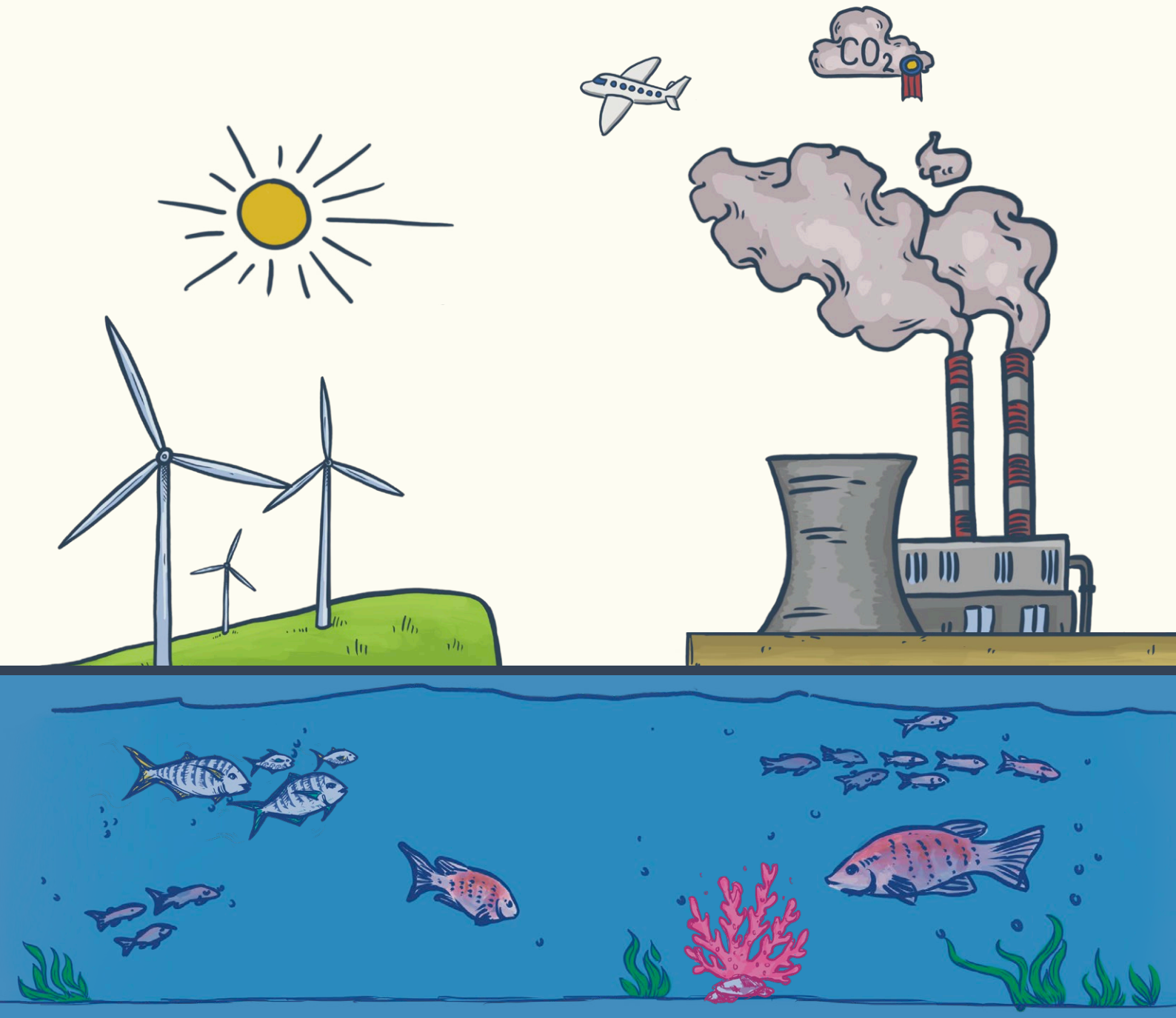
BLUE HERRINGS

Carbon market lessons for blue carbon frontiers



Acknowledgements

Our first acknowledgement must be given to the ocean. The origin of all life and our collective grandparent. The oceanic embodiment of the covenant between Pacific Peoples and the environments we receive life and kinship from.

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April 2025

Foreword by Maureen Penjueli

Pacific Island Countries and communities are at the frontlines of the climate crises, experiencing existential impacts while contributing next to nothing to its causes. The failure by those historically responsible for the climate crises to provide predictable, consistent and adequate climate financing places those most vulnerable in a precarious position. In such a time – of critical underfunding and an urgent need for climate action - false solutions like carbon markets thrive.

The promise of using market forces to push for the most efficient pricing for emitting greenhouse gas emissions while providing funding to developing countries is being sold as a win-win scenario. The theoretical rationale may make some sense but the practical realities of it proves otherwise as outlined in this report, leading to such activities going from climate/development solution to an excuse for those most responsible for climate change to continue emitting. The failure of terrestrial carbon markets to reduce greenhouse gas emissions should be read as a blue herring, a warning not to expand such market based instruments.

The push to commodify the ocean and turn its natural functions including carbon sequestration into a marketable mechanism underscores how far the debate has strayed from the urgent need to take meaningful action on climate change to bring down greenhouse gas emissions. The rush for 'blue carbon' comes amidst a flurry of interest in exploiting oceanic resources for climate, technological and militaristic purposes.

This report aims to help break down an issue that is filled with lofty promises, made to entice governments and communities into believing this false narrative. Highlighting how carbon markets have failed not only in their main claim of reducing emissions but also in delivering financing for climate resilience or community projects.

Halt blue carbon projects before they start pushing the burden of climate action onto communities at the forefront of climate change impacts instead of those who need to reduce their emissions. As Pacific Islanders, the call to push back on this and uphold our guardianship responsibilities has never been so clear.

Maureen Penjueli,
Outgoing Coordinator,
Pacific Network on Globalisation

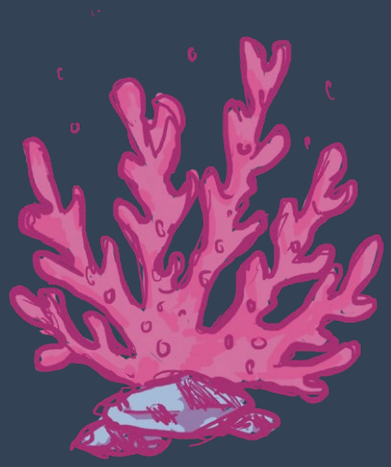


Table of Contents

Executive Summary

There is increasing momentum to expand markets to incorporate marine ecosystems as a financing and conservation response to the climate crises. However, it is important to assess the efficacy of this approach against the urgent need to reduce emissions to below 1.5 degrees Celsius and uphold the responsibilities Pacific peoples' have for ocean guardianship.

Pacific governance is ocean-born, honed over millennia to mirror the kinship-sustained relationships in the ecosystems around us. This reciprocal relationship binds us into a fabric of responsibility that must be centred when considering any new proposal that claims to take care of our communities and ocean kin.

Applying ocean guardianship responsibilities to carbon markets, our assessment of academic literature, reports, expert analysis and community experiences has found that carbon market approaches have a number of critical flaws in their claims for emissions reduction and financial transfers. These raise credible reasons for why Pacific Island governments should work to halt the expansion of market-based approaches into ocean environments.

Blue carbon as a term holds many uses and definitions. Its use in policy, research, and as shorthand for larger concepts makes defining blue carbon difficult to pin down into a concise meaning.

Here, blue carbon is used to describe the carbon that is sequestered by coastal and deep-sea ecosystems as part of their natural processes. Shallow coastal ecosystems include wetlands, saltmarshes, seagrass, seaweed, coral and mangroves. Carbon is also sequestered in the benthic sediment on the ocean floor and in organisms like phytoplankton and marine fauna.

However, there are also political connotations that come with the use of 'blue' in regards to these emerging carbon markets. In 2024 the World Economic Forum openly acknowledged that the shift in language - the adoption of 'blue' into carbon markets - is a rebranding exercise to emphasise the offset contribution of marine ecosystems. This new language leverages the centrality of the ocean in Pacific cultures, disguising the potential harm of political and economic directions that have much more to do with business-as-usual relations with these ecosystems than they do with restoring the forms of governance that have maintained the health of people and place for millennia.

Branding aside, the underlying question is whether or not carbon markets are an effective tool for reducing emissions?

Carbon trading is essentially the exchange of units of carbon sequestration for money by a government or private entity that wants to discount that unit from their emissions volume. Carbon credits are currently traded in two market spheres: compliance markets and voluntary markets, with an emerging third credit exchange mechanism between countries managed under the United Nations Framework Convention on Climate Change.

Compliance markets have government-set limits on the amount of carbon a certain industry or business can emit. Voluntary markets are where private actors, NGOs, and individuals can trade carbon credits, these are unregulated and facilitated by private carbon trading entities. As of November 2024, a new carbon trading mechanism has been designed and operationalised by countries at the latest round of UN climate negotiations, however ongoing issues remain to be finalised.

For trading, there are 3 types of carbon credits: Removal (sourced from removing carbon from the atmosphere), Reduction (sourced from reducing emissions from various mechanisms) and Avoidance (sourced from protecting areas under threat of being used for carbon emitting activities like logging or mining). Of the three types, avoidance credits are dominant, currently comprising 75% of carbon market commodities.

Despite the creation of private and government-to-government carbon trading mechanisms, carbon markets were never intended to become the core policy plank it is now. The intention was for carbon markets and offsets to fill the

gap until broader policy caught up, yet they now prominently sit in place for many other approaches that would meaningfully reduce emissions.

This widespread embrace of carbon markets is reliant on the integrity of the carbon credits themselves.

Do they actually absorb carbon?

We are already witnessing the slowing of carbon absorption and saturation in ecosystems, jeopardising the ability of ecosystems to sequester carbon and be 'marketable'. In addition, recent reports have shown that significant amounts of avoidance credits are fraudulent, based on invented threats, resulting in additional pollution and a smokescreen for an increase in carbon emissions that wealthy companies and countries can leverage.

It's not just avoidance credits that are proving to be ineffectual in delivering the emission savings promised. The Clean Development Mechanism (CDM), an offset facility under the Kyoto Protocol has found that 73% of offsets "have a low likelihood of generating emissions reduction which are additional and not over estimated". It is deeply concerning that integrity is lacking from significant portions of the offsets industry across compliance and voluntary markets, and not just avoidance projects.

The previous experiences of carbon markets have highlighted the mandatory requirement for Free, Prior and Informed Consent (FPIC) from Indigenous peoples prior to any carbon market projects being undertaken. This has become such an entrenched problem that it has resulted in the inclusion of a grievance mechanism in carbon market projects that provide credits to meet a country's emissions reduction targets under the UN Paris Agreement. While this is an acknowledgement of the problems, it is worth noting that an effective and holistic climate change solution shouldn't require a feature to clean up the harms of its implementation.

The failure of these credits comes as carbon markets retain an over-inflated place in policy settings, blocking out other more meaningful actions. This, coupled with an increased uptake in 'net-zero' approaches has incentivised delays to meaningfully transitioning away from fossil fuels as net-zero approaches facilitate the idea that pollution can be cancelled out.

Yet, blue carbon is still being pushed into the market from the fringes.

To get blue carbon to market, governments and communities need to accurately account for their carbon capacity. While there are some standards for terrestrial sequestration, the Intergovernmental Panel on Climate Change (IPCC) has only provided quantitative carbon standards for wetlands for market trading. The blue carbon voluntary market landscape has a range of ocean ecosystem area-sourced credits being offered by multiple private entities, including wetlands and mangroves. The unregulated nature of voluntary markets means that it is up to individual companies and carbon traders to set the quantitative standards for blue carbon ecosystems. While they may draw on international standards set by the likes of the IPCC, they are not required to do so. Some countries have gone ahead with their own standards but the sequestered amounts have been found to be over-exaggerated.

Already we are beginning to see blue carbon in the Pacific with some countries including it in their National Development Plans (Fiji) while others have signed bilateral agreements with credit companies to explore markets (Papua New Guinea). It's not just governments, hybrid entities like the Blue Carbon Institute are attempting to combine government (Singapore), big tech and large conservation groups in setting out blue carbon policy.

International Financial Institutions are also part of the push. The World Bank has been explicit in its support of a blue carbon market pipeline that starts with mapping and inclusion in National Determined Contributions for the purpose of converting ocean ecosystems into property for trading in blue carbon markets. The World Bank is clear on how it views the possibility of blue carbon. It posits that commodification is

the necessary step for obtaining finances for marine protection and community development. The World Bank blurs the purpose of carbon markets, pushing for its use as an emissions reduction tool as well as a financial tool.

But how effective is this blue carbon for accessing financing?

Firstly, it must be remembered that the only reason this question is being asked is on account of the failure of those most responsible for climate change to provide the appropriate funding for adaptation, mitigation and reducing their own emissions. It is this history of failed promises of finance that has pushed developing countries to explore pathways that have largely been designed by, and benefit, developed countries. Developing countries, desperate for financing are left to choose between extractive activities such as logging and mining or risky approaches to climate financing, such as carbon markets and now blue carbon.

Carbon markets themselves are vulnerable to price pressures and market demand fluctuations. Under the Clean Development Mechanism, many credits offered by developing countries were left un-purchased as the establishment phase dragged out for years and developed countries cut spending across the board during the Global Financial Crisis (2006-2009). This left anticipated profits from carbon trading unfulfilled.

As emissions fall there will be an overall reduction in emissions that can be offset, reducing the overall demand (especially for expensive, high integrity credits), and therefore financial needs, that carbon markets would meet. The experience in bond markets highlights how the urging by proponents for high-integrity, social/environmental impact financial products can be undercut by appetite for lower price preferences, undermining such products.

Further, there is the outstanding undefined responsibility in regards to who bears the risks of natural disasters on carbon sequestration projects. This jeopardises the benefits of the projects and presents a possible liability for communities and governments. Developing countries have so far been arguing for risk and permanence rules to not push the risk only on the seller of the credits but there has been no solution reached so far.

The overarching impact of centring carbon markets as a financial solution for frontline communities is it privatises government's climate finance obligations. Official development assistance will be crowded out for market-based financial exchanges. The financialisaton of climate finance comes with several pitfalls, the harms of which will end up being shouldered by the communities who have done the least to contribute to the climate crisis.

Blue carbon projects, from preliminary assessments and marine restoration projects to carbon credit trading, have been tabled as a solution that benefits both polluters and communities that are looking for increased access to finance. This dynamic is not geopolitically neutral. What can be drawn from previous experience with carbon markets and the motivations of international financial institutions is an embedding of a new industrial landscape distributed across existing geopolitical dynamics.

Indigenous peoples have an inherent responsibility to take care of our oceanic territories, but those oceanic territories also have an inherent right to health and autonomy in and of themselves. Extending this lens of more-than-human rights and obligations, our oceanscapes also have a right to not be turned into a market commodity to be owned as property, especially when that commodification disrupts and reforms our relationships to our surrounding ecosystems into one of trader to product.

These values that local communities bring to climate mitigation and adaptation are often highlighted by proponents of carbon markets as a positive outcome that will be increased by funding from selling carbon credits. However, many actors in the carbon market space fail to realise that these practices are effective because

of the Indigenous value systems that underpin them. It is these same value systems that can perceive what is not an effective solution. Blue carbon markets need to be assessed against Indigenous Pacific criteria grounded in centring the ocean as kin - family in order to fully grasp their potential or lack thereof in tackling climate change.

Drawing on decades of carbon trading evidence it becomes clear that carbon markets are incapable of reducing emissions or providing stable and adequate financial redress. Instead there is a proven record of questionable business practices and incentivising increasing emissions.

Communities who are interested in converting their ocean ecosystems into trading units should exercise extreme caution. The introduction of an incentive to clarify property rights for the purpose of gaining consent for carbon farming by intermediaries will exacerbate existing land and ocean tenure tensions, particularly between governments and Indigenous peoples.

The involvement of International Financial Institutions such as the World Bank should be examined critically. Although they offer funding and technical assistance, this is with the explicit intention of bringing these ecosystems into commodity terms. This amount of funding may be better used elsewhere.

Finally, fossil fuel companies and high-emitting industries should be banned from participating in carbon markets, both as a purchaser and investor/carbon market actor. These industries in particular must urgently reduce their emissions without the opportunity to buy their way out as their activities directly affect the wellbeing of Pacific communities and future generations.

Solutions that meaningfully address emissions are directly relevant to Pacific aspirations, needs and self-determination. Pacific communities deserve support for climate solutions that are born from our practices and governance, in alignment with the knowledge and relationships we have crafted over thousands of years. Those climate solutions look like polluters and governments keeping fossil fuels in the ground instead of seeking out false solutions that reinforce old industries, causing very real harm both in their backyards and in our oceans.

Introduction

It is an almost impossible task to describe what the Pacific Ocean is to the people who live within its waters. The ocean is a living entity, an ancestor, a grandparent, a healer, a provider, a weaver of islands, and a life-force for many. Our islands are woven into being by the water that surrounds and cradles us. The ocean is what makes our islands home. Because of this, over tens of thousands of years our knowledge and socio-economic systems developed in relationship with the Pacific Ocean so as to maintain a tangible reciprocal relationship with our surroundings that has been maintained sustainably for generations.

Our Indigenous knowledge tells us that our ecosystems and homes are struggling with the impacts of climate change. We can see it in observations like the lengthening, frequency and intensity of cyclone season and the rising sea levels. Local fisher-folk can see the fish and coral spaces are dying. The likes of NASA, the World Meteorological Organization and the Inter-governmental Panel on Climate Change

agree.[1] Scientific research confirms sea level rise is happening faster in the Pacific than the global average, and ocean acidification is damaging shellfish and disrupting fish populations.[2] The IPCC's Special Report on the Ocean and Cryosphere in a Changing Climate explains coral reefs and whole marine animal ecosystems are being harmed by warming waters and nutrient cycle disruption[3].

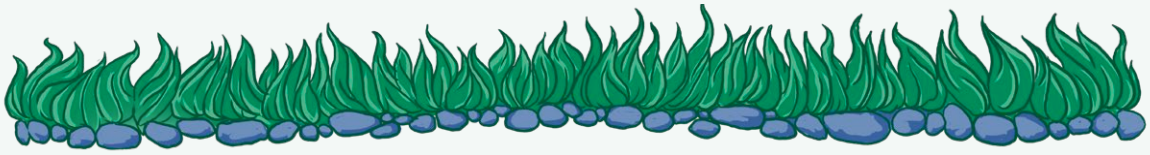
This is being caused by the cumulative heating effect of discharging of gases such as carbon dioxide and methane into the atmosphere. The impacts that the Pacific is experiencing now is the outcome of fossil-fuel emissions released since the industrial revolution, primarily in wealthier countries. Although all countries must reduce their greenhouse gas emissions, it is the same wealthy countries that have the greatest obligation and ability to do so due to their historic contribution to climate change.

Globally, the reduction of fossil fuels and other sources of greenhouse gas emissions is crucial to the future and wellbeing of Pacific peoples and the oceanscapes we are bound to. The mechanisms that reduce emissions also have to align with the practices, knowledge and governance systems of Pacific communities to maintain the efficacy of our governance in sustaining our wellbeing and the health of the places we call home.

Our Pacific communities often have to make hard choices in response to bearing the brunt of extractive treatments of our people and places for generations. Alternative pathways to additional extractive industries such as logging and mining are highly desired. Carbon markets are one of the proposed alternatives. Carbon markets and, more broadly, the idea of "offsetting" or "cancelling" environmental harm have been in the climate policy mix for several decades. These markets have included some ocean ecosystem forms i.e. wetlands but are ramping up in their expansion to include as many ocean ecosystem types as possible. In order to assess whether these solutions will have concrete positive outcomes for the Pacific and climate justice, this report explores the meaning of blue carbon and the historic legacies of carbon markets still impacting Pacific communities today. We explore two key questions about carbon markets: do carbon markets work as an emissions reduction tool? And do carbon markets work as an effective mechanism to deliver finance to Pacific communities?

The answers are deeply troubling. Carbon market expansion is being pushed by wealthier governments, corporations and iNGOs based outside of the Pacific in the face of terrible community experiences of existing land-based carbon markets. The interests are pursuing carbon markets beyond what they are realistically capable of achieving, contributing to an escalation in climate devastation. Fisherfolk from the Pacific region are already sounding the alarm on the negative impacts of blue carbon markets on ocean tenure and livelihoods. The financial benefits are celebrated without the instability of market approaches being acknowledged.

We hope that this report sounds the alarm and arms Pacific nations and communities with knowledge and honest experiences of carbon markets for informed decisions about the expansion into blue carbon market participation. May this support a re-invigoration in climate solutions grounded in Pacific ways of knowing, being, and doing in the pursuit of climate justice.



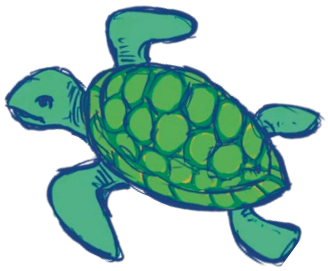
Chapter 1: What is Blue Carbon?

Chapter Summary:

- While it has been used in a number of different ways, for this report Blue Carbon is used to describe the carbon that is sequestered by coastal and deep-sea ecosystems as part of their natural processes (including wetlands, saltmarshes, seagrass, seaweed, coral, mangroves and in the benthic sediment on the ocean floor).
- 'Blue carbon' can refer to the sequestering of carbon by coastal and deep-sea ecosystems. However, the talk of blue carbon projects opens up a wide range of potential activities - anywhere from measuring, managing and commodifying these ecosystems.
- The political use of "blue" leverages the centrality of the ocean in Pacific cultures, disguising the potential harm of political and economic directions that have much more to do with business-as-usual relations with these ecosystems than they do with restoring the forms of governance that have maintained the health of people and place for millennia.

Blue carbon as a term holds many uses and definitions. Its use in policy, research, and as shorthand for larger concepts makes defining blue carbon difficult to pin down into a concise meaning. For the purpose of this report, after explaining the different uses of the language around 'blue carbon', we will largely use the term in relation to its use in coastal ecosystems and carbon markets spaces. However, it is relevant to the content of this report to also understand the broader political trends around the use of blue carbon.

Blue carbon is used to describe the carbon that is sequestered by coastal and deep-sea ecosystems as part of their natural processes. Shallow coastal ecosystems include wetlands, saltmarshes, seagrass, seaweed, coral and mangroves. Carbon is also sequestered in the benthic sediment on the ocean floor and in organisms like phytoplankton and marine fauna.[4]



Not all ecosystems sequester the same amount of carbon. Mangroves, salt marshes and sea grass sequester the most, whereas coral and phytoplankton absorb much less. An established mangrove forest can absorb 2 to 4 times as much as a forest on land.[5] When compared with the amount of carbon sequestered by forests on land, blue carbon ecosystems absorb far more.[6]

In the Pacific, the most common forms of shallow coastal ecosystem are mangroves and seagrass, followed by saltmarshes.[7] Additionally, as the Pacific is an ocean that covers a third of the earth's surface, it contains extensive benthic sediment covering the ocean floor in nearly the entirety of the region.

While 'blue carbon' can refer to the sequestering of carbon by coastal and deep-sea ecosystems, the talk of blue carbon projects opens up a wide range of potential activities - anywhere from measuring, managing and commodifying these ecosystems.

In climate policy and environmental planning, "blue carbon" projects can refer to a range of initiatives. In some countries and local communities, a blue carbon project would be a marine conservation project that is restoring a mangrove area with planting and protection in their marine spatial planning. For others it involves mapping the total shallow coastal ecosystems in a country's exclusive economic zone (EEZ) and calculating the carbon sequestration for inclusion in their Nationally

Determined Contribution (NDC) submitted under the Paris Agreement.[8]

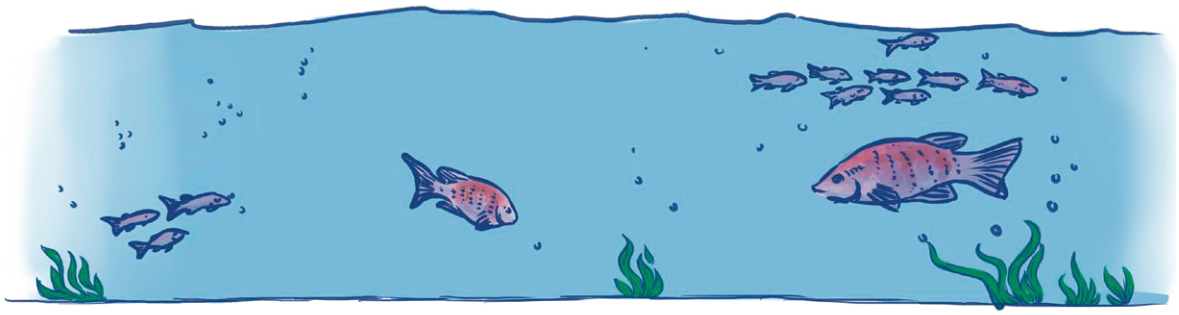
A blue carbon project can also refer to the trading of the carbon that an ecosystem has sequestered on any number of carbon market platforms, or a project that is going through the process of bringing those credits to market after mapping and calculation.

Political branding

Applying the word 'blue' in policy and political spaces has become the fashionable new lens for uncritically alluding to the importance of our oceanscapes. The institutional capture of this can be seen in the spreading popularity of phrases like 'blue economy', 'blue growth', nature-based solutions and now 'blue carbon'.[9] In 2024 the World Economic Forum openly acknowledged that the shift in language is a rebranding exercise to emphasise the offset contribution of marine ecosystems.[10] This shows that particularly from a western lens, the ocean has gone from being once empty spaces between colonies to a highly profitable new industrialisation frontier. This new language leverages the centrality of the ocean in Pacific cultures, disguising the potential harm of political and economic directions that have much more to do with business-as-usual relations with these ecosystems than they do with restoring the forms of governance that have maintained the health of people and place for millennia.

The use of language associated with the environment alludes to a holistic foundation and positive relationship with nature. When this is applied uncritically to any proffered climate solution, it can 'green-wash' or 'nature-wash' an idea or proposal that undermines the types of world views and meaningful solutions that genuinely reflect pathways that align with climate justice in the Pacific.

As blue carbon language aims to distill ocean activities and value into what is politically fashionable in the present, it risks erasing the holistic ways that oceans and their ecosystems work, including the diverse understandings of such. The words we use to frame the environments we live in matters. A single word in a Pacific language can capture whole worlds of environmental knowledge. Even words like mangroves and seagrass can at least convey the specificity, colour and imagery of a habitat, facilitating greater connection and understanding of the complexity and diversity of oceanscapes. By comparison, at the policy level blue carbon has come to be used as a catch-all term to describe ocean-based ecosystems and the short-hand to describe those ecosystems and their associated inhabitants in their entirety. 'Blue carbon' flattens the distinctiveness, and therefore the information, of these spaces into a homogenous treatment determined by its commodifiable value to the market and usefulness in climate pollution offsetting.



Chapter 2: Do Carbon Markets Work as an Emissions Reduction Tool?

Chapter Summary:

- Carbon trading is essentially the exchange of units of carbon sequestration for money by an entity that wants to discount that unit from their emissions volume.
- Carbon credits are currently traded in two market spheres: compliance markets and voluntary markets, with another revamped credit exchange mechanism between countries managed under the UNFCCC.
- Compliance markets have government-set limits on the amount of carbon a certain industry or business can emit. Voluntary markets are where private actors, NGOs, and individuals can trade carbon credits. These are unregulated and facilitated by private carbon trading entities. As of November 2024, a carbon trading mechanism to replace the Clean Development Mechanism under the Kyoto Protocol has been designed and operationalised by countries at the latest round of UN climate negotiations, however ongoing issues remain to be finalised.
- There are 3 types of carbon credits: Removal, Reduction and Avoidance. Avoidance currently comprises 75% of market commodities.
- The intention was for carbon markets and offsets to fill the gap until emissions reduction policy caught up. Carbon markets certainly were never intended to become the core policy plank it is now decades later.
- Credit integrity relies on being able to measure absorption by ecosystem but such modelling is being complicated by the witnessing of slowing absorption and saturation in ecosystems. However, significant amounts of avoidance credits are fraudulent, resulting in additional pollution and a smokescreen for an increase in carbon emissions that wealthy companies and countries can leverage.
- Australian carbon market experts have observed that the escalation in carbon projects in Papua New Guinea is being driven by expansion of oil and gas projects.
- Not just avoidance credits but also removal and reduction categories are being seen as ineffective with 73% of offsets "have a low likelihood of generating emissions reduction which are additional and not over estimated".
- Need for Free, Prior and Informed Consent - The inclusion of a grievance mechanism in UN carbon markets is an acknowledgement of the harms of market approaches. However an effective and holistic climate change solution wouldn't require a feature to clean up the harms of its implementation.
- Carbon markets have an over-inflated place in policy settings, blocking out other more meaningful actions. This, coupled with a recent uptake in fashionable 'net-zero' targets has resulted in the incentivising of a meaningful transitioning away from fossil fuels as net-zero approaches facilitate the idea that pollution can be cancelled out.

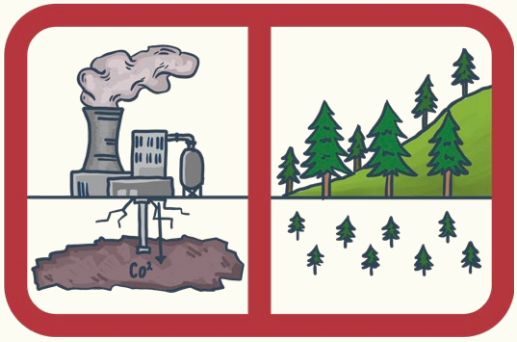
How does carbon trading work?

Carbon markets have been promoted as a climate 'solution' by their proponents for the last three decades, including as part of the Kyoto Protocol and now under the Paris Agreement. They have maintained a central position in the policy sphere, even though their efficacy in reducing emissions has been extensively contested and critiqued.

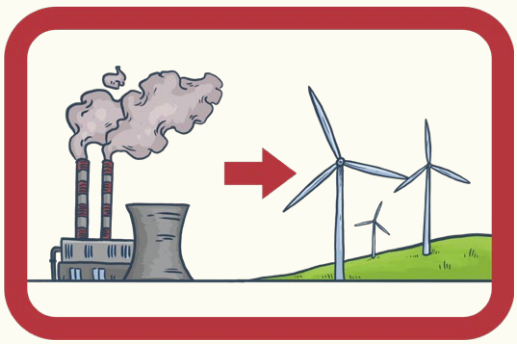
Carbon trading is essentially the exchange of units of carbon sequestration i.e. one tonne of carbon sequestered by organic material such as a tree or dubious technology such as carbon capture and storage (CCS), for money by an entity that wants to discount that unit from their emissions volume.

Types of carbon credits

There are generally three kinds of carbon credits. Each type of credit is determined by the type of project it comes from. The three types are as follows:[11]

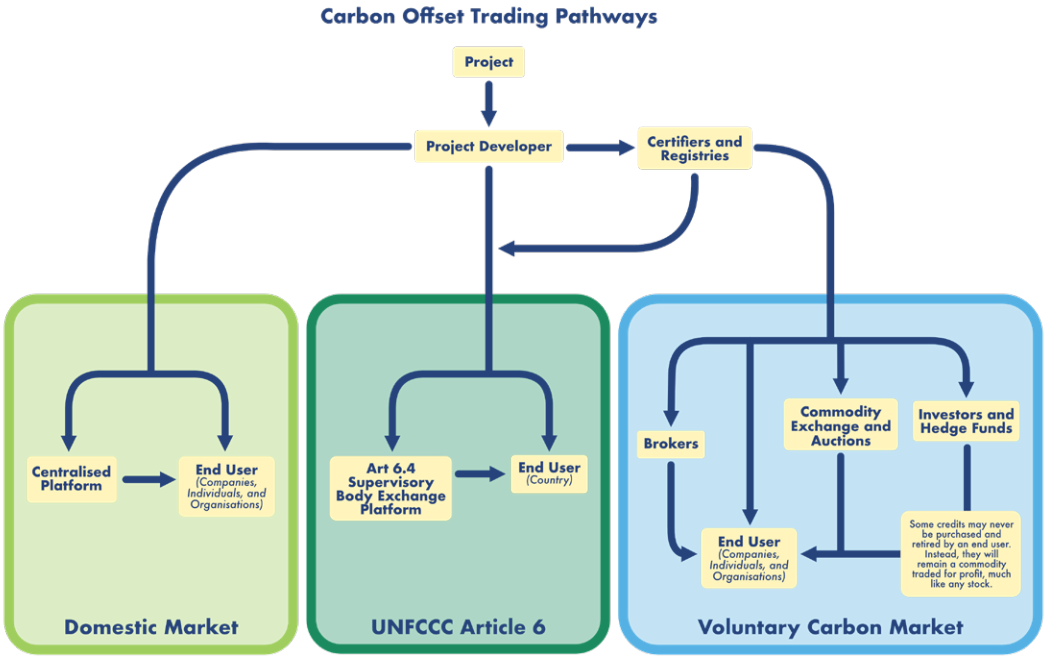


Removal: sourced from removal of carbon from the atmosphere through the likes of reforestation, or carbon capture and storage technologies.



Reduction: sourced from reducing emissions. This can come from several different kinds of sources, such as reducing fossil fuel use or decreasing methane output from farms.

Avoidance: credits that are derived from protecting areas that are under threat of being used for carbon-emitting activities such as logging or mining.



Removal credits only make up a small proportion of the carbon market, estimated at around 3% of the total of carbon credits created.[12] Their validity can be difficult to determine because a data-informed baseline has to be established against which the removal is measured. These can be sourced from reforestation initiatives or carbon capture and storage by technology. The longevity of the sequestration is a concern because the emissions sequestered may end up being released back into the atmosphere through climate disasters such as wildfires or changes in land-use.[13]

Reduction credits are estimated to be up to 22% of the total carbon credits traded. These are also measured against baseline emissions.[14] Credits sourced from technology switches such as replacing a coal power plant with a wind farm would fall into this category.

Avoidance credits take up approximately 75% of the carbon market commodities, with different ratios for the varied trading and verification platforms.[15] Maintaining the integrity of avoidance credits relies heavily on being able to prove a legitimate threat to a place that absorbs carbon, a requirement that is increasingly coming under scrutiny for its effectiveness.

Where are they traded?

Carbon credits are currently traded in two market spheres: compliance markets and voluntary markets,[16] with a revamped credit exchange mechanism between countries, replacing the Clean Development Mechanism (CDM) and managed under the United Nations Framework Convention on Climate Change (UNFCCC).

Compliance markets have government-set limits on the amount of carbon a certain industry or business can emit. These industries and businesses are given emission quotas and have to purchase credits if they emit more carbon than allocated in their quota.[17]

Carbon trading in compliance markets can take two forms. The first is called 'cap-and-trade'. Industries or businesses will be allocated a quota of carbon emissions - establishing

'cap'. The 'trade' happens when an industry or business emits more carbon than their quota and has to purchase credits to make the balance. These credits can be purchased from a business or industry who has emitted less than their allocated quota, leaving left-over credits.[18]

The second type of trading is 'baseline-and-credit'. An emissions-level baseline is established by governments. This is informed by current emissions data and historic emission amounts. A business or industry's emissions are then measured against that baseline. If an entity's emissions are below the base-line then they can sell the difference to another entity.[19]

Voluntary carbon markets are where private actors, Non-Government Organisations (NGOs), and individuals can trade carbon credits.[20] These are unregulated and facilitated by private carbon trading entities that can range from large corporations like Verra and BP to "boutique" carbon credit companies that trade small quantities of carbon from singular community projects. Private actors are motivated to participate in voluntary markets to meet self-imposed emissions reduction targets or for offsetting the carbon emitted along the production and supply chain of goods or services.

United Nations Framework Convention on Climate Change (UNFCCC)

As of November 2024 a new carbon trading mechanism has been designed and operationalised by countries at the latest round of UN climate negotiations, however ongoing issues remain to be finalised. The operationalisation of Article 6 will set a process for country-to-country trading but will also eventually have spill-over influence on the voluntary carbon market. For additional detail, go to the Article 6 info box on page 16.

Corporate Social Responsibility

Some companies will buy credits and not use them to offset their emissions. The funding of an emissions reduction project is included as part of their corporate social responsibility as a means of contributing to a positive social image of the company.

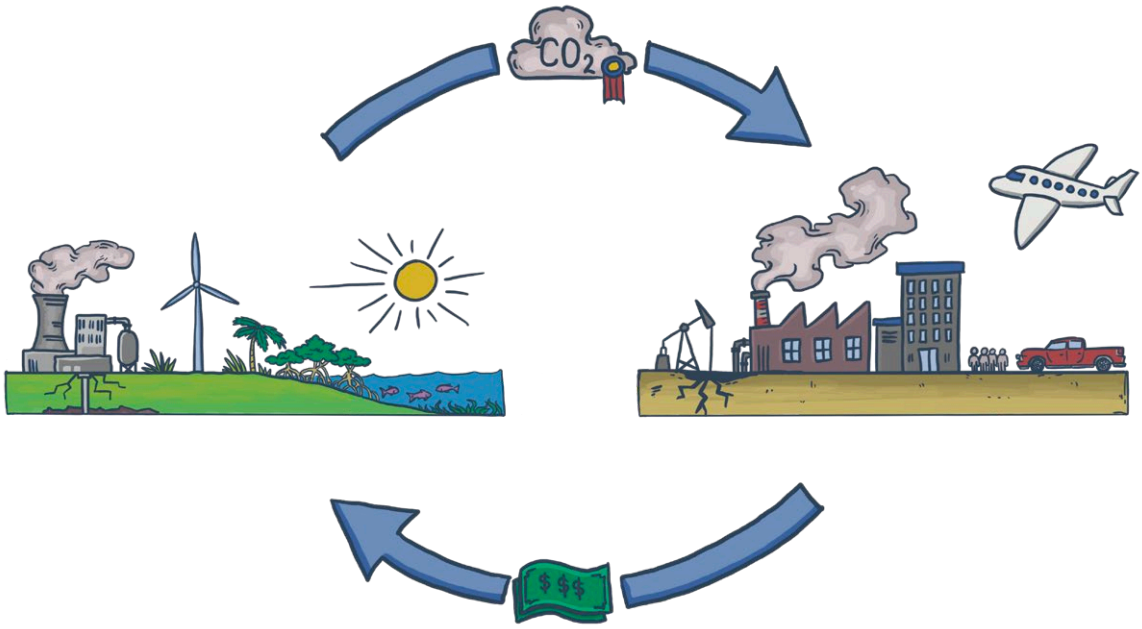
Credit integrity

A carbon credit, whether being sold by a business, community or country, cannot be sold in any market space without first being verified that it absorbs the promised amount of emissions.

An important part of calculating carbon sequestration is calculating how much carbon an ecosystem component absorbs i.e. tropical rainforests. This informs a model that is used to estimate how many tonnes of carbon a particular carbon project is absorbing. There is a wide range of methodologies used to inform the calculations, each with its own accompanying critique.

One complication in this modelling approach that has been observed by scientists is what seems to be a limit to the amount of carbon ecosystems can absorb. From rainforests to the sea floor, the impacts of climate change are disrupting the sequestration of carbon through both natural disasters and slow-onset impacts.[21] Models where this was accounted for anticipated the decrease to happen at a much slower rate than what is being observed on the ground.[22] As far back as 2013 scientists observed that the carbon absorption in Europe's forests was slowing.[23] This can be attributed to climate impacts and deforestation, but also is likely being driven by the slowing of forest growth as trees mature and a natural dynamic where the absorption of carbon by trees decreases as the ratio of carbon in the atmosphere decreases.[24]

In addition to being verified for sequestering carbon, carbon credit sellers can also apply for additional layers of certification that endorse the co-benefits and other positive impacts of the project. These additional registration opportunities have been in response to a broad



range of critiques and pitfalls faced by carbon markets.

The Integrity Council for the Voluntary Carbon Market has been established with private sector backing from finance, investment, trading and NGO support will provide guidance and support for voluntary carbon market credits and processes.[25] It has no binding powers to oversee the voluntary carbon markets.

Various carbon-trading middlemen and certification companies offer verification for a range of extra features of the carbon from a carbon sequestration project, such as:

- The money paid for a credit going directly to the community that is managing or owners of the area of the project;
- The project's success supports social co-benefits;
- The project supports biodiversity restoration;
- The project supports achievement of the Sustainable Development Goals;
- The project enhances coastal resilience.

The above table covers the types of additional criteria a carbon credit can have applied to its accreditation. Some of these may be extra forms of accreditation that are applied for beyond the stock-standard carbon sequestration certification. Other companies may only certify credits that can also prove a number of extra environmental and social impacts.

History of carbon markets

The origins of carbon markets are helpful for both understanding their intended purpose, and comparing that intention to how they're being placed within the climate action suite today.

'Cancelling out' environmental harms through market mechanisms existed before tackling carbon emissions reached global importance. In 1975 the United States of America introduced an exchangeable permit system to handle sulphur dioxide and nitrogen oxide pollution from oil, gas and steel production.[31]

Shortly after, the physicist, Freeman Dyson, advocated in an academic article for large scale tree planting to put a stop to escalating emissions. He argued for this to only be a stopgap, and never a permanent solution.[32]

The first carbon trading project was an agroforestry project in Guatemala to offset the emissions from a coal plant in the US owned

Article 6 – What does the new outcome mean?

Market and non-market co-operation for climate action between governments is guided by Article 6 of the Paris Agreement. Although the Paris Agreement was completed in 2015, the rules of market and non-market approaches required further negotiation and were largely concluded at the end of 2024. This outcome saw the operationalisation of the mechanism that will oversee the exchange of offsets between governments to reach their Nationally Determined Contributions (NDCs).

The emissions traded will be project-sourced and fall into one of two categories: land-based and technology-based. Blue carbon will be included in the former category. The blue carbon contribution will likely come from wetlands, mangroves, seagrasses, reefs and possibly macroalgal fields.

Technology-based credits come from the likes of decommissioning coal power plants and carbon capture and storage initiatives. It is important to note that carbon capture and storage is as yet, still an unproven and potentially unstable technology that has not delivered the promised reductions and is largely championed by fossil fuel companies and International Financial Institutions.

Avoidance credits will not be accepted as offsets. However, the definition of avoidance has been left for future negotiation and credits sourced from forest protection and maintenance, which has typically been considered to fall in the avoidance category, will be permitted under the 'removal' category.

There are three forms of "co-operation" that fall under Article 6. The first are offsets exchanged between countries under a bilateral agreement. These offsets, labelled Internationally Transferred Mitigation Outcomes, have certain criteria they have to meet in order to be counted towards NDCs.[26]

The second type of offsets are called Article 6.4 Emissions Reduction Units.[27] These will be offsets that can be counted towards NDCs and are registered to a centralised UNFCCC entity called the Supervisory Body of the Paris Agreement Crediting Mechanism that oversees the market exchange of offsets between governments. It will provide the guidance for the authorisation of crediting entities, methodologies and carbon credit criteria for offset credits exchanged between countries.[28] The membership of the body council is made up of government representatives. At the time of publication, methodologies, reporting and permanence rules are still under development which means that much of the liability responsibilities and costs that poorer countries should be concerned about have yet to be outlined.[29]

The Supervisory Body has limited accountability powers beyond publishing an ongoing breach of integrity if a country persistently sells credits that do not meet the criteria.

The third form of cooperation is the non-market approach where financial or technical support is given by a country to another country with no expectation of offset credits in return. This will be facilitated by a website where mitigation projects are submitted.

TYPE OF CREDIT VERIFICATION[30]	LARGE TRADERS
The majority of money goes directly to local community hosts of the carbon sequestration project	Plan Vivo
Social co-benefits	Verra, Plan Vivo, American Carbon Standard
Contributes to Sustainable Development Goals	Verra, American Carbon Standard, Climate Action Reserve
Enhances coastal resilience	Verra (in process)
Biodiversity restoration	Verra, Plan Vivo
Other ecosystem benefits	Gold Standard, Plan Vivo, Verra
Gender inclusivity	Gold Standard

by Applied Energy Services in 1988. This was only meant to be an exercise in motivating companies to start thinking about their emissions and commit to reductions. Dr Mark Trexler, who oversaw this project, comments, "no one ever thought that carbon offsets were going to save the world". The intention was for offsets to fill the gap until policy caught up. Carbon markets certainly were never intended to become the core policy plank it is now decades later.[33]

The Kyoto Protocol entrenched carbon trading as a formal and central mechanism in response to climate change for countries, marking a diplomatic win for the United States of America for whom carbon markets were and are a core pillar of American government and corporate climate policy. This is built off the back of years of lobbying by pro-free market economists and senators who desired environmental policy that didn't contradict "American traditions favouring volunteerism.[34]

The non-participation of the US in the Kyoto Protocol, the unambitious targets of the developed countries that were Parties to the Kyoto Protocol, the lack of provision of finance and support to developing countries under the United Nations Framework Convention on Climate Change and the Protocol, and the delay of almost a decade between the Protocol's adoption and its entry into force meant that the Kyoto Protocol was not effective in prompting Parties to develop stronger mitigation regulatory and policy frameworks urgently and coherently. These drove a rapid expansion in voluntary markets as corporations and NGOs who saw value in carbon market responses decided to initiate a trade in carbon credits without waiting for government regulation.

The majority of this chapter has been focused on the technical elements of carbon trading, and this all comes together to help us answer the bigger question – does carbon trading work? And what are the important learnings from terrestrial carbon markets in the Pacific to apply to marine ecosystem offset considerations?

The overarching assumption of carbon markets is that one tonne of emissions can be 'cancelled out' by the absorption of one tonne of carbon by something like a tree or by the replacement of an emitting project like a coal-fired power plant with renewable energy production in another part of the world. The Australia Institute

argues that in the best-case scenario carbon markets maintain the status quo rather than producing the most important way of tackling climate change which is a drastic decrease in gross emissions and environmental pollution.[35]

Credit integrity and license to pollute

The NIHT Kamlapar case study raises one of several problems with 'avoidance' credits. Experts have questioned whether avoidance credits actually contribute to addressing climate change. NIHT's business practices strengthen this critique and call into doubt the effectiveness of carbon trading. Research released just over a year ago found that 90% of rainforest credits sold by major carbon credit verifier, Verra, are avoidance credits and are likely bogus[36] because the threat that avoidance credits are avoiding are largely fabricated by carbon traders who want to cash in on this growing market. So when fraudulent credits make up the majority of a market then the carbon pollution supposedly being offset by the credits is in fact additional pollution, and carbon markets are actually providing a smokescreen for an increase in carbon emissions that wealthy companies and countries can leverage.

Australian carbon market experts have observed that the escalation in carbon projects in Papua New Guinea destined for voluntary markets is being driven by expansion of oil and gas projects. Polly Hemming, former supporter of carbon neutral projects, explains that Australia is expanding its oil and gas extraction by 114 new projects and that the push for carbon credits to "cancel-out" the emissions from these new projects are the reason for "trying to shore up deals with countries like Papua New Guinea so it has a ready supply of credits available".[37] In 2024, Australia supported Fiji to further its carbon market policy infrastructure by facilitating the involvement of the Carbon Market Institute (CMI) as technical support for the development of Fiji's National Carbon Market Strategy Roadmap.[38] CMI counts among its members BP, Shell and Origin who are continuing to pursue new oil and gas projects. This undermines the credibility of the hype that fossil fuel companies give carbon markets as a tool to reduce climate change.[39]

The use of carbon markets as a license to pollute is not new. Analysis of the impact of the Clean Development Mechanism (CDM), an offset facility under the Kyoto Protocol has found that 73% of offsets "have a low likelihood of generating emissions reduction which are additional and not over estimated".[40] Of note is that many of the credits generated by the CDM were not from avoidance projects but new initiatives such as renewable energy or reforestation,[41] which fall under the removal and reduction categories. It is deeply concerning that integrity is lacking from significant portions of the offsets industry across compliance and voluntary markets, and not just avoidance projects.

Indigenous rights and Free, Prior and Informed Consent

The experience of the Kamlapar highlights the lack of FPIC and the displacement of Indigenous Peoples as a feature of carbon markets since its early days. Carbon markets have faced many scandals as local community experiences tell of everything from fake credits and profiteering to heart-breaking displacement.[56] Companies, credit certifiers, colonial governments and international NGO staff consistently misunderstand or dismiss traditional land tenure systems.[57] Although there has been an increase in awareness of the harms of poor consent processes, experts still warn that the conversion of natural processes into a property class, in this case the carbon cycle, will exacerbate existing land tensions, particularly between government, Indigenous communities and interested parties. The World Forum of Fish Harvesters and Fish Workers (WFF) recently published a statement in opposition to blue carbon market expansion specifically in opposition to this impact of carbon markets. The WFF explained

CASE STUDY:

Carbon market harms in Papua New Guinea and lessons from terrestrial carbon

Carbon markets have been plagued by scandals and accusations of ineffectiveness and the Pacific region has its fair share of carbon market harm. Papua New Guinea's decades-long experience with voluntary carbon markets is enough to raise serious concerns about the market's expansion into blue carbon ecosystems.

The voluntary markets in Papua New Guinea have gone largely unregulated although the country was the first, in partnership with Costa Rica, to propose reducing emissions from deforestation at the UN annual climate negotiations in 2005.[42]

In the New Ireland Province, communities are unhappy and concerned with the carbon project they signed off on their land with the American company NIHT (North Ireland Hardwood Timber) Inc 5 years ago.[43]

When NIHT came to the Kamlapar clan seeking consent they promised profits for the members, a school, a church, roads, a health centre and a housing scheme. NIHT would manage the project, handling the certifying and selling of the carbon credits. In return the clan would receive 56% of profits.[44] With the major alternative to carbon speculation being logging, the clan was keen to pursue a means of supporting community incomes that didn't result in additional forest degradation.

However, discrepancies in the contract that was signed leave it unclear as to whether the promised percentage given to clan members is cut from net or gross profit. In addition, NIHT has full discretion to use any amount of the profits to cover additional costs.[45]

Since the carbon project began, NIHT has sold 1.3 million credits at USD$4 each. Many of these credits were sold to Australian organisations and companies. The profit from these sales have not been passed on to the Kamlapar clan who are the caretakers of the forest the credits are sourced from.[46] A Four Corners ABC investigation last year found that clan members had received nothing more than an initial payment of 200 kina (USD$80) each when they had signed the contract. The promised schools, roads and other infrastructure were nowhere to be seen.[47]

These promises have been used to promote the carbon project's success. Marketing material was found to claim 47,000 people have benefitted but after pressure from journalists, NIHT conceded that the true number of beneficiaries is under half that.[48]

The CEO of NIHT, Stephen Strauss, has had a string of failed business ventures in Papua New Guinea related to mining and logging.[49] He was also found guilty of defrauding investors by the US Securities and Exchange Commission, boosting the share prices of his company, Chilmark Entertainment Group, Inc., by claiming in press releases that his company was on the verge of producing bio-fuels from palm oil.[50] Since Verra, the organisation responsible for certifying NIHT's credits were

informed about Straus' background, they have suspended NIHT's right to trade.[51] In the research for this report, the author found that NIHT is still selling the New Ireland credits through the EcoSoul platform.[52]

Another issue of carbon markets and certification capabilities is whether the local community has given their Free, Prior and Informed Consent. FPIC is a basic international mandatory standard that certifiers like Verra claim to assess when they receive a request for credit certification. Additional research in the NIHT-Kamlapar example found that due process was likely not followed in securing free, prior and informed consent from all the communities in the carbon project area.[53]

Putting aside the details of the scandalous past of the CEO of NIHT, what this case study exemplifies is the inability of companies and organisations who give credit certification to do their own due diligence on the ground. Companies like Verra are reliant on the paperwork submitted by the organisation and the work of third parties flagging the extractive and deceptive behaviour to them. There is a large disconnect between the credit-management industry and the realities of carbon projects on the ground, a flaw that comes up time and time again in experiences of carbon farming in Papua New Guinea.

NIHT's original business venture in the region was logging before they switched to carbon farming to produce avoidance credits. The emissions being 'avoided' here are the ones that would have been created from NIHT's logging enterprise. There is little information about how genuine this threat was, and it raises the concern that companies may manufacture threats to then be able to claim the production of avoidance credits.

The NIHT carbon project events are not the only example of its kind in Papua New Guinea. There are a wide range of local experiences with carbon projects, many bad and some good. In many of these instances it seems that many actors in the wider international carbon market industry have, at best, little awareness, and at worst, no care for due diligence before patting each other on the back. One company, Kanaka Management Services, was even awarded Best Project Developer and Best Advisory/Consultancy by its industry peers at the 2021 Voluntary Carbon Market Awards while experts are calling an existing carbon project application almost humorously farcical for its lies of threats from cattle and railway in a region with no cows and a country with no railway, built or planned.[54]

Papua New Guinea has had to deal with 'carbon cowboys' before, banning voluntary carbon markets in 2010 and then reaffirming that ban in 2022.[55] This is to give the government time to create suitable regulations that protect its ecosystems and the autonomy and livelihoods of local communities. These regulations are still in development.

that the land-grabbing fueled by carbon markets will extend to blue carbon projects as governments and carbon project traders push for the conversion of coastal ecosystems into carbon farms that will displace local subsistence practices and Indigenous governance.[58] This is particularly relevant to Pacific countries considering the financialisation of coastal ecosystems as so many of our communities derive sustenance and income from areas being considered for blue carbon projects.

The harms of carbon markets have driven Indigenous Peoples and local communities to persistently call for a grievance mechanism in the new carbon market mechanism under the Paris Agreement.[59] This request was accepted and there will be a grievance mechanism, a feature that advocates of UNFCCC carbon markets point to as evidence of a new and improved approach to carbon markets. Although this may indicate a shift in the negative effects of carbon projects, what the existence of a grievance mechanism leaves un-said is the acceptance of harm as part of carbon markets. An effective and holistic climate change solution wouldn't require a feature to clean up the harms of its implementation and management after the fact. Climate solutions should be designed in such a way that Indigenous wellbeing, sovereignty and socio-economic systems provide the foundation and inform the whole design and development process. Creating and mandating carbon markets as a climate solution accepts and systematises the harm of carbon markets that disproportionately fall on Indigenous Peoples and local communities. Once again, Indigenous peoples are cornered into paying the price for so-called climate solutions.

Policy space impacts

The third issue with the efficacy of carbon markets is the large space they take up in the suite of emissions reduction tools. Emissions have to come down, and they have to come down rapidly.[60] This happens through solutions such as public transport, respecting Indigenous sovereignty, and no more new oil, gas and coal projects. As we explored in the NIHT-Kamlapar case study, carbon markets are driving the greenwashing of the expansion of oil and gas extraction.[61] Both corporations and governments are greenlighting new extraction projects and looking to carbon markets in the Pacific to cover the balance which goes far beyond what carbon markets were ever intended to be used for by its original proponents.

An over-emphasis on carbon markets ends up crowding out other tools in the policy space that will contribute to environmental restoration and reducing emissions. This is particularly relevant to credits sourced from 'threatened' carbon sinks. Carbon market approaches motivate a delay in protecting ecosystems through the creation of national parks and marine reserves because, once protected, they will no longer be under threat and therefore there will be no legitimate reason to sell avoidance credits.

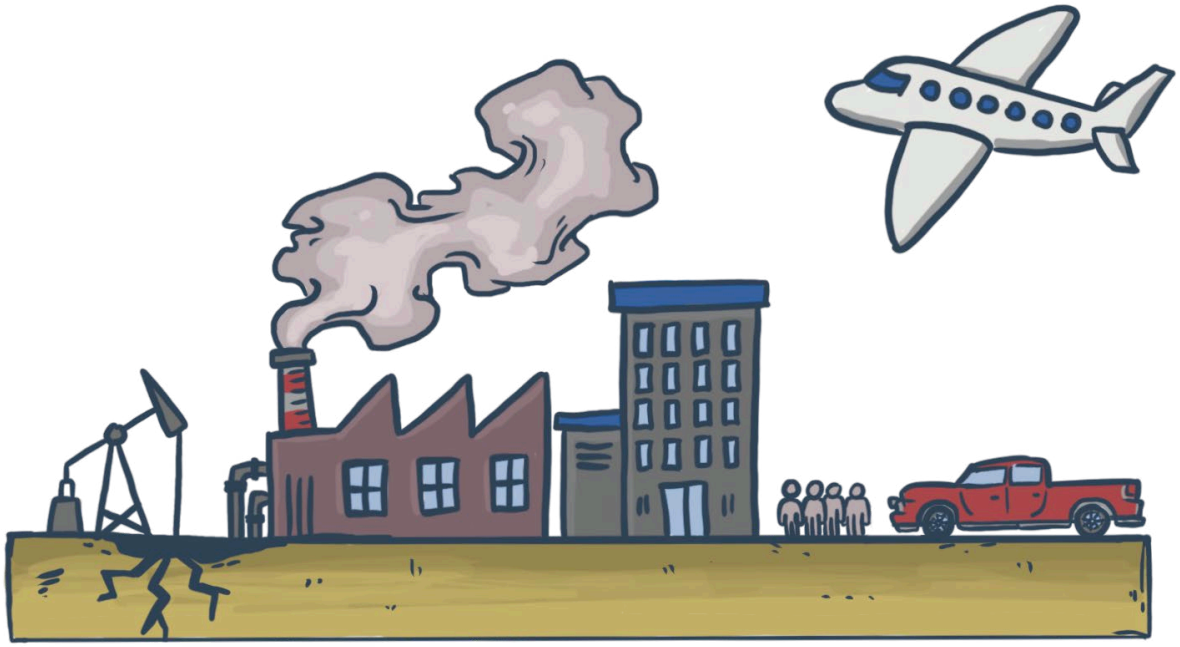
The particular motivation from the Australian government highlights the final issue with carbon markets trying to prevent pollution. Even if carbon markets did reduce carbon emissions it doesn't address the other negative impacts that high-emitting industries and fossil fuel extraction have on the environments where they are taking place. Harmful environmental and social impacts like oil spills, poor health in neighbouring communities,[62] and water contamination all go unaddressed in carbon market exchanges. This supposed solution can be understood to encourage environmental destruction rather than prevent it by greenwashing the industrial consequences, particularly in the way carbon markets are being used by corporations and governments today.

Net-zero and policy

Net-zero targets and carbon budgets across government, NGOs and businesses have markedly accelerated in popularity. This has

turned lowering emissions into an equation segmented into target numbers which has in turn increased the demands for carbon offsets. In persuading many groups that carbon emissions can be calculated away, the near-term carbon budget has been falsely expanded.[63] This is reinforced by commentators calling net-zero plans "largely meaningless".[64] This has incentivised delaying the meaningful transition away from fossil fuels as net-zero approaches facilitate the idea that pollution can be cancelled out which is the opposite of what many Indigenous peoples, frontline communities, scientists, and every-day people have been calling for for decades.

As political appetite for climate action has declined in some countries, companies are starting to abandon net zero goals and recommit to fossil fuel expansion which draws into question the stability of appetite for offsets, something that will be explained further in Chapter 4.[65]



Chapter 3: Blue Carbon on the Market

Chapter Summary:

- The IPCC has only provided quantitative carbon standards for wetlands for compliance market trading. The blue carbon voluntary market landscape has a range of ocean ecosystem area-sourced credits being offered by multiple private entities, including wetlands and mangroves. Some countries have gone ahead with their own standards but the sequestered amounts have been found to be over-exaggerated.
- Some Pacific countries have included Blue Carbon in their National Development Plans (Fiji) while others have signed bilateral agreements with credit companies (Papua New Guinea). There is contention as to whether high-polluting companies should be involved in the discussions for market designs given their responsibility for climate change and attempting to self-regulate. Hybrid entities like the Blue Carbon Institute are attempting to combine government, big tech and large conservation groups in setting blue carbon policy.
- The World Bank and other financial institutions have been explicit in its support of a blue carbon market pipeline that starts with mapping and inclusion in National Determined Contributions for the purpose of converting ocean ecosystems into property for trading in blue carbon markets

Blue carbon is currently at the fringes of full incorporation into carbon markets. It is largely at the development stage with only some countries trading in carbon sequestered by ocean ecosystems.

As described in Chapter 1, countries and communities first need to map their shallow coastal ecosystems and calculate how much carbon these sites are sequestering before they can bring them to market.

Modelling for marine 'units'

The carbon being sequestered by coastal ecosystems and the sea floor is not any different from land-based sequestration at a molecular level. However, not all ecosystems sequester the same amount of carbon. This has resulted in a need to develop form-specific standards of measurement and calculation for the different forms of ecosystems, which would ultimately result in a standard for mangroves, and a different one for seagrasses, and a different one again for wetlands. Only forms of carbon that have standards to be measured by can be brought to market.

It is important to note that the compliance markets have separate standards from voluntary carbon markets. Currently, the IPCC has only provided quantitative carbon standards for wetlands. This was published in 2013.[66] Since then, no other standards have been supplied. This means that as of now only wetlands can offer credits that can be brought to market in the compliance and UN market spaces.[67] The unregulated nature of voluntary markets means that it is up to individual companies and carbon traders to set the quantitative standards for blue carbon ecosystems. While they may draw on international standards set by the likes of the Inter-governmental Panel on Climate Change, they are not required to do so. The blue carbon voluntary market landscape has a range of ocean ecosystem area-sourced credits being offered by multiple private entities, including wetlands and mangroves.[68]

A handful of countries have developed their own standards for domestic trading. Japan, for example, has several blue carbon restoration projects that offer carbon credits from sea grass and macroalgal fields.[69]

Blue carbon modelling is not without its own critiques. According to Johannessen and Christian, the modelling for marine

sequestration has been over-exaggerated. These models have not accounted for turbidity of the carbon cycle and the different rates of carbon cycle rotation across different parts of the world.[70]

Who is trading?

The blue carbon industrial frontier is attracting many different actors. In our research we have come across a long list of entities and individuals who are very interested, if not already active, active in carbon trading and its blue carbon frontiers. These actors include governments, megacorporations, smaller businesses, hedge funds, investors, consultants, non-governmental organisations, and local communities.

Currently, Pacific nations are largely focussed on mapping marine areas and their sequestration contributions. Some, like Fiji, have referenced marine areas or blue carbon in their emission plans submitted to the UNFCCC under the Paris Agreement as well as a strategy to "establish appropriate and standardised methods for blue carbon valuation" in its 2025-2029 National Development Plan.[71] At COP28, Papua New Guinea has indicated it wants to take blue carbon a step further signing a new carbon deal with a United Arab Emirates-based carbon offsetting company called Blue Carbon LLC, who are focussed on blue carbon but also want to support Papua New Guinea to develop biodiversity credits.

There has been a long-standing tension over whether the private sector and high-polluting businesses should be involved in designing and implementing climate solutions and climate financing. Advocates for business inclusion argue that it is necessary to include this sector because they are best placed to understand the impacts of policy on business. They say having business at the table is crucial to enable a whole-of-economy shift to a low-emissions society. The opposition to business inclusion at the design and governance decision-making table is grounded in concerns about having those who have contributed the most to carbon pollution involved in regulating themselves. Critics of mega-polluters point to several historic examples of corporations inhibiting climate ambition, instead using the opportunity to protect their high profits by stalling regulation or designing mechanisms in their favour.

In 2022 Singapore, Conservation International and Amazon partnered to set up the International Blue Carbon Institute, hosted in Singapore. The stated purpose of the IBCI is to develop and inform effective policy, finance and implementation strategies for blue carbon ecosystems.[72] To date the Institute has focussed on marine planning, scoping and ocean ecosystems research.[73] The Institute is being hosted in Singapore as a strategic choice to specifically focus on working in the Asia-Pacific region because it contains the world's largest mangrove and seagrass areas.

However, the Singapore Minister for Sustainability and the Environment and Amazon, who is funding the costs of the Institute for 3 years, have spoken to the context of carbon markets being a motivating factor in the establishment of the Institute.[74] In a press release announcing the launch of the institute, Amazon commented, "at Amazon, we have been investing in nature-based solutions to mitigate carbon emissions outside of our value chain and supplement the carbon-reduction efforts we're driving across our operations. There is strong potential in blue carbon projects to support carbon sequestration, ecosystem services and livelihoods in Southeast Asia, which is home to rich marine and coastal environments."[75]

Thus far, the Institute has only been involved in mapping, protecting and restoring coastal ecosystems. However, it is clear from the comments by those involved in the establishment of the institute that bringing these ecosystems to market once they have been mapped and planned is a highly desired outcome.

This example highlights the active forces and agendas in the blue carbon space that are rapidly encroaching on Pacific places and

ecosystems. Governments, NGOs, funders and businesses are explicit in their desire to create blue carbon markets to evade pollution reduction in their sectors and supply chains. Proponents of blue carbon projects, such as the World Bank, emphasise the necessity for coastal countries to identify initiatives that private actors and financial institutions will find desirable for investment. These International Financial Institutions are clear that although mapping, restoration and management of ocean ecosystems is important, the end goal is to sell credits to polluters.[76]

The blue carbon pitch

The proposed benefits of bringing marine ecosystems to market is much the same as the promises that were made during the introduction of terrestrial carbon projects to poorer countries and frontline communities in previous decades.

Governments, international organisations, private actors and some Indigenous advocates claim that carbon markets create a win-win situation. Emissions are reduced and communities receive a source of income for taking care of their coastal ecosystems.

The World Bank has published guidance for local communities on the steps for bringing a marine ecosystem to market, urging ocean custodians to bring the benefits of carbon trading for "a better quality of life and job creation for vulnerable groups including women and Indigenous Peoples and local communities".[77]

In the Pacific, the New Zealand government has stated as part of its marine ecosystem research efforts that blue carbon trading will deliver a range of benefits for developing countries, and will create a "sustainable and profitable livelihoods".[78]

When concerns of polluter mis-use of credits and community harms are raised, proponents emphasise the necessity of transparency or the anticipated demand for credits with additional beneficial impacts. Although the World Economic Forum has openly acknowledged the harms that carbon markets have had, it is quick to stress that "high quality" credits should work with communities to generate positive financial and nutritional impacts. Across the board, proponents are quick to offer marine ecosystem credits as the answer to poorer country's financial and environmental needs.

The involvement of International Financial Institutions in the expanding blue carbon market frontiers is pertinent to Pacific concerns. Entities like the World Bank and Asia Development Bank have a history of pushing forward forms of development that undermines Indigenous structures and norms, particularly as it applies to land tenure and privatisation and under the guise of environmental initiatives.[79] The World Bank has been explicit in its support of a blue carbon market pipeline that starts with mapping and NDC inclusion for the purpose of converting ocean ecosystems into property for trading in blue carbon markets.[80] In the World Bank's report, "Blue Carbon Development", the institution outlines the steps it insists should be taken towards blue carbon markets.[81] It posits that commodification is the necessary step for obtaining finances for marine protection and community development. The World Bank blurs the purpose of carbon markets, pushing for its use as a emissions reduction tool as well as a financial tool. But how effective is this policy approach?

Chapter 4: Do Carbon Markets Work as a Financial Tool?

Chapter Summary:

- The history of failed promised finance has pushed developing countries to explore pathways that have largely been designed by, and benefit, developed countries. Developing countries, desperate for financing, are left to turn to risky approaches to climate financing.
- Carbon markets are vulnerable to price pressures and market demand fluctuations. This will mean that, as emissions fall there will be an overall reduction in emissions that can be offset, reducing the overall demand (especially for expensive, high integrity credits), and therefore financial needs, that carbon markets would meet.
- There is an undefined responsibility in regards to who bears the risks of natural disasters on carbon sequestration projects. This jeopardises the benefits of the projects and presents a possible liability for communities and governments.

Finance and blue carbon

Couching the discourse around blue carbon in a broader finance context illuminates concerning impacts. For decades, international climate conversations and negotiations have been filled with requests from poorer countries and frontline communities for finance to support a clean transition and resilience pathways. Richer countries have made pledge after pledge of financial contributions that have yet to materialise. One example of this is in 2010, countries at the UN climate talks agreed to mobilise USD$100 billion by 2020. By the time 2020 came around, finance had only reached USD$83 billion.[82] It is as yet unclear whether that has all been additional funding or whether a portion is from shifting money from one funding stream to another. When climate finance or aid is announced it is sometimes just re-tagged money that is already being given or it is given as loans that have to be paid back, exacerbating the debt burden that developing countries already carry. Oxfam's assessment of climate commitments, taking these issues into account, has found that the real value is approximately USD$24.5 billion.[83]

The overarching impact of centering carbon markets as a financial solution for frontline communities is it privatises government's climate finance obligations. Official development assistance will be crowded out for market-based financial exchanges. The financialisation of climate finance comes with several pitfalls, the harms of which will end up being shouldered by the communities who have done the least to contribute to climate countries.

The lack of promised finance constrains the choices that countries and communities can make and drives them towards pathways designed by polluters and wealthier countries – free trade agreements, debt-for-nature swaps, and carbon markets – who have the time, resources and connections to be at the table that design these mechanisms and rules. Each comes with their own financial pitfalls.

Demand fluctuations

One of these pitfalls is the fluctuations in finance that come with market approaches. Market solutions are vulnerable to market forces. Under the Clean Development Mechanism, many credits offered by developing countries were left un-purchased as developed countries cut spending across the board during the Global Financial Crisis (2006-2009).[84] This left anticipated profits from carbon trading unfulfilled. In our scan of pro-blue carbon market content, there was very little critical reflection on how these market fluctuations would affect Pacific countries and communities, and therefore nothing offered by way of solutions or fixes to this dynamic.

Lower price preferences

We can understand another pitfall drawn across from experiences in the sovereign bond market. While sovereign bonds for sustainability projects are entering the market, they are experiencing a slow uptake because of the higher cost. The

same has been experienced in earlier iterations of carbon markets. Should carbon credits with higher integrity become considerably more expensive than low-integrity or non-co-benefit credits, we can logically predict that entities pursuing offsetting will purchase the cheaper option. This is because the profit motive for businesses in particular would prioritise cheap offsetting to save costs.[85]

This leaves the financial benefits for communities who are selling credits on the market vulnerable to purchaser appetite and balance sheets. The maintenance and restoration of ocean ecosystems is incredibly important. This should not be left to the highs and lows of market dynamics. Instead they should be consistently funded over an extended period of time to ensure that the important work that communities are doing doesn't falter.

Market dynamics

Another negative outcome that we will describe is an additional dynamic of market approaches. All countries are expected to reduce their emissions, particularly the global north who contribute the bulk of emissions, far more than many Pacific countries. Gross emissions have to decrease over time in alignment with keeping warming to 1.5 degrees. A reduction of gross emissions is also implicitly predicted by carbon market advocates who agree that market solutions should only play a complementary role in reducing emissions alongside meaningful emissions reduction through transition towards low-emissions transport, infrastructure, economies, housing etc.[86] This will mean an overall reduction in emissions that can be offset, reducing the overall demand, and therefore financial needs, that carbon markets would meet. This sets up communities and countries who have participated in carbon markets to gain access to finances that support their emissions-sequestering projects to depend on a finite industry that will shrink over time. There has been no forecasting of this outcome in the documentation on blue carbon published by international financial institutes and NGOs who are active in promoting blue carbon trading as a financial solution. This is a disservice to communities who are considering bringing coastal ecosystems to market who may come to depend on an income that has a short lifespan.

Risk

There is immense risk involved in carbon market trading in the context of increasing and worsening climate disasters. For example, a project that has planted several acres of mangroves may be destroyed by a cyclone months or years later. The carbon credits sold in recognition of the carbon these mangroves sequester over their lifetime will suddenly be worthless because the mangroves that would have absorbed that pollution will be gone. This particular issue is a sticking point in current Article 6 negotiations. Who will bear the risk if a carbon sequestration project is destroyed by a climate disaster? Developing countries have so far been arguing for risk and permanence rules to not push the risk only on the seller of the credits but there has been no solution reached so far.[87]

Viability

The final flaw is one of viability. It is not necessary to explain to a person from the Pacific how important our marine ecosystems are. Blue carbon credits are being offered as a way to protect our expansive ocean relative but there are increasing concerns that most marine ecosystems will not sequester enough carbon to prompt interest from traders and investors. A marine ecosystem restoration project requires proof of longevity, modelling to prove sequestration and a whole lot of bureaucratic steps before credits can enter a market space. This all costs a considerable amount of money and time so investors want to be sure that the marine habitat can sequester enough carbon to produce enough offset credits to make the investment worthwhile. In one recently published example, the concern was raised that most marine ecosystems will not come close to sequestering the amount of carbon that investors will see as worthwhile in providing funding for, unless they want to produce dubious credits for the less-rigorous voluntary carbon market.[88] This sets up Pacific communities to depend on shaky financial sources that may never emerge, and sits at odds with the promises that are being made by international institutions, governments and NGOs at a global level.

Chapter 5: Blue Carbon and Pacific Worlds

Chapter Summary:

- Our oceanscapes have a right to not be turned into a market commodity to be possessed as property, especially when that commodification disrupts and reforms our relationships to our surrounding ecosystems into one of trader to product.
- Blue carbon markets need to be assessed against Indigenous Pacific criteria grounded in centring the ocean as family in order to fully grasp their potential or lack thereof in tackling climate change.

Blue carbon projects, from preliminary assessments and marine restoration projects to carbon credit trading, have been tabled as a solution that benefits both polluters and communities that are looking for increased access to finance. This dynamic is not geopolitically neutral. The global north is predominantly responsible for historic emissions and the global south is in need of finance and technology to support sustainable development. What we can see from previous experience with carbon markets and the motivations of International Financial Institutions is an embedding of a new industrial landscape distributed across existing geopolitical dynamics. The poorer countries and Indigenous communities farm carbon credits for wealthier countries to use as an exit door on emissions reduction responsibilities, disguised as a benevolent quid-pro-quo arrangement between wealthier and poorer countries. This is a simplified narrative that fails to highlight the flaws of carbon markets and blue carbon expansion.

Not only do Indigenous peoples have a right to take care of our oceanic territories, but those oceanic territories also have an inherent right to health and autonomy in and of themselves. Extending this lens of more-than-human rights and obligations, our oceanscapes also have a right to not be turned into a market commodity to be possessed as property, especially when that commodification disrupts and reforms our relationships to our surrounding ecosystems into one of trader to product. This directly contradicts the qualities of Indigenous relationships that would hold these wetlands, mangroves and seagrasses (and all of their inhabitants) as family, as more than precious. And you do not sell and exchange family. It is exactly this quality of relationship that has underpinned the laws, processes and societal structures of Indigenous communities, successfully keeping ecosystems in balance for future generations of us and our more-than-human relatives.

This value that local communities bring to climate mitigation and adaptation is often highlighted by proponents of carbon markets as a positive outcome that will be increased by funding from selling carbon credits. However, many actors in the carbon market space fail to realise that these practices are effective because of the value systems that underpin them. It is these same value systems that can perceive what is not an effective solution. Blue carbon markets need to be assessed against Indigenous Pacific criteria grounded in centring the ocean as family in order to fully grasp their potential or lack thereof in tackling climate change.

Recommendations

The activity happening around blue carbon in the climate solutions landscape can be understood as an expansion of existing market processes. Drawing on decades of carbon trading evidence and experience in land-based markets, it becomes clear that it is incapable of reducing emissions or providing stable and adequate financial redress. Instead, there is a proven record of questionable business practices and incentivising increasing emissions.

Communities who are interested in converting their ocean ecosystems into trading units should exercise extreme caution. The process of bringing blue carbon to market can raise tensions around land tenure and customary resource allocation structures, as has been experienced in Papua New Guinea. The introduction of an incentive to clarify property rights for the purpose of gaining consent for carbon farming by intermediaries will exacerbate existing land tenure tensions, particularly between governments and Indigenous peoples.

It is well known that aid and financial support from international institutions and foreign governments come with strings attached. The question of who gains the most benefit should always be raised. Do these benefits gained by local communities outweigh the greenwashing and worsening climate impacts? Efforts across climate movements should be dedicated to growing the willingness of wealthier countries to pay up on climate reparations.

Governments should avoid entering markets for these same reasons.

The involvement of International Financial Institutions must be examined critically, given historic legacies of harm. Although they offer funding and technical assistance, this is with the explicit intention of bringing these ecosystems into commodity terms. This amount of funding may be better used elsewhere. Because markets are volatile, this creates reliance on unpredictable sources and undermines economic autonomy which ultimately leaves Pacific communities without crucial income sources.

Finally, fossil fuel companies and high-emitting industries should be banned from participating in carbon markets, both as a purchaser and investor/carbon market actor. These industries in particular must urgently reduce their emissions without the opportunity to buy their way out as their activities directly affect the wellbeing of Pacific communities and future generations.

Conclusion

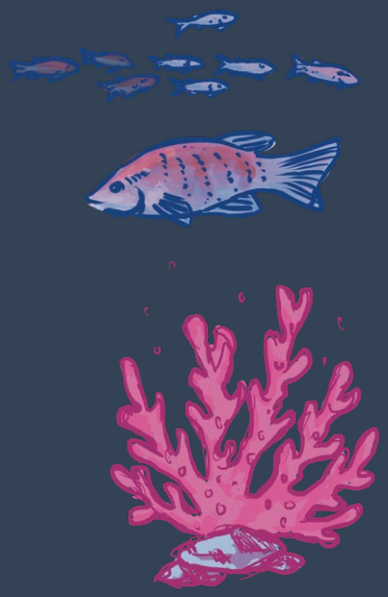
This report is a canvas of the legacies of terrestrial carbon markets and the current state of blue carbon discourses, and contextualised in its place in finance mechanisms.

Carbon markets were only ever meant to be a short-term approach that was more about getting entities to start thinking about pollution than being considered a concrete means of reducing emissions. Instead they have come to occupy a central role in the carbon solutions space, taking up space and resources across international agreements, domestic emissions regulation and corporate programmes. The contested effectiveness of carbon markets makes them too risky an approach to participate in. Major polluters and countries continue to push carbon markets as a tool explicitly coupled with the expansion of oil and gas, and maintenance of the high-emissions status quo.

Colonial countries and International Financial Institutions enter the market landscape with offers of capacity building and technical assistance. They are key advocates for commodifying ocean ecosystems, opening the door with mapping marine spaces to set up a pathway to provide more credits for polluters. This expansion in carbon markets dressed as new business norms reinforced old patterns of globalisation where specific areas are used as zones of extraction for carbon speculation. Part of how these empires, institutions, private actors and hedge funds justify credit commodification is by dressing carbon projects as a financial tool to help get funds to communities and governments who are responsible for the care of these ecosystems. However, the price and demand volatility that is a feature of free markets gives plenty of concern as to the efficacy of markets as a financial solution.

A mechanism that consistently does not do the emissions reduction it promised for as many years as carbon markets have been around should no longer be supported as a legitimate emissions reduction tool.

Solutions that meaningfully address emissions are directly relevant to Pacific aspirations, needs and self-determination. Pacific communities deserve so much more than carbon markets could even hope to achieve. Our oceanic relationships, informed by thousands of years of experience, are evidence enough to legitimise climate solutions that are born from our practices and governance. Those climate solutions look like polluters and governments keeping fossil fuels in the ground instead of seeking out false solutions that reinforce old industries, causing very real harm both in their backyards and in our oceans.



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