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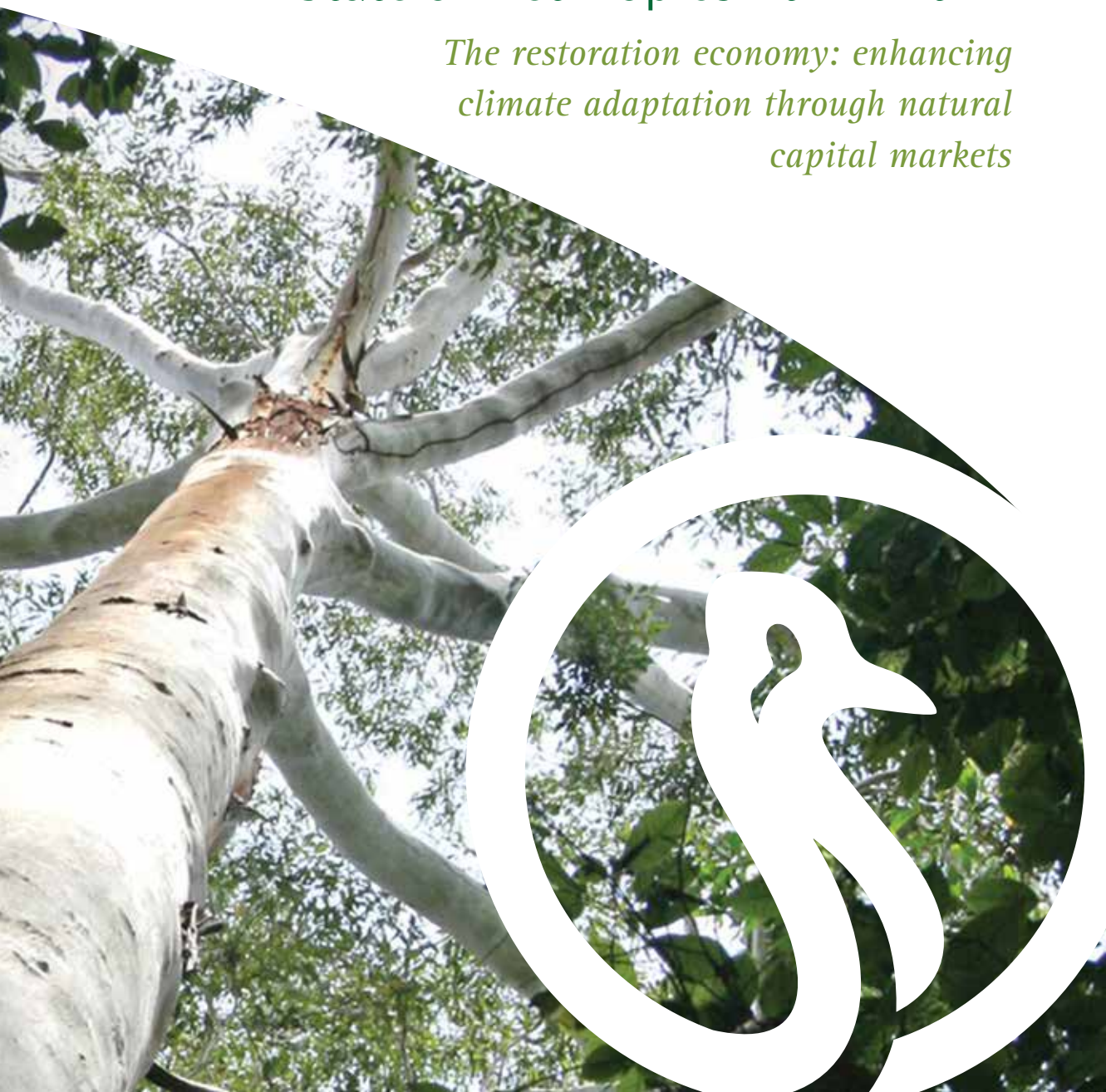
State of Wet Tropics 2021–2022

The restoration economy: enhancing climate adaptation through natural capital markets



The restoration economy: enhancing climate adaptation through natural capital markets

State of Wet Tropics
2021–2022

Purpose of the report
This State of Wet Tropics report satisfies the requirements of Queensland's *Wet Tropics World Heritage Protection and Management Act 1993* and the Commonwealth's *Wet Tropics of Queensland World Heritage Area Conservation Act 1994*.

Acknowledgement of the Rainforest Aboriginal Peoples of the Wet Tropics
The Wet Tropics Management Authority acknowledges Rainforest Aboriginal Peoples as the Traditional Custodians of the Wet Tropics of Queensland World Heritage Area and recognises their connection to this cultural landscape. We pay respect to Elders past, present and future. We recognise Rainforest Aboriginal Peoples' ongoing and essential connections to the Wet Tropics land, sea and sky Country and their rights and responsibilities under customary obligations and Aboriginal lore. The Wet Tropics Management Authority supports the active roles of Rainforest Aboriginal Peoples in the ongoing management and governance of the Wet Tropics of Queensland World Heritage Area.

Acknowledgements
We would like to thank Louise Gavin and John Gavin (Remarkable NRM) for providing the draft report. We thank Liz Owen (Jaragun Ecoservices), Mary Walker (Wadjanbarra Tableland Yidinji Aboriginal Corporation RNTBC), Lorraine Maund and Lana Kyle (Mamu Aboriginal Corporation RNTBC) for their contributions on the draft report and information regarding Rainforest Aboriginal Peoples' perspectives. We also acknowledge the contributions and feedback on the draft report from members of the Wet Tropics Management Authority's Board of Directors, the Community Consultative Committee and the Scientific Advisory Committee.

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Feedback
The State of Wet Tropics report is an important document representing communication and accountability. The Wet Tropics Management Authority values comments and welcomes feedback from readers.

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Attribution
Wet Tropics Management Authority (2022) State of Wet Tropics 2021–2022. The restoration economy: enhancing climate adaptation through natural capital markets. Cairns, Australia.

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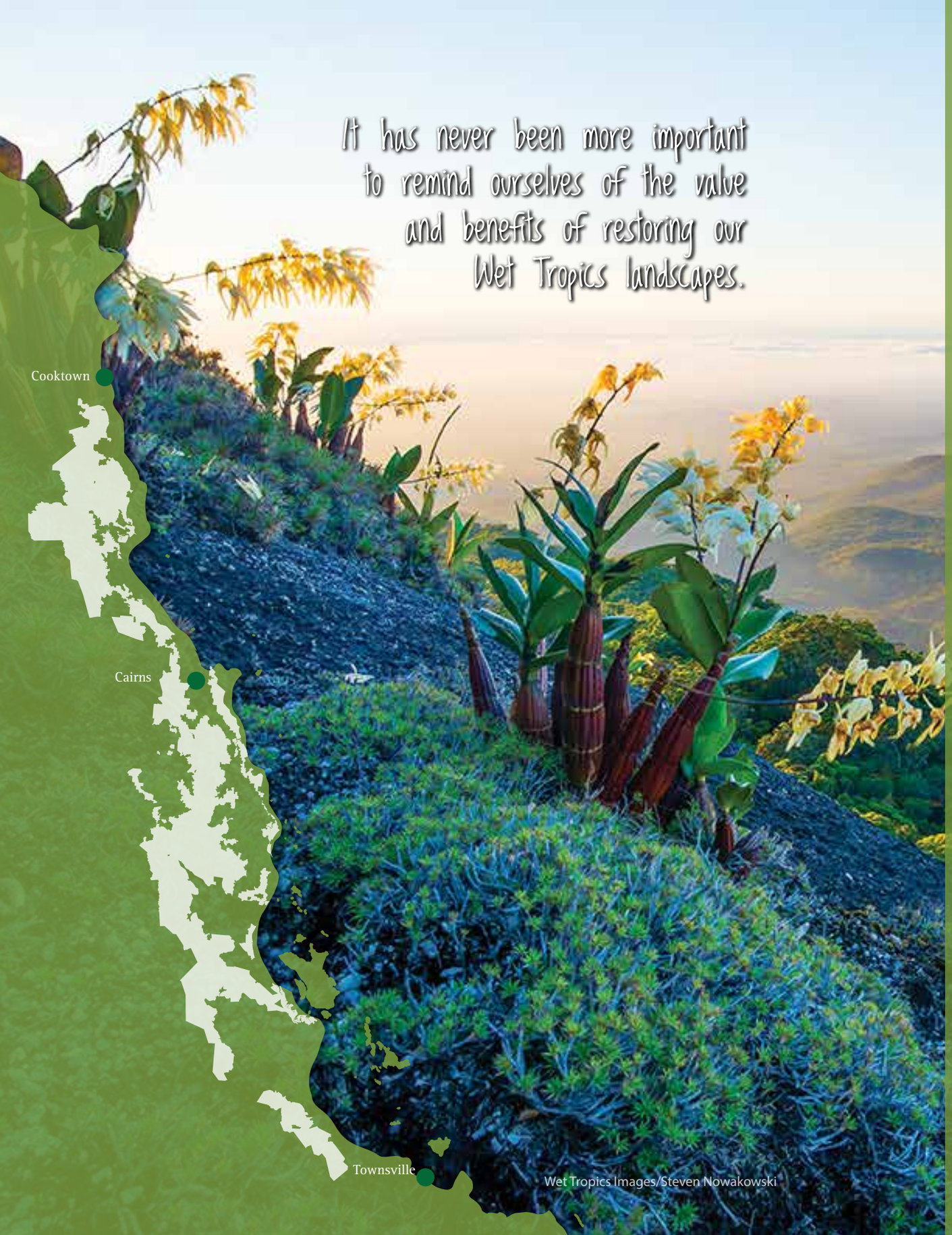
ISBN 978-1-921591-87-7

This report is printed on Impact 100% recycled paper.

Table of contents



Wet Tropics Images/Steven Nowakowski

Message from the Chair

Our economies, livelihoods, cultural identity and wellbeing are all inherently linked to one of our most precious assets: nature.

The Wet Tropics of Queensland World Heritage Area (the Area) is a living cultural landscape, and an internationally recognised natural treasure. It is a significant economic driver across the region, generating a contribution of over $5.2 billion per annum—the Area contributes to direct and indirect economic output and household income, as well as more than 13,500 jobs.

Despite its measurable economic value, nature is often perceived to be 'free of charge', meaning it is systematically undervalued by all levels of society and in decision-making processes. We often take it for granted and—according to the Australian Government's 2021 State of Environment report—are at risk of over-exploiting it, which may lead to irreparable loss of biodiversity and ecosystem services.

Acknowledging the challenge of retaining and restoring the environment, the United Nations has declared 2021–2030 the UN Decade on Ecosystem Restoration, with a focus on preventing, halting and reversing the degradation of ecosystems worldwide.

This State of Wet Tropics report adds to the growing recognition across the community that the basis of the economy in the Wet Tropics region is the environment. It examines how emerging natural capital markets can support climate adaptation for the Area's unique and irreplaceable natural values as well as our transition to a smart green economy.

The opportunity to scale up ecosystem restoration through nature-based economies presents itself at a critical time in history as a means to address the interconnected crises of biodiversity loss, climate change and community resilience. The next decade is our window to climate proof critical areas of the Wet Tropics.

To meet this challenge, the Wet Tropics Management Authority is leading the establishment of a Wet Tropics Restoration Alliance—a coordinated and supported network of community, landholders, Rainforest Aboriginal Peoples, industry, government, researchers and investors who have common goals and aspirations for landscape restoration of the Wet Tropics.

Through the Restoration Alliance, drawing upon the opportunities of natural capital markets, we can build the capacity for the regional community to achieve its full social, ecological and financial potential.

Christine T. Grant

Ms Christine Grant
Wet Tropics Management Authority Board Chair

Terms and abbreviations used in this report

ACCU	Australian carbon credit unit
ALFA	Arnhem Land Fire Abatement
Area	Wet Tropics of Queensland World Heritage Area
Biodiversity	Living organisms and the ecosystems of which they are a part
Blended finance	A model of sourcing capital from multiple finance and/or philanthropic funds to resource innovative or emerging markets
Blue carbon	Refers to the carbon stored in coastal and marine ecosystems
Carbon credit	A generic term for any tradable certificate or permit representing the right to emit a set amount of carbon dioxide or the equivalent amount of a different greenhouse gas (tCO2e)
Ecosystem	An assemblage of interacting living and non-living components—ecosystems may be natural, as in forest ecosystems, or comprised largely of introduced species, as in agricultural and urban ecosystems
Ecosystem restoration	Actions to assist recovery of a natural ecosystem
Ecosystem goods and services or ecosystem services	Contributions of ecosystems to human communities—ecosystem services are the benefits that people obtain from ecosystems
ERF	Emissions Reduction Fund
GHG	Greenhouse gas
LRF	Land Restoration Fund
LULUCF	Land Use, Land Use Change and Forestry
MBI	Market-based instrument(s)—tools that provide economic incentives to achieve environmental outcomes. This approach complements a regulatory approach
MLA	Meat & Livestock Australia
Nature-based solutions	Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits
Natural capital	The world's stocks of natural assets which include geology, soil, air, water and all living things
Natural capital market	Mechanisms that aim to leverage environmental protection or conservation through market means—also sometimes referred to as ecosystem or environmental markets
Rainforest Aboriginal Peoples	Traditional Custodians of the Wet Tropics of Queensland World Heritage Area and wider Wet Tropics region. Includes more than 20,000 people from at least 20 tribal groups, 120 clans and eight language groups
Refugia	An area where a species' population, or multiple species, can survive climatic or other disturbances, as the negative effects of disturbance are lower in that area than those in the surrounding areas
RNTBC	Registered Native Title Body Corporate
Shelter belts	Strips of woody vegetation usually established between paddocks to reduce windspeeds and provide shade and shelter
Traditional Custodian/s	An Aboriginal person/Aboriginal persons of a local descent group having inherent rights and responsibilities in relation to a tract of land or area of water
Wet Tropics bioregion	Geographic region that encompasses the Wet Tropics of Queensland World Heritage Area and surrounding landscapes along Queensland's tropical east coast. There are 89 formally recognised bioregions in Australia that represent large geographically, distinct regions based on common climate, geology, landform, vegetation and species information. More information can be found at www.dcceew.gov.au/environment/land/nrs/science/ibra

Executive summary

The need to conserve and restore ecosystems is recognised at a global level. The interrelated crises of biodiversity loss, land degradation and climate change require urgent and immediate action.

Simply reducing our impact on nature is not enough. World-wide management actions are vital to achieve recovery of natural systems to deliver healthy ecosystems, communities, and financial systems.

The Wet Tropics is facing escalating threats, including fragmentation and degradation of habitat, the impacts of invasive species, and—most critically—a rapidly changing climate. Natural systems are constrained in their ability to rapidly adapt to changes in climate, so dual approaches of limiting emissions as well as proactive adaptation actions are essential to reduce the severity of the impacts of climate change.

The restoration economy in Australia is largely driven by the carbon market (implemented through soil and vegetation management) and emerging natural capital markets. Natural capital markets provide incentives for environmental protection, such as payments for storage of carbon or protection of biodiversity.

This report examines the ability of natural capital markets to enhance climate adaptation in the Wet Tropics. Key findings include:

- there are a range of natural capital market mechanisms available, but not all are suitable for the Wet Tropics region
- successful outcomes are based on a clear understanding of what objectives and benefits are being sought before selecting a mechanism
- there are already some successful natural capital market projects underway in the Wet Tropics region, but these are relatively small scale
- Rainforest Aboriginal Peoples are very keen to be involved and to earn an income from caring for Country, but lack of land ownership is an impediment, and
- Government funding is an important component to establish the framework and certainty required to deliver market-based instruments, and will be increasingly important to drive complex transdisciplinary outcomes e.g. climate resilience, improved biodiversity, improved ecosystem service delivery and cultural and social benefits.

This report identifies that there are opportunities for natural capital markets to enhance climate adaptation and restoration initiatives in the Wet Tropics, mobilised through the ratification of international commitments that will increase the demand for domestic action.

A combination of existing management practices (e.g. managing and expanding our reserve network) and new approaches (e.g. scaling up restoration work outside reserves) are needed to limit the effects of climate change, improve ecosystem function and facilitate climate adaptation across the Wet Tropics. New land diversification opportunities are appearing, associated with avoiding environmental harm or managing risks to natural capital caused by unsustainable land-use and management practices.

This report investigates the constraints and opportunities of natural capital markets for five different sectors: investors, Traditional Custodians, agricultural land managers, governments and natural resource managers (landcare groups and regional NRM groups).

Though there are challenges, this report argues that the Wet Tropics is uniquely positioned to deliver outstanding natural capital outcomes as a result of investment into carbon farming and developing biodiversity markets that deliver additional environmental, cultural and socio-economic benefits.

The combination of good growing conditions, engaged Traditional Custodians, a motivated community, and exemplar biodiversity values along with the collaborative actions and commitments described above, makes an attractive investment opportunity to ensure a secure future for the Wet Tropics.

Introduction

The Wet Tropics Management Authority's annual State of Wet Tropics report updates stakeholders and community members on the integrity and condition of the Wet Tropics of Queensland World Heritage Area (the Area).

This 2021–22 report examines the current state of natural capital markets and their ability to enhance climate adaptation in the Wet Tropics. This report considers:

- global and domestic drivers for natural capital markets, and the range of options available
- benefits of utilising natural capital markets to retain and restore our natural capital assets
- opportunities for investors, Traditional Custodians, agricultural land managers, governments, and natural resource managers to participate in natural capital markets
- opportunities to enable better climate change adaptation outcomes through natural capital markets for the Wet Tropics bioregion.

Natural capital markets provide incentives for environmental protection, such as payments for storage of carbon or protection of biodiversity. The focus on exploring natural capital markets is driven by the recognition that a combination of existing management practices and new approaches is needed to limit the effects of climate change and facilitate climate adaptation across the Wet Tropics[1,2].

A significant scaling up of investment in on-ground protection and restoration of key natural assets is required to ensure Wet Tropics forests and associated ecosystems are made resilient to climate change. Rainforest Aboriginal Peoples are increasingly taking the lead in the development and implementation of management frameworks informed by their perspectives on Country health and healing Country[3]. Supporting these initiatives provides a meaningful opportunity to deliver environmental, cultural and social returns.

The Wet Tropics Management Authority is already working with many stakeholders and the community to implement region-wide responses, to ensure the Wet Tropics is well placed to take advantage of major national and international investment opportunities through the emerging restoration economy. Three key initiatives include:

1. **Accelerating landscape restoration opportunities across the Wet Tropics**

   The Australian Government's commitment to net zero emissions by 2050 offers opportunities to build the environmental and economic resilience of farms, forests, reserves and Indigenous owned and/or managed lands in the Wet Tropics. These opportunities include landscape restoration projects, some of which focus on protecting climate refugia.

   Identifying policy and planning drivers that enable local buy-in and remove barriers to innovation, adaptation and restoration effort is essential to successfully realising these opportunities, as is prioritising sustainable funding models and economic instruments that are attractive to investors and provide additional revenue and incentives for landholders.

2. **Establishing the Wet Tropics Restoration Alliance**

   The Wet Tropics Restoration Alliance is a coalition of organisations working together to ensure the survival of Wet Tropics forests under a changing and unstable climate. Core supporting partners include the Wet Tropics Management Authority, Terrain NRM and James Cook University.

   World-leading research will support members to coordinate and scale up on-ground nature-based action and investment, coordination and knowledge sharing. The Alliance takes a strategic and scientific approach to landscape conservation by supporting new and existing forest corridors, creating protective buffers around reserves, and preserving remnant vegetation across the landscape.

3. **Partnering with others to maintain momentum on smart green economy opportunities**

   Cairns Regional Council is leading an innovative Smart Green Economy project to develop the region's competitive advantages to position it as the capital of the smart green economy in Australia. This nature-based approach to the economy will reinvigorate the region so that both the environment and the economy become more sustainable and resilient.

   This multi-stage strategic project will include the biodiversity and carbon markets as one of its key themes, convinced that this will lead to economic and employment growth and provide direct and in-direct benefits to key sectors within the region via the protection of high value natural assets and improved natural capital accounting methodologies.

Successful adaptive management of the Wet Tropics in response to climate change

The Wet Tropics of Queensland World Heritage Area and surrounds has the largest expanse of tropical forests in Australia, which has Outstanding Universal Value for the whole world. Sadly, the plants, animals and ecosystems of the region face a host of escalating threats including fragmentation and degradation of habitat, the impacts of invasive species, and—most critically—a rapidly changing climate. It is recognised that the impact on the natural and cultural values of the region are a threat to our economy, communities, culture, and our way our life.

Many organisations and individuals currently work across the Wet Tropics region to protect and restore our unique forest areas, doing fantastic work to connect and restore land outside of existing protected areas.

However, the challenges for their work are many. The scale of restoration required to save Wet Tropics forests is significant. Areas of climate refugia need to be made resilient, such as by expanding areas of habitat and establishing new connectivity corridors throughout thousands of hectares of land across different tenures. The efforts required are hampered by limited short-term funding, inconsistent access to information on best practice and emerging environmental markets, and a restoration community whose efforts are under-recognised in terms of the immense contribution they make to the region's economy and environment.

These organisations identified the need for a Wet Tropics Restoration Alliance—a coordinated and supported network of community, landholders, Rainforest Aboriginal Peoples, industry, government, researchers and investors who have common goals and aspirations for restoration of the Wet Tropics.

Natural capital markets

Natural capital is the stock of the Earth's renewable and non-renewable resources, including trees, soils, air, water, and all living things[4]. It is from these natural assets that a wide range of ecosystem services are produced.

The United Nations Millennium Ecosystem Assessment[5] divided ecosystem services into four categories (Figure 1): provisioning, regulating, cultural and supporting.

Figure 1: Ecosystem services provided by the environment

Provisioning services	Regulating services	Cultural services	Supporting services
Products obtained from ecosystems: • food • fresh water • fuelwood • fibre • biochemicals • genetic resources	Benefits obtained from regulation of ecosystem processes: • climate regulation • disease regulation • water regulation • water purification • pollination	Nonmaterial benefits obtained from ecosystems: • cultural heritage • spiritual and religious • recreation and ecotourism • aesthetic • inspirational • educational • sense of place	Services necessary for the production of all other ecosystem services: • soil formation • nutrient cycling • primary production

Natural capital markets (sometimes called environmental markets) are a key response to the growing call for nature-based solutions that address the growing impacts of the depletion of the Earth's natural assets. The International Union for Conservation of Nature define nature-based solutions as 'actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits[6].'

Natural capital markets are focused on gaining a return on investment from our natural resources. There is increasing global recognition of the role these markets can play in the sustainable use or rehabilitation of the environment and improving livelihoods. Theoretically, natural capital markets offer a market solution to an environmental problem[7].

The growth of natural capital markets

The call to action on climate change has advanced over recent years, both to mitigate risks through lowering emissions, and also to stimulate actions to help species and ecosystems to adapt. Effectively managing the impacts of climate change requires solutions that capitalise on and engage with our economic and societal systems in new and novel ways, noting climate risk is at the forefront of financial risk and business insecurity[8].

Simply reducing our impact on nature is not enough and world-wide need for management actions to achieve recovery of natural systems is vital to deliver healthy ecosystems, communities, and financial systems).

Natural capital markets–where do we need to be?

Estimates of annual expenditure on the natural environment in 2019 range between $115 billion and $199 billion[9,10] with the annual investment required by 2030 to be between $1073 and $1437 billion.

This creates an annual funding shortfall at current investment levels, globally, of over $1040 billion (or $1.04 trillion). Though this appears a large value, it is quite a modest outlay, when compared to the World Economic Forum's estimate that $64 trillion—more than half the world's economic output—is moderately or highly dependent on nature[11].

Institutional investors control an estimated $129 trillion in assets and can play a significant role in increasing funding availability, given the need for their business models to focus on long-term investment strategies[12].

Encouragingly, corporate regulators are increasing the requirements for companies to include consideration of climate change impacts in their activities; and it is not uncommon for social, corporate and natural capital related key performance indicators to be incorporated into fund performance data[13].

The World Economic Forum[14] identified that nature-positive business transactions—founded on restoring the stocks of natural capital—can help us achieve a resilient and sustainable global economy. This will encourage governments and the private sector to significantly increase biodiversity finance while reducing finance for activities that negatively impact biodiversity.

In Australia, the Commonwealth Government recognises the key importance of protecting, restoring and managing ecosystems that provide nature-based solutions to climate change and the additional benefits this may provide. They have identified the need to embed natural capital in commercial and financial decision making and in the 2021–22 budget committed $4.7 million over three years to develop approaches and tools to inform financial solutions that help pave the way for increased private sector investment to improve our natural capital across a broad range of economic sectors[15].

Similarly, $35 million is being invested to establish the Queensland Natural Capital Fund which will facilitate private sector co-investment to generate both commercial and environmental market returns while also producing positive environmental, social and economic co-benefits[16].

Restoring natural capital for climate adaptation in the Wet Tropics

Competition for land resources across Australia, including the Wet Tropics, has resulted in continued decline in the amount and condition of our land-based natural capital (native vegetation, soil and biodiversity) which deliver essential ecosystem services.

More than 160 years of European colonisation in the region has seen large areas of forest cleared and converted to crops and pasture. This legacy of deforestation coupled with accelerating climate change threatens the natural values, ecosystem services, and quality of life that the Wet Tropics of Queensland World Heritage Area (the Area) and surrounding landscapes and seascapes support[17].

Prior to European settlement, Rainforest Aboriginal Peoples lived in the Wet Tropics for tens of thousands of years and their management over time shaped the landscape. The Wet Tropics is the only place in Australia where Aboriginal Peoples have permanently inhabited a tropical forest environment—their livelihoods and culture are intertwined with the landscape's natural features[18,19].

Traditional practices and looking after Country are important custodial responsibilities. Empowering Traditional Custodians and respecting their role in managing Country is an important part of restoring natural capital. Rainforest Aboriginal Peoples continue to manage Country through land and sea ranger programs, Indigenous Protected Areas and Cooperative Management Agreements, aligning with the principles and guidelines established under the Wet Tropics of Queensland World Heritage Area Regional Agreement 2005. As Aboriginal land interests increase across the Wet Tropics so will the role of Rainforest Aboriginal Peoples in protected area management.

Many of the region's unique species have already declined and the Wet Tropics is experiencing more extreme weather including longer drought periods, greater bushfire risk and more frequent coastal flooding[20]. Reversing this trend requires innovative proactive policy and programs, and collaboration among governments, businesses and communities to restore ecosystem function and build resilient landscapes.

Over the past 20 years, successive Queensland and Australian governments have invested in environmental and landscape restoration efforts through various programs. In the Wet Tropics, a number of these have become increasingly concerned with buffering and supporting the Area, improving the quality of water in agricultural run-off to the Great Barrier Reef, and mitigating climate change (e.g. the National Landcare Program and Queensland's Land Restoration Fund). Philanthropic organisations and private land conservation trusts also generate significant funding to purchase land and restore habitat restoration in the region.

Foundations for a restoration economy

The foundation for the restoration economy in Australia is the carbon market. Other emerging natural capital markets in native vegetation management and environmental stewardships also support Australia's sustainability market brand[21].

The land use, land use change, and the forestry sector (LULUCF)—including agricultural land use—plays an important role in storing carbon. Queensland is responsible for 90% of Australia's total land sector emissions. In all other states and territories—except Western Australia and the Northern Territory—this sector acts as a 'carbon sink', meaning activity in the sector removes more carbon from the atmosphere than it releases.

Management of carbon sources and sinks in the land sector helps balance the release of carbon due to industry and bushfires. However, the sinks created by changes in land use from 2010 to 2019 are still not enough to balance industry sources in Australia's carbon budget, resulting in a net release of 23 million tonnes of carbon dioxide (CO2) to the atmosphere, and contributing to global warming[22].

In Australia, emissions from LULUCF have been declining and have been a net negative contribution since 2015. Reducing the amount of land-clearing in Queensland is an integral step in reducing our overall carbon emissions.

Avoiding further land clearing is only part of the equation: encouraging regrowth and afforestation is equally important and provides an opportunity to engage with environmental markets to deliver climate change adaptation activities.

The economic case for nature is rapidly growing, and nature-based solutions to recover natural capital values (including ecological restoration through biodiverse carbon farming) has the potential to address up to 20% of the current climate crisis[23] while providing environmental benefits and economic return to regional communities.

The Wet Tropics is an outstanding natural landscape for natural capital investment

The unique biodiversity and its significance in understanding evolutionary history makes the Wet Tropics of Queensland World Heritage Area one of the most important and irreplaceable regions in the world and an ideal location to invest in nature positive action to build climate resilience.

The is the largest expanse of rainforest in Australia and supports the highest level of biodiversity of any region in Australia.

It fulfills all four natural criteria for World Heritage listing. Covering just 0.12% of Australia, the Area is home to an exceptionally high proportion of the nation's biodiversity including:

65% of Australia's fern species
36% of Australia's conifers
30% of Australia's orchids
30% of Australia's marsupials
48% of Australia's bat species
25% of Australia's frog species
45% of Australia's bird species
60% of Australia's butterfly species
41% of Australia's freshwater fish species
16% of Queensland's critically endangered plant species.

The Area is home to: 700+ vertebrate species (including 88 endemic species) and 3,300+ plant species (including 700+ endemic species and 15 of the world's 26 ancient lineages of flowering plants)—the highest concentration in a single protected area on Earth.

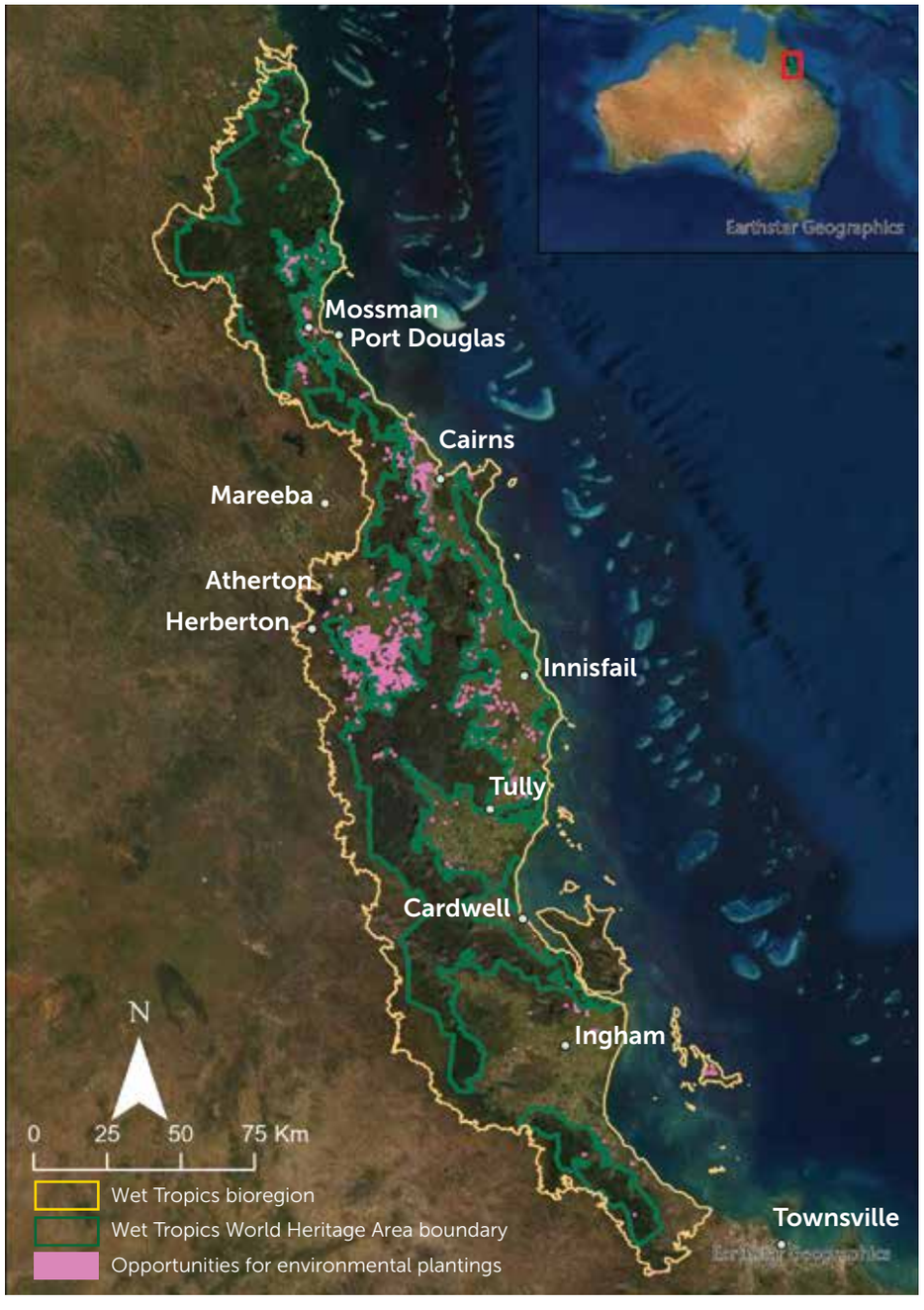
Growing opportunities for restoration for climate adaptation in the Wet Tropics

There is much that landscape restoration can do to protect the natural and cultural values and therefore the economic values of the Wet Tropics. As an example, an increasing number of options are emerging to generate revenue from reforestation by the sale of carbon credits. In the Wet Tropics, a range of organisations work with landholders to engage them in carbon markets.

Several factors support expansion of the landscape restoration industry in the Wet Tropics: the warm climate and high rainfall promote fast vegetation growth, and there is no shortage of cleared land suitable for reforestation potential (refer Map 1). Around 54,000 hectares in the Wet Tropics are

estimated to be potentially suitable for carbon sequestration. This is due to the land being of poor agricultural quality (14,403 hectares), over 20% slope (9,649 hectares), or along a waterway (30,072 hectares)[24,25]. Expanding carbon, ecosystem services, and corporate social responsibility markets offer landholders an increasing array of opportunities to profit from reforestation on this land.

Map 1. Potential (indicative) opportunities for environmental plantings to store carbon and enhance biodiversity and natural capital in the Wet Tropics



Market-based environmental policy instruments

Market-based instruments (MBIs) are becoming a mainstream way of managing a range of environmental problems as they have the potential to offer effectiveness, equity, efficiency, flexibility and broader stakeholder acceptance[26]. MBIs are particularly effective where regulatory approaches have failed to arrest ongoing resource or ecosystem service degradation or where the cost of traditional policy tools is proving prohibitive to government or society in general[27].

MBIs have the potential to deliver the same outcome as regulatory mechanisms, but generally at a lower financial cost to the industry and the general community. MBIs can help to assign 'the right price' to resources that are not otherwise appropriately valued in the market, such as ecosystem services, land degradation, clean water or air, climate change mitigation and biodiversity[28]. The main types of MBIs, based on their aim and function, include[29]:

- **environmental taxes and charges** (also environmentally related taxes)—designed to change prices and thus the behaviour of producers and consumers, as well as raise revenues
- **tradable permits** (or cap and trade schemes)—designed to achieve reductions in pollution (such as emissions of CO_2) or use of resources in the most effective way through the provision of market incentives to trade
- **environmental subsidies and incentives**—designed to stimulate development of new technologies, create new markets for environmental goods and services to encourage changes in consumer behaviour, and to temporarily support achieving higher levels of environmental protection by companies
- **liability and compensation schemes**—aimed at ensuring adequate compensation for any damages resulting from dangerous activities to the environment and providing for means of prevention and reinstatement.

The emergence of alternate MBIs has both national and state government support, as well as buy-in from business and community. For example, the Australian Government is kick-starting investment in farm sustainability using a market-based mechanism to reward farmers for increasing biodiversity through the Carbon + Biodiversity Pilot (Agriculture Biodiversity Stewardship Package)[30]. Farmers who undertake plantings for carbon can receive income from plantings that deliver biodiversity improvements and carbon abatement. Reef credits is another example of a market-based instrument, with a number of projects registered across the Wet Tropics.

Reef credits–a market-based instrument to improve water quality and farm business goals

The Reef Credit Scheme is an innovative market-based incentive developed through a partnership between regional NRM organisations and a commercial environmental markets investor and project developer, with support from the Queensland Government. The scheme has received significant interest across the Great Barrier Reef (GBR) catchments, nationally and globally.

The focus of the Reef Credit Scheme is the ability for landholders to generate 'reef credits' by implementing activities to reduce nutrient and sediment run-off in GBR catchments. One reef credit equates to a kilogram reduction of nitrogen or a comparable volume of sediment or pesticide reduction on farmland, adjacent to the GBR. By putting a dollar value on reducing water pollutants, and generating tradeable units for sale, the Reef Credit Scheme creates the potential for a new environmental market where supply and demand drives investment to new heights.

The scheme has at least 11 registered projects. These are mainly focused on reducing runoff through gully rehabilitation, and reduction of nutrient run-off through managed fertiliser application.

The scheme, with projects first commencing in 2017, has three purchasers to date: the Queensland Government, HSBC Bank and most recently Tourism Australia[31]. Although relatively new, the Reef Credits Scheme has issued 35,565 credits, with 24,807 being purchased and claimed.

The carbon marketplace

Carbon markets have a growing profile as a market-based instrument in Australia and internationally. With clear drivers for demand—through international agreements, domestic policy and social pressures for change—the carbon market in Australia has seen a substantial increase in size since first developed.

Australia's domestic carbon market operates across all states and is underpinned by the Emissions Reduction Fund (ERF). The market's tradeable commodity is the Australian carbon credit unit (ACCU) representing one tonne of carbon dioxide equivalence (tCO_2-e). There are two main markets participants can operate in:

- the Emissions Reduction Fund (primary demand)—driven by government demand for ACCUs to meet international emission reduction commitments and compliance obligations on heavy-emitting industries, covered under the safeguard mechanism
- the voluntary market (emerging demand)—driven by voluntary demand for ACCUs (outside of regulated compliance markets) by investors, businesses, state governments or individuals seeking to reduce their greenhouse gas emissions through offsetting outside a regulatory regime.

There has been volatility in the Australian carbon market, with government policy changes in early 2022 having a significant impact. Prices on the spot market have varied from $55/tonne in January 2022 to $28/tonne in August 2022 for generic ACCUs. Both the absolute price and the price variability have a direct impact on project viability and the financial return for any carbon project[32]. Large premiums are being paid for nature-based offsets, suggesting voluntary buyers continue to make purchasing decisions based on the perceived benefit of each sub-type and individual project[33].

The increase in scope of methods available under the ERF and market growth has done little in meeting the demand for ACCUs. The recent strengthening of Australia's emissions reduction commitments to 43% below 2005 levels by 2030 and net zero emissions by 2050 is expected to drive further demand in the market.

It is important to ensure that management of carbon is integrated with management of all other natural capital assets. Restoring vegetation, soil, biodiversity and carbon are integrated processes—not separate—thus schemes that encourage co-benefits across different types of natural capital are better placed for landscape-scale success[34].

How does the Emissions Reduction Fund work to reduce carbon emissions?

Established by the Australian Government in 2014 to achieve Australia's 2020 emission target, the Emissions Reduction Fund (ERF) offers landholders, communities and businesses the opportunity to run projects in Australia that avoid the release of greenhouse gas emissions or remove and sequester carbon from the atmosphere. It is enacted through the *Carbon Credits (Carbon Farming Initiative) Act 2011* and the Carbon Credits (Carbon Farming Initiative) Rule 2015.

A number of activities are eligible under the scheme and participants can earn Australian carbon credit units (ACCUs). ACCUs can be sold to generate income, either to the Australian Government through a carbon abatement contract, or to companies and other private buyers in the secondary (or voluntary) market. There is no fixed price for an ACCU on the voluntary market because the price paid depends on the value the buyer places on the carbon credit.

The ERF has seen substantial government investment in native forest protection and restoration—$2.6 billion committed through the Clean Energy Regulator to date—with 145.2 million tonnes of abatement coming from vegetation projects covering more than 4.4 million hectares[35].

To ensure these emissions reductions are not displaced significantly by a rise in emissions elsewhere in the economy, the ERF also includes a safeguard mechanism, which requires Australia's largest greenhouse gas emitters to keep their net emissions below an emissions limit (a baseline). The government will gradually reduce emissions limits under the safeguard mechanism to help Australia reach net zero emissions by 2050.

The current state of carbon farming projects across the Wet Tropics

For the purposes of focusing on climate change adaptation in the Wet Tropics, this section focuses on the land sector opportunities (i.e. carbon farming).

Carbon farming activities either:

- sequester carbon (remove carbon dioxide from the atmosphere) by storing it in plants and soil, or
- avoid the release of greenhouse gas emissions through better management of fire, livestock and fertiliser use.

There are four types of land sector carbon farming methods that can be used to generate ACCUs:

1. Agricultural methods that avoid emissions or sequester greenhouse gasses in the soil by increasing soil carbon or improving beef herd management
2. Savanna burning methods that avoid late dry-season fires and therefore improve the emissions profile to less potent greenhouse gasses being released
3. Vegetation methods that remove carbon dioxide from the air (replanting vegetation and encouraging native vegetation regrowth) and avoiding the clearing of native regrowth and native forests. Vegetation projects generate abatement by removing carbon dioxide from the atmosphere and storing it as carbon in plants as they grow
4. Blue carbon method that supports the generation of ACCUs through increasing sequestered carbon through restoring intertidal flow in coastline ecosystems, supporting the growth of mangroves and marshes.

Land clearing activities have removed 461,156 hectares of native vegetation in the Wet Tropics up to 2017, with a further 168 hectares cleared between 2017 and 2019 hectares[36,37].

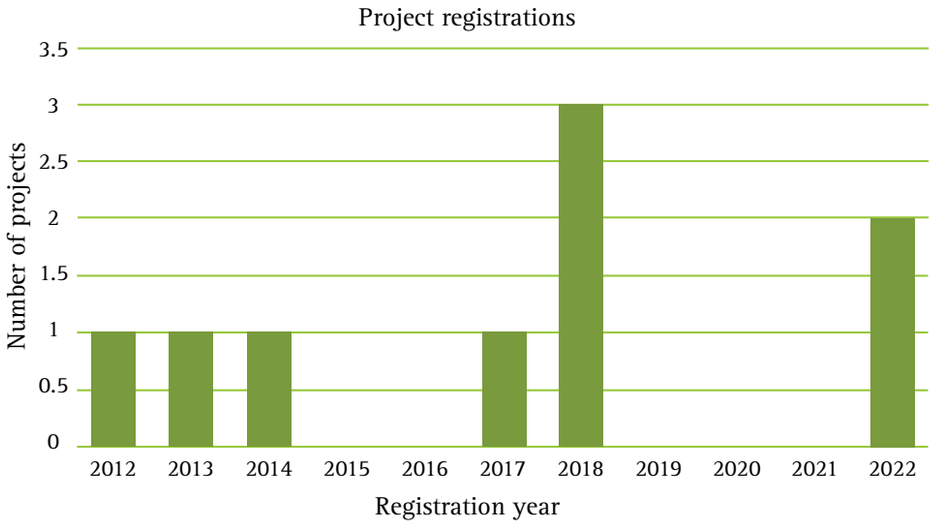
In theory, this provides a substantial opportunity for carbon sequestration through revegetation. Indeed, carbon farming in the Wet Tropics has a relatively long history with the earliest vegetation management project registered in 2012 through the Emissions Reduction Fund (ERF) located on the Atherton Tableland.

However, this early impetus was not a sign of things to come—to date, there are only nine registered projects in the region, three of which have met the requirements to produce ACCUs. This has resulted in a combined 24,768 ACCUs attained, with over 99% of ACCUs coming from one project[38].

The projects range in size from approximately 2 hectares to over 743 hectares—it is likely the smaller projects were not financially viable and other considerations led to their development.

ERF project registrations (refer Figure 2) give an indication of the level of activity and reflect the uncertainty and difficulty in establishing projects.

Figure 2: ERF project registrations across the Wet Tropics



In the Wet Tropics, low participation rate in the ERF has been attributed to a number of reasons including market complexity, audit costs, reluctance to commit to a 99-year permanence obligation, cost of environmental plantings, size and location of project, and competing with the favourable returns from traditional agricultural practices[39,40]. Additionally, modelled sequestration rates across the Wet Tropics vary considerably (refer Table 1), impacting financial return on investment and project viability[41].

To overcome these barriers or disincentives in the Wet Tropics there is an increasing focus on integrated projects that recognise the need to combine productive land uses with nature-based solutions and payments for ecosystem services.

Table 1: Estimated sequestration rates for vegetation projects across select locations in the Wet Tropics

	Sequestration potential (tCO2e / ha /yr)		
	Reforestation by environmental plantings	Human-induced regeneration of a permanent, even-aged forest	Native forest from managed regrowth
Location			
Daintree	19.69	10.3	11.34
Julatten	16.16	8.52	9.78
Topaz	37.87	20.0	22.97
Millaa Millaa	34.26	18.11	20.77
Mena Creek	33.31	17.61	20.20
Upper Stone	6.57	3.44	3.94
Bambaroo	8.71	4.54	5.18

Integrating natural capital markets for landscape-scale public benefits

The development and integration of natural capital approaches to inform solutions in the land sector will help pave the way for increased private sector investment in maintaining and improving our natural capital across a broad range of economic sectors[42]—this will also help build climate resilience.

Carbon credits generated through land sector activities can provide multiple social, environmental and economic co-benefits in addition to the primary driver of greenhouse gas (GHG) abatement. These include water filtration, flood buffering, soil health, biodiversity habitat and enhanced climate resilience[43].

The Queensland Government's Land Restoration Fund (LRF) is a world-leading program integrating carbon projects (i.e. generating an ACCU) and paying an additional price for co-benefits such as healthier waterways, increased habitat for threatened species and more resilient landscapes.

Verification schemes for the measurement of co-benefits are being utilised for projects participating in the LRF, with Accounting for Nature Ltd developing robust methods for measuring change in natural capital on a parcel of land[44].

The Land Restoration Fund: on-ground climate action to create jobs and protect the environment

The Queensland Government's Land Restoration Fund (LRF) is expanding carbon farming opportunities in the state by supporting projects that deliver carbon credits plus environmental, social, economic and Indigenous co-benefits.

By valuing and paying a premium for carbon projects with co-benefits, the LRF is supporting land managers—including farmers and Indigenous peoples—to generate new, regular income streams while improving Queensland's environment and waterways, providing more habitat for threatened species and creating regional jobs.

The LRF is underpinned by the LRF co-benefits standard[45], which outlines how co-benefits from LRF projects are to be identified, measured, reported and verified. This standard, which is a market-leading innovation, ensures that co-benefits associated with carbon projects are evidence-based.

With climate change transforming the global economy and organisations increasingly becoming aware of their environmental impact, national and international organisations are looking to achieve their emissions-reduction targets by purchasing carbon credits while investing and securing other environmental, cultural and social benefits.

Co-benefits, biodiversity credits and stacking

There is recognition of co-benefits in the prices people are willing to pay, with the premium related to the level of verification of the co-benefit. It has been noted that buyers (or investors) often have preferences for carbon projects which offer more than just a carbon offset[46].

The concept of 'credit stacking' has emerged partly in response to the growing acknowledgement that the full suite of ecosystem services provided should be reflected in the market through increasing the financial reward for project implementation. An example could include a project that provides necessary habitat for an endangered species (cassowary credits), improves water quality (reef credits) and wetlands (blue carbon), and includes revegetation (carbon sequestration).

Just as the carbon market has grown rapidly in the last five to ten years, there is real scope for other quantifiable and verifiable standards to evolve on a similar trajectory.

Validating co-benefits and other credits will be an important factor for driving market participation and maximum environmental outcomes for climate change adaptation in the Wet Tropics.

Cassowary Credit Scheme–a new environmental market mechanism to support biodiversity conservation

The Cassowary Credit Scheme provides a framework and structure to generate a tradeable credit in exchange for rainforest condition improvement, called a 'cassowary credit'.

A cassowary credit represents a quantified amount of improvement in rainforest condition that can be achieved through any purposeful action involving reinstatement, repair, threat mitigation or enhanced protection, delivered using an approved methodology. The core driving purpose of developing a Cassowary Credit Scheme is to attract significant investment for large-scale rainforest restoration, that can be tailored to maximise participation of landholders in the region.

While still in development, the Cassowary Credit Scheme is well placed to become a co-benefit for the Land Restoration Fund program or have buy-in from a Queensland-based industry looking to recognise and voluntarily offset their biodiversity impact.

The scheme will suit freehold landholders currently farming or managing the land for conservation. The scheme will also likely be of interest to protected area managers and not-for-profit landholders managing for conservation.

Investors have the potential to invest in a project that suits their motivations, aspirations and resources. The scheme has the flexibility to improve the condition of rainforest over small or large areas of land and in areas of a property that work well with other land uses.

The cassowary credit can form the basis for a revegetation credit to protect rainforest habitat. A method for accounting for rainforest condition improvement through restoration of native vegetation has been proposed by Accounting for Nature Ltd as a way to have a standard that can be verifiably applied[47].

Wet Tropics Images/Steven Nowakowski

Supporting participation in natural capital markets in the Wet Tropics

This section provides an overview of natural capital market from perspectives of various stakeholders. It is based on research and a number of conversations with stakeholders. For simplicity, these stakeholders have been summarised into five broad groupings: investors, Traditional Custodians, agricultural land managers, government, and natural resource managers (landcare and regional NRM groups).

Each has a critical role and responsibility to play in developing better access to natural capital markets to support climate adaptation in the Wet Tropics. Their participation and engagement differs depending on the project objectives and capability to engage in the market. There can be significant cross over between roles and functions of each group, making cross-sector partnerships important for delivering high impact natural capital projects for landscape restoration[48].

Investors

Background

Investors include stakeholders who source financing through natural capital markets to fund on-ground environmental works. Investors can be public (e.g. the Queensland Governments Land Restoration Fund) or private (profit or not-for-profit). Investors also include not-for-profit organisations who play a dual role of sourcing funds from investors and delivering this funding on-ground.

A critical gap remains in the way we calculate and account for carbon storage in Wet Tropics forests. Field data from the Wet Tropics has shown the methods used in the Commonwealth Government's National Carbon Accounting System do not adequately represent the amounts of stored carbon in this region's forest restoration sites because it is based largely on data from non-tropical areas[49].

Another barrier to investment in the region is availability of land and knowledge of interested land managers. Investors consulted in the preparation of this report have commented that natural capital markets have no shortage of investors willing to support the kinds of opportunities available in the Wet Tropics. The difficulties are to do with finding interested landholders. Investors indicated very strong interest in the establishment of a Wet Tropics Restoration Alliance to allow better interaction between investors and land managers.

Opportunities

Investor feedback during the preparation of this report has been highly positive. The Wet Tropics of Queensland World Heritage Area—as one of the most biodiverse areas on Earth and a rich and enduring cultural landscape, forming a significant catchment for the Great Barrier Reef World Heritage Area—may constitute a premium investment product.

A number of investors have identified that the Wet Tropics aligns with their funding models. While restoration in the Wet Tropics can be relatively more expensive than compared with drier climates, a compelling case can be made around the combined benefits from carbon storage, significant biodiversity outcomes, strong engagement with and benefit sharing with Traditional Custodians, and climate adaptation outcomes.

Purchasing and rehabilitating land in the Wet Tropics has proven to be a very effective way to achieve extensive conservation outcomes. This has been seen through large-scale land buy-backs of vacant residential allotments in the Daintree, and also strategic acquisitions of properties on the Atherton Tableland and Mission Beach vicinity, in areas of high biodiversity and connectivity. However, this approach has significant capital costs (including land purchase, restoration costs and ongoing management costs) creating financial barriers to how many new blocks can be purchased over time. One way to overcome this barrier is to buy, rehabilitate and sell conservation properties to willing landholders (e.g. someone who wants a lifestyle property and will take over management of the natural assets), and reinvest this money into purchasing new land. This revolving land fund concept can create ongoing sustainable financing.

Traditional Custodians

"Our people have long-held cultural and traditional responsibilities to protect and manage our Country"

Yirrganydji Land and Sea Rangers

Background

A number of Aboriginal groups in Queensland are starting to capitalise on natural capital markets. Cultural Fire Credits is an initiative by the Firesticks Alliance and the Aboriginal Carbon Foundation supporting Indigenous-led projects and providing pathways for Aboriginal communities to utilise traditional land management practices to heal, protect and manage Country[50]. Another example is Mungalla Station, a $3.74 million project funded through the Queensland Government's Land Restoration Fund, to improve biodiversity and water quality outcomes and store carbon through protecting and replanting native vegetation[51].

In the Wet Tropics, several plans—including Country-based plans and Indigenous Protected Area plans—currently exist to manage biodiversity and threatened ecosystems of the Wet Tropics for some Rainforest Aboriginal organisations. One example is the Russell River Catchment Planning initiative by Jaragun Ecosystem Services. This initiative aims to 'perform system repair to protect or improve the ecosystem services we depend on to maintain our social, cultural and economic wellbeing'[52].

Access to natural capital markets by many Rainforest Aboriginal groups remains problematic for a number of reasons.

The barrier of not owning Country that they are increasingly managing hampers Traditional Custodians' ability to own a carbon project. When asked about participation in new markets like carbon farming markets and having financial autonomy, it was noted that there needs to be land tenure change which takes many years.

"Recognition is one thing, but to own it is a different thing"

Aunty Mary, Wadjanbarra Tablelands Yidinji

Traditional Custodians say they still largely feel restricted in their aspirations to access and manage their land.

However there have been promising shifts in recent years, with the proclamation of the *Cape York Peninsula Heritage Act 2007* allowing for large areas of land to be transferred to Aboriginal freehold land to be jointly managed as national park/s—including Daintree National Park in 2021. There has also been a trend of increasing government funding for Indigenous Land and Sea Ranger programs. Where ranger programs have been established, they undertake a range of activities including fire management, protection of threatened species and their habitats, pest plant and feral animal management, visitor management, research and monitoring and cultural heritage management[53].

There remain very few examples of Aboriginal organisations managing natural capital projects in the Wet Tropics. More commonly, Traditional Custodian groups are being engaged as service providers and accessing small amounts of funding and working for someone else. The most well-known examples of carbon projects being owned and managed by First Nations people is for savanna burning projects, led by Arnhem Land Fire Abatement (ALFA)[54]. It is assumed this type of collaboration and leadership is possible in the Wet Tropics with some adaptation. Unlike the Wet Tropics, almost all of Arnhem Land is covered by Indigenous Protected Areas, and 80% of Arnhem Land is Aboriginal-owned.

Arnhem Land Fire Abatement

In Arnhem Land in the Northern Territory, Aboriginal groups have come together to ensure that the burning practices on the land they own are bringing funds back to their communities. The reintroduction of customary burning practices by Aboriginal rangers and Traditional Custodians has produced a notably positive difference between past practices and the strategic fire management now being undertaken annually. The projects are each following the rules of the savanna burning methods for monitoring and record-keeping.

Arnhem Land Fire Abatement (ALFA) is the registered proponent for five carbon farming projects using one of the savanna burning methods. All of the projects were established following extensive consultation with and approval from Traditional Custodians across each of the project areas. The consultations were led by the Northern Land Council and were compliant with the *Aboriginal Land Rights (Northern Territory) Act 1976*. (Pers. Comm. Anthony Simms) The projects encompass nine Aboriginal ranger groups which are generally made up of Traditional Custodians and their families.

ALFA is an organisation created by Aboriginal landowners in 2013. It is an entirely Aboriginal-owned, not-for-profit carbon farming business. ALFA support Traditional Custodians to manage five fire projects across an area of more than 80,000 square kilometres, encompassing vast savanna regions, rugged sandstone escarpments, monsoon rainforest, intact river ecosystems, floodplains, and remote coastal areas55.

ALFA has been granted the legal right to undertake fire management for the purposes of generating and selling carbon credits. ALFA manages the ACCUs it earns, either selling them under contract to the Australian Government or to corporate buyers.

Kakadu National Park has a similar fire abatement program running to that of ALFA. Traditional Custodians from the Jawoyn 3 Clan Group and Garndidjbal Yurlkmanj and Wurngomgu clans, together with the Northern Land Council and Parks Australia, have partnered to provide Indigenous employment and financial returns by earning ACCUs through savanna fire management projects.

In the Wet Tropics, Registered Native Title Body Corporates (RNTBCs) have relationships with family groups, and have the legal authority to take on leadership roles to manage carbon farming projects like what is happening in Arnhem Land. However, with the difference in tenure, then this would require access negotiations and partnerships with government and other landholders to realise increased opportunities to undertake activities consistent with carbon farming or other natural capital markets. Several of the RNTBCs in the Wet Tropics are already established and have the potential to take on a role similar to ALFA and could be supported to do so.

Opportunities

There is an overwhelming desire for Rainforest Aboriginal Peoples to gain more autonomy in looking after Country and consultations during the preparation of this report indicated interest in learning more about natural capital markets, market-based instruments, and strategies on how to access these.

Rainforest Aboriginal Peoples are keen to look for opportunities from natural capital markets to combine their cultural obligations to stewardship of Country and to their cultural practices. For example combining land restoration (tree planting) with burial practices—a cultural practice stretching back 15,000 years.

"My great-great-grandmother was one of the last people to be buried in a tree in this area"

Mamu Elder Lana Kyle

Rainforest Aboriginal groups are looking beyond publicly-funded ranger programs to find ways to support training and career pathways. They are looking to establish business enterprises based on land, sea and culture. There are myriad additional cultural, social and economic benefits that natural capital markets could invest in such as incorporating native bush foods in environmental plantings that also create job opportunities, support traditional ecological knowledge, and provide health benefits.

There is enormous opportunity for investors to connect with Rainforest Aboriginal organisations who have existing plans to manage Country. These plans identify opportunities to manage natural and cultural assets in line with the aspirations of Traditional Custodians and can be used to inform land management projects as funding becomes available and partnership opportunities arise. Developing business strategies to access natural capital markets would greatly assist their implementation.

Agricultural land managers

Background

Agriculture plays a part in Australia's overall greenhouse gas emissions, contributing 15.8% of Australia's total emissions[56]. The reduction of this impact and an increase in consumer demand for sustainably produced products has been recognised by agricultural industries across Australia. The National Farmers' Federation and Meat & Livestock Australia have both set targets for their industries to become carbon neutral. Conversely, the requirements for project establishment, management, auditing and reporting provide significant barriers to participation, impacting on the potential of the agricultural sector as a source of carbon units to meet Australia's internationally agreed emissions reduction targets[57].

Primary production is a dominant source of economic return for the Wet Tropics region. Dairy farms, beef cattle grazing, cane farming and horticulture are all thriving businesses as much of the land is fertile volcanic soil, and the climate is favorable. Many of the farmers in the Wet Tropics are multi-generational farmers, and agriculture generates $1.62 billion annually in the region[58].

There is limited information comparing the economic benefits of different land use types in the Wet Tropics. For example, the monetary return of a revegetation carbon project compared with cattle grazing. It is, however, generally accepted that a carbon farming project by itself at existing carbon prices would not provide financial returns equivalent to beef production systems on the same land area[59].

Even so, the additional benefits of nature-based solutions to agricultural enterprises are likely to include better water efficiency, protection for stock (through trees providing shade and windbreaks), improved livestock and soil production efficiency, financial diversification, and improved fertiliser efficiency. These benefits have been proven through many projects aimed at improving water quality flowing to the reef. Even very high up in reef catchments, Atherton Tableland farmers understand the value of improving their waterways[60] and, it is hoped, they will continue to adopt practices to improve the riparian zones on their farms and continue to limit nutrient runoff.

There are initiatives in the financial services industry that will result in enterprises associated with sound environmental practices having increased access to finance and natural capital. Receiving a higher price for products and having more sustainable farm practices for livestock and growers will reduce the pressure on the land and allow more natural processes and recovery to take place. There are many farm stewardship and accreditation schemes operating in Australia and many of the agricultural industry bodies have targets and schemes for improved practice. Programs exist within these organisations: Meat & Livestock Australia, National Farmers' Federation, AgForce, Queensland Farmer's Federation, Growcom, and Queensland Cane Growers Organisation Ltd.

Smaller land holdings are less likely to participate in the Clean Energy Regulator or Land Restoration Fund schemes due to high set up, monitoring and audit costs. Joining similar projects across several business enterprises is one way to share the project management costs. Aggregation of a carbon project takes significant time commitment and resourcing to ensure data collection and reporting across multiple sites is accurate and active relationship management is maintained across multiple landowners.

Opportunities

There are significant opportunities for land managers, especially farmers to enhance their economic return on their farms in ways that also support better environmental outcomes. The rise of sustainable agriculture, regenerative agriculture and organic farming in the Wet Tropics make a more compelling case for increasing the area of land on farming properties set aside for improved biodiversity. There is significant natural capital market interest in investing in approaches such as regenerative agriculture, biodiverse carbon plantings (which could be focused on unproductive land or riparian corridors).

Farmers in the Wet Tropics have areas of land which are less productive and, in some cases, not productive at all. Around 54,000 hectares in the Wet Tropics are estimated to be of poor agricultural quality (14,403 hectares), over 20% slope (9,649 hectares), or along a waterway (30,072 hectares)[61]. With consideration given to the concerns of farmers, it is feasible to restore or revegetate low-yielding patches on farms. Being clear about the objectives prior to the works commencing will aid a smooth process for the farmer and the organisation undertaking the revegetation. For example, revegetation may be for erosion management, shelter belts, to assist with pollination of crops.

Industry bodies are beginning to set socially and environmentally responsible expectations on their producers and there is potential for financial benefits as well as community and social benefits. Horticulture enterprises may work with their industry body as the aggregator or facilitator to put forward a plan to improve large areas of land for biodiversity, or for reduced erosion or sediment. In doing so they can reduce flood potential, stabilise waterways and improve water quality for the entire community in wet seasons and major storm events. Farmers may, for example, be able to receive funding from government to plant trees to mitigate flooding, and at the same time stabilise stream banks and gullies.

Where the goal isn't biodiversity and planting mixed native species, other forestry options for investment may be considered. These may come at a reduced economic cost for setting up. There are industry standards in place around environmental management for these horticultural industries. If there was an opportunity to measure this change for a premium market or as an identified co-benefit which attracted financial reward, an industry body may play the role as aggregator or coordinator. This increase in environmental management is a positive step for the industry and its social license to operate and should improve farm product efficiencies.

Social considerations can also provide barriers to farmers and growers to adopt new practices and approaches, such as through market-based instruments. Land managers with peer support networks are more likely to hear about and adopt new innovations and improved land practices[62]. Improved farm and production efficiency will utilise the existing cleared land more efficiently and will reduce the pressure for more land to be cleared. Another benefit of creating peer networks is to enhance collaboration between farmers and other land managers. This is particularly important in the Wet Tropics given the challenges for small landholders participating in the carbon market (i.e. complexity and cost involved with aggregating carbon and monitoring/auditing costs).

Landholder Incentives Program–Terrain Natural Resource Management building rainforest resilience

A four-year program funded through the Australian Government has been successfully revegetating corridors in areas adjacent to the Wet Tropics of Queensland World Heritage Area (the Area). With a focus on revegetation, weed management, habitat protection and habitat augmentation, the program has revegetated 13 hectares of priority areas with local, native rainforest species to buffer and connect areas of the Area.

The program prioritises areas with threatened species and ecological communities, namely littoral rainforest and Mabi forest as well as cassowary habitat, and successfully encourages voluntary revegetation of critical habitats and ecosystems and connects willing landholders and Traditional Custodians.

Coordination of positive and genuine broadscale community engagement and the utilisation of the expertise of the recovery teams for these projects is a way to engage a variety of experts and interested local people. The project is achieving relatively small-scale revegetation in its current form and larger areas of land or building each year on initial projects would improve ecosystem outcomes.

The project has demonstrated significant appetite and in-kind contributions from biodiversity-rich landholders for small incentive payments coupled with landholder-friendly technical support. With additional funding, the project could be significantly scaled-up and still retain its focus on people, place and purpose in connecting and buffering the region's core habitat areas while still providing other production and environmental benefits.

Several areas of forest plantings across multiple land holdings, on negligible productive land, may prove a viable investment option where each individual site would not ordinarily be viable.

Governments

Background

Governments and policymakers—national, state and local—have key roles in creating policy for catalysing and sustaining new natural capital markets and establishing appropriate regulatory and verification frameworks.

In the Wet Tropics, government support has included providing funding for the up-front costs of market development (for example through the Land Restoration Fund), including implementing policy and programs to increase participation, and being an early market participant to stimulate supply and developing market dynamics. This support can be expanded to include the development of new methods and providing specialist support for the development of new financing tools.

All of the regional councils in the Wet Tropics have considered the impacts of climate change and all but one has developed a climate change adaptation plan. Implementing nature-based solutions within a natural capital framework provides an opportunity to resource and deliver on the objectives of these councils.

Opportunities

Governments and agencies are in the important position of being able to catalyse action through blended finance models. Many existing nature-based solutions involve multiple investor types through blended finance structures, which strategically apply grant funding to stimulate activity to draw attention to a particular outcome or mitigate specific investment risks. This is particularly necessary where there are project activities that are not considered investable on a standalone basis, whether due to the high risk or sub-scale returns.

At the regional level there is a clear need to sponsor and support the creation of standards and verification codes for ecosystem services and impact measures relevant to the Wet Tropics. The Accounting for Nature Framework is an example of a nationally accredited system for ensuring market integrity, where the methods for credit generation are supported by science and verifiable. To effectively engage and attract market participants clear target outcomes and measures need to be identified for any instruments or activities. Government is well positioned to support this work, and the Queensland Government is already supporting the Cassowary Credit Scheme for the Wet Tropics.

A greater level of support is needed at the on-ground level to increase market development and farm participation in a biodiversity stewardship or accreditation scheme. The Australian Government has announced its intention to develop a biodiversity certificates scheme operating in parallel to the ERF and rewarding landholders for carbon planting projects that deliver broader benefits for the environment[63]. Provision of additional support and clearly understood information for this and other market opportunities, will increase uptake across the region and assist with the

development of projects that have multiple benefits and avoid unintended negative consequences.

There is an opportunity to incorporate payments for ecosystem services that provide disaster risk reduction using nature-based solutions in the Wet Tropics bioregion. Financial return could be realised through new co-benefits as part of the LRF program to further benefit communities when a project is undertaken. Industries or business enterprises may be paid for delivering flood resilience through nature-based solutions. Industries requiring transport access for their goods may find it in their interest to fund the improvement of land or waterways in the upper catchment of where the industry infrastructure is based. This would then provide a business resilience benefit and a social benefit for that community too.

Natural capital environmental accounting project

The NRM group for Burnett Mary region is working with Accounting for Nature Ltd, Pollination Group and Minderoo Foundation to measure and value the condition of natural capital across their region.

Environmental assets that will be accounted for include native fauna, soil, freshwater and native vegetation. Additional measures for environmental condition and natural capital monetisation include landscape resilience, bushfire and flood risk, carbon offset potential, biodiversity credit potential, and cultural condition (traditional ecological knowledge).

Each of the project partners bring particular skills and expertise.

Burnett Mary Regional Group is project manager and conduit for First Nations and community engagement; Accounting for Nature Ltd will develop the verifiable scientific measurement methods and accreditation; Pollination Group will provide natural capital impact assessment, valuation tools and strategic environmental markets advice; and Minderoo Foundation is the investor. This innovative will:

- develop accurate, scalable and repeatable best practice measures and method for credible natural capital accounting and valuation in Australia and internationally
- deliver world-leading integrated natural capital environmental accounts and impact assessment and valuation outputs
- demonstrate that investing in nature can deliver a financial return, while also improving the resilience and health of the environment.

The Burnett Mary region will benefit from the project through increased investment that will improve the local environment. Local farmers and landowners will benefit from new sustainable revenue streams, as well as increased productivity from healthier land. Investors in the project will benefit from new opportunities to gain a financial return, and future investors will gain useful information and frameworks to assess investment opportunities that have a positive impact on the environment[64].

Nature resource managers (landcare and regional NRM groups)

Background

There are dozens of active landcare and community groups working across the Wet Tropics to protect and restore important remnant vegetation and improve connectivity across fragmented landscapes. Funding for many of these organisations has typically been via short-term grant funding through Queensland and Australian governments.

Terrain NRM covers the majority of the Wet Tropics, however, the region also overlaps with Cape York NRM and Burdekin Dry Tropics NRM. Agriculture, biodiversity, tourism, human health, critical infrastructure and Aboriginal cultural values are listed in various forms in each of these organisations' regional plans as areas to develop and implement climate change mitigation and adaptation strategies. Plans incorporate the desire to work with local Aboriginal groups and the community to support adaptive capacity to respond to climate challenges and care for Country.

Opportunities

Terrain NRM, Cape York NRM and Burdekin Dry Tropics NRM regions have updated their regional NRM plan to include the impacts of climate change and potential adaptation actions. These groups are actively investigating opportunities for accessing natural capital markets in their work, and along with other regional NRM groups in Queensland are becoming increasingly well positioned to support blended financing models to achieve adaptation outcomes.

In the Wet Tropics, landcare groups have proved effective at delivering local revegetation and conservation projects—primarily on degraded agricultural land—and engaging with local famers to gain access for conservation works in poorer-quality agricultural lands. These groups are looking for long-term support to increase the effectiveness of their work to accelerate conservation of habitat and revegetation in their local areas. To help move beyond ad hoc short-term grant funding, these organisations have identified a need to tap into emerging natural capital markets. This includes better knowledge around the opportunities of different kinds of credits (carbon and biodiversity in particular), development of relationships with investors, and assistance with preparing submissions for emerging funding opportunities through government such as the Land Restoration Fund.

Conclusions

This report has examined the enormous potential for natural capital markets to help support scaled-up adaptation efforts in the Wet Tropics, and the opportunity for different sectors to better access these markets.

The scale of restoration required to save Wet Tropics forests from escalating threats—particularly climate change—is significant, requiring the expansion of areas of habitat and establishing new connectivity corridors across thousands of hectares of different land tenures.

There is plenty of opportunity to achieve this. An initial estimate is that at least 54,000 hectares of agricultural land may be suitable for reforestation, because they are of poor agricultural quality, over 20% slope, or along waterways. Other approaches such as protecting areas of remnant vegetation and purchasing strategic parcels of land will also be required to achieve significant adaptation outcomes.

The restoration economy in Australia is largely driven by the carbon market (implemented through soil and vegetation management) and emerging natural capital markets in native vegetation management. There have been only nine registered carbon farming projects in the Wet Tropics as it has been challenging to develop successful projects based on carbon alone.

Instead, there is an increasing focus on integrated projects that recognise the need to combine productive land uses with nature-based solutions and payments for ecosystem services and co-benefits such as improvements to biodiversity and water quality.

The report has identified opportunities for four different sectors to better engage and benefit from natural capital markets:

Investors—investor feedback during the development of this report has been highly positive, identifying that the Wet Tropics aligns with their funding models and that a compelling case can be made around the combined benefits from carbon, biodiversity, Traditional Custodian engagement and adaptation outcomes. Investors are seeking premium investment opportunities and interested landholders. Investor interest could be further strengthened though research to better quantify carbon storage potential in Wet Tropics forests. Purchasing and rehabilitating land will continue to be important to achieving scaled-up restoration outcomes. Development of a revolving land fund should be investigated further.

Traditional Custodians—there is an overwhelming desire for Rainforest Aboriginal Peoples to gain more autonomy in looking after Country. Consultations during the development of this report indicated interest in learning more about natural capital markets, market-based instruments, and accessing these funding sources. There is enormous opportunity for investors to connect with Rainforest Aboriginal organisations who have existing plans to manage Country. Developing business strategies to access natural capital markets would greatly assist in the implementation of these plans. Rainforest Aboriginal Peoples are keen to look for opportunities from natural capital markets to combine their cultural obligations to stewardship of Country through the application of cultural practices.

Agricultural land managers—there are significant opportunities for land managers, especially farmers, to enhance the economic return on their land in ways that also support better environmental outcomes. There is a great deal of interest from natural capital markets in investing in approaches such as regenerative agriculture and biodiverse carbon plantings which could be focused on unproductive land or riparian corridors. Land managers with peer support networks are more likely to hear about and adopt new innovations and improved land practices. This is particularly important in the Wet Tropics given the challenges for small landholders participating in the carbon market (i.e. complexity and cost involved with aggregating carbon and monitoring/auditing costs).

Government—governments and agencies are in the important position of being able to catalyse action through blended finance models and to sponsor and support the creation of standards and verification codes for ecosystem services and impact measures. The Cassowary Credits Scheme is under development to support these opportunities in the Wet Tropics region. There is also a role for governments to increase market development and farm participation in biodiversity stewardship and accreditation schemes, and to trial incorporation of payments for ecosystem services that provide disaster risk reduction using nature-based solutions in the Wet Tropics.

Natural resource managers (landcare and regional NRM groups)—landcare groups in the Wet Tropics are looking for long-term support to increase the effectiveness of their work to accelerate conservation of habitat and revegetation in their local areas. These organisations have identified a need to tap into emerging natural capital markets. This includes better knowledge around the opportunities of different kinds of credits (carbon and biodiversity in particular), development of relationships with investors, and assistance with preparing funding submissions for emerging funding opportunities through government (such as the Land Restoration Fund). Regional NRM groups are actively investigating opportunities for accessing natural capital markets in their work and are becoming increasingly well-positioned to support blended financing models to achieve adaptation outcomes.

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The Wet Tropics Management Authority is able to undertake its work in the Wet Tropics of Queensland World Heritage Area with the assistance of the Australian Government and Queensland Government.

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