SCALING CLIMATE FINANCE

BIODIVERSITY INSTRUMENTS

CLIMATE INNOVATION LAB

MARCH 2021

NEW ZEALAND'S BIOLOGICAL HERITAGE

Ngā Koiora Tuku Iho

National Science Challenges

THIS REPORT

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The BioHeritage Challenge, Ngā Koiora Tuku Iko, aims to protect and manage Aotearoa New Zealand's biodiversity, improve its biosecurity, and enhance its resilience to harmful organisms.

The BioHeritage Challenge does this by focusing research on Aotearoa New Zealands's land-based and freshwater ecosystems, with the ultimate aim of reversing the decline of biological heritage.

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This report is authored by Mōhio, a think-and-do tank that works on an inclusive, equitable and tika transition for a low-emissions New Zealand.

Through its climate finance workstream, Mōhio aims to realign investment with the creation of genuine public value by enabling projects and activities that deliver combined social, environmental and economic impacts.

The Climate Innovation Lab

The Climate Innovation Lab is a fixed-term project hosted by Mōhio.

The Lab is a collaborative effort between Partners. Partners are high-level leaders from the private sector that contribute funding and/or expertise to selected instrument development.

Partners are organisations that are leaders in their sectors of expertise and/or re-present key market stakeholders.

The Lab draws on this experience and expertise in order to inform well designed, scalable financial instruments.

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PREFACE

Climate finance is a growing part of the global investment landscape.[1] Capital is increasingly being channelled into climate-aligned projects and activities to deliver mitigation and adaptation outcomes that benefit the environment and humanity more widely. This transition is occurring at all levels of society from the smallest grants or microloans to the largest transactions among corporations and countries.

But not enough is being done. Annual financing gaps for fulfilling the pledges of the Paris Agreement and UN Sustainable Development Goals (UNSDGs) run into trillions of dollars. The Intergovernmental Panel on Climate Change (IPCC) says that an annual investment of US$2.4 trillion – about 2.5% of the world's economy – is needed in the energy sector until 2035 to limit temperature rise to below 1.5 °C from pre-industrial levels.[2] The Business & Sustainable Development Commission recently estimated that a similar volume of additional investment is required to meet the UNSDGs in developing countries alone.[3] Current financial flows are insufficient to match these challenges.

Fortunately, the institutional will to address this shortfall is growing. In Aotearoa New Zealand, investment barriers are being addressed by regulatory and finance sector reforms, such as Aotearoa Circle's Sustainable Finance Forum.[4] But a key area for further market development is increasing the supply of investment-grade product which meets risk/return requirements across the investment spectrum, particularly at the institutional level.

The Climate Innovation Lab ('the Lab') is one of a growing number of initiatives around the world that uses financial innovation to mobilise and redirect some of the US$71 trillion currently invested in global capital markets towards climate-aligned projects.[5] Biodiversity and nature-based solutions are being increasingly recognised for their contributions to climate mitigation and adaptation, but also their inherent importance for human wellbeing.

This Concept Paper identifies unrealised opportunities for increasing investment into projects and activities that preserve, support and expand Aotearoa New Zealand's unique biological heritage. Redirecting finance and funding through climate finance instruments – such as those described in the pages that follow – can accelerate the shift toward a more resilient, low-emissions future.

[1] Climate Policy Initiative, (n.d.). http://www.climatefinancelandscape.org/
[2] Intergovernmental Panel on Climate Change (2018). *Global Warming of 1.5°C: Summary for Policymakers.*
[3] Business & Sustainable Development Commission (2017). *Better Business Better World.*
[4] The Aotearoa Circle (n.d.). https://theaotearoacircle.nz/sustainablefinance/
[5] Shub, G. et al. (2016). *Global Asset Management: Doubling Down on Data.* Boston Consulting Group.

EXECUTIVE SUMMARY

Aotearoa New Zealand, like other countries around the world, is facing the twin crises of climate change and biodiversity loss. These crises are mutually interrelated, insofar as each is causally implicated in the other. Biodiversity loss is primarily driven by the loss of natural habitat, such as forests and wetlands, which releases carbon into the atmosphere. Simultaneously, climate change is becoming an increasingly prominent driver of biodiversity loss, by transforming the habitats that living species have adapted to.

The loss of biological heritage in Aotearoa New Zealand is not only detrimental to the environment, but also to human wellbeing. Biodiversity underpins the wellbeing of communities throughout the country, and people further enhance their wellbeing by giving their time to restoring and repairing native ecosystems. For Māori in particular, biodiversity loss is not only detrimental to wellbeing, it is a symptom of the continued failure of Treaty partners to honour te Tiriti o Waitangi and enable Māori to fulfil their duties as kaitiaki.

Nature-based Solutions (NbS), which involve working with and enhancing nature to address these interrelated challenges, are increasingly recognised as an important response. New Zealand's co-leadership with China of the NbS Coalition at the 2019 UN Climate Action Assembly reinforced the important role for a broad range of nature-based interventions, including stewardship of natural and semi-natural ecosystems, green and blue infrastructure in urban areas, agro-ecological farming systems, and the protection and enhancement of blue carbon in wetlands, mangroves and kelp forests.

But the biodiversity financing gap – that is, the gap between actual financing and the scale of financing that is needed – is large. A recent global analysis quantified the global financing gap for biodiversity as between US$598-824 billion per year, thereby requiring a five- to seven-fold increase of current financial flows. The biodiversity financing gap in Aotearoa New Zealand has not been quantified, but research into conservation funding has concluded that it is insufficient in scale and not effectively distributed.

This Concept Paper finds that financial innovation could play a catalytic role in reversing biodiversity, but also that systems change is a necessary precondition for biodiversity financing to occur at scale. Biodiversity is inherently complex and often expensive to measure, and also lacks well-defined markets. In this sense, it is less like financing climate mitigation where there are clear market signals such as a carbon price, and more like financing climate adaptation where the outcomes are diffuse and difficult to monetise. To mobilise capital at the scale that is required, public, private and civil sectors will need to transform the enabling environment for biodiversity financing through regulatory, economic, cultural, and fiduciary changes.

Arguably the single most important lever is a stable and meaningful biodiversity payment that would generate revenue from improving biodiversity outcomes. There are various mechanisms that can deliver a biodiversity payment. Presently, the New Zealand Government tends to rely on output-based grants and environmental covenants, and while these produce tangible local

impacts, these mechanisms are not suited to producing the catalytic change that is required. Ideally, Aotearoa New Zealand would look toward more transformative options, such as results-based payments for biodiversity improvements, or compensatory schemes such as biodiversity offsets or redistributive schemes that use environmental taxes to recycle money into biodiversity projects.

In the absence of a biodiversity payment, this Concept Paper proposes five instruments which meet our screening criteria. These biodiversity finance instruments are derived from a literature review of sustainable finance innovation internationally, combined with a localised analysis of the Aotearoa New Zealand and its unique cultural and biophysical context. The proposed instruments are as follows:

1. Hauraki Gulf Blue Bond

Blue bonds are a relatively new type of sustainability bond which mobilises finance for projects related to ocean conservation. The Hauraki Gulf Blue Bond is a debt instrument for which the use-of-proceeds are linked to the protection, rehabilitation and enhancement of the mauri (or life force) of the Hauraki Gulf/Tīkapa Moana/Te Moana-nui-ā-Toi. Investors are paid an interest rate on a fixed schedule and will receive their initial investment (principal) upon maturity. The Bond could be issued to institutional investors by a bank, local or regional council, or even as a sovereign blue bond by the New Zealand Government. In the context of the Hauraki Gulf, the Bond will enable coordinated catchment-level investment into the protection of water resources (including waste water treatment and water pollution prevention projects), storm water systems and flood protection, and protection and restoration of water and marine ecosystems and related biodiversity (wetlands, rivers, lakes, coastal areas and open sea zones).

2. Debt-for-Nature Swaps

Debt-for-nature swaps are a familiar instrument in international sustainable development, whereby a developing country's debt is reduced in exchange for environmental protections. This basic concept is adapted here for domestic application. Debt-for-nature swaps are treated as a risk management tool for banks to alleviate debt-related stress on agricultural borrower and thereby avoid the systemic risk of widespread defaults. A proportion of the debt stock or service is voluntarily cancelled under the agreement, then savings are redirected into biodiversity improvements that reduce the exposure of farms to forthcoming environmental prices and regulations, and enhance their resilience to climate-related shocks.

3. Paradise Bonds

Paradise Bonds are a class of bank bonds issued to investors for the purpose of reverting land to its natural state. The issuer uses the bond's proceeds to finance land from landowners, which would be retired from agricultural use and returned into natural ecosystems that generate public environmental value. The issuer simultaneously enters into a long-term results-based payment (RBP) agreement with the New Zealand Government (or government agency) that complements the interest payments on the Paradise Bond, provided that pre-agreed levels of land use change are achieved. The purpose of Paradise Bonds is to fund a wholesale shift in land use type and large-scale restoration of biological heritage.

4. Regional Biodiversity Fund

A closed-end fund to invest in 10–20 companies in mature biodiversity-related markets, operating in regions of New Zealand such as Te Tai Tokerau (Northland), Te Tai Rāwhiti (the East Coast), the South Island (Te Wai Pounamu). Example markets include sustainable forestry, sustainable agriculture, and ecotourism. Many of the Fund's projects generate environmental assets such as New Zealand Units (NZUs) and certified commodities. With underlying products certified by Forest Stewardship Council (FSC), Fairtrade, and ecotourism labels, the fund would generate financial returns from the sale of sustainably harvested timber, non-timber products like mānuka honey, and carbon credits through the Emissions Trading Scheme or voluntary carbon markets. Given the premium these products can demand in their respective markets, investment opportunities potentially abound and are waiting for the right type of intentional capital injection.

5. Biodiversity Notes

Biodiversity Notes are issued by a private entity that raises capital to finance biodiversity efforts; for example, the acquisition, management and restoration of land for biodiversity conservation purposes. Repayment is not tied to revenue streams from the use of proceeds, rather from the issuer's general business and/or fundraising activities. Therefore, investors will assess the issuer's credit rating and ability to generate revenues sufficient to cover debt service on the Note. Biodiversity Notes may reduce the cost of capital by providing access to debt on attractive terms, especially where the biodiversity benefits are diffuse or difficult to monetise, but nevertheless materially beneficial to the issuer.

The objectives of this Concept Paper are two-fold: (1) to galvanise the local conversation about the opportunities for innovative financial instruments to deliver biodiversity outcomes; and (2) to use these proposals as catalysts to create 'coalitions of the willing' who can bring these instruments to market.

This Concept Paper serves as an invitation to participate in that latter aim, to further co-develop these concepts with key partners into the form of a business case (using the New Zealand Treasury's Better Business Case framework) to bring these projects to life.

The Concept Note is laid out as follows:

- **Section 3: Lay of the Land** provides high-level context on the state of biodiversity, the biodiversity financing gap, and the regulatory framework.
- **Section 4: Impact Framework** discusses the impact frameworks that could be utilised, including Māori frameworks of value, the new NbS global standard, relevant IRIS metrics and the UN Sustainable Development Goals.
- **Section 5: Instrument Proposals** describes each of the biodiversity financing instruments above, by discussing the current obstacles to biodiversity improvement, then how each instrument will overcome them.
- **Section 6: Changing the System** recommends transformations to the enabling environment to upscale biodiversity, including biodiversity payments, regulatory settings, and te Tiriti partnerships.
- **Section 7: Excluded Instruments** summarises the instruments that we chose not to develop into initial concepts, and provides our reasoning why.
- **Section 8: Glossary** is provided to assist the reader with acronyms and specialised terminology.
- **Appendix 1: Climate Innovation Lab Methodology** is a description of the Climate Innovation Lab's methodology and approach, and explains key concepts such as 'climate finance' and 'additionality'.

LAY OF THE LAND

This section examines the current state of biodiversity in Aotearoa New Zealand, the type and scale of financing available, as well as the regulatory landscape within which the financial instruments examined in section will develop.

3.1. The State of Biodiversity

Aotearoa New Zealand, like other countries around the world, is facing the twin crises of climate change and biodiversity loss. These crises are profoundly interrelated. Climate change contributes to biodiversity loss through the disruption of ecosystems.[6] Also, land use change, the primary driver of biodiversity loss, is a major contributor to climate change by releasing greenhouse gases (especially carbon dioxide and methane) into the atmosphere.[7] These crises are interrelated and mutually reinforcing.

This also means that a solution to one crisis can be a solution to the other. On the one hand, mitigating climate change and reducing its impacts is crucial for preventing the loss of the world's biological heritage. On the other hand, protecting and enhancing native biodiversity can contribute to climate mitigation by preserving and expanding carbon sinks,[8] and climate adaptation by supporting natural and social resilience.[9] From the perspective of ecological science, the first principle of resilience is biodiversity – that is, the variability among living organisms within a particular ecosystem.[10] For example, a monoculture forest that has the same even-aged tree species is generally more vulnerable to threats (such as wildfire and disease) than a biodiverse forest that incorporates multiple tree species of varying age and size.[11] Diversity and resilience are positively correlated.

Internationally, such insights have crystallised in the concept of *Nature-based Solutions* (NbS). NbS involves 'working with and enhancing nature to help address societal challenges' such as climate change. By acknowledging that sustainable development involves multiple objectives, NbS purports to take 'an integrated approach that can reduce trade-offs and promote synergies' among them.[12] It achieves this through a broad range of interventions, including stewardship of natural and semi-natural ecosystems, green and blue infrastructure in urban areas, the

[6] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019). *Summary for policymakers of the global assessment report on biodiversity and ecosystem services*. IPBES.

[7] Intergovernmental Panel on Climate Change (2019). Summary for Policymakers. In: *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. IPCC.

[8] Griscom, B. W., Adams, J., Ellis, P. W., Houghton R. A., Lomax G., Miteva, D. A., Schlesinger, W. H., Shoch, D., Siikamäki, J. V… Fargioneet, J. (2017). Natural climate solutions. *Proceedings of the National Academy of Sciences*, 114 (44) 11645-11650.

[9] Martin, T., & Watson, J.E. (2016). Intact ecosystems provide best defence against climate change. *Nature Climate Change*, 6, 122-124.

[10] Folke, C., Carpenter, S., Walker, B,. Scheffer, M., Elmqvist, T., Gunderson, L., Holling, C.S. (2004). Regime shifts, resilience, and biodiversity in ecosystem management. *Annual Review of Ecology, Evolution and Systematics*, 35, 557-581; and Hooper, D.U., Chapin, F.S., Ewel, J.J., Hector, A., Inchausti, P., Lavorel, S., Lawton, J.H.,Lodge, D.M., Loreau, M., Naeem, S., Schmid, B., Setälä, H., Symstad, A.J., Vandermeer, J., Wardle, D.A. (2005). Effects of biodiversity on ecosystem functioning: A consensus of current knowledge. *Ecological Monographs*, 75(1), 3-35.

[11] Höltermann, A. (2020). Forests under a changing climate: increasing adaptability and resilience through more diversity and heterogeneity. In *How to balance forestry and biodiversity conservation – A view across Europe*. Krumm, F.; Schuck, A.; Rigling, A., Eds): European Forest Institute; Swiss Federal Institute for Forest, Snow and Landscape Research.

[12] Seddon, N., et al. (2020). Understanding the value and limits of nature-based solutions to climate change and other global challenges. *Philosophical Transactions of the Royal Society*, 375(1794), 20190120.

application of ecological principles into agricultural systems, and the protection and enhancement of blue carbon in wetlands, mangroves and kelp forests. The loss of native species and associated ecosystems leaves Aotearoa New Zealand more vulnerable to the impacts of climate change, by removing the benefits of resilience that are too frequently taken for granted.

In this light, biodiversity trends in Aotearoa New Zealand are cause for serious concern. Environmental monitoring tracks a dramatic loss of species and ecosystems over many decades (see Box 1), which parallels trends of biodiversity decline globally. As elsewhere, land use is a key driver of change,[13] but also significantly influenced in Aotearoa New Zealand by the introduction of predators and pests, such as possums, mustelids, deer, rats, mice, dogs and cats.[14] The general trend of decline does obscure pockets of biodiversity improvement, such as the success of offshore island sanctuaries, the management of forests with 1080 poisoning, and the uptake of riparian restoration by farmers throughout the country. Nevertheless, while the conservation status for 26 species has improved over the last ten years (including 21 bird, 2 plant and 1 whale species), extinction risk has worsened for 86 species over the last fifteen years (including 61 plant, 7 bird, and 4 freshwater species).[15]

This entails a loss of national value for Aotearoa New Zealand. This can be seen from Māori and Pākehā perspectives.

For Māori, biodiversity loss involves the severing of relationships to taonga species which carries a corresponding sense of grief and loss.[16] In te ao Māori, the concept of whakapapa emphasises the interconnectedness of all things, because all things derive from the same primal ancestors: Ranginui, the sky father, and Papatūānuku, the earth mother.[17] From a whakapapa perspective, conservation is not merely about protecting native species, it is about sustaining relationships with one's kin. It also follows that kaitiakitanga is not mere 'guardianship', as it is often translated, with the implication of human dominion over nature. Rather, it is a 'practical philosophy' that 'involves practices that nurture wellbeing in a socio-environmental context… protecting reciprocal relationships between people and the environment.'[18] Accordingly, biodiversity loss is not only directly harmful to tangata whenua, it also reflects the frustration of mana whenua rights, particularly the inability to fulfil the duties of kaitiakitanga due to inadequate resourcing and decision-making power vis-à-vis the Crown and private landowners.[19]

[13] Ministry for the Environment & Statistics New Zealand (2019). *New Zealand's Environmental Reporting Series: Environment Aotearoa*. p.23; & Tilman, D. (1999). Global environmental impacts of agricultural expansion: The need for sustainable and efficient practices. *Proceedings of the National Academy of Sciences*, 96, 5995–6000.

[14] Russell, J.C., Innes, J.G., Brown, P.H., & Byrom, A.E. (2015). Predator-Free New Zealand: Conservation Country, *BioScience*, Volume 65, Issue 5, 520-525, https://doi.org/10.1093/biosci/biv012

[15] Ministry for the Environment & Statistics New Zealand (2019). *Environment Aotearoa*. New Zealand Government, 21.

[16] Wehi, P. M., Cox, M. P., Roa, T., & Whaanga, H. (2018). Human perceptions of megafaunal extinction events revealed by linguistic analysis of indigenous oral traditions. *Human Ecology*. https://doi.org/10.1007/s10745-018-0004-0

[17] Roberts, M. (2013). Ways of seeing: whakapapa. *A Journal of Social Anthropology and Cultural Studies*, 10(1), 93-120. https://doi.org/10.11157/sites-vol10iss1id236

[18] Walker, T.E., Wehi, P.M., Nelson, N.J., Beggs, J.R., & Whaanga, H. (2019). Kaitiakitanga, place and the urban restoration agenda, *New Zealand Journal of Ecology*, 43(3), Article: 3381.

[19] For discussion, see Selby, R., Moore, P., & Mulholland, M. (2010). *Māori and the Environment: Kaitiaki*. Huia.

Box 1: The state of biodiversity in Aotearoa New Zealand

- Since humans arrived in Aotearoa New Zealand:
  - ⇒ At least 75 animal and plant species are extinct;
  - ⇒ About two-thirds of Aotearoa's original forest habitat is gone, the remainder mostly in hilly and mountainous areas;
  - ⇒ Wetland habitats are reduced by about 90% of their original area.

- In recent years, there are localised improvements, but despite this:
  - ⇒ Native forest total area was reduced by 16,108 hectares in 1996–2012;
  - ⇒ Native scrub and shrubland declined by 24,187 hectares in 1996–2012;
  - ⇒ Native tussock grasslands reduced by 30,928 hectares in 1996–2012;
  - ⇒ Wetland areas reduced by 1,247 hectares in 2001–2016;
  - ⇒ More rivers had worsening water quality (59%) than improving quality (41%) in 2008–2017.

- At the time of writing:
  - ⇒ Almost 4,000 native species are currently threatened or at risk of extinction;
  - ⇒ Almost two-thirds of rare ecosystems are threatened with collapse, with an even higher rate
  - ⇒ For rare coastal ecosystems like coastal turfs and shingle beaches (more than three-quarters are threatened);
  - ⇒ Stoats, possums, and rats are present on more than 94% of Aotearoa New Zealand's land;
  - ⇒ New pathogens are establishing themselves in Aotearoa New Zealand, such as myrtle rust and kauri dieback.

Adapted from Ministry for the Environment, *Environment Aotearoa 2019*

Although the concepts of whakapapa and kaitiakitanga are particular to Māori, the notion of a co-dependency between natural and human wellbeing has parallels in the worldviews of Pākehā and tauiwi (non-indigenous New Zealanders). One prominent example is the New Zealand Government's Living Standards Framework, which conceives of intergenerational wellbeing as underpinned by four interrelated capitals: natural, human, social and financial/physical.[20] On this view, present and future wellbeing cannot be sustained by financial outputs alone, rather by the combined outputs of the four capitals (and potentially others such as cultural capital). Natural capital, which includes natural ecosystems, generates value through the provision of *ecosystem services* – that is, the 'flows of materials, energy, and information from natural capital stocks which combine with

[20] New Zealand Treasury (n.d.) *The Living Standards Framework.* https://www.treasury.govt.nz/information-and-services/nz-economy/higher-living-standards/our-living-standards-framework

manufactured and human capital services to produce human welfare.'[21] Ecosystem services can be divided into three broad categories; (1) *provisioning services* such as food and timber; (2) *regulating services* such as storm surge protection, flood mitigation, and carbon sinks; and (3) *cultural services* such as recreational activities and a sense of identity.[22] The Covid-19 pandemic is a global reminder of such benefits: on the one hand, people rely on parks and green spaces to maintain their mental and physical wellbeing during lockdowns; on the other hand, it was the human disruption of habitat in China that increased the risk of the novel coronavirus making its fateful leap from animals to humans.[23] In sum, social, human and financial capital are underpinned by a healthy and stable environment, but these capitals are also resources to draw upon to enhance natural capital, through a commitment of resources, ingenuity and care.

Many New Zealanders would like to see a reversal of biodiversity decline.[24] Aspirational visions, such as the Predator Free 2050 Vision, have widespread support. Internationally, there are a number of initiatives that look to upscale nature-based solutions; see Box 2 below. The will exists to restore and enhance this biological heritage; but what is often lacking is *capability*. The protection and restoration of biological heritage requires time and resources, often without a clear line to monetisable returns. This is where *biodiversity finance* can play an enabling and empowering role.

[21] Costanza, R., et al. (1997). *The value of the world's ecosystem services and natural capital*. Nature, 387, 253-60. Dasgupta, P. (2021). *Final Report on The Economics of Biodiversity: The Dasgupta Review*. HM Treasury. https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review

[22] New Zealand Treasury (2018). *Living Standards Framework: Background and Future Work*, 37.

[23] Beyer, R. M., Manica, A., and Mora, C. 2021. Shifts in global bat diversity suggest a possible role of climate change in the emergence of SARS-CoV-1 and SARS-CoV-2. *Science of The Total Environment*, 145413.

[24] Hughey, K., Kerr, G., & Cullen, R. (2019). *Public Perceptions of New Zealand Environment: 2019*. EOS Ecology.

Box 2: International or multinational biodiversity initiatives launched since 2019

Date	Name	Description
March 2019	UN Decade on Restoration 2021–2030	The UN Decade is building a strong, broad-based global movement to ramp up restoration and put the world on track for a sustainable future.
September 2019	Nature-Based Solutions for Climate Coalition	The NBS Coalition co-led by China and New Zealand launched the *NBS for Climate Manifesto* at the UN Climate Action Summit convened by the UN Secretary-General on 23 September 2019.
July 2020	Taskforce for Nature-related Financial Disclosures (TNFD)	Creation of an Informal Working Group to design a Taskforce for Nature-related Financial Disclosures (TNFD), with its recommendations planned for mid-2022.
November 2020	UN SCF Forum on Finance for Nature-based Solutions	UN Forum of the Standing Committee on Finance (SCF) will organise its next Forum on Finance for Nature-based Solutions.
January 2021	High Ambition Coalition for Nature and People	An intergovernmental group of more than 45 countries championing a global deal for nature and people to halt the accelerating loss of species and protect vital ecosystems.
February 2021	Final Report on The Economics of Biodiversity: The Dasgupta Review	The Dasgupta Review is an independent, global review on the Economics of Biodiversity led by Professor Sir Partha Dasgupta, University of Cambridge, and commissioned in 2019 by HM Treasury in the UK.

3.2. The Financial Landscape

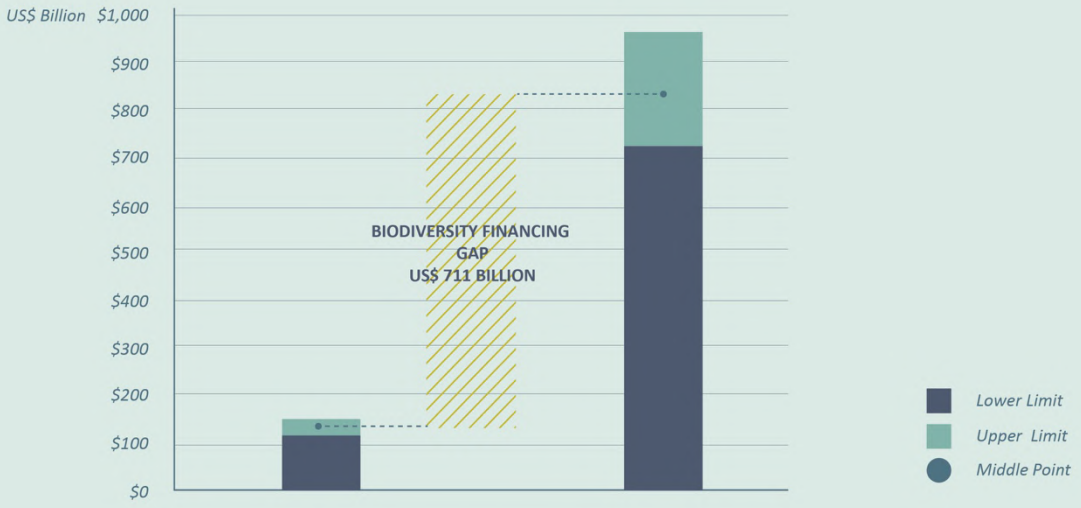
Biodiversity finance is defined as 'the practice of raising and managing capital and using financial incentives to support sustainable biodiversity management.'[25] It can be seen as a subset of *sustainable finance*, which is generically defined as financial flows that support projects and activities aligned with the UN Sustainable Development Goals.[26] It also partially overlaps with *climate finance*, another subset of sustainable finance, which is focused on supporting climate mitigation and adaptation outcomes.[27] Wherever the protection and restoration of biodiversity and associated habitats involves safeguarding or enhancing carbon sinks, or contributing to the resilience of landscapes and catchments, then biodiversity enhancement contributes to climate-related objectives.

Biodiversity finance flows in Aotearoa New Zealand are presently insufficient. As described in the 2015 book, *Vanishing Nature*, 'It's all about the money… Examples of the funding shortfall are everywhere. The Department of Conservation cannot properly maintain its present public conservation land holdings nor fulfil its other functions effectively. Regional and local councils have similar constraints in managing their reserves and private land protection programmes. Private landowners and community groups have limited or no financial support or incentive to undertake conservation, meaning only that a fraction of what could be done, will be done.'[28]

What is needed, the authors argue, is not only an overall increase in funding and finance, but also *more effective* funding, as well as better incentives for protecting and enhancing nature. The authors' primary focus is the need for larger, more secure statutory funding and legislative support. However, there is a role for private capital to contribute to bridging the finance gap, by increasing its exposure to biodiversity enhancement. This might not only contribute to increasing the pool of capital available for biodiversity gains, but also increase the discipline of biodiversity financing and hence its impactfulness for every dollar spent.

The finance gap is not unique to Aotearoa New Zealand; it is a global challenge. A recent report by the Paulson Institute, The Nature Conservancy, and the Cornell Atkinson Center for Sustainability estimated that financial flows into global biodiversity conservation in 2019 are between US$124 and US$143 billion. Although this funding has nearly tripled since 2012, global funding needs to increase another five- to seven-fold to meet present

[25] Biodiversity Finance Initiative (2016). *BIOFIN Workbook: Mobilizing Resources for Biodiversity and Sustainable Development*, United National Development Program, 11.
[26] For more on sustainable finance in the context of Aotearoa New Zealand, see Aoteaora Circle (2020) *Sustainable Finance Forum Roadmap for Action: Final Report.*
[27] Hall, D., & Lindsay, S. (2017). *Climate Finance Landscape for Aotearoa New Zealand: A Preliminary Survey*. Mōhio Research.
[28] Brown, M., Stephens, R.T.T., Peart, R., & Fedder, B. (2015). *Vanishing Nature: Facing New Zealand's Biodiversity Crisis*, Auckland. Environmental Defence Society & Law Foundation, 177.



Credit: *Financing Nature: Closing the global biodiversity financing gap*, The Paulson Institute, The Nature Conservancy, and the Cornell Atkinson Center for Sustainability, 2020.

Figure 1: The Global Biodiversity Financing Gap

biodiversity needs, which are estimated at US$722–967 billion annually over the next ten years.[29] As Figure 1 shows, **the global financing gap for biodiversity is between US$598–824 billion per year.**

In the context of Aotearoa New Zealand, uncertainty prevails over the scale of the finance gap. The total budget for the Department of Conservation (DOC) for 2020/21 is NZ$520.3 million.[30] The 2020 Budget supplemented this with a NZ$1.245 billion Jobs for Nature programme, as part of its COVID-19 Response and Recovery Package. This funding is earmarked for improving freshwater quality by fencing waterways, water reticulation and riparian management; improving biosecurity by weed and pest control; and enhancing biodiversity on public and private land by, for instance, planting native plant species. About half of this funding (NZ$501.8 million over four years) is going to DOC's budget,[31] and most of the remainder to Ministry for the Environment (NZ$500 million) for regional environmental projects targeted at freshwater improvement.[32]

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[29] Heal, A., Niu, G.M., Swanson, R., Townshend, E., Zhu, T. Delmar, Meghji, A., Sethi, S. A., & Tobin-de la Puente, J. (2020). *Financing Nature: Closing the global biodiversity financing gap*. The Paulson Institute, The Nature Conservancy & Cornell Atkinson Center for Sustainability.

[30] New Zealand Treasury (2020). *Summary Tables for the Estimates of Appropriations 2020/21*. New Zealand Government.

[31] The 2020 Budget also provides the Department of Conservation (DOC) with NZ$23.1 million of additional operating funding for investing in staff and Treaty Partner engagement, and NZ$13.7 million contingency funding for repairing and restoring infrastructure in Fiordland after February 2020's severe weather event. See DOC (2020) *Budget 2020: Overview*. https://www.doc.govt.nz/news/issues/budget-2020-overview/

[32] Ministry of the Environmental (n.d.) *Jobs for Nature*. https://www.mfe.govt.nz/funding/jobs-for-nature

This increased funding is meaningful, but insufficient for the scale of the challenge. For example, budgetary increases of about NZ$20 million per annum between 2018–2022 meant that DOC was able to increase its predator control from 200,000 to 800,000 hectares, yet this still only covers 10% of over 8 million hectares of public conservation land.[33]

Government spending is supplemented by other funding sources. A recent review of environmental funding among philanthropic organisations and local authorities in Aotearoa New Zealand found that almost NZ$35 million was dispensed in the 2017-2018 year.[34] The top three beneficiaries by environmental theme were water (15% of attributable funds), pest eradication (12%) and animal biodiversity (9%).

This combined supply of funding, however, is not meeting the demands of community conservation and restoration groups, neither in terms of volume nor process.

A 2018 review and survey by The Catalyst Group paints a detailed picture of the constraints faced by community conservation. As the Catalyst report describes, 'the environmental funding landscape is one of many relatively small funds designated for different purposes, and only a few large and general funders (mainly government agencies).'[35] The small funds are 'geographically restricted in who and what they can fund', and often function differently in different regions. The larger government funders mostly provide in-kind support through advice, technical support and monitoring, which diminishes their own capacity to undertake their own work programmes.

As a result, community conservation groups face ongoing funding challenges. Small projects struggle to attract the funding that larger initiatives do. There is a lack of time and capacity for administration and governance. Collaboration between community groups often fail because they are time-poor, unaware of each other, or in competition. Existing funding tends to focus on start-ups and novel projects, rather than ongoing support to established programmes. Time-limited funding also means that projects may lose funding before biodiversity gains are locked in. Accordingly, 63% of community groups and 72% of landowners were 'partly' or 'not at all' satisfied with their current funding situation.[36] Each group called for more streamlined processes for allocating existing funding, greater overall funding, greater longevity of funding, and assistance with sourcing funding.

Moreover, the Catalyst report identifies significant uncertainties over the overall effectiveness of conservation work, given the lack of measurement and assessment of outcomes. This is not because measurement tools are lacking, but rather because of a lack of 'time, money, enthusiasm, expertise and support'.[37] This lack of rigour is also apparent in project design; for example, a study of 89 funding applications found that only 53% contained one or more outcomes that aligned with the National Biodiversity Strategy; and none satisfied the familiar SMART criteria for goal setting: Specific, Measurable, Achievable, Relevant and Time-based. These factors combine to make it difficult for prospective funders to accurately assess the return on investment, and to improve its effectiveness and impact. Accordingly, the Catalyst report recommends that 'the funding

[33] See, Sage, E. (2018). *Backing Nature – funding a future of native species*. Media Release. https://www.beehive.govt.nz/release/backing-nature-%E2%80%93-funding-future-native-species

[34] Philanthropy New Zealand (2019). *Stocktake of Environmental Funding*.

[35] Brown, M. (2018). *Transforming community conservation funding in New Zealand*. Catalyst Group, 18.

[36] Ibid., 38.

[37] Ibid., 27.

system… focus more stringently on outcomes and streamline processes to reduce transaction costs while enhancing accountability for outcomes.'[38]

Well-targeted private investment has the potential to improve outcomes in these respects, both to increase the volume of capital flow, and to bring professional rigour to operational processes, impact assessment and project evaluation. **The challenge is that biodiversity investment is inherently misaligned to conventional risk and return requirements for prospective investors.**

In regard to risk, biodiverse ecosystems are inherently complex, so the consequences of interventions are highly uncertain and difficult to predict. In regard to returns, biodiversity value is not often monetised and indeed can be hard to monetise, because of its inherent complexity, its diffuse benefits, and the non-economic nature of its value (i.e. the spiritual, cultural or aesthetic value of biodiversity). So, for instance, while carbon has a clear market price through New Zealand's Emissions Trading Scheme (ETS), biodiversity has no direct equivalent. Some pricing mechanisms, such as nitrate caps or water allocation and trading schemes, do have indirect implications for biodiversity, by pricing activities that effect natural ecosystems. Indeed even the carbon price can be leveraged to create biodiversity improvements; see the Climate Innovation's Lab previous report for examples.[39] However, because these mechanisms do not price biodiversity directly, there remains a possibility that these price signals will incentivise behaviours that are indifferent to, or even in conflict, with biodiversity improvements.[40] A salient example is the strong financial incentive that the ETS creates for fast-growing exotic species such as *Pinus radiata*, even though this creates a lost opportunity for biodiversity improvements, and also a suboptimal outcome from a climate adaptation perspective. Accordingly, perhaps more than other sustainable finance target sectors, it will be critical to develop the enabling environment for biodiversity financing as a precondition to the scaling up of financial flows.

Despite the urgent need for more strategic market making, the finance sector is responding to the biodiversity challenge. For example, ANZ's Environmental Loan is a low-interest loan designed to support the implementation of farm environment plans and thereby respond to growing environmental compliance. It provides concessionary debt with a floating interest rate (presently 3.00% p.a.), lending of up to $300,000, and no establishment fee. The loan can be used for water and energy conservation projects, farm infrastructure to support environmental management (fencing and planting on retired land, water quality management and monitoring, and effluent management), and farm advisory services. Better data on biodiversity impacts and associated costs will enable banks to further price in environmental risks and impacts.

Internationally, global markets are exploring how to account for nature-related impacts more rigorously. There are a variety of initiatives, such as the effort to meet the demands of conscientious markets with a dynamic, globally-relevant benchmarking of environmental impacts of food production.[41] There is also now a process underway to develop a reporting framework for nature-related disclosures. This Taskforce for Nature-related Financial Disclosures

[38] Ibid., 52.
[39] Hall, D. & Lindsay, S. (2020). *Scaling Climate Finance: Forest Finance Instruments.* Mōhio Research.
[40] Aotearoa Circle (2020). *Native Forests: Resetting the Balance.* Price Waterhouse Coopers (PwC).
[41] Negra, C., Havemann, T., Baumann, K., Werneck, K., Houtkamp J., Janssen, H., Kuikman, P. & Vullings, W. (2019). *Environmental Impact Reporting in Agriculture: Creating a link between agricultural investments and environmental impact.* Clarmondial, Wageningen University & Versant Vision.

(TNFD) would complement the existing Taskforce for Climate-related Financial Disclosures (TCFD) framework which is being adapted by companies around the world, and which the New Zealand Government plans to make mandatory under a comply-or-explain arrangement. The TNFD could do for biodiversity what the TCFD has done for climate risk – that is, compel companies to increase their own awareness of the impacts of their supply chains on biodiversity and ecosystems. The Covid-19 pandemic has cast all this into sharper relief, given that land use change, ecosystem disruption and climate change all increase the risk of animal-to-human transmission of novel viruses. An Informal Working Group for the TNFD was formed in July 2020 and plans to publish its recommendations in mid-2022.[42]

But another crucial dimension of the enabling environment is the regulatory framework, which is discussed in the next section.

3.3. The Regulatory Landscape

The strategic centrepoint for biodiversity is *Te Mana o te Taiao – The Aotearoa New Zealand Biodiversity Strategy 2020*, launched by the Department of Conservation in August 2020.[43] Its purpose is to provide overall strategic direction for biodiversity in Aotearoa New Zealand from 2020 to 2050. It will be followed in 2021–2022 by an implementation plan that sets out actions and responsibilities for fulfilling strategic objectives. Implementation plans will be renewed on a five-yearly cycle.

Te Mana o te Taiao identifies the need for funding in its proposed goals to 2025. Under *Tūāpapa / Getting the System Right*, Goal 1.5 calls for ongoing resource and funding to be secured from multiple sources; while Goal 8 calls for sufficient resources for Treaty partners, whanau, hapū, iwi and Māori organisations, as well as appropriate resources and incentives for communities, individuals and businesses. It also calls more broadly for a renewed appreciation of the central role of biodiversity in the economy. However, beyond these generalised goals, the strategy does not offer guidance on the specific instruments or actors that will deliver these resources. These will hopefully be clarified in the forthcoming implementation plan.

As for regulatory architecture, two key instruments are (1) the Resource Management Act 1991 (RMA) and the legislation that soon replaces it, and (2) the forthcoming National Policy Statement for Indigenous Biodiversity (NPS-IB).

The RMA is the main piece of legislation that sets out how Aotearoa New Zealand should manage its environment. It is founded on the principle of sustainable management, which involves considering effects of activities on the environment now and in the future when making resource management decisions. It operationalises this through various processes, including resource consents, council plans, designations and national policy statements.

National policy statements (NPS) are issued under section 52(2) of the RMA. These enable Government to prescribe objectives and policies that are relevant to achieving the RMA's sustainable management purpose. Although several NPS are indirectly relevant to biodiversity, the Government has also consulted on proposals for a National Policy Statement for Indigenous Biodiversity (NPS-IB) since 2010. This will

[42] Taskforce for Nature-related Financial Disclosures (n.d.) https://tnfd.info/

[43] Department of Conservation. (2020). *Te Mana o te Taiao: Aotearoa New Zealand Biodiversity Strategy 2020*, New Zealand Government.

set out the objectives, policies and implementation requirements for managing natural and physical resources in order to maintain indigenous biodiversity under the RMA.[44] In other words, it will establish a series of national 'bottom lines' which must be considered in RMA processes, including the treatment of Significant Natural Areas (SNAs) where valuable species or ecosystems are present. Ministerial consideration of the final policy statement was supposed to occur in mid-2020, but was delayed until April 2021 because of the Covid-19 pandemic.

Following the recent RMA review (2018-2020), which concluded with what is commonly known as 'the Randerson Report',[45] the Government is looking to replace the RMA with new legislation. If these reforms follow the review's recommendations, then the new legislation will retain an integrated approach for land use planning and environmental protection, but exercise this through two acts. Firstly, a Natural and Built Environments Act which makes resource management more efficient and responsive and gives great focus to climate adaptation and tikanga Māori. Secondly, a new Strategic Planning Act which establishes a framework for mandatory regional spatial planning for both land and the coastal marine area.

Another instrument worth highlighting is the provisions for biodiversity offsetting provided by an amendment to the RMA (the Resource Legislation Amendment Act 2017). This legislation clearly identifies biodiversity offsetting as a mechanism that regional councils can offer to resource consent applicants to compensate for disruptions to areas of significant habitat, indigenous biodiversity and environmental importance, as well as to address concerns of mana whenua. However, *these provisions are non-mandatory* – that is, 'a consent authority cannot require the provision of an offset'. Rather, because 'the law does not specifically require offsets, it is up to the applicant to offer an offset, or for the decision-maker to… conclude that providing an offset might be the only practical way to meet the [biodiversity] requirement in the RMA.'[46] Consequently, biodiversity offsetting has not been applied as commonly as it could be. The RMA review notes that broader provisions of economic tools for local authorities, including environmental offsetting, is one option for improving resource allocation – but decisions on any such provisions are yet to be finalised.

For further discussion of biodiversity offsetting and other potential tools for delivering a biodiversity payment, see Section 6 of this report.

[44] New Zealand Government. (2019). *Draft National Policy Statement for Indigenous Biodiversity*. New Zealand Government.
[45] Resource Management Review Panel. (2020). *New Directions for Resource Management in New Zealand*. New Zealand Government.

[46] Maseyk, F., Ussher, G., Kessels, G., Christensen M., & Brown, M. (2018). *Biodiversity offsetting under the Resource Management Act: A Guidance Document*. Prepared for the Biodiversity Working Group on behalf of the BioManagers Group for Local Government New Zealand, 6.

IMPACT FRAMEWORK

This section identifies frameworks for evaluating the impact of the instrument proposals in Section 5, as well as the impact methodology used for selecting and prioritising potential instruments.

4.1. Māori Impact Framework

Aotearoa New Zealand's biological heritage has immeasurable value for Māori, as noted in §3.1. Through whakapapa, Māori have active relationships with native ecosystems and species, with which their own physical and spiritual wellbeing is intertwined. In the words of Moana Jackson, Māori live by 'an ethic of restoration that seeks balance in all relationships, including the primal relationship of love for and with Papatūānuku.'[47] The decline of native biodiversity in Aotearoa New Zealand is a symptom of Māori being inhibited from fulfilling the duties that follow from that ethic, particularly the duty of kaitiakitanga. Genuine co-governance of resources and decision-making powers is one aspect of enabling tangata whenua to practice kaitiakitanga. Greater resources for iwi, hapū and whānau is another way to enhance their capabilities for effective resource management.[48]

Sustainable finance has the potential to support Māori to exercise kaitiakitanga by improving access to finance for relevant projects and activities. But there is also the potential for misalignment, both at the level of instrument design and the impact framework. In regard to the latter, it is vital that project managers co-design with Māori the impact framework – that is, the metrics and standards by which a project is deemed successful. This is because, where a sustainable finance instrument is mobilising investment for projects that relate to Māori interests, there is a danger that the interests of investors or outcome funders will not align with the interests of Māori, and thus create negative rather than positive impacts. By co-designing the impact framework with Māori, there is an opportunity to discover and remedy the sources of misalignment.

At the general level, there already exists a significant literature on distinctively Māori frameworks of valuation and wellbeing.[49] Such frameworks are applicable to sustainable finance, even when their explicit focus is elsewhere, such as Māori health, cultural health, water quality, and Māori entrepreneurship.

Distinctively Māori conceptions of impact are also emerging in corporate documents and practices. One example is Te Ara Putanga, the outcomes

[47] Jackson, M. (2020). Where to Next? Decolonisation and the Stories in the Land. In *Imagining Decolonisation*, BWB Texts, 140.

[48] Bargh, M., & Jones C. (2020). *Briefing to the Incoming Ministers for the Environment & Conservation Te Tiriti o Waitangi based co-governance for environmental resilience.* National Science Challenges: New Zealand's Biological Heritage - Adaptive Governance and Policy.

[49] For example, see Durie, M. (1999a). *Te Pae Mahutonga: A model for Māori health promotion*. Health Promotion Forum of New Zealand Newsletter, *49*, 2–5; Tipa, G. & Teirney, L. (2003). *A Cultural Health Index for Streams and Waterways: Indicators for recognising and expressing Maori values*, Ministry for the Environment; Morgan, T. K. K. B. (2006). Waiora and cultural identity: Water quality assessment using the Mauri Model. *AlterNative: An International Journal of Indigenous Peoples*, 3, 42–67; Hēnare, M. (2014). The economy of mana. In Cooke, D., Hill, C., Baskett, P., & Irwin R., (Eds.), *Beyond the free market: Rebuilding a just society in New Zealand*, Dunmore, 65-69; Awatere, S., Mika, J., Hudson, M., Pauling, C., Lambert, S., & Reid, J. (2017). Whakatipu rawa ma ngā uri whakatipu: Optimising the 'Māori' in Māori economic development. *AlterNative: An International Journal of Indigenous Peoples*, 13, 80–88; Wolfgramm, R., Spiller, C., Henry, E. and Pouwhare R. (2019). A culturally derived framework of values-driven transformation in Māori economies of well-being (Ngā hono ōhanga oranga). *AlterNative: An International Journal of Indigenous Peoples*, 16 (1), 1–11; McMeeking, S., Kahi, H., & Kururangi, G. (2019). *He Ara Waiora: Background paper on the development and content of He Ara Waiora*, New Zealand Treasury; Mika, J. P., Dell, K., Newth, J. & Houkama, C. (2020) *Toward a Māori theory of value*, 9th Biennial International Indigenous Research Conference.

pathway that Parininihi ki Waitotara Incorporation created for its annual reports.[50] Under the four values of manaakitanga, kaitiakitanga, whakapono and whanaungatanga/kotahitanga, the framework tracks a variety of metrics which enable annual comparisons. Another example is the ethical screening criteria used by TAHITO Tai o Rēhua Fund, which uses an 'Aroha Connection' to track companies progress from internally focused behaviours to a more relational, sustainable business approach.[51] These examples demonstrate the feasibility of using Māori values for financial decision making.

This report recommends that co-design of the impact framework be specific to each instrument. That is, participation of Māori organisations and communities ought to be part of the basic design process for sustainable finance.

An example of this instrument-level approach is the Community Driven Outcomes Contract (CDOC), developed in Canada by Raven Capital Partners. This structure was designed to improve uptake of a government-funded renewable energy programme on reserves for Indigenous communities. Under the existing programme, the Canadian government paid for outputs that aligned with its own interests, not necessarily the interests of indigenous communities. Hence, Raven Capital Partners used an impact bond structure where the government would instead pay for outcomes – i.e. the installation of renewable energy assets. Raven Capital Partners then worked with Indigenous communities to co-develop an impact framework that focused not only on the outcomes of energy savings and emissions reductions, but also job creation, training opportunities and avoided reliance on social support. On the back of the CDOC, private investors provided the upfront capital for contractors to undertake the installation of new renewable energy assets. The impacts were verified and reported to the Canadian government as the purchaser of outcomes, then payment was delivered to the financial intermediary (Raven Capital Partners) who returned the principal plus coupon to investors. The co-created 'rate card' or impact framework found that, for every CA$1 million of investment, the CDOC generated CA$1.8 million of outcomes, as well as a competitive, 4% rate of return for investors.[52]

Such a structure could be piloted in Aotearoa New Zealand. With support from Foundation North's GIFT Fund, Mōhio has already prepared an Indicative Business Case for Native Forest Bond Scheme, which also uses an impact bond structure.[53] As part of piloting this instrument, the impact framework could be co-designed with relevant iwi and hapū, specifically those that have ahi kā (or continuous occupation) on the site where the pilot is hosted. An aspiring project already taking this approach is The Hope Project | Te Mahere Whakauka,[54] which aims to develop the capacity of hapū-based enterprises to employ people by producing and planting native seedlings.

To conclude, the co-design of impact frameworks is vital for any financial instrument that effects Māori interests. Accordingly, this should be treated as a mandatory requirement for all the instruments proposed in Section 5, irrespective of structure.

[50] Parininihi ki Waitotara Incorporation (2020) https://pkw.co.nz/annual-report-2020/
[51] TAHITO Tai o Rēhua Fund (n.d.) https://tahito.co.nz/
[52] Raven Capital Partners (n.d.). https://ravencapitalpartners.ca/index.php/what-we-do/outcomes-contracts
[53] Hall, D. & Lindsay, S. (2018). *Indicative Business Case: Native Forest Bond Scheme*. Mōhio Research.
[54] The Hope Project | Te Mahere Whakauka (n.d.) https://www.whakauka.org

4.2. IRIS Metrics

IRIS (Impact Reporting and Investment Standards) is a set of standardised metrics that can be used to measure and describe the social, environmental, and financial performance of organisations and businesses that receive impact investment capital.[55] These constitute an internationally recognised tool for asset managers to measure progress. IRIS provides a library of approximately 400 widely used social and environmental metrics, and standardised definitions that leverage global best practice and expert input. The system is non-prescriptive, which means that individual companies and investors can choose to track the most relevant metrics for their Environmental, Social and Governmental (ESG) goals. IRIS is broadly aligned with the targets and indicators of the Sustainable Development Goals (SDGs),[56] as well as the Impact Management Project (IMP) which is emerging as a framework of international consensus for measuring impact.

Below is a list of IRIS metrics that may be applicable to the instruments sketched out in Section 5.

IRIS Metric	Summary	Rationale
Environmentally Focused Metrics		
Threatened Species Policy (OI1618)	Organisations should footnote the details of their policies, how the threatened species are being affected and what is being done to protect them, and how organisations determine which habitats are affected by the organisation's operations. See usage guidance for further information.	Indicates whether the organisation implements policies to protect the threatened species that reside in habitats affected by the organisation's operations.
Area of trees planted: Native Species (PI3848)	Area of land on which native species of trees were planted during the reporting period.	Metric provides an indication of the forest lands long-term sustainability.
Biodiversity Assessment: (OI5929)	Examples of information that the assessments may cover, to footnote, include: the species present in a given area, wildlife habitat conditions, availability and quality of water	Indicates whether the organisation has undertaken biodiversity-related assessments to evaluate the biological diversity present on the land that is directly or

[55] IRIS is the catalogue of generally accepted performance metrics, managed by the Global Impact Investing Network (GIIN). See www.iris.thegiin.org (n.d). The authors have chosen to work with IRIS due to its long track record in the impact investing marketplace and high degree of acceptance among leading impact investors globally. Investors and companies have alternate options to choose from including internally designed metrics or other third-party metric providers.

[56] For a full explanation of the SDG and IRIS alignment, refer to Global Impact Investing Network (2019), *IRIS+ and the SDGs.*

	resources, historical/archaeological importance of the land etc.	indirectly controlled by the organisation.
Land Directly Controlled: Sustainably Managed (OI6912)	Area of land directly controlled by the organisation and under sustainable cultivation or sustainable stewardship. Report directly controlled land area sustainably managed during the reporting period.	The metric provides an indication of the sustainability practices being implemented.
Greenhouse gas emissions avoided due the carbon offsets sold (P12787)	The number of metric tonnes of CO2 equivalent and corresponding monetary value.	The metric provides an indication of the financial value generated by the forest.
Ecosystem services provided (PD8494)	Ecosystem services provided by land directory or indirectly controlled by the organisation during the reporting period. These are likely to include: biological raw materials; regulation of water timing and flows; erosion control; maintenance of soil quality; habitat; primary production; recreation and ecotourism; ethical/spiritual values; educational/inspirational values, etc.	Metric enables the instrument to describe, in a standardised way, the environmental and social value that the forest asset creates.
Socially Focused Metrics		
Social Impact Objectives (OD6247)	Social Impact Objectives could include: increasing access to better, stable pricing of agricultural products, increasing farm profitability, etc.	Describes the social impact objectives pursued by the organisation.
Jobs maintained at directly supported/financed enterprises: Total (P15691)	The total number of full-time equivalent employees working for enterprises financed or supported by the organisation at the end of the reporting period who remain at the organisation as of the end of the reporting period.	Metric helps to demonstrate the social and economic impact of the instrument funding, which is frequently in under-served rural communities.

4.3. IUCN Global Standard for Nature-Based Solutions

Given the momentum around Nature-Based Solutions (NbS), the International Union for Conservation of Nature (IUCN) in July 2020 released the world's first Global Standard for Nature-based Solutions.[57] The standard is a self-assessment tool for use by public and private sector parties, and designed to encompass a range of practices such as forest landscape restoration, integrated water resource management, ecosystem-based adaptation and mitigation, and ecosystem-based disaster risk reduction.

The Global Standard constitutes eight criteria, each of which encompass indicators and guidance for achievement.

Criterion	Guidance
1. NbS effectively address societal challenges	NbS is designed as a response to a societal challenge(s) that has been identified as a priority by those who are or will be directly affected by the challenge(s)
2. Design of NbS is informed by scale	NbS is designed to achieve scale not only across the biophysical or geographic perspective, but also economic systems, policy frameworks and cultural perspectives
3. NbS result in a net gain to biodiversity and ecosystem integrity	NbS design and implementation must ensure its long-term resilience and durability by not undermining the integrity of underlying ecosystems and, instead, proactively seeking to enhance the functionality and connectivity.
4. NbS are economically viable	NbS give sufficient consideration to return on investment, the efficiency and effectiveness of the intervention, and equity in the distribution of benefits and costs.
5. NbS are based on inclusive, transparent and empowering governance processes	NbS acknowledge, involve and respond to the concerns of a variety of stakeholders, especially rights holders and indigenous peoples, to exercise good governance arrangements and enhance its social license to operate.
6. NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits	NbS design identifies and understands trade-offs and social/ecological limits; and follows a fair, transparent and inclusive process to balance and manage them over both time and geographic space.

[57] International Union for Conservation of Nature (n.d.) https://www.iucn.org/

7.	NbS are managed adaptively, based on evidence	NbS implementation plans include adaptive management, based on monitoring and evaluation, as a response to uncertainty and to effectively harness ecosystem resilience.
8.	NbS are sustainable and mainstreamed within an appropriate jurisdictional context	NbS interventions are designed and managed with a view to long-term sustainability and to take account of, work with and align with sectoral, national and other policy frameworks, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

4.4. UN Sustainable Development Goals

At the higher level, biodiversity financing aligns with the multilateral ambitions enshrined in the United Nations Sustainable Development Goals (UNSDGs). The instruments described in Section 5 may align with the following targets:

Goal 13: Climate Action

Target 13.1
Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

Alignment with Paris Agreement
The UNSDGs note that Goal 13's objectives for climate action are principally operationalised through the Paris Agreement.

Goal 14: Life Below Water

Target 14.1
By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

Target 14.2
By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

Goal 15: Life on Land

Target 15.1
By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

Target 15.2
By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation,

restore degraded forests and substantially increase afforestation and reforestation globally.

Target 15.3
By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.

Target 15.4
By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.

Target 15A
Mobilise and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.

Target 15B
Mobilise significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.

INSTRUMENT PROPOSALS

This section sets out five proposals for biodiversity finance instruments. Each subsection begins with an overview of the instrument, a description of the finance gap that the instrument intends to fill, and a discussion of the instrument structure and underlying business case. This Concept Paper prioritises brevity over comprehensiveness, so does not represent the entirety of the underlying research, but this can be provided by the Lab upon request.

The Lab has screened the instrument proposals against its alignment with one or more of the following criteria:

a) the instrument has the potential to deliver new sources of capital on an ongoing basis (i.e. the instrument can be applied broadly and not only for one-off, localised interventions);

b) the instrument has an achievable policy and/or market pathway to implementation and subsequent scaling in order to meet the required potential;

c) the instrument can be easily scaled within an established market through, for instance, plain equity or debt vehicles, such that each instrument provides precedents for similar models to be established in other locations with high potential;

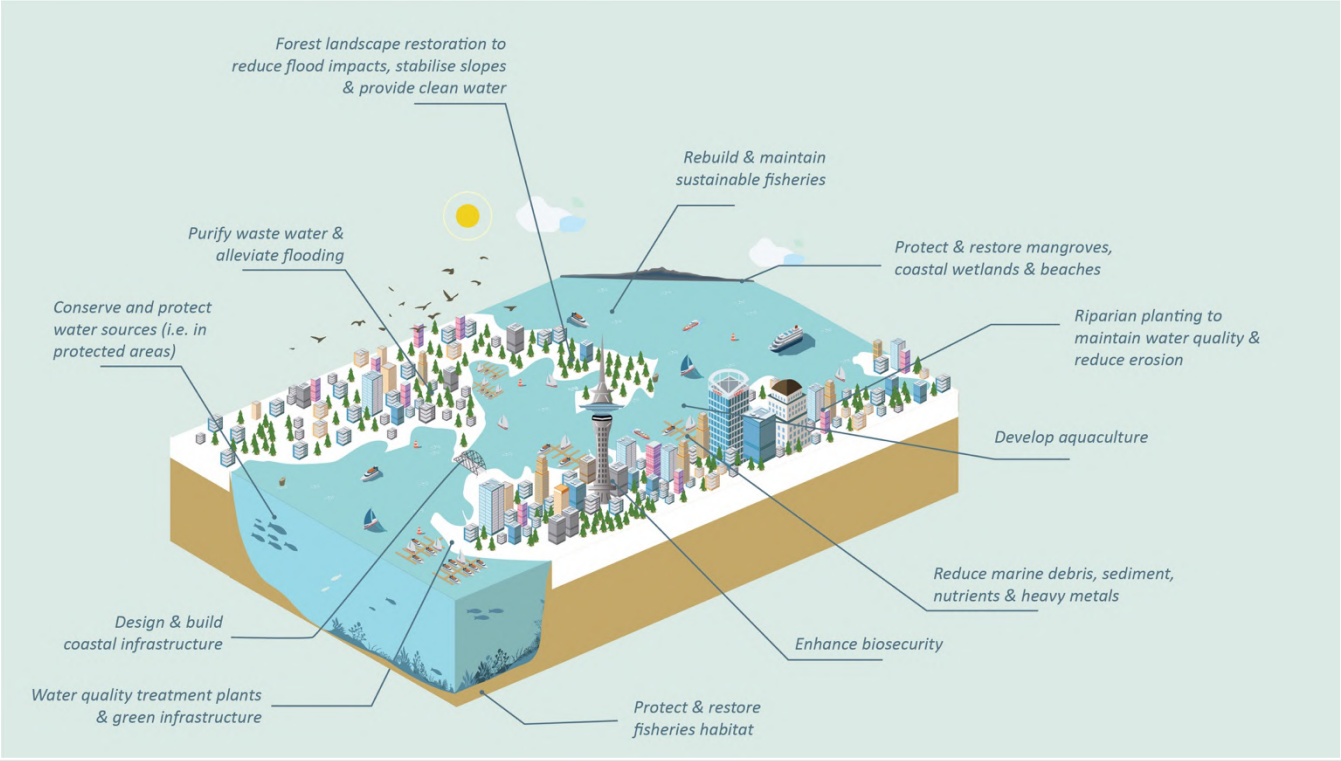
d) the instrument can have broad impact across many established markets by aggregating projects together; and

e) the instrument accommodates blended capital from public and private sources so to create one risk/return sharing vehicle and, therefore, be more attractive to mainstream investors.

Detail about the Lab's Methodology can be found in Appendix 1.

5.1. The Hauraki Gulf Blue Bond

Instrument Overview	
Sector Focus	Multiple – land, freshwater and oceans
Investor Market	Single – institutional
Instrument Class	Debt – fixed interest bond
Proof of Concept	Nascent stage – some overseas applications
Risk Mitigation	Stable cash flow & rated issuer



5.4.1. Overview

Blue bonds are a relatively new type of sustainability bond which mobilises finance for projects related to ocean conservation. The Hauraki Gulf Blue Bond is a debt instrument for which the use-of-proceeds are linked to the protection, rehabilitation and enhancement of the mauri (or life force) of the Hauraki Gulf/Tīkapa Moana/Te Moana-nui-ā-Toi. Investors are paid an interest rate (commonly known as a coupon) on a fixed schedule and will receive their initial investment (principal) upon maturity. The Bond would be issued by a bank, local or regional council for institutional investors, or even as a sovereign blue

bond by the New Zealand Government. In the context of the Hauraki Gulf, the Bond will enable coordinated catchment-level investment into the protection of water resources (including waste water treatment and water pollution prevention projects), storm water systems and flood protection, and protection and restoration of water and marine ecosystems and related biodiversity (wetlands, rivers, lakes, coastal areas and open sea zones).

5.4.2. Current Obstacles

The Hauraki Gulf/Tīkapa Moana/Te Moana-nui-ā-Toi is 'a mighty ecosystem brought to its knees'.[58] Marine species like crayfish are classified as functionally extinct in the Gulf. Shellfish beds are in decline and kelp forests are being replaced with kina barrens. Toxic algal blooms are increasingly common, as well as mass mortalities of fish and shellfish. Marine and estuarine sites are coping with high levels or sediment and nutrient loads, in addition to high levels of heavy metal contamination (such as copper, mercury and zinc) in certain sites around Waitematā Harbour and Tāmaki Inlet.

Auckland Council and Waikato Regional Council have responsibilities for the integrated management of the natural and physical resources in the Hauraki catchment. In exercising these responsibilities, however, regional councils are financially constrained. For Auckland Council in particular, these constraints were made more acute by the Covid-19 pandemic. This means that – in the absence of other financing options – regional councils can only eke out minor improvements over time from a few minor revenue streams, such as the Natural Environment Targeted Rate and Water Quality Targeted Rate, rather than implement upfront the catalytic change that is required. The relevant district councils – Thames-Coromandel, Hauraki, Waikato and Matamata-Piako District Councils – are similarly constrained.

A holistic approach to restoring the mauri[59] of the Hauraki Gulf requires a coordinated action across multiple iwi, hapū and local councils. Since its establishment in 2000, the Hauraki Gulf Forum is the central forum for strategic direction, as a statutory body that involves representatives from relevant councils, tangata whenua and ministerial representatives for conservation, fisheries and Māori development. Its Work Plan 2020-2022 involves information gathering and advocacy for regulatory change, in particular to achieve a 5% increase in marine protected areas. However, other desired outcomes – restoration of shellfish beds, greater riparian planting, and an end to marine dumping of wastes by vessels – involve investments that the Hauraki Gulf Forum itself has limited access to achieve. In May 2020, the Forum approved a reduced budget in light of the Covid-19 pandemic, which reflects its dependence upon council funding and its subsequent vulnerability to local government's financial constraints.

In the meantime, the Sea Change – Tai Timu Tai Pari Hauraki Gulf Marine Spatial Plan (released December 2016) lays out a detailed plan for restoring the mauri of the Hauraki Gulf.[60] The Government is yet to formally respond, with a Ministerial Advisory Committee still working through its recommendations in order to report to relevant

[58] Hauraki Gulf Forum (2020). *State of Our Gulf 2020: Hauraki Gulf/Tīkapa Moana/Te Moana-nui-ā-Toi*, 6.

[59] In te ao Māori, the deterioration of local environments involves its mauri (or life force) being diminished, which in turn diminishes the mauri of tangata whenua.

[60] The Hauraki Gulf Marine Spatial Plan (2017) https://www.seachange.org.nz/

ministers. Aspects of Sea Change have been supported, such as a 2019 co-funding arrangement for shellfish restoration involving the Department of Conservation, Fisheries New Zealand, The Nature Conservancy, and the Revive Our Gulf community group. Yet the combination of piecemeal funding and fragile council financing means that present effort are falling short of the 'sea change' that the Marine Spatial Plan aspires to.

5.4.3. The Hauraki Gulf Blue Bond

In order to deliver a coordinated response at a scale that reflects the size of the Hauraki catchment as well as the need for urgent intervention, this Concept Paper proposes a Hauraki Gulf Blue Bond for which the use-of-proceeds are linked to the protection, rehabilitation and enhancement of the mauri (or life force) of the Hauraki Gulf/Tīkapa Moana/Te Moana-nui-ā-Toi. This structure would provide access to financing so that interventions can be undertaken now, rather than incrementally over future decades.

By raising capital from debt markets, the Hauraki Gulf Blue Bond will enable investment into projects and activities identified by the Sea Change Marine Spatial Plan or subsequent research. This includes (and is not limited to):

- Support for community engagement and education;
- Rangatiratanga for mana whenua;
- The restoration of benthic habitats and shellfish beds;
- Riparian and estuarine restoration in the wider Hauraki catchment;
- Nature-based solutions for coastal resilience and adaptation;
- Impact investments into sustainable fisheries and aquaculture;
- Protection of endangered marine and terrestrial species;
- Support for offshore island sanctuaries and predator control;
- Increasing investment into green infrastructure (e.g. bioswales, rain gardens, permeable surfacing, green rooves) and grey infrastructure (e.g. storm- and wastewater systems, water treatment facilities, sediment traps) to improve water quality by reducing sediment, debris and pollutants.

The Hauraki Gulf Blue Bond can accelerate these activities by improving access to finance. Dedicated use-of-proceeds means that the capital raised is earmarked for only these activities, thereby reducing the transactional costs of accessing finance and funding, and improving the stability and security of funding over the longer term. Essentially, the blue bond reduces the cost of capital, making environmental spending more effective.

Repayment of principal will be achieved by uplifting gains from the regional economy that benefits from the natural wealth and health of the Hauraki Gulf. A 2012 report by Auckland Council estimated that the Hauraki Gulf generated over NZ$2 billion annually in economic activities that included tourism and the cruise industry, marine recreational activities, commercial and recreational fishing, aquaculture,

and Ports of Auckland.[61] This could be achieved directly by targeted investments into businesses that deliver social and environmental benefits alongside financial returns, such as sustainable fisheries, aquaculture and carbon farming on erosion-prone land. Where the returns are less direct, such as tourism, a results-based levy could be paid toward servicing the Hauraki Gulf Blue Bond, where the levy rate is relative to agreed-upon outcomes being achieved. The early interventions this pays for will bring forward the prosperity that a healthier Hauraki Gulf will produce for local businesses, and also improve their resilience against the coastal erosion and extreme weather that climate change is likely to bring.

Revenue from public sources will also be critical, especially to attract institutional investors who require secure returns with very low risk of non-repayment. This could be provided by various instruments. Firstly, Auckland Council has the Natural Environment Targeted Rate and the Water Quality Targeted Rate, both introduced in July 2018, which would provide a secure revenue stream if redirected toward repayment of a bond. In other words, rather than use these targeted rates to eke out minor improvements over time, Auckland Council could leverage these long-term revenue streams to raise a large upfront commitment of impact-oriented capital which enables more substantive interventions over a shorter timescale. Secondly, this could be complemented by service charges or infrastructure growth charges (levies) for relevant utilities such as Watercare, the Auckland Council Controlled Organisation (CCO) that manages drinking water and wastewater services in the Auckland region. Contributions by such entities will help to reduce the risk of the instrument overall.

A 2019 survey of international asset owners, managers and intermediaries by The Nature Conservancy found that risk-sharing and risk reduction was likely to increase investment in natural capital.[62] Greater liquidity and higher returns were also ranked as similarly important (although these priorities, especially on returns, may have changed following the Covid-19 pandemic and associated monetary policy response). However the factor that was most likely to increase the attractiveness of nature-based investment was *the availability of large-scale opportunities*. The Hauraki Gulf Blue Bond has been designed precisely to address this need, as a large catchment that centres on Aotearoa New Zealand's largest city and financial centre. Moreover, the scale of the Blue Bond could be increased to incorporate the Manukau Harbour, which also faces environmental degradation and may be positively impacted by the same interventions, given that it is separated from the Waitematā Harbour (and hence the Hauraki Gulf) by only a narrow isthmus. If successful, the Hauraki Gulf Blue Bond could also serve as a pilot for other issuances that target smaller catchments, which benefit from replicating processes in order to reduce transaction costs and thereby to offset the reduced opportunities for revenue to repay the bond.

Although still in a nascent stage, blue bonds have emerged globally as a part of the broader sustainable bond landscape. In 2018, the Republic of the Seychelles issued the first bond explicitly marketed as 'blue', the Seychelles Blue Bond which raised US$15 million for the expansion of marine protected areas, improved governance of priority fisheries, and the development of the Seychelles' blue economy. In January 2019, the Nordic Investment Bank launched

[61] Barbera, M. (2012). *Towards an economic valuation of the Hauraki Gulf: a stock-take of activities and opportunities.* Auckland Council, TR2012/035.

[62] The Nature Conservancy & Environmental Finance. (2019). *Investing in Nature: Private finance for nature-based resilience.*

a Nordic-Baltic Blue Bond which raised SEK2 billion for projects such as wastewater treatment, prevention of water pollution and water-related climate change adaptation.

In comparison to the global bond market, the green and climate bond market is still relatively small, yet with a strong upwards trend. Global green bond issuance reached a record-breaking US$ 269.5 billion in 2020, improving slightly on the previous year despite the Covid-19 pandemic.[63] In Aotearoa New Zealand, the green bond market is small but has momentum. As of 30 June 2019, Climate Bonds Initiative quantified New Zealand's cumulative green and sustainability debt issuance at NZ$3.8 billion.[64] Notable issuances include Argosy Property (NZ$100 million), Westpac NZ (NZ$860 million), Contact Energy (NZ$1.8 billion), Auckland Council (NZ$350 million), and Kāinga Ora's well-being bond (NZ$500 million).

In light of the Covid-19 pandemic, it is also worth noting the opportunity for large-scale blue or green bonds to contribute to the economic stabilisation and stimulation programme of the Reserve Bank of New Zealand (RBNZ). In March 2020, the RBNZ committed to a Large Scale Asset Purchase (LSAP) programme of up to NZ$100 billion in New Zealand Government Bonds. Internationally, as a consequence of similar programmes following the pandemic and also the Global Financial Crisis over a decade earlier, there is an ongoing debate over the extent to which monetary and fiscal policy should be more coordinated, so that central bank stimulus contributes to imminent threats such as climate change.[65] At the strong end, there are proposals for 'green quantitative easing', where central bank balance sheets are used proactively to support climate mitigation and adaptation. Such proposals, however, are controversial, because they overstep the conventional mandate of central banks to not interfere in fiscal policy decision making. Less controversial, however, is the proposal that central banks should be responding to the risks that climate change poses for financial stability. One way to achieve this is through taxonomies (such as the EU Sustainable Taxonomy) that track the risk differentials between green, non-green and grey assets, and adjust portfolio management accordingly.[66] So, while the positive screening approach of green QE requires radical changes to central bank mandates, the negative screening approach implied by climate risk management appears to be increasingly accepted as consistent with central bank mandates; for example, in March 2021 the Bank of England's remit was extended to include the UK's net-zero target,[67] and new US Treasury secretary Janet Yellen has signalled that she will integrate such capacity into the US Treasury.[68] In the context of Aotearoa New Zealand, if the RBNZ develops a more discerning approach to its balance sheet, then the creation of climate-aligned assets of sufficient scale could be beneficial, in case the current purchasing programme continues, or

[63] Climate Bonds Initiative (2021). https://www.climatebonds.net/2021/01/record-2695bn-green-issuance-2020-late-surge-sees-pandemic-year-pip-2019-total-3bn

[64] Boulle, B., & Nolan, S. (2019). *New Zealand Green Bonds and Infrastructure 2019*. Climate Bonds Initiative.

[65] Bolton, P., Despres, M., Pereira da Silva, L.A., Samama, F., & Svartzman, R. (2020). *The green swan: central banking and financial stability in the age of climate change*, Bank of International Settlements.

[66] Network for Greening the Financial System (2020). *A Status Report on Financial Institutions' Experiences from working with green, non green and brown financial assets and a potential risk differential*. NGFS.

[67] Sunak, R. (2021). *Budget Speech 2021*. https://www.gov.uk/government/speeches/budget-speech-2021

[68] Reuters Staff (2021, January 20). Yellen says would appoint senior climate official at Treasury. *Reuters*. https://www.reuters.com/article/us-usa-biden-yellen-climate-idUSKBN29O2B3

another liquidity crisis forces the RBNZ to assume its role once again as 'market-maker of last resort'.[69]

In terms of impact framework, a rigorous proposal for blue bond metrics is the Blue Natural Capital + Impacts Framework (BNC+ Framework), developed by Blue Natural Capital Financing Facility and grounded in the IUCN's BNC Positive Impacts Framework.[70] This goes beyond the generic guidelines of the Green Bond Principles and focuses more specifically on the unique functions of blue investments to include conservation management, ecosystem restoration, climate mitigation, creation of jobs and livelihoods, and gender equality. Under each of these categories are several KPIs to track to measure progress.

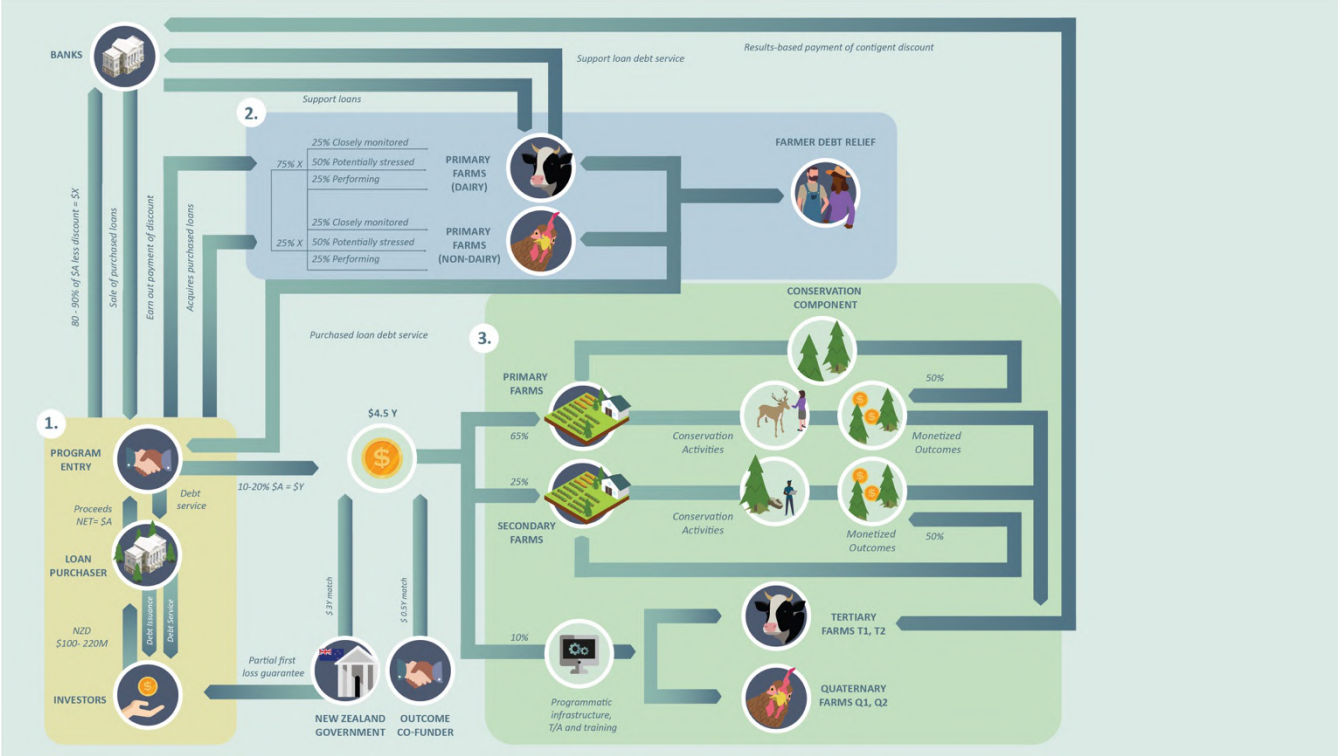
The BNC+ Framework provides a good starting point with the benefit of international alignment. However, it will also be necessary to involve Indigenous values in impact measurement by inviting tangata whenua to co-design the impact framework from the outset, as described in §4.1. A useful precedent is the Mana Enhancing Agreement (MEA) that supports the Northern Wairoa Freshwater Improvement Project in the Kaipara Harbour Catchment. This places mana at the centre of the partnership between Northland Regional Council, tangata whenua, research organisations and service deliverers. More relevant to the Hauraki Gulf is the Mana Whenua Kaitiaki Forum, which involves the 19 hapū and iwi authorities of Tāmaki Makaurau. In response to the Auckland Climate Action Plan, the Forum developed a wellbeing framework, Te Ora ō Tāmaki Makaurau, which is grounded in the recognition that oranga wai, the health of the water, is interconnected with oranga whānau, oranga marae, orange whenua and oranga whakapapa – that is, the health of family, meeting places, land and relationships. Integrating these insights into the impact framework, or mapping out the synergies between them, will be vital to success.

[69] Hauser, A. (2021, 7 January). *From lender of last resort to market maker of last resort via the dash for cash - why central banks need new tools for dealing with market dysfunction.* Speech by Mr Andrew Hauser, Executive Director for Markets of the Bank of England, at Thomson Reuters Newsmaker. https://www.bis.org/review/r210113a.htm

[70] Wilson, S., & Baldwin, R. (2018). *Blue Natural Capital Positive Impacts Framework (BNC+)*, Report prepared for International Union for Conservation of Nature, Five Oceans Environmental Services Ltd., and the Government of Sweden.

5.2. Debt-for-Nature Swaps

Instrument Overview	
Sector Focus	Single – land use (dairy agriculture, non-dairy and forestry)
Investor Market	Single – institutional
Instrument Class	Multiple – credit, results-based payment
Proof of Concept	Concept stage
Risk Mitigation	Rated issuer, government outcome funder



5.2.1. Overview

Debt-for-nature swaps are a familiar instrument in international sustainable development, whereby a developing country's debt is reduced in exchange for environmental protections. This basic concept is adapted here for domestic application. Debt-for-nature swaps are treated as a risk management tool for banks to alleviate debt-related stress on agricultural borrower and thereby avoid the systemic

risk of widespread defaults. A proportion of the debt stock or service is voluntarily cancelled under the agreement, then savings are redirected into biodiversity improvements that reduce the exposure of farms to forthcoming environmental prices and regulations, and enhance their resilience to climate-related shocks.

5.6.2. Current Obstacles

The agricultural sector, and dairy sector in particular, has a portion of serious financial vulnerability. These are significant enough that the Reserve Bank of New Zealand (RBNZ) has long identified agricultural debt as an area of concern for systemic financial stability. As the RBNZ notes in its May 2020 Financial Stability Report, agricultural lending accounts for about 13% of bank lending, about two thirds of which is for the dairy sector. Prior to the Covid-19 crisis, the agriculture sector was facing difficulties in servicing debt, initiated by the 2015 downturn in global dairy commodity prices. Highly indebted dairy farmers require payouts above $6 per kilogram of milk solids (kgMS) to break even, yet the farmgate milk price has averaged $6.25 kgMS over the last decade. This leaves little room for error. As of November 2019, RBNZ's bank balance sheet surveys identified 3% of dairy loans as 'non-performing', 10% as 'potentially stressed', and 15% as 'closely monitored'. The sheep and beef and horticultural sectors also carry stressed debt, but not to the same degree. However, a continuation of low wool prices could lead to a similar situation.

Although commodities have fared well through the Covid-19 pandemic, this is offset by a stronger NZD currency, as well as great global uncertainties. Moreover, severe drought in the upper and eastern North Island through the summer of 2019/2020 created further stress for farmers. This economic impact is likely to be attributable to climate change, and likely to increase in frequency and intensity as the world continues to heat.[71]

In the meantime, the agricultural sector is facing growing pressure to improve environmental outcomes. New freshwater regulations through the National Environmental Standards for Freshwater have also tightened environmental regulation for agriculture. Ongoing initiatives such as He Waka Eke Noa (the Primary Sector Climate Change Commitment) are proposing a suite of new environmental reforms, including farm gate emissions pricing mechanism by 2025, with the possibility of agriculture entering the Emissions Trading Scheme if these arrangements are not implemented.

This will leave some farmers in a difficult position, facing growing costs as environmental damages are internalised through pricing mechanisms, yet also highly indebted and so unable to invest in remediating activities that might improve environmental outcomes. Such activities could include the restoration of wetlands for regulation and filtration of water, retiring and restoring riparian margins, and restoring native vegetation on suboptimal land to create on-farm forest sinks. A 'just transition' approach would enable farmers to transition their agricultural practices toward more sustainable outcomes, in order to avoid the growing cost of environmental compliance.

[71] Frame et al. (2020). Climate change attribution and the economic costs of extreme weather events: a study on damages from extreme rainfall and drought. *Climatic Change*, 162, 781–797.

5.6.3. Debt-for-Nature Swaps

Debt-for-nature swaps (DNS) are a familiar instrument in international sustainable development.[72] It is an agreement to reduce a developing country's debt stock or service in exchange for a commitment to protect nature from the debtor-government. Donor countries thereby voluntarily cancel the debt owned by the developing country's government, with the resulting savings redirected toward conservation projects. For example, a DNS arranged in 2007 between the United States of America and Costa Rica will involve the erasure of US$26 million of Costa Rica's external debt with the US by 2024. The money that would have otherwise serviced this debt has instead funded the conservation of almost 800,000 hectares of tropical forest, additional planting of about 60,000 trees, the development of climate adaptation plans, and purchasing of new land for restoration.[73]

The innovation is to adapt this logic for a DNS Programme to manage stressed agricultural debt. This would be achieved by an intermediary that acquires existing farm loans from agricultural lenders at a discount from principal value. The farm debtors would then undertake a number of nature-based interventions, such as land use conversion and regenerative farming practices, with the potential to deliver farm-level environmental improvements, such as reduced sediment and nutrient run-offs, reduced erosion, and improvement in soil and water quality. Participating banks would be contractually bound to deliver financing for these activities, but on a strictly results-based payment basis with reference to documented future avoided losses in their agricultural loan portfolios. Accordingly, the exposure of the banks will be limited to the value of the initial discount. Although improved environmental outcomes are the primary focus, additional co-benefits of the DNS Programme include improved operating economics for farm owners, lending institutions, and farming communities at large. This further contributes to managing the systemic risk of financial destabilisation from large-scale default, potentially triggered by another major drought or extreme weather event, or economic factors such as a collapse in milk prices or a sustained upswing of national currency.

The loan acquisition would be funded by an environmental bond offering, issued by an intermediary or consortium with support from public and private entities. Given the national interest in environmental improvements and financial stability, the New Zealand Government could support the DNS Programme by providing a partial first loss-guaranty on the bond and/or directly co-fund the environmental activities, as it already does through various erosion control or afforestation schemes. Regional councils could also co-contribute, where financially feasible, as well as selected private sector corporates that have a stake in the intended outcomes.

The DNS Programme will focus on acquiring closely monitored and potentially stressed loans. It will not involve bail-outs of non-performing loans – that is, loans classified as >90 days past due or impaired. Potentially stressed loans refer to loans that banks have assigned internal credit rating grades equivalent to B (S&P/Fitch) or B2 (Moody's) or lower, but not non-performing. This involves exposure to a pivotal part of the agricultural sector, which has potentially overextended on agricultural intensification, and also

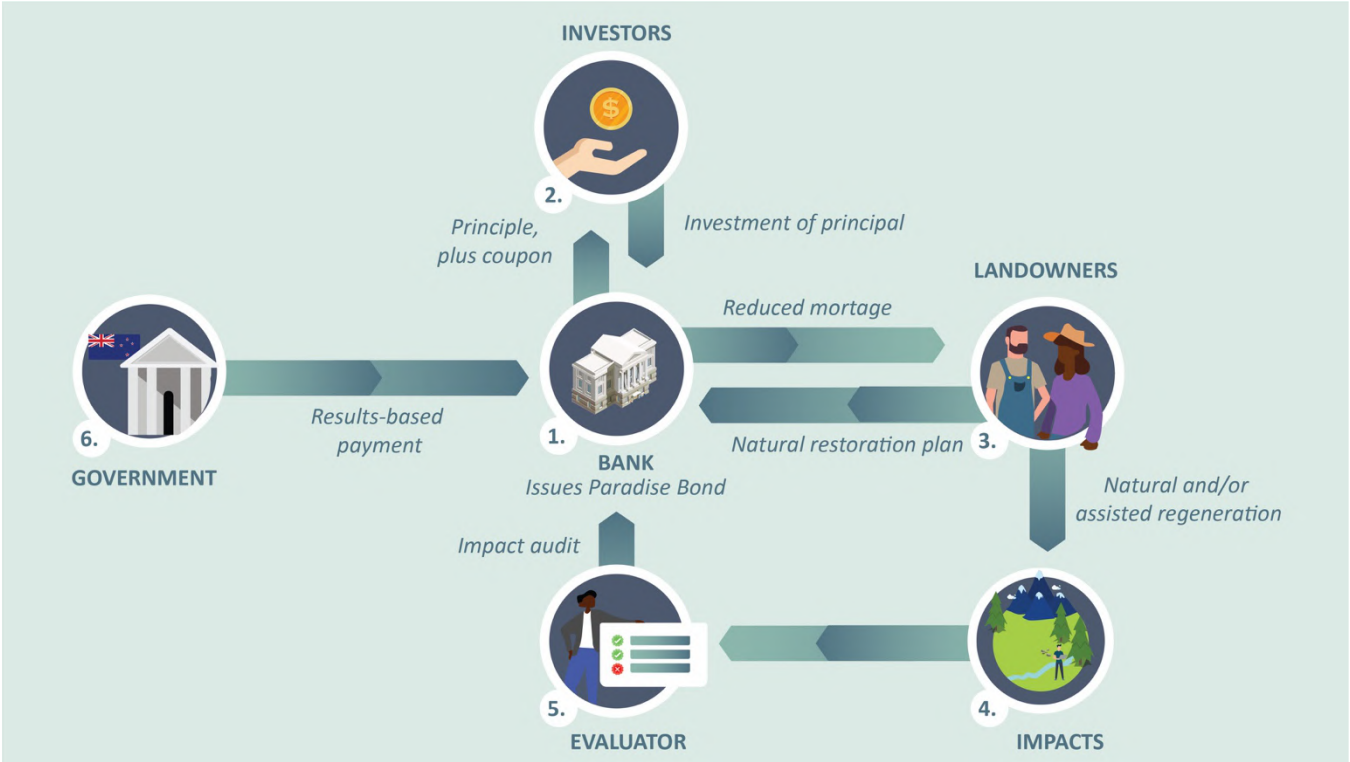
[72] UNDP (n.d.). *Debt for nature swaps.* swapshttps://www.sdfinance.undp.org/content/sdfinance/en/home/solutions/debt-for-nature-swaps.html#mst-0

[73] Brears, R. 2020. *Nature-based Solutions to 21st Century Challenges.* Earthscan, 295.

lacks the creditworthiness or risk appetite to invest in low-input farming systems and adaptive land use changes. By transitioning this portion of the agricultural sector to more sustainable practices, it can uplift the whole sector to the level of the more sustainable farmers.

5.3. Paradise Bonds

Instrument Overview	
Sector Focus	Single – land use
Investor Market	Multiple – institutional and retail
Instrument Class	Debt – fixed interest bond
Proof of Concept	Concept stage
Risk Mitigation	Stable cash flow & government outcome funder



5.3.1. Overview

Paradise Bonds are a class of bank bonds issued to investors for the purpose of reverting land to its natural state. The issuer uses the bond's proceeds to finance land from landowners, which would be retired from agricultural use and returned into natural ecosystems that generate public environmental value. The issuer simultaneously enters into a long-term results-based payment (RBP) agreement with

the New Zealand Government (or government agency) that complements the interest payments on the Paradise Bond, provided that pre-agreed levels of land use change are achieved. The purpose of Paradise Bonds is to fund a wholesale shift in land use type and large-scale restoration of biological heritage.

5.3.2. Current Obstacles

Land use change has transformed the New Zealand landscape since human settlement, removing more than two-thirds of the original forest. Over the last 25 years, the most significant trends in land use change are a decline in sheep and beef farming, and an increase in dairy farming and exotic plantation forestry.[74] New Zealand's total land area is 26.8 million hectares, inclusive of off-shore islands. Of this, agriculture covers 13.8 million hectares (53.4%), exotic forestry 2.1 million hectares (8.1%) and native forest 7.6 million hectares (29.6%). While there are a wide range of potential factors that act as driver and barriers to land use change, it is often economic factors that have the greatest influence on land use decisions. This explains, in part, why a high proportion of land in New Zealand has been converted for dairy farming or planted for plantation forests. The result is that New Zealand's biodiversity supporting potential has been in rapid decline for decades.

Recent research shows that nature-based solutions, especially the protection and restoration of forest ecosystems, can cost-effectively deliver 37% of all CO2 mitigation needed globally by 2030.[75] Although land use change is implicated in serious global challenges such as climate change and biodiversity loss, land use change can also contribute to the solutions. Alongside carbon sequestration, sustainably managed land can reduce vulnerability and enhance resilience against extreme climate events, as well as broader co-benefits of improving soil fertility and water quality. These co-benefits have substantial economic, social and developmental value and are a prerequisite for rural productivity to be maintained or enhanced in the future.

5.3.3. Paradise Bonds

Paradise Bonds are long-term fixed-rate bonds issued by banks and placed with investors in the mainstream international capital markets.[76] The Bonds are backed by the full faith and credit of the issuing entity. Paradise Bonds constitute a so-called 'cover pool' of relatively low-risk real estate assets, such as restored forest, riverways or wetlands. Given that the pool of assets will meet certain environmental criteria, the bond will also designated 'green' in reference to a relevant standard, such as Green Bond Principles or Climate Bonds Initiative.

Maturities would typically be 10–30 years, reflecting the timescale that sustainable land use change takes to fully realise. Paradise Bonds differ from regular bank bond issuances in two ways:

1. The issuer specifically uses the proceeds to finance the transition of modified land cover to natural land cover types, such as forests or wetlands, which involves the recreation of native

[74] Journeaux, P., Reenen, E., Manjala, T., Pike, S., Hanmore, I. (2017). *Analysis of drivers and barriers to land use change*. Report prepared for the Ministry for Primary Industries. Agfirst.

[75] Griscom, et al. (2017). Natural Climate Solutions, *Proceedings of the National Academy of Sciences*, 114 (44), 11645-11650.

[76] Paradise Bonds are an amalgamation of two concept financial instruments. Firstly, an Eden Bond, promoted by Sarason & Partners (n.d.) https://sarasinandpartners.com/think/eden-bonds-can-money-grow-on-trees/). Secondly, a Sustainable Land Bond, promoted by The Nature Conservancy (2018). *Sustainable Land Bonds: How governments can finance climate commitments and strengthen rural economies*, The Nature Conservancy & Climate Bonds Initiative.

ecosystems.[77] The landowner retains ownership of their land but on more favourable terms *if* they revert and maintain the land in natural regeneration.

2. The issuer enters into results-based finance agreement with the New Zealand Government (or government agency) that is designed to increase the annual interest rate payment on the Paradise Bond, provided that pre-agreed levels of land cover change are achieved that year.

From an investor perspective, the Paradise Bond is identical to a typical bank bond issue by financial risk/return analysis, but it will have the advantage of qualifying as a green bond based on a transparent use-of-proceeds. As Paradise Bonds are placed into mainstream capital markets with an above-market coupon rate, the largest institutional investors could potential supply capital in the tens or hundreds of millions of dollars. Finally, landowners from across New Zealand that have land available for retirement would benefit from lower financing costs. Programmes such as the QEII Trust only partially support landowners to restore native habitat on retired land, whereas the results-based payment contract that underlies the Paradise Bond would be set at an adequate rate to undertake the necessary interventions.

The Paradise Bond structure would signify a step-change in delivering biodiversity and climate change targets at scale. With interest rates at historically low levels, this is an opportune time to borrow long-term money at low cost.[78] The yield between the cost of capital and the returns from nature have never been higher. Furthermore, the inclusion of banks and insurance companies in the new mandatory requirements for reporting and disclosure under the Taskforce for Climate-related Financial Disclosures (TCFD) framework means that the whole of the economy will be seen through a climate risk lens, not just large companies listed on the stock market. Being able to demonstrate climate resilience through nature-based solutions will be important to demonstrate preparedness for climate-related risks.

From the Government's perspective, Paradise Bonds are a mechanism for effectively delivering a payment for ecosystem services, which is embodied in the result-based payment. This would support its objectives of achieving carbon sequestration, biodiversity and the economic well-being of rural communities. Policy makers have an historic opportunity to initiate large-scale land-use change when capital market conditions can help to implement this – with record-level low bond yields, investor appetite for products that support environmental outcomes, and emerging technology that aids monitoring and evaluation. Paradise Bonds would enable the Government to set clear outcomes through the underlying results-based contracting, co-designed in conjunction with Māori as Treaty partners, so that it pays for optimal outcomes on each site. This will align neatly with the Climate Change Commission's advice, which emphasises the importance of an integrated approach to afforestation, which recognises the wider environmental co-benefits from native afforestation and ecosystem restoration.[79] It will also likely enhance

[77] The cornerstone of a Green Bond is the utilisation of the bond's proceeds for projects which should be appropriately described in the legal documentation for the security. All designated Green Project categories should provide clear environmental benefits, which will be assessed and, where feasible, quantified by the issuer. For more information, see *The Green Bond Principles*, The International Capital Market Association (ICMA)

[78] Interest rates in New Zealand dropped to a record low of 1% in August of 2019. On 11 October 2020, Heartland Bank released the lowest home loan rate in New Zealand history.

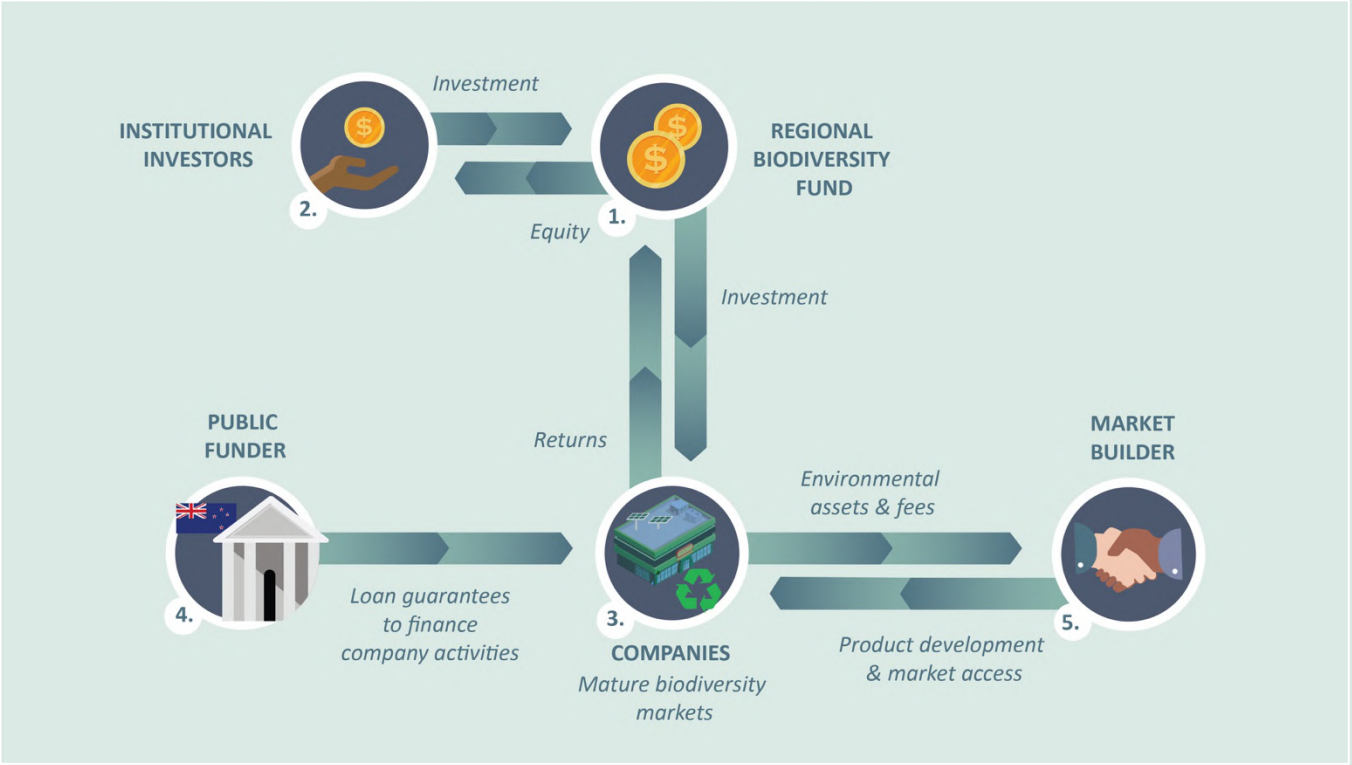
[79] Climate Change Commission (2021). *2021 Draft Advice for Consultation.*

the country's standing in capital markets more generally, given that rating agencies are taking account of Paris Agreement commitments when evaluating sovereign debt ratings.[80] Finally, Paradise Bonds encourage the Government to link up its sectoral and regional programs, rather than focus on funding individual projects. This should enable greater coordination between relevant government agencies such as Treasury, Ministry for Primary Industries, and Ministry for the Environment; and between central and local government.

[80] See UN Environment Programme Finance Initiative (n.d.) *Sovereign Credit Risk*. https://www.unepfi.org/ecosystems/erisc/

5.4. Regional Biodiversity Fund

Instrument Overview	
Sector Focus	Multiple – forestry, agriculture, aquaculture, tourism,
Investor Market	Single - institutional
Instrument Class	Equity – private equity
Proof of Concept	Emerging stage – some examples internationally
Risk Mitigation	Pubic business loan guarantee & marketing building



5.2.1. Overview

A closed-end fund to invest in 10–20 companies in mature biodiversity-related markets, operating in regions of New Zealand such as Te Tai Tokerau (Northland), Te Tai Rāwhiti (the East Coast), the South Island (Te Wai Pounamu). Example markets include sustainable forestry, sustainable agriculture, and ecotourism. Many of the Fund's projects generate

environmental assets such as New Zealand Units (NZUs) and certified commodities. With underlying products certified by Forest Stewardship Council (FSC), Fairtrade, and ecotourism labels, the fund would generate financial returns from the sale of sustainably harvested timber, non-timber products like mānuka honey, and carbon credits through the Emissions Trading Scheme or voluntary carbon markets. Given the premium these products can demand in their respective markets, investment opportunities potentially abound and are waiting for the right type of intentional capital injection.

5.2.2. Current Obstacles

Direct investments into companies that aim to preserve and/or enhance New Zealand's biodiversity are feasible without any intermediary financial structure. However, such direct investment typically have high search costs, high deal transaction costs, and offer low risk diversification. They also do not increase the participation of a broader investor base (unless via deal-by-deal co-investment) who are not intimately familiar with the nuances of biodiversity investment. Furthermore, the investment needs of companies in this space are not generally of a size to match the investment mandates of institutional investors who may need to multi-million dollar deals in order to justify the high transaction costs. Lastly, direct investments do not easily accommodate blended capital structures (that is, combined public and private sources of funds) that can better address investor expectations regarding risk, return, and impact, thereby increasing the impact of biodiversity-focused capital.

5.2.3. Regional Biodiversity Fund

A Regional Biodiversity Fund can improve access to capital for sustainable businesses that create a positive impact on biodiversity as part of their activities. The Fund would reduce the cost of capital for these companies by streamlining transactional and administrative costs. The Fund would use a negative screen to avoid investments that contributed negatively to biodiversity and climate change, but more importantly a positive screen to target companies that credibly improve biodiversity outcomes as part of their business. This might include native forestry, farms using agroecological principles, eco-tourism, honey production, and wild foods and products involving pests like deer and goats. These investments will produce an array of environmental goods and services, such as New Zealand Units (NZUs) and commodities that attract appropriate certification, such as Forest Stewardship Council (FSC), Fairtrade, and ecotourism labels. These can be expected to attract premium returns, such as 15–25% higher for FSC-certified timber,[81] 15 times higher prices for mānuka honey versus budget honey brands,[82] or agricultural premiums at 36% higher for organics, 24% higher for environmentally friendly, and 11–25% higher for carbon neutral products.[83] Given the new focus on climate risk, which the New Zealand Government has mandated under the Taskforce for Climate-related Financial Disclosures framework, the themed approach of the Regional Biodiversity Fund will make it an attractive option for investors looking to reduce climate risk exposure in their portfolios.

[81] Forest Stewardship Council (2012). *FSC-certified wood and products fetch higher prices.* https://fsc.org/en/newsfeed/fsc-certified-wood-and-products-fetch-higher-prices

[82] Sainsburys (n.d.) https://www.sainsburys.co.uk/

[83] Yang, W., Rennie, G., Ledgard, S., Mercer, G., & Lucci, G. (2020). Impact of delivering "green" dairy products on farm in New Zealand. *Agricultural Systems*, 178. Note that this research derives from Credence Attributes on Farm Project on Our Land and Water – National Science Challenges, (n.d.). https://ourlandandwater.nz/incentives-for-change/credence-attributes/

The regional focus has various advantages and disadvantages. On the one hand, it makes it easier to build an investment pipeline, which would be critical to success, by improving visibility and reducing the operational costs of building the pipeline. Moreover, a regional focus would likely improve partnerships with iwi and hapū, which operate within particular rohe or regions, by ensuring that partnerships are strong and rich, rather than spread thinly across multiple regions. On the other hand, a regional approach may compound regional inequities, because the Fund may focus on regions that are already economically advantaged and therefore host more investable opportunities. This risk could potentially be mitigated by having a more sectoral focus, or by taking a tiered approach which mandates partial exposure to neglected markets and regions.

There are international examples of this model being effectively deployed. One recent example is the August 2020 announcement of the HSBC Pollination Climate Asset Management, a joint venture which intends to establish a series of natural capital funds, investing in a diverse range of activities that preserve, protect and enhance nature over the long-term, and address climate change. Investment themes will include regenerative and sustainable agriculture, sustainable forestry, sustainable fisheries, coastal restoration, blue carbon, biodiversity, wildlife protection and restoration, and natural capital and real assets that generate carbon credits.[84]

Another more mature example is the Althelia Climate Fund (ACF). The ACF was fully committed in June 2017, with investments in land-use practices that enable rural communities to establish profitable livelihoods while protecting ecosystems, reducing deforestation and conserving biodiversity. Returns are generated through the production and sale of real assets (in the form of sustainable agriculture and soft commodities such as Fairtrade certified cocoa and coffee, FSC-certified timber etc.), and also presently undervalued environmental assets such as carbon emission reductions and other ecosystem services such as biodiversity and water. According to the Fund's 2020 Impact Report, 'key impact indicators are on track or already exceeding initial objectives, with 44 million tonnes of CO2 emissions avoided, more than 2 million hectares of critical and high conservation value habitat protected, and more than 2,000 livelihoods directly supported in rural economies'.[85]

Althelia also applies a blended finance model that combines public and private sources of capital. In May 2014, the U.S. Agency for International Development (USAID) agreed to provide over US$130 million in loan guarantees to encourage private lenders operating in local markets to extend financing to businesses associated with underlying Althelia projects. According to Sylvain Goupille, co-founder and managing partner of Althelia Ecosphere, this guarantee effectively halves the financial risk associated with the projects, and 'allows private capital to flow at scale toward financing sustainable land use programmes and activities.'[86]

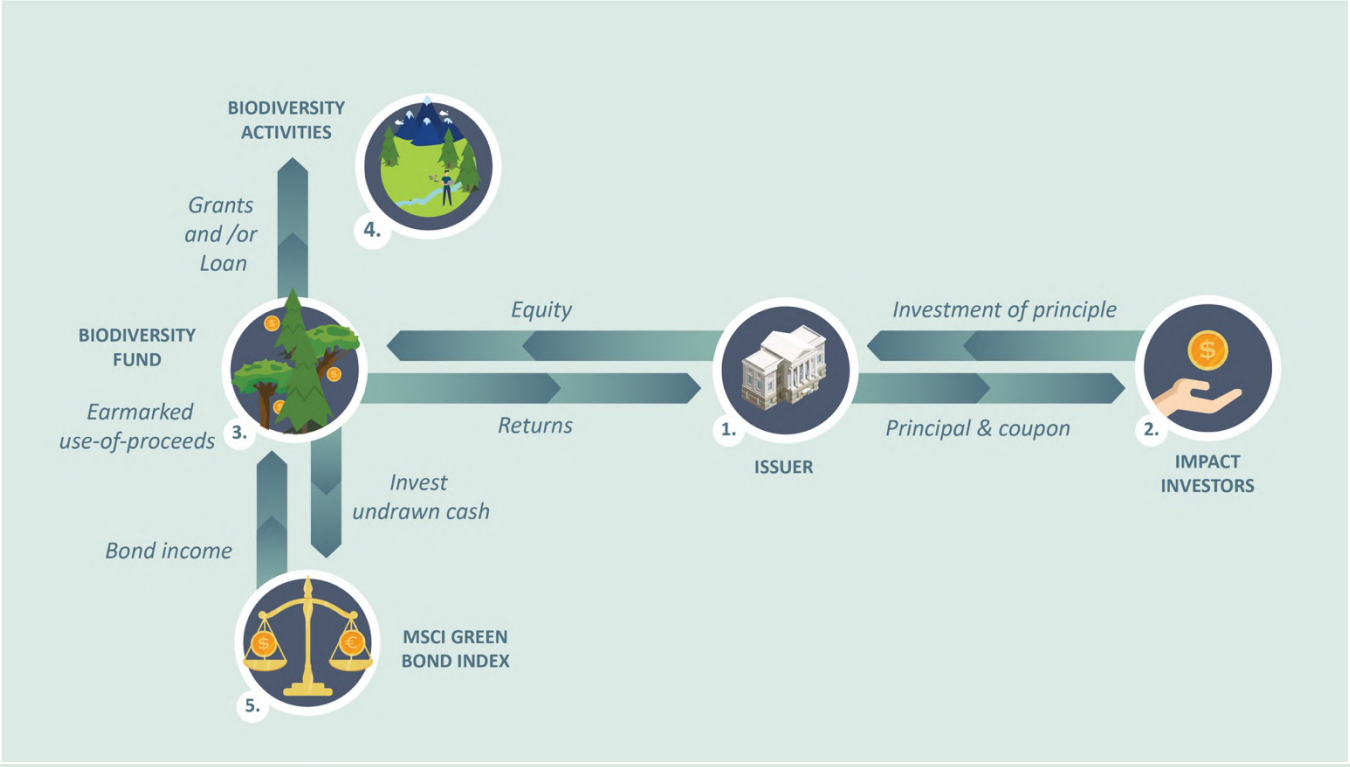
A further aspect of the Althelia model is the incorporation of Ecosphere+, a venture funded by Althelia in 2016. Ecosphere+ manages the sales and marketing operations for Althelia's portfolio of environmental assets with a mission to scale-up near-term private sector climate action and create demand for currently under-valued ecosystem services. One

[84] Pollination Group (n.d.) https://pollinationgroup.com/climateassetmanagement-1/
[85] Althelia Fund Management (n.d.) https://althelia.com/wp-content/uploads/2020/08/ACF-Impact-Report-2020.pdf
[86] USAID (n.d.) http://www.usaid.gov/news-information/press-releases/may-28-2014-us-government-althelia-climate-fund-mobilize-1338-million-forestconservation

example of the role that Ecosphere+ contributes to the viability of the Althelia investment model is to help airlines use forest conservation in their preparation for new rules on emissions from international flights. As part of the aviation sector's commitment to cap international emissions at 2020 levels, the International Civil Aviation Organisation (ICAO) agreed in October 2016 to the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). For emissions above the sector's 2020 levels, airlines in countries that have opted in to CORSIA's voluntary phase need to offset these with high-quality emission reductions verified to have occurred elsewhere. Airlines or suppliers to airlines can engage with Ecosphere+ to purchase options via offtake agreements that lock in potentially lower prices of carbon offsets. This helps to ensure a consistent demand for carbon from Althelia's investee companies. The New Zealand Government has announced that it will join CORSIA when it comes into effect in 2021.

5.5. Biodiversity Notes

Instrument Overview	
Sector Focus	Multiple – across sectors
Investor Market	Single – retail and institutional
Instrument Class	Debt – fixed income
Proof of Concept	Established – examples internationally
Risk Mitigation	Rated issuer & stable cashflow



5.1.1. Overview

Biodiversity Notes are issued by a private entity that raises capital to finance biodiversity efforts; for example, the acquisition, management and restoration of land for biodiversity conservation purposes. Repayment is not tied to revenue streams from the use of proceeds, rather from the issuer's

general business and/or fundraising activities. Therefore, investors will assess the issuer's credit rating and ability to generate revenues sufficient to cover debt service on the Note. Biodiversity Notes may reduce the cost of capital by providing access to debt on attractive terms, especially where the biodiversity benefits are diffuse or difficult to monetise, but nevertheless materially beneficial to the issuer.

5.1.2. Current Obstacles

Biodiversity improvements are often treated as a nice-to-have, even among companies and other organisations whose activities and supply chains have biodiversity impacts. Although some companies see protecting and improving biodiversity as integral to their business and/or brand, biodiversity poses unique challenges, because biodiversity measurement is often complex and expensive, valuation is controversial, and the lines between cause-and-effect are diverse and complex. Also, the material benefits of biodiversity tend to be diffuse and difficult to monetise.

Therefore, in the absence of a specific biodiversity payment, it is not easy to apply sustainable finance instruments (such as green bonds) to biodiversity outcomes, because there are limited revenue streams for repayment. If biodiversity is the primary objective, then opportunities for resource extraction, such as timber or food, are necessarily limited. Other revenue opportunities, such as the sale of carbon credits or ecotourism opportunities, may be insufficient to break even on a timescale that meets investor requirements (at least without the systems-level change discussed in Section 6). Ecosystem service assessments of biodiversity give the appearance of revenue opportunities, but these evaluations tend to rely on methods of contingent valuation, such as willingness-to-pay surveys, where people are asked what they *might* pay for biodiversity improvements, which is not necessarily closely related to what people *actually* would pay.[87] Consequently, for biodiversity in particular, there is a need to finance outcomes from other revenue-generating activities.

5.1.3. Biodiversity Notes

Biodiversity Notes have emerged in the last few years as a way for private entities to diversify capital sources for biodiversity activities while providing new investment vehicles for a growing market of impact investors.

A Biodiversity Note is issued by a private entity that raises capital to finance biodiversity efforts; for example, the restoration of land for biodiversity conservation purposes. Repayment is not tied to any revenue stream from the use of proceeds, rather from the issuer's general business and/or fundraising activities. Therefore, investors will assess the issuer's ability to generate revenues sufficient to cover debt service on the Notes while meeting its operating expenses and other cash requirements. It is assumed, therefore, that issuers will require an investment-grade credit rating, and also that the issuance must be large enough to justify the related transaction costs and due diligence. Consequently, only a select few organisations would qualify for the issuance of such an instrument, unless a non-qualifying party was backed by a credit enhancement from some other qualifying party to reduce its risk of default.

[87] Kahneman, D., Ritov, I., Jacowitz, K. E. & Grant, P. (1993). Stated willingness to pay for public goods: a psychological analysis. *Psychological Science Edition,* 4, 310–315.

Global charitable environmental organisation, The Nature Conservancy (TNC) first pioneered the concept in 2012 with the issue of US$25 million of Conservation Notes in the United States.[88] The US$25 million offering was the first investment-grade retail product focused on conservation. TNC has since raised a total of US$42 million via this vehicle. TNC developed Conservation Notes as part of an institutional strategy to broaden support for the Conservancy among the growing market of impact investors. The Conservation Notes are a retail investment-grade vehicle, specifically targeted at high-net-worth individuals with an interest in impact investing for conservation. TNC modelled the Conservation Notes on the Community Investment Notes offered by the Calvert Foundation. Since their inception in 1994, the Calvert Foundation has raised ~US$480 million from over 18,000 investors via the Community Investment Notes. TNC's Conversation Note have similar characteristics. Investors are able to choose both rate and term, with an option to receive zero interest or donate the interest back to TNC. The minimum investment is US$25,000, and investors can choose one, three, or five-year notes. The interest rate, depending on the term, varies from 0 to 2%. TNC's Conservation Notes were sold directly to a small segment of the retail investor market with no custodian and limited internal sales staff. Nevertheless, the offering was fully subscribed in less than a year. Investors responded strongly to TNC's brand; its threshold scale in terms of its balance sheet, cashflow, and profits and losses; and the confidence that proceeds from the Notes would be used to achieve conservation outcomes.

Another noteworthy example is the Nature Conservation Note offered by Credit Suisse in partnership with investment specialist Althelia Ecosphere (mentioned earlier in §5.4). The Notes were launched in 2015 and attracted EUR€15 million of investment from 50 individual investors including a small number family offices and foundations. The Notes form part of the financing for the EUR€101 million Althelia Climate Fund. Another novel feature of the Notes is that, rather than holding undrawn cash on deposit in the bank or in the stock market, it will be invested in 10-20 green bonds selected from the Barclays/MSCI green bond index.

As to how Biodiversity Notes might be applied in the context of Aotearoa New Zealand, two hypothetical examples follow:

- **Predator Free 2050:** A large agricultural company with an investment-grade credit rating wishes to undertake pest and predator control on retired land on its farms in order to accelerate the regeneration of native vegetation, increase the presence of native birds and other fauna, and contribute to the national vision of Predator Free 2050. Such activities will eventually increase carbon revenue by enabling assisted regeneration of woody biomass, but, over a ten-year time horizon, the expected carbon revenue is outweighed by the upfront costs of pest and predator control, making it uneconomic. Nevertheless, by immediately contributing to the company's brand as a sustainable supplier of agricultural exports, such regeneration activities will also improve the company's access to premium markets, and hence expected returns from core business. Consequently, the company arranges an issuance of Biodiversity Notes on concessionary terms (i.e. below market interest rate) from an impact-oriented lender, the proceeds of which are used to fund landscape-

[88] The Nature Conservancy (2014). *The Conservation Note Prospectus*.

scale pest and predator management. Repayment of the Note is primarily achieved through improved export revenue from premium markets, with a secondary contribution from the sale of carbon credits.

- **Forestry Transitions:** A large forestry company has decided to retire parts of its forestry estate, particularly those parts on orange- and red-zoned land which faces more restrictive compliance under the National Environmental Standard for Plantation Forestry. These forest areas are presently managed as even-aged stands of *Pinus radiata*, which faces problems of social licence in the event of harvesting, as well as liability to wildfire in a warming world. A transition to biodiverse native forest is regarded a more prudent land use choice. However, this transition requires active management, especially the establishment of native seed sources, the selective felling of mature pine trees to create light wells for native understoreys, and the provision of pest and predator control to facilitate natural regeneration.[89] Although the carbon stocks will remain roughly equivalent as the forest transitions from exotic to native species, over the long-run there are opportunities to selectively harvest native timber for premium prices. Consequently, the company arranges an issuance of Biodiversity Notes on concessionary terms (i.e. below market interest rate), the proceeds of which are used to fund the active management of retired forests. Repayment of the Note is primarily achieved through timber sales and carbon revenue from elsewhere in the forestry estate, with a long-run opportunity for revenue from multifunctional forest benefits, including harvesting native timber.

[89] Forbes, A. S., Norton, D. A., & Carswell, F. E. (2019). *Opportunities and limitations of exotic Pinus radiata as a facilitative nurse for New Zealand indigenous forest restoration*. New Zealand Journal of Forestry Science, 49(6).

CHANGING THE SYSTEM

In this section, we describe how changes to the enabling environment could help to improve the viability of the instruments described above.[90] The enabling environment for climate finance can be defined as various interrelated factors – such as regulatory, bureaucratic, fiscal, monetary, informational, political, and sociocultural factors – that influence the capacity of actors to engage in climate-aligned projects and activities in a sustained and effective manner.[91]

One key lesson from this Concept Paper is that systems change will be essential to scale up biodiversity investment. Financial innovation cannot achieve this alone. If the aspirations enshrined in recent landmark reports (e.g. the Paulson Report and The Dasgupta Review) are to be achieved, it will not be due to novel business models, but because system change enabled these business models to become viable when they otherwise would have been marginal or unprofitable under business-as-usual arrangements.

In this regard, there are strong affinities between biodiversity and climate adaptation financing (not least because biodiversity improvements are a kind of climate adaptation activity). The recent experience of Climate-KIC Australia's Adaptation Finance Project is telling.[92] The Project sought to quantify the scale of the adaptation finance gap, with the intention of consolidating existing projects into an adaptation bond. However, after a market scan and cross-sectoral consultation, the Project discovered that there were no investment ready projects to be found in Australia. So, rather than develop an investment pipeline, the Project was forced to acknowledge that systems change was a precondition to adaptation finance:

'*Adaptation is not created by establishing financial products, rather these products are the beneficiaries of interventions which are shaped by multiple interventions, across both investable and non-investable assets which enhance the value of each other over time. The* output *is an investable pipeline of investment-ready individual projects.*'[93]

The Climate Innovation Lab takes a similar view on biodiversity and nature-based solutions. This Concept Paper has identified innovative financial instruments that are plausible under current conditions (such as the Hauraki Gulf Blue Bond), but also assumes the mandate of exploring financing instruments that are speculative and not investment-ready. What could make these instruments feasible is systems change, especially the introduction of market mechanisms that monetise the specific value of biodiversity. As such, the Lab endorses the call for 'transformation capital', which is grounded in 'a systemic investment logic designed to catalyse mission-driven sustainability transitions in the real economy.'[94] The instrument proposals in Section 5 provide useful insights into what sorts of systemic transformation would increase the feasibility and reduce the risks of biodiversity financing.

[90] Hall, D. (2018). *The Interwoven World | Te Ao i Whiria: Toward an Integrated Landscape Approach in Aotearoa New Zealand.* The Policy Observatory, 40-43.
[91] Hall, D. & Lindsay, S., (2018). *Climate Finance Landscape for Aotearoa New Zealand: A Preliminary Survey*, Report Prepared for the Ministry for the Environment, Auckland: Mōhio.
[92] Climate-KIC Australia (n.d.). https://climate-kic.org.au/our-projects/#Adaptation-Finance
[93] Emphasis added. Mortimer, G., Whelan, B. & Lee, C. (2020). *Adaptation Finance: Emerging approaches to solve the climate adaptation finance gap*. Climate-KIC Australia, 6
[94] Hofstetter D. (2020). *Transformation Capital: Systemic Investing for Sustainability*. Climate-KIC, 4.

6.1. Biodiversity Payments

The Concept Paper takes the view that a biodiversity payment would be the single most influential lever for the scaling up of biodiversity financing in Aotearoa New Zealand. All of the instrument proposals described in Section 5 would benefit from the cashflow that such a payment would provide.

As noted throughout this Concept Paper, biodiversity financing is uniquely challenging. While climate mitigation has the Emissions Trading Scheme, there is no equivalent mechanism for biological heritage that rewards those who preserve or create native ecosystems and penalises those who disrupt them. Without such a market mechanism, there is no clear price signal to enable instruments that deliver positive biodiversity impacts. Instead, instrument design must operate more obliquely to overcome market barriers, for example, through achieving large investment scale (see the Hauraki Gulf Blue Bond at §5.1), leveraging the value of debt relief (see the Debt-for-Nature Swaps at §5.2), or repaying debt from general business rather than the diffuse and often unmonetisable benefits of biodiversity (see the Biodiversity Notes at §5.5). The creation of a biodiversity payment would enable these activities to occur more directly, whether by individual actors receiving revenue for biodiversity improvements that they undertake from their own balance sheet, or by financial instruments that can scale up climate action by leveraging such payments for cashflow. For example, a stable and meaningful biodiversity payment would mean that the Biodiversity Note could be substituted with a simple green bond structure, because the biodiversity impacts from the bond's use-of-proceeds would directly attract revenue from the biodiversity payment to repay the underlying debt.

There are multiple policy mechanisms that could deliver a biodiversity payment to parties undertaking relevant activities. Options are summarised in Table 1 and discussed further below.

Type	Description	Examples
Grant-based Schemes		
Output or action-based grants	A non-repayable grant to parties who must undertake pre-defined activities	Jobs for Nature, New Zealand; Direct landowner grants, One Billion Trees Programme, New Zealand; Erosion Control Funding Programme, New Zealand.
Environmental covenants	A grant provided in exchange for a covenant with an authority which restricts subsequent land use change	QEII National Trust & Ngā Whenua Rāhui Fund, New Zealand.
Easement schemes	A payment provided to landowners who retire land from agricultural production in order to accelerate regeneration	Agricultural Conservation Easement Program, United States.

Outcomes- or result-based schemes	A payment to an agent who assumes responsibility for achieving pre-defined results, verified independently	Burren Programme, Ireland.
Compensatory Schemes		
Offsetting or trading schemes	A market mechanism that counter-balances the unavoidable impacts of development activities on biodiversity by enhancing the state of biodiversity elsewhere	Biodiversity Offsets Scheme, Australia; Wetland mitigation banking, United States.
Redistributive schemes	A fiscal instrument which imposes a tax on ecosystem disruption, then recycles revenue into biodiversity improvements	Parliamentary Commissioner for the Environment's proposed levy for biogenic emissions, with revenue recycled into on-farm forest sinks.

6.1.1. Grant-based schemes

Grants are the conventional funding instrument for biodiversity in Aotearoa New Zealand. The $1.245 billion Jobs for Nature programme is directed explicitly at biodiversity activities such as riparian management, weed and pest control, and planting native species. Other grants support native biodiversity indirectly, such as the One Billion Trees Programme landowner grants which subsidise native trees (as well as exotic trees). However, grants have well known shortcomings, including economic inefficiency, vulnerability to political whim, and the creation of dependencies.[95] The aforementioned grants also only partially subsidise biodiversity activities, covering only a small proportion of the total cost, which raises questions of equity and whether grants are accessed by those least able to pay for biodiversity. Finally, output-based grants, which fund actions rather than outcomes, can have a weak relationship to successful impact, and therefore may not overcome the problems of inefficacy identified by the Catalyst Report (see §3.2). Well-designed grants can play a valuable role, but transformative change is likely to require a more systematic intervention.

[95] Kees, V.M., Noordarn, M. (2006). *When Markets Do Not Work, Should Grants Be Used?* Agricultural and Rural Development Notes No. 9. World Bank.

6.1.2. Environmental covenants

Environmental covenant schemes, such as QEII Trust and Ngā Whenua Rāhui Fund, are another mechanism for grant-funding which involve a strong compliance aspect. Under such a covenant, present and future landowners relinquish the authority to undertake future land use change in exchange for access to public funding for conservation activities. These covenant schemes are widely regarded as successful, but they are inherently constrained by the level of public funding commitment, and consistently oversubscribed in proportion to available funding. Again, a more generalised and self-sustaining mechanism is desirable.

6.1.3. Easement schemes

An option that is not familiar in Aotearoa New Zealand is easement schemes, where landowners access a publicly funded revenue stream in exchange for retiring areas of land from agricultural production. The Agricultural Conservation Easement Program provides a variety of easements for grasslands, wetlands and ranchlands, generally over 30 year periods. The Program can provide up to 50-75% of the easement's fair market value. Since 2014, the Program has obligated more than US$1.8 billion in financial and technical assistance nearly 800,000 acres of agricultural and wetland easements.[96] Such schemes enable farmers to diversify their revenue streams and to substitute foregone income from retiring land.

6.1.4. Results-based payments

In Mōhio's view, a results-based approach is highly attractive to ensure that public money is directed toward successful impacts, and aligns with international trends in policy design. For example, agri-environmental schemes are a longstanding mechanism under the EU's Common Agricultural Policy, yet with environmental outcomes being treated as a convenient by-product (with mixed social, environmental and economic results). Consequently, there has been a turn toward result-based agri-environmental schemes which instead reframe conservation and biodiversity enhancement as 'a new form of production'.[97] A potential role model is the Burren Programme in Ireland, which covers agricultural land in Counties Clare and Galway. Co-designed with farmers, the Burren Programme adapted earlier research on historical agricultural management into a hybrid scheme that provided results-based payments and access to a fund for related activities. Farmers participate via 5-year contracts, with their farms scored on biodiversity improvements in registered grasslands. The scorecards track the presence of key indicators species, grazing levels, water quality, and presence (or not) of invasive species. The higher the score, the higher the results-based payment that the farmer receives. In order to improve their score, farmers also have an allowance in a fund to draw on, complemented by technical support on how to undertake these works

[96] National Sustainable Agriculture Coalition (n.d.) https://sustainableagriculture.net/publications/grassrootsguide/conservation-environment/agricultural-conservation-easement-program/

[97] Wynn-Jones, S. (2013). *Connecting payments for ecosystem services and agri-environment regulation: An analysis of the Welsh Glastir Scheme*. Journal of Rural Studies 31, 77.

effectively. The Burren Programme is credited with strong compliance among participants, relatively streamlined operations, and supporting farmer autonomy to achieve results in whatever way they like.[98]

6.1.5. Biodiversity offsetting

Biodiversity offsetting is a familiar instrument in environmental finance.[99] It refers to 'a process that seeks to counter-balance the unavoidable impacts of development activities on biodiversity by enhancing the state of biodiversity elsewhere.'[100] First developed in the United States, policies for offsetting biodiversity losses are used in at least 33 countries around the world, cumulatively restoring and protecting 8.3 million hectares of land.[101]. The global annual market size has grown to approximately US$2-4 billion depending on the definition used to categorise the various sub-markets that aim to protect some aspect of biodiversity loss from development projects.

As discussed in §3.3., provisions and guidance for such mechanisms have long been in place in Aotearoa New Zealand through the Resource Management Act 1991, which provides councils with discretionary powers to require biodiversity offsetting as a condition for resource consent. However, councils are not commonly enforcing these requirements. Greater use of such powers is one way to create a biodiversity payment, and indeed the recent Randerson Report recommends that councils are empowered further to utilise such tools. One option is to create a trading scheme – that is, a biodiversity equivalent of the Emissions Trading Scheme which trades in 'rights to disrupt habitat' rather than 'rights to emit'.

A controversial aspect of such offsetting schemes is that the creation of the payment for biodiversity providers necessarily entails the modification of biodiversity elsewhere. To put it bluntly, biodiversity offsetting seems to create a 'license-to-trash', a permission for habitat destruction under the presumption that such damages can be commensurably compensated elsewhere by the creation of an identical ecosystem.[102] However, ecological analysis seems to disprove this presumption; for example, an analysis of wetlands in Alberta, Canada, found that restored wetlands had distinctive and less diverse bird communities than natural wetlands, which calls into question the underlying assumption that developers can offset 'like with like'.[103] Moreover, if an offsetting scheme uses poorly designed baselines, this means

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[98] O'Rourke E,. & Finn, J.A. (2020). *Farming for nature: The Role of Results-based Payments*, Teagasc and National Parks and Wildlife Service.

[99] More accurately, it is a family of instruments which includes voluntary offset models where offsets are traded voluntarily, mandatory or compliance market models where offsets are traded compulsorily, or public agency models where the state requires compensatory actions without trading. See Koh, N.S., Hahn, T., & Boonstra, W.J. (2019). How much of a market is involved in a biodiversity offset? A typology of biodiversity offset policies, *Journal of Environmental Management*, 232, 679-691. https://doi.org/10.1016/j.jenvman.2018.11.080

[100] Maseyk, F., Ussher, G., Kessels, G., Christensen, M. & Brown, M. (2018). *Biodiversity offsetting under the Resource Management Act: A Guidance Document*. Prepared for the Biodiversity Working Group on behalf of the BioManagers Group for Local Government New Zealand.

[101] Bennett, G., Gallant, M., Kate, K.T. (2017). *State of Biodiversity Mitigation Markets and Compensation for Global Infrastructure Development*.

[102] Pilgrim, J.D., Bennun, L. (2014). Will biodiversity offsets save or sink protected areas? *Conservation Letters*, 7(5), 423-424.

[103] Anderson, D.L., & Rooney R.C. (2019). Differences exist in bird communities using restored and natural wetlands in the Parkland region, Alberta, Canada, *Restoration Ecology* 27(6), 1495 - 1507.

that the net position of biodiversity may decline under offsetting, if the offset is not additional to the status quo, or if the offset is inferior in size or quality to the ecosystem being destroyed. By way of counterargument, it can be argued that offsetting can succeed in increasing the overall biodiversity good, given that habitat destruction might have occurred anyway without compensation. Moreover, the net biodiversity position can be managed by a target-based approach to ecological compensation which requires that the overall quantity of biodiversity being restored is greater than the quantity being disrupted, working from a baseline of overall biodiversity improvement.[104] This Concept Paper will not delve further into the pros and cons of biodiversity offsetting, but these are discussed at length elsewhere.

It is important to note that, in the view of biodiversity expert Dr Marie Brown, regulatory reforms are a prerequisite for such a scheme being feasible. She argues that 'the weak policy framework for offsetting must be addressed first', which involves addressing such weaknesses as 'poor compliance, lack of expertise in implementing offset projects and an inability to carry out offsets in advance of impacts'.[105] A national review of biodiversity offsets corroborates these findings: an audit of 81 case studies across New Zealand, with 245 conditions relating to ecological compensation, found that 35.2% of requirements were not being achieved.[106]

6.1.6. Redistributive schemes

A variation on conventional offsetting relinquishes the basic analogy of market trading, and instead uses the fiscal policy analogy of tax-and-transfer. That is, instead of requiring developers to purchase offsets, it imposes an environmental tax or levy on developers, then hypothecates this revenue toward biodiversity projects and activities. The key difference here is that such a mechanism does not assume commensurability – that is, it does not assume (as trading schemes do) that qualities of nature can be transformed into a single metric for exchange. However, under a distributive scheme, where no such assumption is made, the hypothecated revenue can be used to support biodiversity projects that are qualitatively different from the disrupted habitat being compensated for.

A recent proposal along these lines was the Parliamentary Commissioner for the Environment's proposed levy for biogenic emissions from agriculture, with the revenue recycled into on-farm forest sinks.[107] This proposal was designed specifically to overcome the incommensurability of long- and short-lived greenhouse gases and their different effects on global warming, as well as parallel ambiguities over the stock/flow nature of emissions from forestry and land-use change. This mechanism transcends such ambiguities, while still imposing a cost on emissions and cashflow for carbon sequestration.

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[104] Simmonds et al. (2019). *Moving from biodiversity offsets to a target-based approach for ecological compensation*, Conservation Letters, 13(2), e12695. https://doi.org/10.1111/conl.12695

[105] Brown, M. (2017). *Banking on Biodiversity.* Environmental Defence Society.

[106] Brown M., Clarkson B. D., Barton B. J., & Joshi C. (2013). Ecological compensation: an evaluation of regulatory compliance in New Zealand. *Impact Assessment & Project Appraisal*, 31(1), 34 - 44.

[107] Parliamentary Commissioner for the Environment (2019). *Farms, forests and fossil fuels: The next great landscape transformation?*

In this spirit, Aotearoa New Zealand could consider a Biodiversity Reparations Scheme. This would shift away from the transactional logic of trade and exchange, to instead a restorative logic of reparations. By acknowledging the issue as one of reparations, developers would be discouraged from assuming that a harm to habitat in one place can be cleanly compensated by habitat restoration or conservation in another. Instead, it could encourage developers to take more seriously the first three steps of the mitigation hierarchy – that is, Avoidance, Minimising and Restoring On-site before turning to Compensation. Furthermore, although the Biodiversity Reparations Scheme still acknowledges the trade-offs between development and environment, it does this without the illusion of a 'like for like' transaction. Instead, the compensation can be different in kind to what it is compensating. For example, the creation of a new subdivision on the outskirts of Auckland, which entails disruptions to local soil and water systems, need not pretend that it can offset such damage by remediating comparable problems elsewhere. Instead, it could simply invest in the restoration of any kind of habitat, such as wetlands, rivers, or estuaries. Again, a target-based approach to environmental compensation that is underpinned by baselines of overall improvement can ensure that the outcomes are net positive; for example, through the expansion of natural habitat by two parts for every part lost, or the preservation of 90% of a habitat for every 10% disrupted.

In regards to the taxation mechanism, one option is to use the Crown revenue created through the auctioning of units within the ETS, which could be hypothecated into a fund for nature-based investment. Another option that the Tax Working Group recently explored is the idea of a modified *environmental footprint tax*, where tax rates are set according to the ecological impact of land use activities, with higher tax rates applying to areas of low or degraded ecological value, such as paved surfaces, and lower or even negative tax rates applied to areas with high ecological value, such as native forest or wetland.[108] Such a system could be adapted to the Biodiversity Reparations Scheme, whereby intensive land uses require a higher rate of compensation. This could be administered through a two-tiered system where (tier one) organisations use look-up tables to estimate their environmental footprint based on generic scientific predictions; or (tier two) organisations undertake a detailed environmental footprint assessment to quantify the levels of environmental consumption.[109] (This would be analogous to how carbon sequestration for forestry is quantified in the ETS, either by the look-up tables for forests under 100 hectares, or through the more detailed and expensive Field Management Approach for forests larger than 100 hectares.) This approach has the added advantage of avoiding the problem of grandfathering in offsetting schemes, where new developments are required to compensate for habitat destruction and old developments are not. Instead, what is being priced is the level of modification and intensification of land use, irrespective of whether it is recent or historical. Such prices could be introduced incrementally in order to avoid shock, and revenue would be recycled into the creation of nature-based solutions elsewhere in the system. Crucially, though, the ability to impose a price upon existing land uses would overcome the problem of scale, which is currently an impediment to creating momentum for biodiversity offsetting in New Zealand.

[108] Tax Working Group (2019). *Future of Tax: Final Report.* https://taxworkinggroup.govt.nz/resources/future-tax-final-report.html
[109] Stephens, T., Greenhalgh, S., Brown, M., & Daigneault, A. (2016). Enhancing the Tax System to Halt the Decline of Nature in New Zealand, *Policy Quarterly* 12(1), 26 - 34.

Reputational risk from greenwashing would be reduced, because the proposition does not aspire to neutrality, but rather to reparations – that is, an incommensurate investment into nature-based solutions as a form of reparations for harm being created elsewhere in the system. Ideally, the price would respond to the need for achieving particular objectives, consistent with the notion of target-based environmental compensation discussed above.[110]

[110] Simmonds et al. (2019). Moving from biodiversity offsets to a target-based approach for ecological compensation. *Conservation Letters*, 13(2), e12695.

6.2. Te Tiriti o Waitangi-based Co-Governance

As noted by Maria Bargh and Carwyn Jones in a ministerial briefing note, partnership relationships under Te Tiriti o Waitangi are central to environmental protection in Aotearoa.[111] However, various Waitangi Tribunal judgements have concluded that, since the signing of Te Tiriti, successive governments have fallen short of the duties that follow from the agreed partnership. Due to the Crown's failure to protect Māori rights and to enable tino rangatiratanga, many significant natural resources have become severely degraded. However, if the Crown were to turn around this trajectory, then there is an opportunity for governments to oversee improvements to environmental objectives, simply by upholding their obligations as Treaty partners. Bargh and Jones emphasise eight themes, which address various aspects of systems change in the cultural, political and economic domains:

- **Restore the essence of te Tiriti** to enable a whole-of-government approach to honouring its obligations;
- **Power sharing partnerships** where mana whenua have appropriate governing responsibilities;
- **Funding and capacity building** so that mana whenua have the capabilities to undertake their practical and governing responsibilities, and the Crown undertakes its own cultural capacity building;
- **Monitoring and reviewing** to ensure that local and central government is supporting Māori rights;
- **A pursuit of balance** in the values that inform policy and resource management, which includes cultural, spiritual and ancestral values, and acknowledges the reset past imbalances;
- **Protection** provided for significant and sacred areas, especially wāhi tapu, taonga and customary practices;
- **Representation** in legislative and governance processes and institutions, where Māori are foundationally involved in co-development;
- **Diversity** to accommodate Māori values, rights and tikanga during decision making and planning.

6.3. National Strategic Conservation Plan

The 2018 Catalyst Group report (discussed in §3.2) highlights the importance of 'a far more coherent and evidence-based strategic plan for conservation than presently exists at a national scale, to form a solid basis for the distribution of funding (among other things).'[112] The Department of Conservation has since released its *Te Mana o te Taiao – The Aotearoa New Zealand Biodiversity Strategy 2020*, which only offers very general guidance (discussed in §3.3).[113] This will be followed shortly by an implementation plan (unpublished at the time of writing), which ought to provide coherent guidance, especially on funding and financing issues. It remains to be seen whether this provides the 'solid basis' that the conversation sector requires.

[111] Bargh, M., & Jones, M. (2020). *Briefing to the Incoming Ministers for the Environment & Conservation: Te Tiriti o Waitangi based co-governance for environmental resilience*. National Science Challenges: New Zealand's Biological Heritage - Adaptive Governance and Policy.

[112] Brown, M. (2018). *Transforming community conservation funding in New Zealand*, Catalyst Group, 50.

[113] Department of Conservation. (2020). *Te Mana o te Taiao: Aotearoa New Zealand Biodiversity Strategy 2020*, New Zealand Government.

6.4. Emissions Trading Scheme Reform

This Concept Paper has focused on instruments for which carbon is not anticipated to be the sole, or even primary, source of revenue (for instruments that do rely primarily on carbon revenue, see the Lab's previous Concept Paper on forest finance).[114] However, there are nevertheless reforms that could be undertaken to support biodiversity more than the ETS presently does.

Before identifying these, it is important to be explicit about what the ETS cannot do. It is often mistakenly assumed that, through policy changes, NZUs could be provided for carbon sequestration that presently does not meet the ETS criteria. Presently, the ETS does not recognise woody biomass that falls outside the forest definition (i.e. forest smaller than one hectare, or narrower than 30 metres, or less than 5 metres tall). It also does not recognise soil carbon, or blue carbon such as wetlands, mangroves, or kelp forests. Setting aside measurement issues, it is technically possible to include these carbon sinks in the ETS, because it is a domestic policy instrument which, within reason, we can redesign as we like. However, it is practically very unlikely, because we cannot as easily change our international commitments, nor the rules and accounting frameworks that underpin them. Indeed, seeking to change these rules through climate negotiations would be regarded internationally as shirking responsibility (at a time when the international community is supposed to ratcheting up ambition), because it would create a new supply of carbon credits by an accounting change, not by additional mitigation activities. As such, even if domestic emitters were permitted to offset their emissions with NZUs that come from wetlands or riparian margins, these removals could not count toward our international commitments. Consequently, the Government would need to source additional credits from elsewhere (like international markets) to compensate. Because this would involve a cost that the Government – and indeed the public – would likely deem unacceptable, this is not a prudent way forward.

Nevertheless, as noted by the recent Aotearoa Circle report, *Native Forests: Resetting the Balance*,[115] other changes could better support native ecosystems that *are* ETS eligible, specifically native forests that meet the forest definition. These changes include:

- Remove current barriers to scrubland for ETS participation, especially through land classification processes.
- Review legislation and regulations to support the inclusion of new native forests on DOC land within the ETS, so that the NZUs can be benefit community or local government initiatives (even though the Crown cannot, and should not, receive NZUs itself).
- Invest in updating the sequestration look-up tables for natives to more accurately reflect the range of sequestration for different native species and geographic locations.
- Extend the sequestration look-up tables beyond 50 years.
- Create demand-side rules such as purchase agreements for mandatory ETS participants that require a minimum proportion of NZUs to be associated with native forests.
- Restrict ETS participation to forests in the Permanent Forest Category, accompanied by rules which limit this category to predominantly native forests only.

[114] Hall, D., & Lindsay, S. (2020). *Scaling Climate Finance: Forest Finance Instruments.* Mōhio Research.

[115] Aotearoa Circle (2020). *Native Forests: Resetting the Balance.* Price Waterhouse Coopers (PwC).

EXCLUDED INSTRUMENTS

In this section, we highlight a number of financial instruments or products that we considered but discounted as viable possibilities, and provide some rationale for doing so.

7.1. Green Bonds

Green bonds are a candidate instrument for mobilising capital for biodiversity – and their potential has been identified in other reports. This is evolving into the domain of 'nature bonds' which focus on biodiversity impacts more explicitly.[116] However, given that bonds are a loan that require repayment from associated activities, a biodiversity bond is difficult to justify without the system change identified in Section 6, especially the biodiversity payment. This is why we have explored adjacent concepts instead, such as Biodiversity Notes (§5.5) which rely on cashflows from general business, or the Hauraki Gulf Blue Bond (§5.1) which is large enough in spatial and economic scale to be investable. However, if a meaningful biodiversity payment were implemented (see §6.1), then it would become feasible to issue a bond to scale up aligned activity.

It is also worth noting that biodiversity or nature-based bonds are more feasible in other countries and regions, especially in the context of developing countries. For example, one way to service a biodiversity bond is to monetise access to the relevant ecosystem; for instance, to charge for access to forests or beaches. However, in Aotearoa New Zealand, with its strong emphasis on free public access, these opportunities for cashflow are largely unviable. Similarly, many developing countries have forestry definitions that enable smallholders to generate carbon credits for much small forest, as small as 0.05 hectares with tree crown cover (or equivalent stocking level) of more than 10 per cent with trees with the potential to reach a minimum height of 2 metres at maturity in situ. This makes carbon revenue more viable

7.2. Resilience Bonds

Resilience bonds[117] are a debt instrument that could potentially finance nature-based solutions that reduce vulnerability to climate-related disasters.[118] The opportunity for such an instrument comes from the growing reliance on markets for disaster-related insurance.

Governments are typically the 'insurer of last resort' in the event of natural disasters, through mechanisms such as New Zealand's Earthquake Commission. Under the circumstances of climate change, however, when extreme weather events and related disasters become increasingly frequent, this insurance role becomes increasingly unfeasible for governments that are committed to prudent debt management. Catastrophe bonds emerged as a mechanism for transferring these types of risks to the capital markets, whereby the holder of an insurance policy receives a pay-out when a disaster reaches a predetermined threshold. Resilience bonds are a proposed extension of this structure, which use a resilience rebate to turn avoided losses into a revenue stream, thereby funding risk reduction protections. This structure is attractive because it incentivises proactive mitigation of risk, rather than merely insure losses when they happen. As such, it is an example of *transitional finance* which targets climate-exposed assets in order to proactively reduce its climate-related risks.[119]

[116] Finance for Biodiversity Initiative (2021). *Greening Sovereign Debt: New Paper: Building a Nature and Climate Sovereign Bond Facility.* F4B. https://www.f4b-initiative.net/publications-1/greening-sovereign-debt%3A-new-paper%3A-building-a-nature-and-climate-sovereign-bond-facility

[117] Vaijhala, S., & Rhodes, J. (2018). Resilience Bonds: a business-model for resilient infrastructure, *Field Actions Science Reports* 18, 58 - 63.

[118] Cohen-Shacham, E., Walters, G., Janzen, C., Maginnis S. (Eds.) (2016). *Nature-based Solutions to Address Global Societal Challenges*, International Union for Conservation of Nature; & Renaud, F., Sudmeier-Rieux, K., Estrella, M., Nehren, U. (2018). *Ecosystem-Based Disaster Risk Reduction and Adaptation in Practice,* Springer.

[119] Piemonte, C., et al. (2019). *Transition Finance: Introducing a new concept.* OECD Development Co-operation Working Papers, No. 54, OECD Publishing, https://doi.org/10.1787/2dad64fb-en

The Lab explored whether the resilience bond structure could be applied to nature-based solutions; for example, whether resilience bonds could be used to insure against serious climate-related risks to particular hydrological catchments, and the rebate could be used to finance the restoration of vital ecosystems and habitats to improve the resilience of that catchment. The major obstacle is that a resilience bond would need to be able to model and price the risk reductions created by various interventions, within a narrow margin of uncertainty. While this can be achieved for grey infrastructure, it is much more difficult to predict the effects of green or natural infrastructure, because such systems are inherently more complex and uncertain. As re:focus partners argue, 'Resilience Bonds only work for some projects where risk reductions are readily measurable and targeted'.[120] Further work needs to be undertaken to either overcome the knowledge gaps, improve the technological capacity to credibly predict and price the risk mitigation the nature-based solutions provide, or to identify adequate proxy metrics.

7.3. Impact Bonds

The Lab chose not to explore impact bonds in this Concept Paper, not because this instrument structure is inapplicable to biodiversity or nature-based solutions, but because the Lab has explored this concept at length elsewhere (see especially the Indicative Business Case for the Native Forest Bond Scheme).[121] Instead, for this Concept Paper, the Lab explored adjacent structures, such as Paradise Bonds, which offer an alternative route to a similar outcome, and might be sufficiently distinctive that they are attractive to issuers and investors when impact bonds are not.

That said, if an outcome payor is willing to pay for successful outcomes, then impact bonds are potentially a viable and effective structure for deploying funds. Impact bonds have the advantage that issuers can determine the outcomes through the impact framework, and outcome funders can redistribute the risk of project failure. In addition to native afforestation, the impact bond structure could also plausibly be applied to wetland restoration, catchment-level management, predator control, coastal resilience, or other outcomes. Already there are issuances that relate to urban green infrastructure and wetland restoration for coastal adaptation purposes.[122] An impact bond could alternatively be structured around social outcomes with biodiversity co-benefits, such as reduced recidivism through conservation programmes. Although the choice of appropriate impact indicators can be challenging, especially given the complexities of biodiversity, this is not unique to impact bonds, and may be overcome through good design.[123]

[120] Vaijhala, S. & Rhodes, J. (2018). Resilience Bonds: a business-model for resilient infrastructure.

[121] Climate Innovation Lab (n.d.). https://www.mohio.co/nativeforest. See also the Environmental Impact Bond and Community Funding Programme concepts in Hall, D. & Lindsay, S. (2019). *Scaling Climate Finance: Forest Finance Instruments*. Mōhio Research.

[122] Goldman Sachs. (2016). *Factsheet: DC Water Environmental Impact Bond*; Herrera et al. (2019). Designing an environmental impact bond for wetland restoration in Louisiana, *Ecosystem Services* 35, 260-276.

[123] Hall, D. (2017). Greening the future: A case for environmental impact bonds. *Policy Quarterly* 13(2), 41-48.

GLOSSARY

Biodiversity offsetting: A compensatory process that seeks to counter-balance the unavoidable impacts of development activities on biodiversity in one place by enhancing the state of biodiversity elsewhere.

Blue bond: A fixed-income debt instruments whose use-of-proceeds are specifically earmarked for projects and activities that support water-related outcomes, such as coastal protection, hydrological catchment management, and ocean conservation. Note that projects and activities can be terrestrial (such as tree planting) where this has water-related impacts, such as flood or sedimentation control.

Blue carbon: Carbon captured by the world's coastal ocean ecosystems, mostly mangroves, salt marshes, seagrasses and macroalgae, through plant growth and the accumulation and burial of organic matter in the soil.

Catastrophe bonds: A high-yield debt instrument that is designed to raise money for companies or governments in the event of a natural or climate-induced disaster. Catastrophe (CAT) bonds allow the issuer to receive funding from the bond only if specific conditions, such as a flood or cyclone, occur. The issuer's obligation to pay interest and repay the principal is either deferred or completely forgiven.

Climate finance: Investment and expenditure – public and private, domestic and transnational – that demonstrably contributes to climate mitigation, adaptation or both.

Easement schemes: An agreement to retire land for conservation or restoration purposes, which provides a nonpossessory right to the funding agency in exchange for payments for ecosystem services.

ESG: Environmental, social and governmental.

ETS: New Zealand Emissions Trading Scheme.

Green bond: A type of fixed-income debt instruments whose use-of-proceeds are specifically earmarked to finance climate and environmental projects. Formally, green bonds must be verified by reference to an appropriate standard, such as Green Bond Principles Framework or Climate Bonds Initiative Standards.

Impact Bond: A debt instrument for financing projects that pays returns based on outcomes, such that investors only collect a return on their investment if the project proves to be successful. These can be issued on social outcomes (Social Impact Bonds), environmental outcomes (Environmental Impact Bonds), and a combination of both.

IRIS: IRIS metrics are designed to measure the social, environmental and financial performance of an investment.

IUCN / International Union for Conservation of Nature: An international organisation working in the field of nature conservation and sustainable use of natural resources.

Lab / the Lab: The Climate Innovation Lab, a fixed term project by Mōhio Research Ltd., with support from ANZ and AUT University.

M&E: Monitoring and Evaluation.

Mana whenua: The power associated with possession and occupation of tribal land. Also used to refer to the people (whanau, hapū or iwi) that hold such power.

Mauri: Essential life force or essence in te ao Māori, which relates to the well-being of both people and the environment.

MBIE: Ministry of Business, Innovation & Employment.

MfE: Ministry for the Environment.

MPI: Ministry for Primary Industries.

Nature-based Solutions: Actions that work with, and enhance, nature to help address societal challenges such as climate change, biodiversity loss and environmental degradation.

Natural Climate Solutions: conservation, restoration, and improved land management actions that increase carbon storage and/or avoid greenhouse gas emissions across global forests, wetlands, grasslands, and agricultural lands.

NbS: See Nature-based Solutions.

NCS: See Natural Climate Solutions.

NCS Units: The units or credits awarded for recognition of activities that meet criteria for a "natural climate solution", which can then be sold on the NCS Exchange.

NDC: Nationally Determined Contributions.

NGO: Non-government Organisation.

NPO: Non-profit Organisation.

NPV (Net Present Value): the difference between the present value of cash inflows and the present value of cash outflows over a period of time.

NZU: New Zealand Unit.

RBP: See Results-Based Payments .

Results-Based Payments (RBP): A form of funding for project implementation or service provision, where the principal, who provides the funding, pays the agent, who implements the project or provides the service, upon achieving predefined results. Related concepts include outcomes-based funding, pay-for-results funding, or pay-for-performance funding.

PFSI: Permanent Forest Sink Initiative.

SIB: See Social Impact Bond.

SIL: See Sustainability Improvement Loans.

Stranded assets: These are assets which are losing economic value well ahead of their anticipated useful life due to changes in technology, regulations, legislation, societal norms, environmental shocks or other powerful forces.

Sustainability Improvement Loans (SILs): Loans that involve conditionality related to the sustainability performance of the borrower, where the interest rate is partially adjusted depending on the evolution of the borrower's sustainability performance.

Transitional finance: Any form of financial support that enables climate-exposed companies to implement changes to become less exposed to climate- and sustainability-related risks. Examples include resilience bonds and sustainability improvement loans.

Transformation capital: An investment logic intending to deploy capital to catalyse directional transformative change of socio-technical systems to build low-carbon, climate-resilient, just, and inclusive societies.

UNFCCC: United Nations Framework Convention on Climate Change.

APPENDIX

Our Methodology

A.1. An Entrepreneurial Approach

The Lab takes an entrepreneurial approach in three senses. First, it takes an entrepreneurial approach to product development. Second, it conceives of the public policy process through the lens of policy entrepreneurship, and promotes concepts in that spirit. Third, the Lab is a neutral platform for intrapreneurs from public and private sector organisations to explore and finesse their innovations.

First, climate finance innovation is an entrepreneurial exercise in the standard commercial sense, insofar as the Lab seeks to address a gap in the market gap by designing climate finance products to invest in. However, the Lab does not understand entrepreneurship to be an individualised activity, whereby solitary actors are responsible for innovation and independently reap all the rewards. Rather, the Lab sees entrepreneurship as a collective process, which necessarily involves relationships with others – through drawing on existing research and analysis, co-designing instruments to ensure it meets the needs of investors and other stakeholders, and creating coalitions of the willing to bring the instrument concepts to market. Similarly, the rewards of entrepreneurship should be distributed in a way that reflects this co-creation, not least through the deliberate creation of positive externalities that deliver substantial public benefits.

Second, the Lab is influenced by the idea of *policy entrepreneurship*, an important empirical literature which recognises that public policy is itself the product of entrepreneurial activity. This theory of policy diffusion is distinct from the traditional theory of rationalist problem-solving, whereby solutions are solved by purposeful, evidence-based policy design. Rather, policy entrepreneurs exploit 'windows of opportunity' to advance readymade policy solutions as problems appear, especially in moments of political crisis. To navigate the complexities of real-world policy environments, policy entrepreneurs learn to (1) tell good stories that grab the attention of policy makers, (2) produce solutions in anticipation of attention to problems, and (3) adapt their strategy to each new 'window of opportunity' that emerges.[124] Insofar as some climate finance instruments will require government involvement – either through changes to the enabling environment for climate finance, or through public investment (see §A7 on blended finance below) – then it is important that climate innovation is designed and diffused in a way that is responsive to the realities and constraints of policy makers.

Finally, the Lab strives to provide a neutral space that people from the public and private sector can meet to co-create investment solutions to climate-related challenges. In this sense, it is a space where intrapreneurs – that is, people within an organisation who promote innovation internally to push beyond business-as-usual approaches – can explore ideas and solutions that they have devised from inside their own organisations, with their own particular insights about opportunities and constraints.

A.2. A Climate-Conscious Investment Strategy

There are two general questions which ought to guide climate-conscious investors.

The first question is: 'Does the investor want to reduce risks to their portfolio and make it more resilient in the future?' If the answer is yes, then the investor should employ a screening strategy that *closes doors* to investments that increase portfolio risk, such as foregoing carbon-intensive capital expenditure that may become stranded assets in the near future.

[124] For review, see Cairney, P. (2018). Three habits of successful policy entrepreneurs. *Policy & Politics*, 46(2), 199–215.

The second question is: 'Does the investor want their investment portfolio to be involved in solution-creation to advance economic performance, social progress and environmental sustainability?' If the answer is yes, then the strategy should *open doors* to investments that actively seek to create that future, such as including renewable energy and sustainable forestry in the investment portfolio. The aim of the Lab is to create such opportunities for investors to shift capital into (see §A3 below).

Analysing these questions, in light of the science and economics of climate change, will encourage investors to *divest* from the high-emissions economy that still predominates, and invest into the low-emissions economy that is emerging from beneath it.

A.3. Supporting Climate-Conscious Investment

The purpose of the Lab is to create climate finance instruments that meet the needs of climate-conscious investors, so that when such investors open doors to the low-emissions future, there are investment opportunities available. The Lab considers a broad array of activities and strategies that may achieve climate alignment in an investment portfolio (for the full investment spectrum, see Figure 1 below). These include:

- *Responsible Investment* which is screened to exclude investments that conflict with ESG criteria;
- *Sustainable Investment* which focuses on positive environmental and social outcomes through investment selection, portfolio management and investment committee engagement;
- *Thematic Investment* which centres on one or a cluster of issue areas where social and/or environmental need creates a commercial opportunity; and
- *Impact Investment* where there is an intention to create a positive social and/or environmental impact beyond financial return.

The Lab is particularly focused on the last strategy, Impact Investment, because this is where the non-financial impacts are given the greatest relative weighting over financial returns. (The next step along the spectrum is philanthropic grant-giving, where financial returns are disregarded altogether). To impose discipline on the prospective management of investment, the Lab draws on the IFC's *Operating Principals for Impact Management* by considering strategy, origination and structuring, portfolio management, exit, and independent verification.[125]

The Lab's investment approach anticipates environmental, social and governance (ESG) in portfolio selection, but also cultural factors. The inclusion of culture in this framework is particularly relevant for Aotearoa New Zealand, because giving effect to te Tiriti o Waitangi / the Treaty of Waitangi requires engaging with Māori communities and organisations through principles of partnership, reciprocity and active protection.[126] As such, the sustenance of Māori culture ought to be an aim of impact investment, and Māori values ought to be among the criteria that define success. In this regard, the Lab finds inspiration in such initiatives as the Tahito wealth fund which selects companies in light of indigenous values,[127] and *He Ara Waiora* framework for Māori wellbeing.[128]

[125] For a more detailed explanation, refer to World Bank Group. (2019). *Investing for Impact: Operating Principles for Impact Management.* International Finance Corporation.
[126] Bargh, M. (2019), Tika Transition. In *A Careful Revolution* (Hall, D. ed.), BWB Texts.
[127] Tahito Fund Management (n.d.). https://www.tahito.co.nz/
[128] McMeeking, S., Kahi, H., & Kururangi, G. (2019). *He Ara Waiora: Background paper on the development and content of He Ara Waiora.* New Zealand Treasury.

A.4. Climate Finance Outcomes

The UNFCCC defines climate finance by the intended outcome of investment: 'Climate finance aims to reduce emissions of GHGs, and to enhance sinks of GHGs and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts.'[129] In other words, climate finance involves financial flows to projects and activities that deliver mitigation benefits, adaptation benefits, or dual mitigation/adaptation benefits.

The Climate Policy Initiative estimates that, on average between 2015 and 2016, US$410 billion of climate-aligned finance flowed from private and public sources for climate adaptation and mitigation purposes.[130] Capital is increasingly being channelled into vehicles that prioritise and enable climate-aligned projects to deliver mitigation and adaptation benefits, as well as a range of other socially inclusive outcomes. This transition is occurring around the globe, at all levels of capital exchange, from the smallest loan or donation to the largest transactions among corporations and countries.

A.5. Transnational and Domestic Financial Flow

In the Lab's view, climate finance refers to both transnational and domestic financial flows, where the latter refers to finance which is sourced from, and used in, the same national jurisdiction.

The Lab's primary focus is climate finance with domestic use-of-proceeds – that is, financial flows that support activities and projects within Aotearoa New Zealand, where the source of finance may derive from inside or outside the country. The reason for this domestic focus is simply that, while sustainable development assistance is crucial for global cooperation and fulfilling the Paris Agreement, it is also important that Aotearoa New Zealand attracts climate finance to meet its own domestic targets for climate mitigation and adaptation. It is worth recalling that the UNSDGs are meant to regarded as a set of goals and targets for developing and developed countries, in the knowledge that all countries need to make progress on a truly *sustainable* development.

A.6. Addressing the Finance Gap

The finance gap is the difference between the investment required to meet obligations such as the UNSDGs and Paris Agreement, and investment currently directed into meeting these obligations.

It is generally accepted that the annual financing gap for reaching the targets set out in the UNSDGs and Paris Agreement is in the trillions of dollars.[131] The Business & Sustainable Development Commission recently estimated that US$2.4 trillion of additional investment is required to fulfil the SDGs in developing countries alone.[132]

Addressing the finance gap requires a substantial increase in investment across the board. However, given the political constraints of governments, it is generally agreed that private sector investment will play a vital role, especially for providing scale. To attract more private capital, Aotearoa New Zealand, along with the rest of the world, needs to pursue innovative finance solutions (such as blended finance) to mobilise some of US$71 trillion currently invested in global capital markets.[133]

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[129] UNFCCC Standing Committee on Finance (2014). *Biennial Assessment and Overview of Climate Finance Flows*. United Nations Framework Convention on Climate Change (UNFCCC).

[130] Barbara, B., Oliver, P., Wang, X., Carswell, C., Meattle C., & Mazza, F., (2017). *Global Landscape of Climate Finance 2017*. Climate Policy Initiative.

[131] Development Finance International (DFI) & Oxfam International (2015). *Financing Sustainable Development Goals*; UNCTAD. (2014). *World Investment Report: Investing in the SDGs: An Action Plan*; World Bank, 2014, *From Billions to Trillions: MDB Contributions to Financing for Development*.

[132] Business & Sustainable Development Commission (2017). *Better Business Better World*.

[133] Shub, G. et al. (2016). *Global Asset Management 2016: Doubling Down on Data*, Boston Consulting Group.

A.7. The Role of Blended Finance

In the context of climate action, *blended finance* involves the strategic use of public and philanthropic funding to mobilise private capital flows that intend to enable climate-aligned projects and activities.[134] By using public investment to 'crowd in' private investment, blended finance is a strategy for scaling up climate finance. It enables public organisations to overcome financial constraints by catalysing external sources of finance; and it enables private organisations to overcome constraints on shareholder expectations of risk and return. As the Blended Finance Taskforce[135] puts it:

> *…blended finance uses public or philanthropic money to improve the risk-return profile or commercial viability for a private investor, allowing it to invest in places and projects where it wouldn't otherwise go, by mitigating a raft of real or perceived barriers, including political risk, currency volatility, lack of liquidity, weak local financial markets, knowledge gaps about investment opportunities, and challenging the investment climates, including poor regulatory and legal frameworks.*

The effectiveness of blended finance derives from its capacity to:

- *Increase capital leverage* by using public and philanthropic funds to facilitate larger volumes of private capital.
- *Deliver risk-adjusted returns* by structuring finance in a way that re-allocates risk and better aligns with market expectations.
- *Enhance impact* by combining the skills and knowledge of public and private stakeholders.

[134] See the Blended Finance Toolkit by OECD and World Economic Forum: https://www.weforum.org/reports/blended-finance-toolkit

[135] Blended Finance Taskforce (2018). *Better Finance, Better World.* Consultation Paper of the Blended Finance Taskforce, prepared by the Business & Sustainable Development Commission and SYSTEMIQ, 22.

A.8. 'Crowding-in' Capital

'Crowding in' refers to investment strategies that attract diverse sources of finance – from governments, philanthropic donors or private sector investors. Given the extent of total investment required to transition Aotearoa New Zealand to a low emissions economy, it is important that investment structures enable participants to co-invest wherever possible, in order to increase the total available pool of capital that can be deployed to climate-aligned outcomes. Such a strategy intentionally avoids instances where private investors are 'crowded-out' of investment opportunities by public investments that substitute, rather than complement or stimulate, private investment activity.

A.9. Additionality in Investment Structures

Additionality refers to a material deviation from business-as-usual to overcome barriers that would have prohibited the investment had a new set of circumstances not been created. By way of example, this could mean increasing an enterprise's access to finance, successfully navigating a difficult policy landscape, developing new business models within a market, or raising the ESG outcomes of the enterprise.

Although there is disagreement over how additionality should be defined, the concept has become an important part of the climate finance vocabulary.[136] The reason for this is two-fold. First, the Copenhagen Accord committed in developed countries to deliver 'new and additional' resources to developing countries for measures taken to address climate change. Second, both public and private investors have a mandate to ensure the effectiveness of their investment is compatible with less than 2°C of global warming. Investment time and resources into sectors that

[136] Brown, J., Bird, N. & Schalatek, L. (2010). *Climate Finance Additionality: Emerging Definitions and Implications.* Climate Funds Update, Policy Brief No. 2.

are close to, or have already reach market saturation is not effective.

A multi-criteria framework developed by Climate Policy Initiative[137] identifies eight criteria that are split into two categories:

- **Venture specific criteria:** examine the set of circumstances that are specific to the individual enterprise and the role that the intervening finance played in enabling the transaction. The factors are the (1) 'crowding-in' or attracting of private investment, (2) access to finance otherwise available, (3) demonstration to other market participants, and (4) improved ESG standards or enterprise quality.

- **Context specific criteria** examines four factors to place the investment within a context wherein the greater the barriers to investment, the more likely that the investment is *additional*. These factors are the (5) policy environment, (6) institutional environment, (7) market landscape, and (8) a country's access to developed value-chains and qualified human capital. For each factor, the presence or lack of barriers to private investment informs a determination about whether the investment would have happened if not for a new set of circumstances taking place.

Each criteria is assessed based on stakeholder interviews, literature and enterprise documents. A determination is then made on the presence of a given factor and the specific role that new funding played in enabling this condition. The additionality framework and accompanying analytical questions can be seen below.

[137] Escalante, D., Abramskiehn, D., Hallmeyer, K. & Brown, J. (2018). *Approaches to assess the additionality of climate investments: Findings from the evaluation of the Climate Public Private Partnership Programme (CP3).* Climate Policy Initiative.

Venture Specific Criteria	
Crowding-in Private Investment	▪ Did private finance in the venture occur alongside, or after, the public investment? ▪ Investments are more likely to be additional if private finance mobilised additional finance, either by playing a broker function to bring in other investors, lending credibility that persuades other investors to invest, or providing management support to the venture to encourage other investors to participate.
Access to Finance	▪ Could the venture access finance from other sources on comparable terms? ▪ Investments are more likely to be additional if comparable finance was unavailable prior to the investment or if the public or philanthropic investment increased a venture's access to finance.
Demonstration Effect	▪ Will the venture demonstrate new business models or technologies and thus promote changes in investor behaviour? ▪ Investments are more likely to be additional when investor behaviour changes to pursue new options.
Improved ESG Standards	▪ Will the venture increases ESG impact against IRIS metrics and/or other non-financial conditions tied to the investment? ▪ Investments are more likely to be additional if the ESG impact is increased in a way that would not have otherwise occurred.
Context Specific Criteria	
Policy Environment	▪ Does the proposed venture operate within a robust policy environment and exist with sound, credible, and predictable policies (e.g., targets, subsidies, mandates, standards, etc.) related to the target sector? ▪ Investments are more likely to be additional if the policy environment is weak or non-existent.
Institutional Environment:	▪ Does the proposed venture operate within a robust legal, regulatory, and institutional environment?

	▪ Investments are more likely additional in sectoral contexts where the legal, regulatory, and institutional environments are weak or non-existent.
Market Environment:	▪ Is the specific market environment for this venture operating alongside robust financial institutions, sophisticated capital markets, access to comparable terms, strong historical track record of investment by public and/or philanthropic investors in the target sector and other variables? ▪ Investments are more likely additional when weak markets are present, and less likely to be additional in well-established markets.
Value Chains & Human Capital:	▪ Does the venture operate within developed value chains with sufficient qualified human capital? ▪ Investments are more likely to be additional where sectoral value chains do not exist domestically, and where required human capital or sector-specific expertise is lacking.

MŌHIO

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