONS & LOCAL COMMUNITIES
MARKET DYNAMICS	With the increased focus globally on nature loss, there is strong recognition of the role that environmental markets can play in directing private capital into biodiversity restoration and protection activities. As such, biodiversity benefits have a clear and comparatively well-established rationale for payment by demand-side actors.	The fishing industry is a potentially key beneficiary of blue carbon projects given these ecosystems function as nurseries for 95 per cent of commercial fish species.[1] Despite this, a limited engagement with stakeholders indicates players in the fisheries industry are either not willing to pay a premium for blue carbon credits with quantified fisheries co-benefits or would only do so if the project can demonstrate a direct beneficial link to their operations. This may however also reflect the early stage of blue carbon projects in Australia.	Blue carbon ecosystems act as a critical natural buffer to periodic flooding from storm surges and incremental tidal flooding from sea-level rise. The demand profile, while not yet well established, is likely to be comprised of actors that are the most exposed to damages from these events and thus have the most to gain from the coastal protection capacity of mangroves. Finance is not yet flowing at scale.	There is evidence of demand side actors valuing – and paying a premium for – the provenance of carbon credits from First Nations-owned projects. Nevertheless, broadly speaking, there is a lack of sophistication in the way demand side actors consider and value the relationship between First Nations communities and carbon projects.
GAPS & LIMITATIONS CONSTRAINING DEMAND FOR NON-CARBON BENEFITS	• Lack of market trends to inform pricing trends • Clarity in claims from established certification frameworks for blue carbon projects.	• Business case for investment in blue carbon projects not yet proved out. Further data and industry education required. • Potentially need direct beneficial link to compel purchase, which may be challenging. • Seafood sustainability certification scheme do not consider contribution to coastal and marine ecosystems	• Limited public awareness of the coastal risk reduction benefits of blue carbon, which could be limiting demand by risk-affected parties including developers, asset owners (public and private) and insurers. • Greater data needed to support business case for investment, especially as compared with grey infrastructure.	• Education and capability uplift likely required for purchasers to adequately value First Nation involvement in carbon projects and to distinguish between forms of certification that are nuanced and sophisticated and those that are more tokenistic.
DEMAND				
EVIDENCE OF FINANCE FLOWING				

KEY

 No evidence

 Limited evidence

 Strong evidence

1. Lellis-Dibble et al, (2008)
2. Mapping Ocean Wealth, (2023), Fisheries.

A lack of certification frameworks applicable to blue carbon projects in Australia will constrain **supply** of projects with certified non-carbon benefits.

	BIODIVERSITY BENEFITS	FISHERIES BENEFITS	COASTAL RISK REDUCTION	FIRST NATIONS & LOCAL COMMUNITIES
MARKET DYNAMICS	There are a range of frameworks available to project proponents to measure and certify biodiversity co-benefits to carbon projects, but no clear or dominant methodology applicable to Australian blue carbon projects. Likewise, though a range of standalone biodiversity credit frameworks are emerging in Australia, none are currently applicable to blue carbon projects. This diversity in certification frameworks creates uncertainty on both the supply and demand side of the market.	Though there is fairly strong evidence linking healthy blue carbon ecosystems to an uplift of fish stocks, the quantification and certification of benefits attributable to a blue carbon project specifically is challenging. Though scientific methods exist, there is no readily available framework for Australian blue carbon projects to quantify and certify project-level uplift in fish stock to form part of an environmental markets transaction.	There is currently no clear or well-established framework for certifying the risk reduction benefits for blue carbon projects in Australia (though a methodology under Verra's SD VISta program is under development). Given this, there is potential for variation in approaches taken to measurement certification.	Though a range of models and frameworks for benefit recognition currently exist, these are mostly not currently geared to adequately recognise the reciprocal and mutually reinforcing relationship between First Nations communities and carbon projects. Though a number of existing frameworks appear likely to be applicable in the blue carbon context, applicability is not explicit and warrants further investigation. Institutional capacity and specialised capability in First Nations organisations is needed to support implementation of certification frameworks. **Note that certification of benefits may not be required to support pricing premium, especially for First Nations-owned projects.**
GAPS & LIMITATIONS CONSTRAINING SUPPLY OF CERTIFIED NON-CARBON BENEFITS	• Lack of market trends to inform pricing trends, and therefore provide rationale for certification. • Potential need for significant baselining of biodiversity values to underpin certification. Costs potentially prohibitive unless offset by significant credit premiums	• Lack of applicable certification framework • Data challenges to attribute project-level benefits to fisheries. Costs need to be offset by demand, which is not currently present.	• Lack of applicable certification framework • Requirement for and lack of large-scale spatial data on weather events, ecosystem extent and condition, population density and value of infrastructure. • Public awareness and business case for demand required to underpin supply.	• Need for culturally appropriate certification framework applicable to blue carbon projects. • Pressures on First Nations organisations and industry groups' resources limits their capacity to leverage opportunities presented by carbon markets.
AVAILABILITY OF CERTIFICATION FRAMEWORK				

KEY

 No evidence

 Limited evidence

 Strong evidence

1. Lellis-Dibble et al, (2008)
2. Mapping Ocean Wealth, (2023), Fisheries.

We have developed a set of **targeted recommendations** for Australian policymakers to address core barriers to finance flowing for each non-carbon benefit assessed.

BIODIVERSITY BENEFITS

Governments could play a valuable role developing or **supporting the development of publicly available frameworks** (potentially via methodologies under the proposed Nature Repair Market) for the certification of biodiversity co-benefits to blue carbon projects. This would support both demand and supply side confidence in certification approaches.

At this stage, the credit price uplift via certification of biodiversity benefits to blue carbon projects is uncertain. Governments could support supply side pricing confidence and demand side pricing expectations, as well as contribute to biodiversity-related policy goals, through **offtake contracts targeting blue carbon projects with certified biodiversity benefit**s.

As the cost of certification is high and data accessibility is low, governments could provide **financial support for biodiversity benefit certification and for measurement and monitoring technology**, as well as enable access to governments' datasets.

Finally, governments could financially support the **incorporation of First Nations knowledge** into blue carbon biodiversity benefit certification schemes.

FISHERIES BENEFITS

There are a range of mechanisms governments could pursue to drive fisheries sector investment into blue carbon projects.

This could include requiring **fisheries to finance blue carbon as a condition of their fishing licence**s, by requiring evidence of investment into blue carbon activities directly, or the purchase of blue carbon credits with fisheries co-benefits. Through these funds gathered from fishing licence fees, the **government could establish a blue carbon investment facility**.

Before this can occur, frameworks to quantify and schemes to certify the benefits Australian blue carbon projects deliver for fisheries are required. Given that, though scientific methods exist, there is no readily available framework for Australian blue carbon projects to quantify and certify project-level uplift in fish stock, Governments could **seek to expedite DCCEEW and CSIRO's efforts to develop the metrics** that would underpin such a certification framework.

Finally, governments could **collaborate with domestic and international fisheries sustainability certification bodies** to integrate investment into blue carbon ecosystems that support fish stocks into existing certification schemes.

COASTAL RISK REDUCTION

There is an opportunity for governments to play a strong advocacy role and develop policy settings that enable education, standardisation and innovation in valuing the coastal risk reduction benefits provided by blue carbon in Australia.

Governments could develop **targeted information campaigns** for local communities and asset owners to increase public awareness of the protective benefits of blue carbon ecosystems, and help build capacity of coastal asset owners to integrate costs and benefits of blue carbon in infrastructure assessments and valuations.

To address the lack of a clear certification framework for quantifying coastal risk reduction benefits from Australian blue carbon projects, governments could develop a more standardised approach. This could **involve endorsing certification frameworks** that are applicable to Australian blue carbon ecosystem types, providing access to robust and consistent data and metrics, and aligning with established understandings of physical climate risk.

Finally, governments could partner with the insurance industry to **pilot innovative insurance models** that facilitate investment into blue carbon ecosystems.

FIRST NATIONS & LOCAL COMMUNITIES

Governments at all levels can help to enable market norms that ensure that the beneficial relationships between blue carbon projects and First Nations and local communities are properly understood and financially valued by carbon market participants.

It would be valuable for governments to **enable First Nations organisations to convene** Indigenous communities, carbon market actors and policy makers to design market-led solutions to scale the Indigenous carbon industry, including blue carbon.

Governments can also play an important role in **supporting capability and cultural awareness uplift in demand side carbon market actors** to build sophistication in market norms.

Further, governments could s**upport and promote culturally appropriate models for benefit recognition**, including the development and endorsement of First Nations-led certification frameworks relevant to blue carbon projects.

Targeted grants or concessional finance to de-risk First Nations-owned blue carbon projects would help to facilitate private sector investment.

Finally, there are a range of initiatives governments could fund or pursue to ensure First Nations organisations and industry groups have the institutional capacity to leverage the potential of carbon markets to grow the intergenerational wealth and wellbeing of First Nations communities.

POLLINATION

This paper has been prepared by Pollination for the Advisory Committee of the 'Mapping the blue carbon mitigation opportunity in Australia' project led by CSIRO and supported by BHP.

We'd be very happy to discuss this report and its findings and recommendations with you further.

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