# Nature-Related Investment in Aotearoa New Zealand

## Stakeholder workshop

Tuesday 5 July

Principal Partner

Deloitte.

Event Host

NZSUPERFUND
Te Kaitiaki Tahua Penihana Kaumātua o Aotearoa

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# Karakia

**Matt Whineray,** Chief Executive Officer at Guardians of New Zealand Super

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# Purpose of the workshop

**Gael Ogilvie,** Director of Tread Lightly Advisory

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UN environment WCMC 40 years

Natural Capital Finance Alliance
Finance sector leadership on natural capital

# Natural capital

## Abiotic

### Functional

*Atmosphere*

- Atmospheric gases
- Atmospheric processes

*Water*

- Surface
- Ocean
- Ground
- Fossil
- Soil

### Non-renewable

*Energy and Minerals*

- Oil resources
- Gas resources
- Coal and peat resources
- Metallic mineral resources
- Non-metallic mineral resources

*Soils and sediments*

- Top-soil
- Sub-soil
- Ocean sediments

### Physical

*Land geomorphology*

- Mountains
- Plains
- Plateaus
- Valleys

*Ocean geomorphology*

- Shelf
- Slope
- Abyssal
- Hadal

## Biotic

### Biodiversity

*Habitats*

- Littoral
- Sub-littoral
- Deep-sea
- Coastal
- Inland surface waters
- Grasslands
- Heathland and scrub
- Woodland and forests
- Unvegetated or sparsely vegetated
- Agriculture and croplands
- Urban and developed areas
- Habitat complexes

*Species*

- Wild
- Domestic, commercial

# Workshop objectives

- Gain an understanding of the
  - The relationship between business/investment activity and nature – in an Aotearoa New Zealand context
  - Māori perspectives on nature positive Investments
  - The work of the Taskforce on Nature-related Financial Disclosures (TNFD)

- Showcase existing NZ practices in the agricultural, forestry, marine and urban sectors that are delivering positive financial returns alongside nature positive outcomes.
- Begin to shape next steps – to place Aotearoa New Zealand in a global leadership position driving nature-positive investments.

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# Sustainable Finance and the New Zealand Super Fund

**Matt Whineray,** Chief Executive Officer at Guardians of New Zealand Super

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# Nature and te ao Māori

**Temuera Hall,** Director of Tahito Ltd

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# Māori Creation - Whakapapa

TAHITO

| | | |
|---|---|---|
| Te Rā | = | Tau Ana Te Marama |
| Te Ao-nui | = | Te Pō-nui |
| Te Ao-roa | = | Te Pō-roa |
| Te Ao-papakina | = | Te Pō-papakina |
| Te Ao-pakorea | = | Te Pō-pakorea |
| Te Ao-ki tua | = | Te Pō-ki tua |
| Te Ao-ki roto | = | Te Pō-ki roto |
| Te Ao-ki tawhiti | = | Te Pō-ki tawhiti |
| Te Ao-ruru | = | Te Pō-ruru |
| Te Ao-āio | = | Te Pō-āio |
| Te Ao-whero | = | Te Pō-whero |
| Te Ao-mā | = | Te Pō-mā |
| Te Ao-pango | = | Te Pō-pango |
| Te Ao-whakarito | = | Te Pō-whakarito |
| Te Ao-kūmea | = | Te Pō-kūmea |
| Te Ao-i runga | = | Te Pō-i runga |
| Te Ao-ki raro | = | Te Pō-ki raro |
| Te Ao-ki katau | = | Te Pō-ki katau |
| Te Ao-ki mauī | = | Te Pō-ki mauī |
| **Ranginui-e-tū-iho-nei** | **=** | **Papatūānuku** |

# Indigenous

TAHITO

6% of global population

Own, occupy, or use a quarter of the world's surface

Safeguard 80% of the world's remaining biodiversity

Indigenous hold vital ancestral knowledge and expertise on how to adapt, mitigate, and reduce climate and disaster risks

# Indigenous Māori

TAHITO

- 17% of the people in Aotearoa
- 5% of Aotearoa land (approx. 1.4 million ha)
- 445,000 ha Māori Farm land (43% in Grass, 28% forestry, 29% bush & scrub)
- 1 in 4 ha of Māori farms in plantation forest (1 in 8 ha for all NZ farms)
- 468,000 ha in production forestry
- 490,000 (the balance) mostly in natural state

Two thirds of our 5% of Aotearoa is nature positive

# He aha ai? Why is that?

- Not a capital model
- Collective ownership (No traditional concept of ownership)
- Land is taonga-tuku-iho held for future generations
- Value the collective over the individual
- Deep imbedded connection to the environment

# What is this Traditional Māori Knowledge?

TAHITO

## Collective Self Intelligence

Te Iho-taketake:

Environment before people

People before profit

Collective before the individual

Mauri o te Aroha, Ora o te Aroha, Mauriora.

# Individualism vs Collectivism vs Māori-ism

**Individualism** – the rights of each person

Independence and personal identity

**Collectivism** – the importance of the community

unity and selflessness  are valued traits

**Māori-ism** – Whakapapa, relational and interdependent

people are not the center

TAHITO

People, sky, land, and ocean are one

# Our Western Problem - We think we own nature!

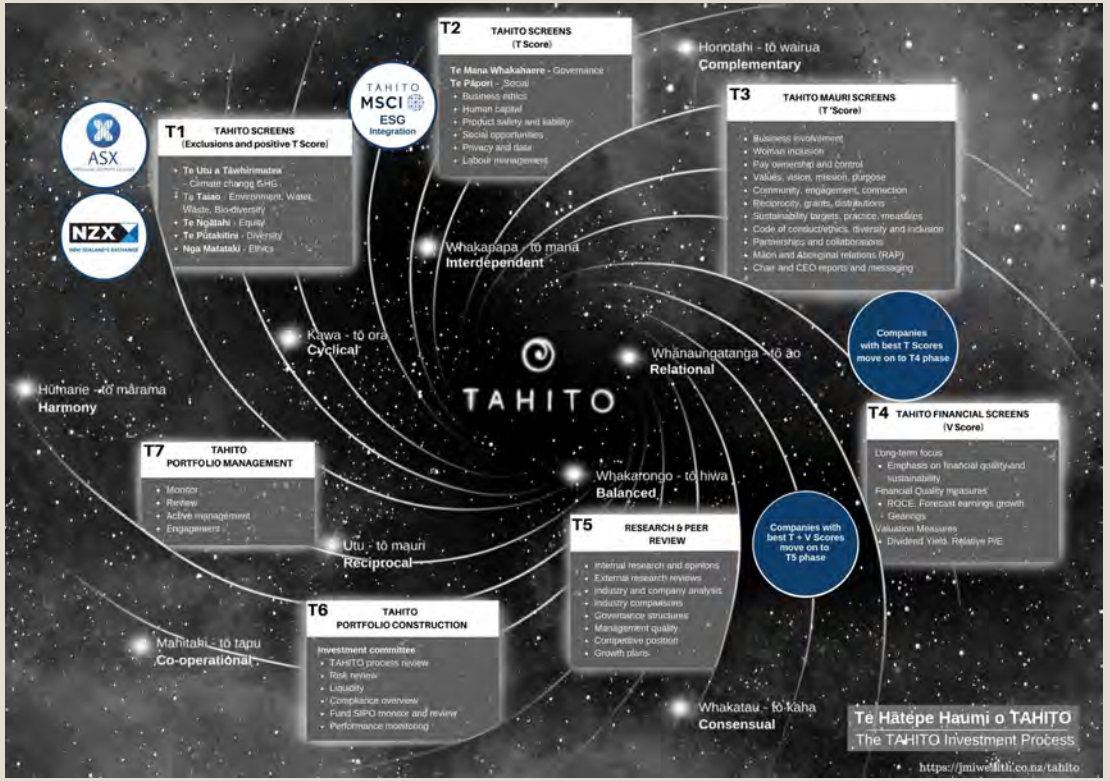
*Gus Speth: Founder - Natural Resources Defence Council.*

*'I though 30 years of good science could address the problems of biodiversity loss, ecosystem collapse and climate change. But I was wrong….. **The top environmental problems are selfishness, greed and apathy**…..to deal with those we need a spiritual and cultural transformation – and we scientists don't know how to do that.'*

TAHITO

Mate ai te tangata, toi tu te whenua!

# Transform: Holistic Social-Ecological System


## He Ara Waiora

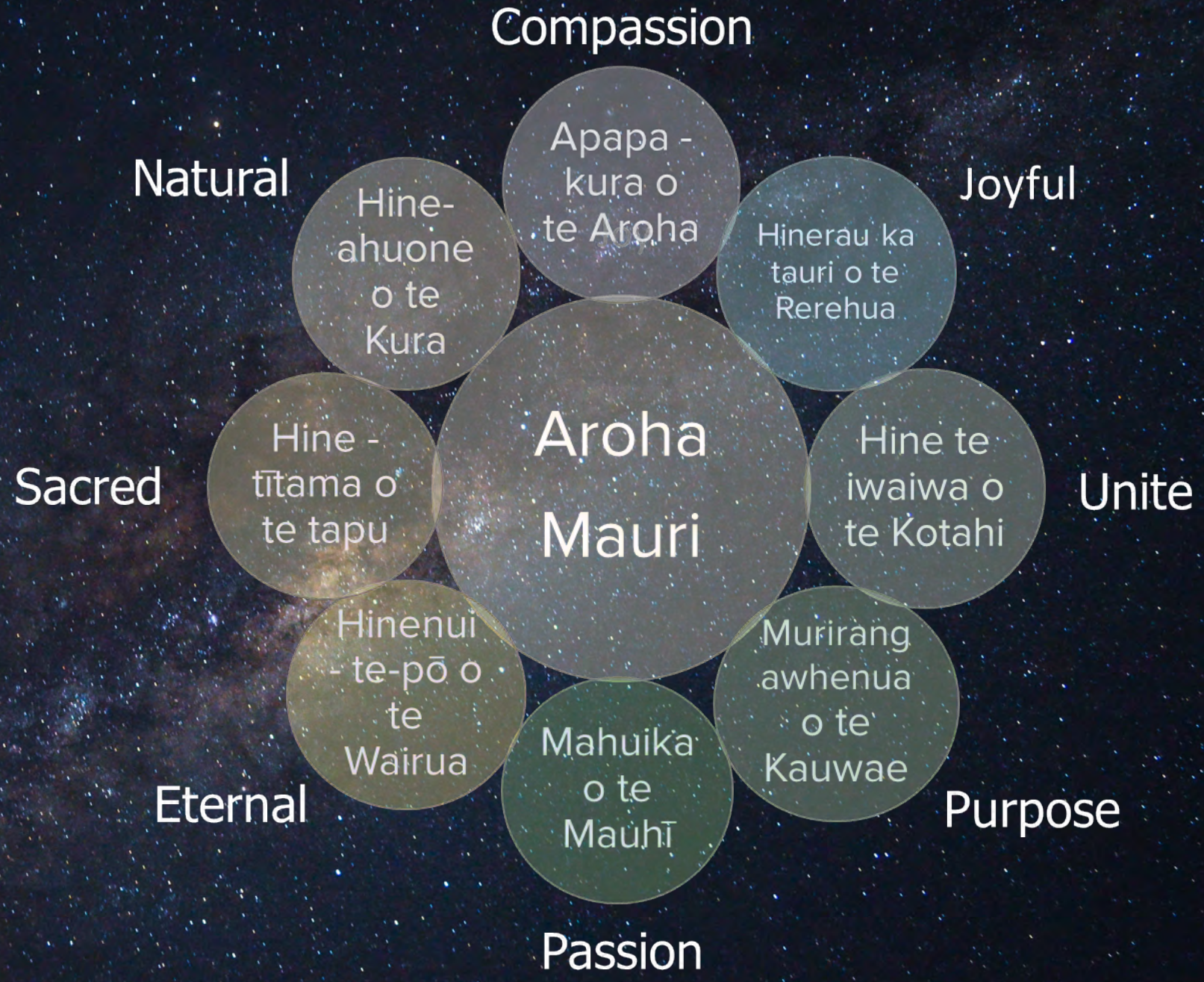
Te Tai Ohonga – NZ Treasury

## Te Kōwhiringa Tapu

TAHITO – Tai o Rehua Fund

# Ngā Ruahine

Indigenous Regeneration



# ‘It’s not what you do, it’s how you do it’

TAHITO

Nature related investment is a start but by itself its not enough

Behaviour and cultural change

Transformational leadership

Māori World View – Māuri o te Aorha

# Update on the Taskforce for Nature-related Financial Disclosures (TNFD)

**Amy Sparks,** Associate Director of Deloitte

**Guy Williams,** Co-chair of RIAA's Nature Working Group & Director, Biodiversity & Natural Capital - Sustainability and Climate Change at Deloitte

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Deloitte.

# RIAA
# Nature-Related Investment in Aotearoa New Zealand

MAKING AN IMPACT THAT MATTERS since 1845

# The Taskforce on Nature-related Financial Disclosures (TNFD)

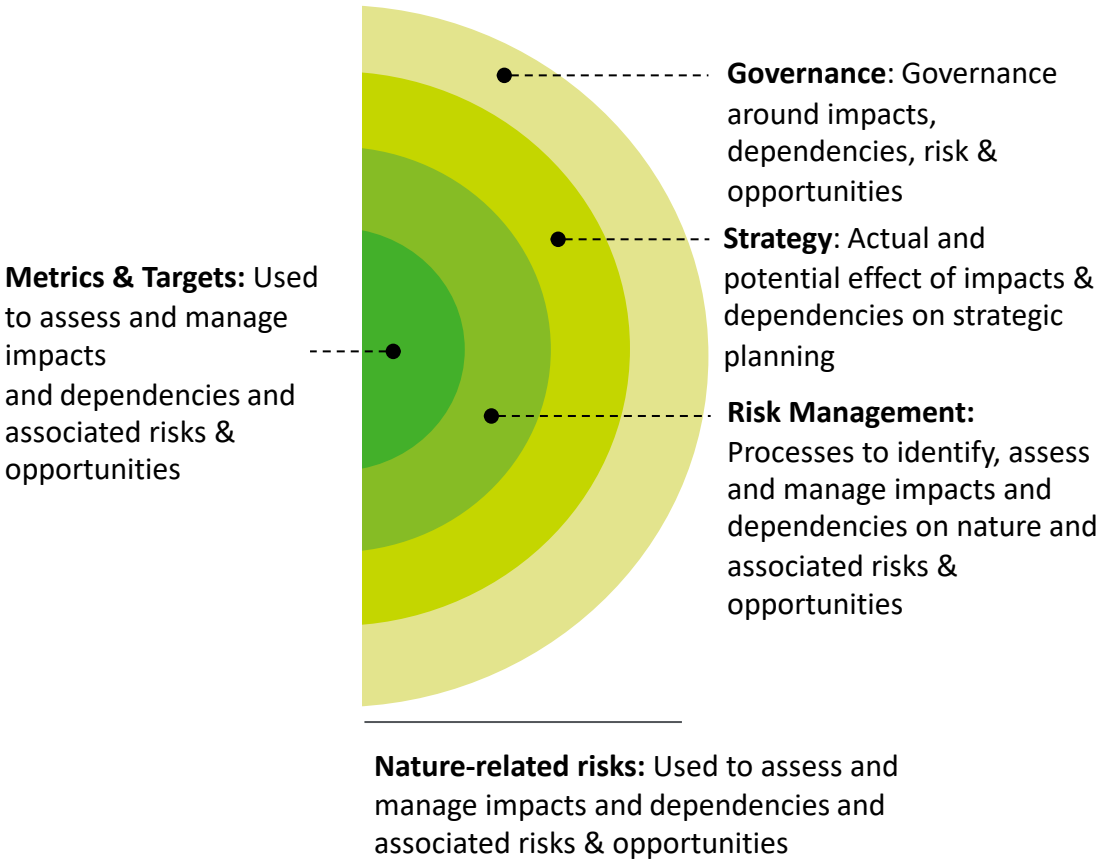
TNFD aims to create economic resilience by “making nature count in all decisions”

## What is the TNFD and how will it deliver?

- The TNFD aims to:
  - provide a **framework** for corporates and financial institutions to **assess, manage and report** on their **dependencies and impacts on nature**
  - aid in the **appraisal of nature-related risk & opportunities**
  - aid in the **redirection** of global **financial flows** away from nature-negative outcomes and towards **nature-positive outcomes**.

- The TNFD is supported by some of the world’s largest organisations – **including Deloitte** – as well as the United Nations, national governments and standard setting bodies.
- Engaging with the TNFD will help organisations in all sectors to understand the issues, make scientifically **informed decisions**, build **resilience**, and to make the most of the opportunities created by the drive for a **nature positive future**.

Source: TNFD (link)



# Recap: Where has the TNFD come from

The mission of the TNFD is to develop and deliver a risk management and disclosure framework for organisations to report and act on evolving nature-related risks, which aims to support a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

## Financial Institutions

- AP7
- AXA
- Bank of America
- Banorte
- BlackRock
- BNP Paribas
- FirstRand
- HSBC
- Macquarie
- MS&AD
- Mirova
- NBIM
- Rabobank
- SwissRe
- UBS

## Corporates

- AB InBev
- Anglo American
- Bunge
- EcoPetrol
- GlaxoSmith Kline
- Greig
- Seafoods
- Holcim
- Natura
- Nestle
- Olam
- Suzano
- Tata Steel

## Service Providers

- **Deloitte**
- EY
- KPMG
- Moody's
- PwC
- S&P Global
- Singapore Exchange

- **Market-led** – 35 Taskforce Members & 300+ institutional supporters (including MCA and many members!)
- **Politically-backed** – Endorsed by the G7 & G20 Finance & Environment Ministers (including DAWE!)
- **Science-based** – World-leading scientific and standard bodies as knowledge partners

# Next to Climate: Comparison to the TCFD approach

The TNFD builds on the **Task Force on Climate-related Financial Disclosures (TCFD),** as a starting point to ensure a consistent approach to disclosure and enable organisations to tackle climate- and nature-related risks in tandem, but there are also **important differences** due to the specific qualities of the realms of nature.

## Similarities TCFD

- Same four pillars approach
- Building off the 11 TCFD disclosure recommendations as a starting point
- Consistency in language and definitions
- Alignment with IFRS as global baseline for sustainability standards

Eight jurisdictions, (incl. UK, Japan and the EU) have mandated the incorporation of TCFD recommendations into their national reporting regimes

## New components in TNFD

- A conceptual architecture and **language system** to help market participants understanding nature
- Integrated approach to climate-nature nexus
- Emphasis on **location**
- Focus on dependencies & impacts, leading to risks and opportunities
- Specific timeframes
- Supplementary how-to guidance for risk assessment (LEAP process)

## Development Priorities

- Additional releases with more on **metrics, targets and data**
- Development of sector-specific guidance, **including for the finance sector**
- Development of nature-risk scenarios
- Adaptation of 'scope' concept for nature (direct / upstream / downstream)
- Further integration of climate-nature nexus

# TNFD beta framework – First release

Beta version of the framework is now open for consultation!! - https://tnfd.global/tnfd-framework/

## Open innovation approach

**TNFD is inviting organisations to test and provide feedback on the proposals supporting the TNFD's ongoing development.**


### 1. Language system

- What is '**nature**'? Society interacts with and across all four realms land, oceans, atmosphere and freshwater
- **Impact and Dependencies**: Natural capital as a stock of Environmental assets and a flow of Ecosystem services
- **Physical, transition and systemic risks** and opportunities to mitigate these risks or halt nature loss

### 2.Disclosure recommendations

| Pillar | Disclosure about: |
|---|---|
| **I. Governance** | the role of the board and management |
| **II. Strategy** | financial planning over the short, medium and long term |
| **III. Risk management** | how nature risks are integrated into wider risk management frameworks |
| **IV. Metrics and targets,** | how performance is measured. |

### 3.How To (LEAP) Guidance

Voluntary step by step approach on nature-related risk management:

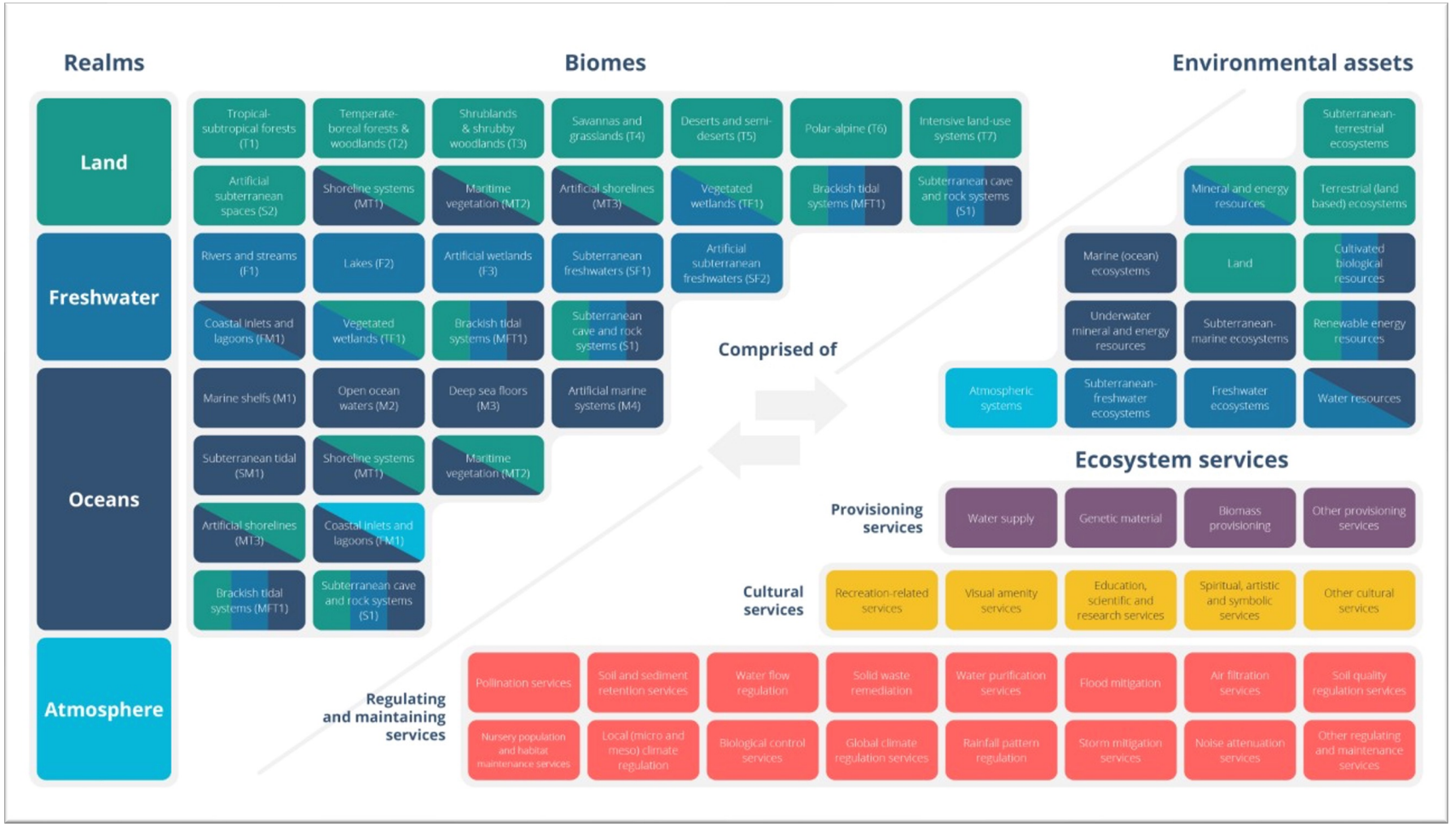
1. **L**OCATE your Interface with Nature,
2. **E**VALUATE your Dependencies & Impacts,
3. **A**SSESS your Material Risks & Opportunities and,
4. **P**REPARE to Respond and Report.

# Foundations for Understanding Nature

A ‘periodic table’ for Natural Capital as ‘scaffolding’ for enabling market participants to engage

**The scaffolding for climate action**

- Emissions
- Parts per million
- 1.5/2.0$^{O}$C
- Mitigation & adaptation
- Net Zero
- Carbon budget
- Credits/Offsets
- ….



# Nature-related Risk Assessment Process - LEAP

The TNFD includes a recommended process for how to assess nature-related risks and opportunities, based on demand from market participants for prescriptive guidance

START

**LOCATE** Interface with nature

1. **Business footprint**
Where are our direct assets and operations; and our related value chain (upstream and downstream) activities?

2. **Nature interface**
Wich biomes and ecosystems do these activities interface with?
WHAT is the current assessed state of the health and resilience of the ecosystems at each location?

3. **Priority Location Identification**
Which locations is our organisation interfacing with ecosystems assessed as being in a state of [high or extreme] level of stress?

4. **Sector Identification**
What sectors, business units, value chains or asset classes are they?

**EVALUATE** dependencies & impacts

5. **ID of relevant environmental assets and ecosystem services**
What environmental assets and ecosystem services do I have a dependency or impact on at each priority location?

6. **ID of dependencies and impacts**
What are our nature-related dependencies and impacts across our business at each priority location?

7. **Dependency analysis**
What is the size and scale of our dependencies on nature in each priority location?

8. **Impact analysis**
What is the size and scale of our nature impacts in each priority location?

**ASSESS** material risks & opportunities

9. **Risks ID & Assessment**
What are the corresponding risks for our business?

10. **Existing Risks Mitigation & Management**
What existing risk mitigation and management approaches are we already applying?

11. **Additional Risks Mitigation & Management**
What additional risk mitigation and management options should we consider?

12. **Materiality Assessment**
Which risks are material & should be disclosed in line with the TNFD disclosure recommendations?

13. **Opportunity Identification & Assessment**
What commercially attractive and nature positive opportunities does this assessment present for our business?

STAKEHOLDER ENGAGEMENT (Government, Community & Indigenous Groups, Other Businesses)

REVIEW & REPEAT

**PREPARE** to Respond and Report

Strategy & Resource Allocation

14. **Strategy and Resource Allocation**
What strategy and resource allocation decisions should be made as a result of this analysis?

15. **Performance Measurement**
How will we define metrics & targets to measure progress?

Disclosure Actions

16. **Reporting**
What will I disclose (link to TNFD Disclosure Recommendations)?

17. **Presentation**
Where and how do I present my nature-related disclosures?

# TNFD beta v0.2 – key elements

**1. METRICS / TARGETS***

A first draft architecture for metrics and targets

**2. SECTOR-SPECIFIC GUIDANCE**

A proposed approach to customising TNFD to different sectors

**3. UPDATE TO LEAP-FI**

Flexibility for financial institution to determine appropriate entry points to LEAP

**While the measurement of natural capital and ecosystem services has progressed, **there is not yet consensus in the market – in principle or in practice – on the approach to measuring nature-related dependencies, impacts risks and opportunities**. As such, current guidance focuses on providing an overarching approach, with specificity to increase as the TNFD develops.*

# TNFD beta v0.2 - LEAP-FI

## Rationale

- All aspects of LEAP approach should be incorporated by organisations
- BUT for FSIs different entry points and a greater or lesser emphasis on different components may be appropriate
- FSIs may choose to initially assess one area of their business, and over time assess all areas of their business

# TNFD beta v0.2 – Metrics and Targets: what's included so far

## Assessment Metrics

*used to assess and manage nature-related risk and opportunity management*

- Impacts and Dependencies — **Covered by v0.2**
- Risks and Opportunities — *Forthcoming in v0.3*

## Disclosure Metrics

*required for disclosures to market participants in line with the TNFD's disclosure recommendations*

- Core disclosures — *Forthcoming in v0.3*
- Additional disclosures — *Forthcoming in v0.3*

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**LOCATE** **EVALUATE** **ASSESS** **PREPARE**

# TNFD next steps

| Beta release | Release date | Deadline for feedback on this release |
|---|---|---|
| v0.1 | 15 March 2022 | 25 May 2022 |
| v0.2 | 28 June 2022 | 23 September 2022 |
| v0.3 | November 2022 | 24 January 2023 |
| v0.4 | February 2023 | 1 June 2023 |
| v1.0 (final) | September 2023 | |

- v0.3 to focus on initial approach to scenarios, building out approach to metrics and targets, and specific guidance for priority realms, issues and sectors
- Next LEAP-FI update in beta v0.4
- New focus on traditional knowledge, IPLC and TNFD kicking off with Deloitte and IUCN

Deloitte.

# Coming Soon

If you're interested in finding out what the true value of nature could mean for your business, keep an eye out for our upcoming thought leadership Banking on Natural Capital.


Scan here to read our pre-release blog

# Showcasing activities in the agricultural, forestry, marine and urban sectors

**Barry Coates,** CEO at Mindful Money

**Natalie Whitaker,** Co-Founder and CEO of Toha

**Blair Jamieson,** General Manager at Tamata Hauha

**Mawae Morton,** Executive Chair at Greenwave Aotearoa

**Alec Tang,** Director Sustainability at Kainga Ora

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# Investment focus for the future




First market category

# Regenerative agriculture in New Zealand

Clean water

Reduce GHGs

Clean food and food systems

Healthy, resilient farmers

Healthy soils, pastures & crops

Sequester carbon

Healthy animals

Resilient farms

Shorter supply chains

TOHA

**Blair Jamieson,** General Manager at Tamata Hauha

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TĀMATA HAUHĀ
HE WHENUA • HE TĀNGATA • HE TAURIKURA

*April 2022*

# CARBON & FORESTRY INVESTMENTS FOR THE WHENUA.

TĀMATA HAUHĀ OFFERING SUMMARY

TĀMATA HAUHĀ
HE WHENUA • HE TĀNGATA • HE TAURIKURA

**THE KAUPAPA -** Tāmata Hauhā partners with Māori landowners, providing them with strategies and the funding to develop un-productive or marginal land-holdings into productive assets.

**THE APPROACH -** We utilise the ETS to generate finance and create bespoke solutions on whenua Māori, allowing Tāmata Hauhā to operate in a space that traditional financial institutions ignore.

TĀMATA HAUHĀ
HE WHENUA • HE TĀNGATA • HE TAURIKURA

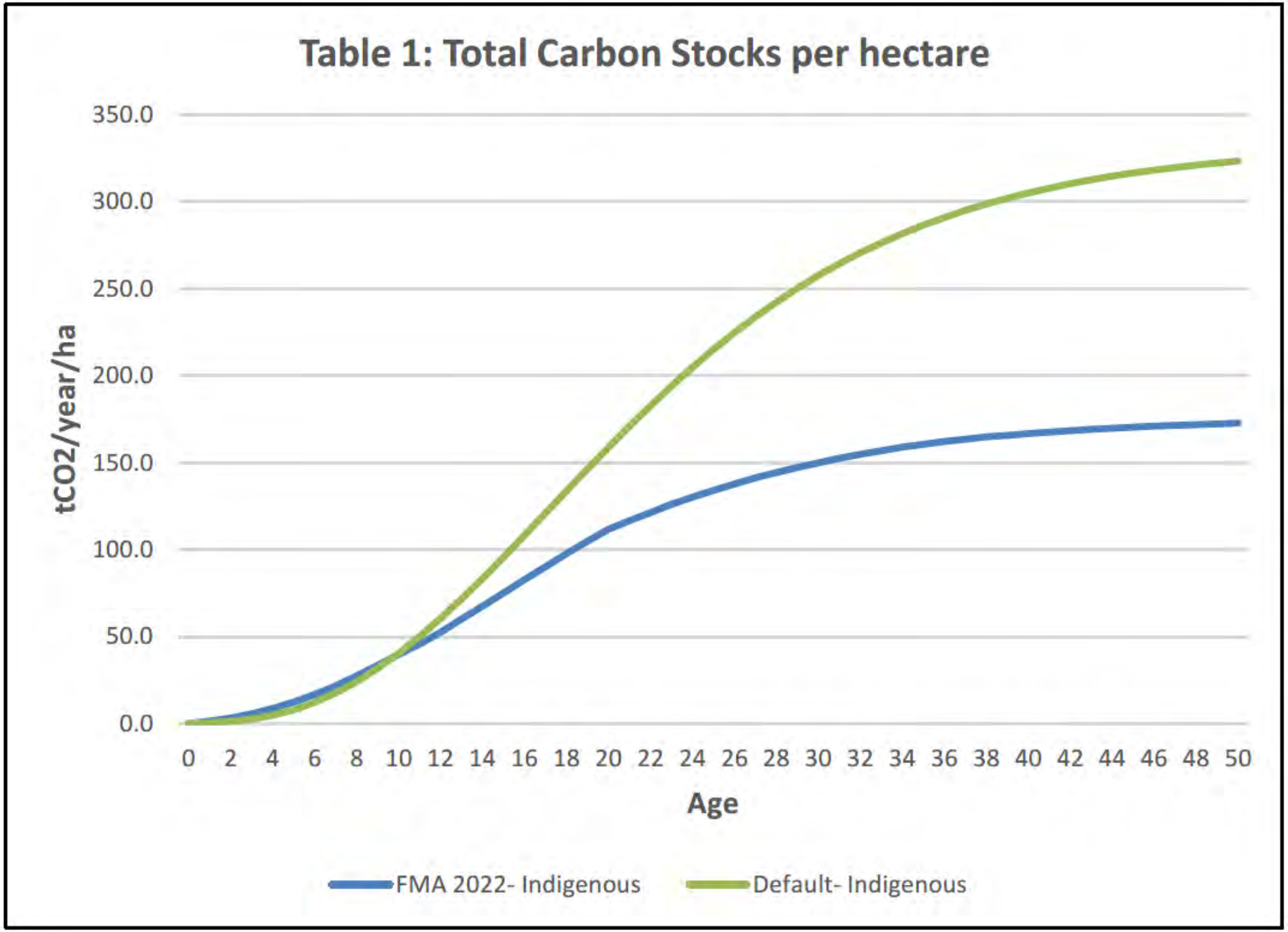
**PARTNERSHIP OFFERING -** In this offering, landowners provide the land, Tāmata Hauhā provides all the finances and carries the financial risk. Once entered into the ETS, landowners receive 50% of the profits for 20 years and then 100% after that.

**LAND PROCUREMENT -** Tāmata Hauha also seeks to procure lands and transition them to Māori ownership. Procurement is focused on lands that are culturally significant, have enduring economic returns, support erosion control, and able to provide access to existing landlocked Māori lands.

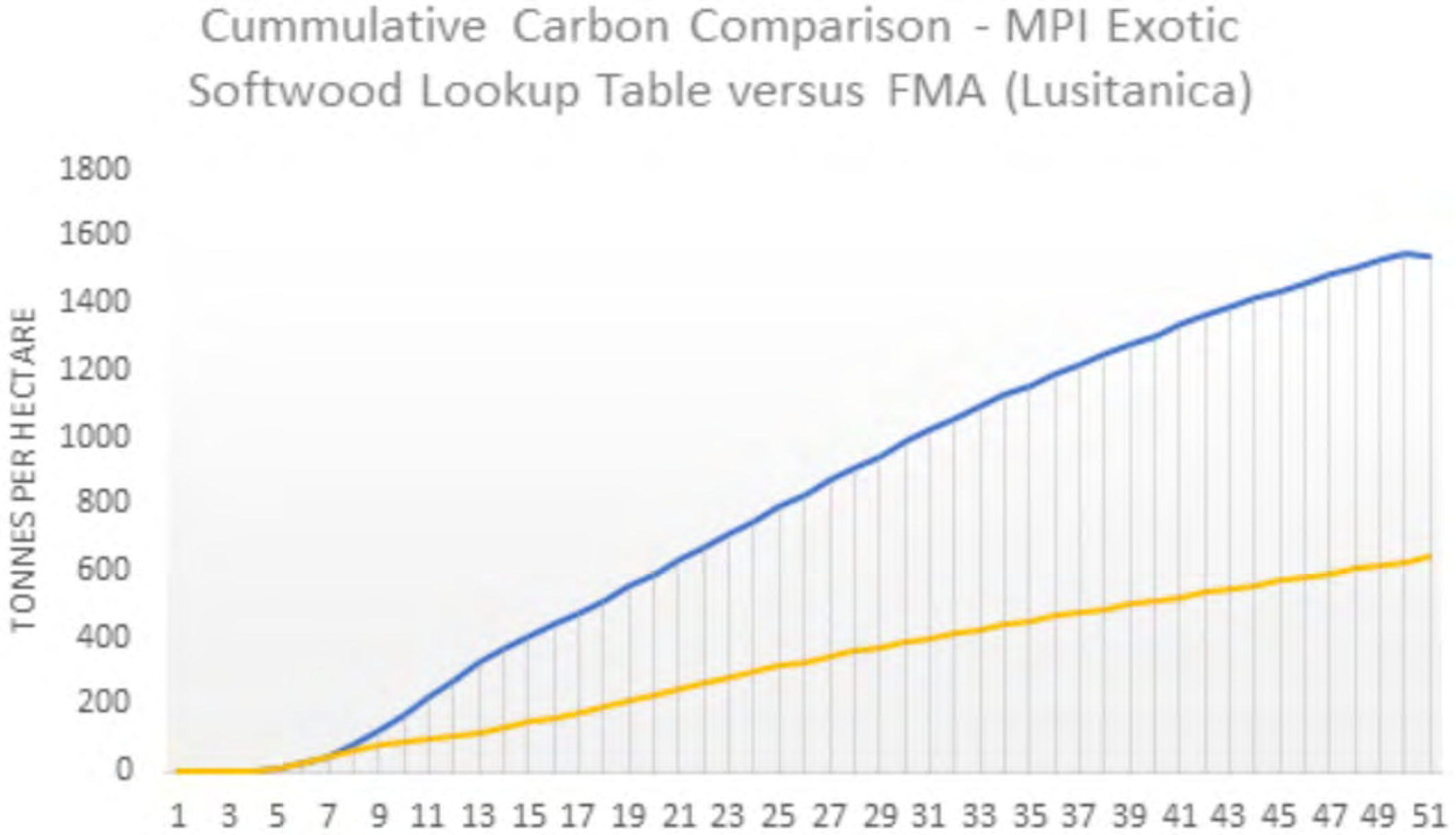
# IMAGERY FOR QUESTIONS

# Understanding species annual returns: Per Hectare – Lower NI

| Year | Proposed 85/15 Mix | 100% Radiata Pine | 100% Hardwoods. | 100% Softwoods | 100% Indigenous | |
|---|---|---|---|---|---|---|
| | *Per Hectare* | *Per Hectare* | *Per Hectare* | *Per Hectare* | *Per Hectare* | Arrangement |
| 4 | $711 | $825 | $693 | $297 | $69 | 50% Profit Share |
| 5 | $1,053 | $1,220 | $957 | $462 | $106 | 50% Profit Share |
| 6 | $1,199 | $1,385 | $1,154 | $627 | $142 | 50% Profit Share |
| 7 | $1,204 | $1,385 | $1,286 | $594 | $178 | 50% Profit Share |
| 8 | $873 | $990 | $1,286 | $462 | $214 | 50% Profit Share |
| 9 | $1,008 | $396 | $1,253 | $330 | $251 | 50% Profit Share |
| 10 | $1,002 | $429 | $1,220 | $264 | $284 | 50% Profit Share |
| 11 | $824 | $759 | $1,154 | $363 | $317 | 50% Profit Share |
| 12 | $809 | $891 | $1,121 | $396 | $346 | 50% Profit Share |
| 13 | $925 | $1,023 | $1,023 | $462 | $369 | 50% Profit Share |
| 14 | $1,012 | $1,121 | $990 | $495 | $389 | 50% Profit Share |
| 15 | $1,070 | $1,187 | $1,072 | $528 | $402 | 50% Profit Share |
| 16 | $1,100 | $1,220 | $1,051 | $561 | $416 | 50% Profit Share |
| 17 | $1,128 | $1,253 | $1,034 | $561 | $419 | 50% Profit Share |
| 18 | $1,101 | $1,220 | $957 | $561 | $422 | 50% Profit Share |
| 19 | $1,100 | $1,220 | $891 | $594 | $419 | 50% Profit Share |
| 20 | $1,099 | $1,220 | $792 | $561 | $409 | 50% Profit Share |
| 21 | $2,337 | $2,590 | $1,702 | $1,258 | $883 | 100% Landowners |
| 22 | $2,332 | $2,590 | $1,628 | $1,258 | $847 | 100% Landowners |
| 23 | $2,202 | $2,442 | $1,554 | $1,184 | $818 | 100% Landowners |
| 24 | $2,070 | $2,294 | $1,628 | $1,184 | $782 | 100% Landowners |
| 25 | $2,065 | $2,294 | $1,628 | $1,110 | $746 | 100% Landowners |
| | **$28,223** | **$29,958** | **$26,076** | **$14,109** | **$9,229** | |



# Understanding species annual returns: the reality of Exotic in FMA



# Understanding Agroforestry: Paulownia Example

# Understanding Integration: Manawatu Example

# Understanding Integration: Manawatu Example

**Mawae Morton,** Executive Chair at Greenwave Aotearoa

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## NZ Seaweed Supply Chain Maturity

Hatchery | Farming | Products | Science | Workforce

*Absent* *Emerging* *Constrained* *Developed*

## US Seaweed Supply Chain Maturity

Hatchery | Farming | Products | Science | Workforce

*Absent* *Emerging* *Constrained* *Developed*

# EnviroStrat

- **$6m raised for commercial pilot**
- $2m from MPI, $4m from private consortium
- 2 hatcheries built & operational
- Developing farms in Hauraki Gulf

Ministry for Primary Industries
Manatū Ahu Matua

AgriSea NEW ZEALAND

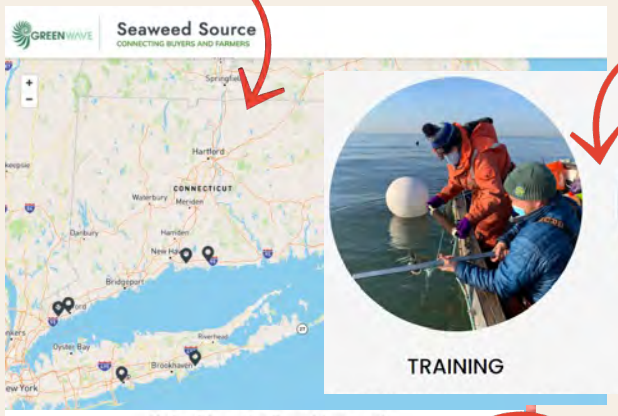
Iwi, funders & supply chain partners!

Seaweed nursery supply under development!

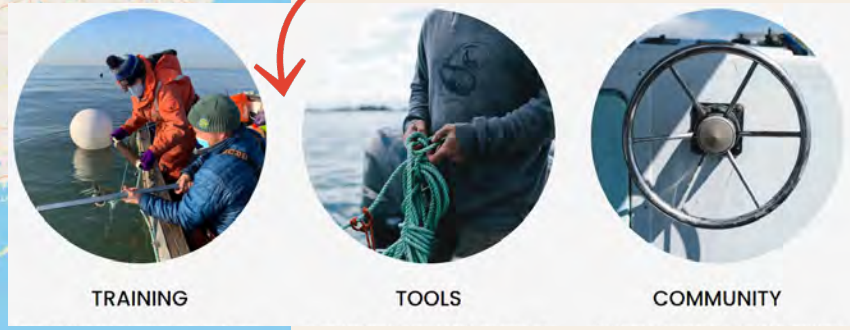
THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Digital platform to sell crop!

GREENWAVE




Online Farming Hub!




Kelp Climate Fund Impact

ESTIMATED YIELD
566,400 LBS

90 ACRES OF KELP PLANTED

14,160 LBS CARBON REMOVED

1,133 LBS NITROGEN REMOVED

Climate subsidies for farmers!

## NATURE-BASED SOLUTIONS

Mixed species co-cultivation (polyculture – mimics nature)

No inputs required (e.g. feed, water & fertiliser)

Marine species provide coastal ecosystem services

'Blue to Green' | Moana to Whenua product applications

## BARRIERS

Regulatory framework roadblocks

Alignment of investor expectations

Availability of domestic risk-tolerant capital

High production costs

# REGENERATIVE OCEAN FARMING AOTEAROA

## NATURE POSITIVE OUTCOMES

Water quality improvement

Atmospheric $CO_2$ sequestration ('Blue Carbon')

Biodiversity enhancement

Ocean health regulation (acidity and nutrients)


## INDIGENOUS KNOWLEDGE

Mātauranga Māori threaded throughout supply chain

Underpinning core principles: **People, Planet & Prosperity**

Enhancing the mauri of the moana

Outcomes designed by Māori, for Māori

**Mahi underpinned by the Wellbeing Impact Framework**

*The Wellbeing Framework dictates what we do by outlining the social, environmental, economic & cultural impacts we seek*

*We measure our impact during and post pilot using codeveloped metrics with core project partners – inline with investor expectations*

**Alec Tang,** Director Sustainability at Kainga Ora

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SPACE:
the Final
Frontier
...but not as you
might have imagined it

*no two cities are the same...*

*but all cities need the same things:*

PLACES TO WORK

PLACES TO MAKE THINGS WE NEED

PLACES TO LIVE

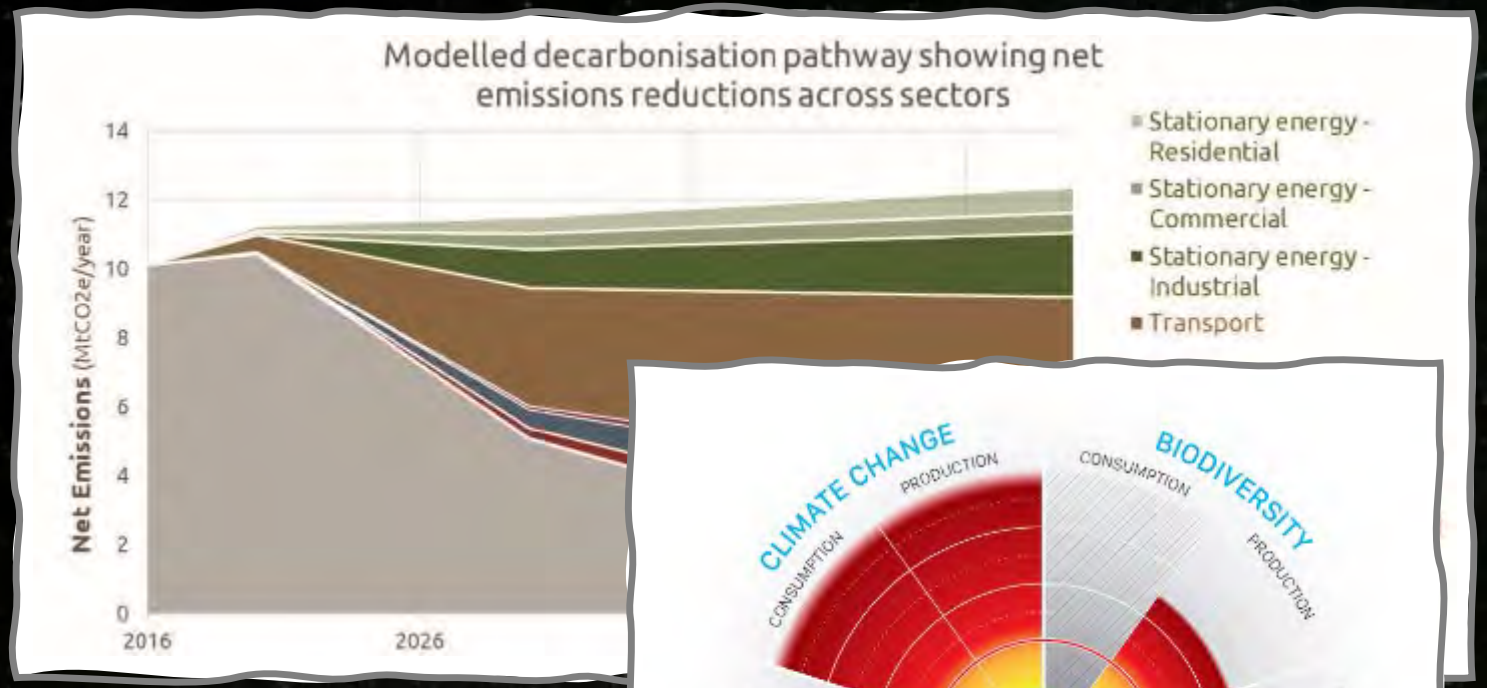
PLACES FOR MOVING ABOUT

PLACES TO BELONG

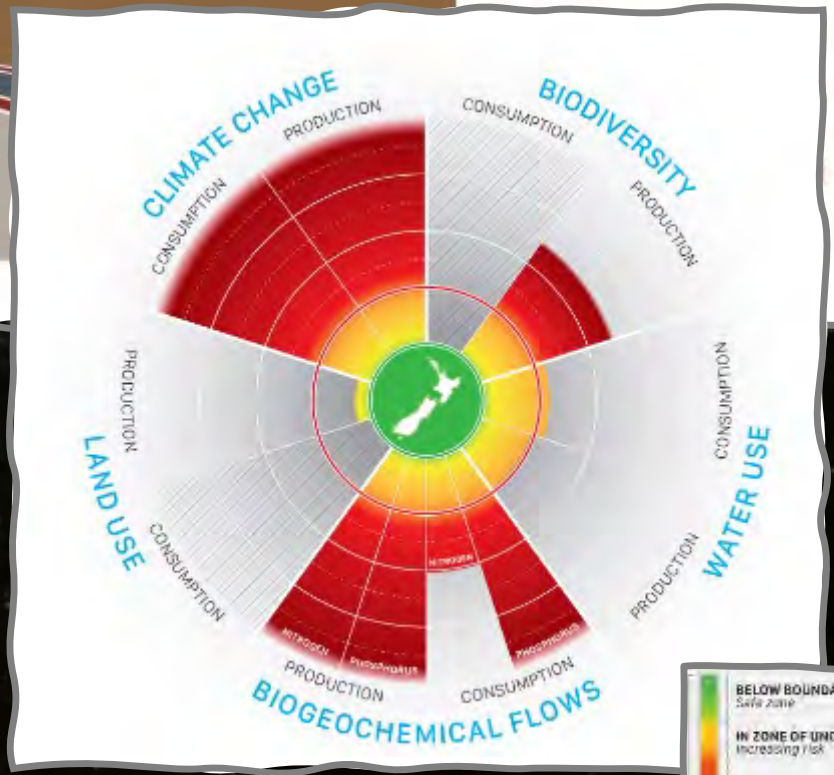
PLACES FOR NATURE

PLACES TO MANAGE OUR WASTE

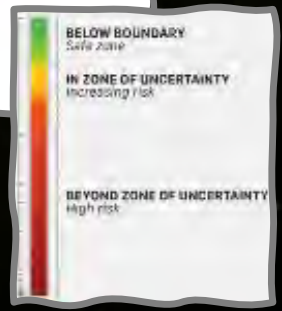
# ...and we are increasingly aware of the constraints within which we need to deliver these spaces:




TE TĀRUKE-Ā-TĀWHIRI: AUCKLAND'S CLIMATE PLAN
WWW.CLIMATEAKL.CO.NZ




A SAFE OPERATING SPACE FOR NEW ZEALAND/AOTEAROA
HTTPS://ENVIRONMENT.GOVT.NZ/ASSETS/PUBLICATIONS/FILES/A-SAFE-OPERATING-SPACE-FOR-NZ-AOTEAROA.PDF



# our spaces need to be:

## MULTIFUNCTIONAL

PLACES TO MANAGE OUR WASTE

PLACES FOR NATURE

PLACES TO BELONG



TE AUAUNGA AWA

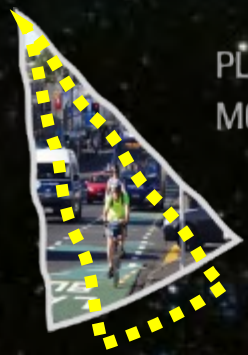
## DENSE

PLACES TO LIVE

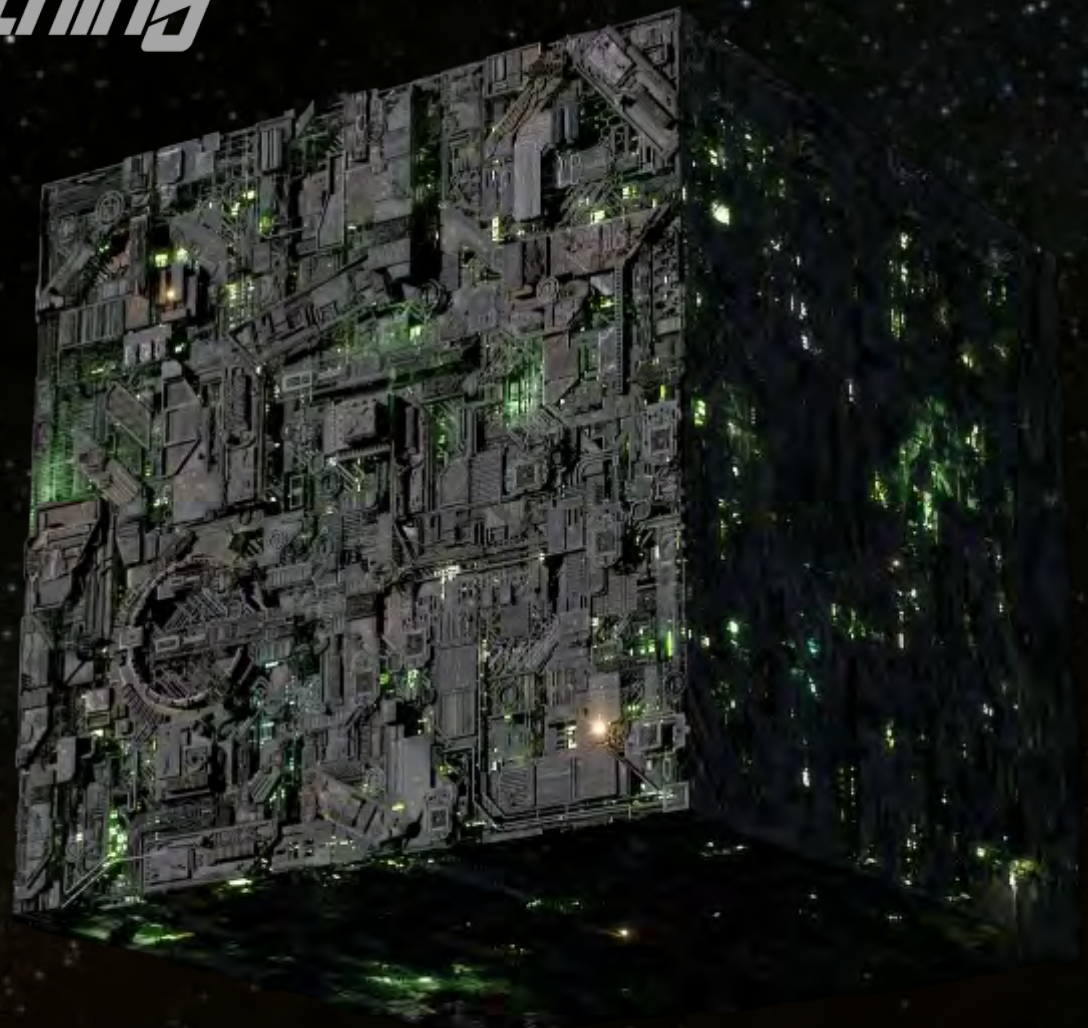
ARLINGTON STREET, WELLINGTON

## EFFICIENT

PLACES TO MOVE ABOUT



# A Final thought:
# context is everything



# Climate and nature - opportunities and barriers

**Rod Oram,** Journalist at newsroom.co.nz

riaa
Responsible Investment Association Australasia

# *Reinventing paradise*

Humanity must work with nature…
…not against it

Rod.Oram@NZ2050.nz / +64 21 444 839
Newsroom.co.nz / Blog - NZ2050.nz
Twitter @RodOramNZ

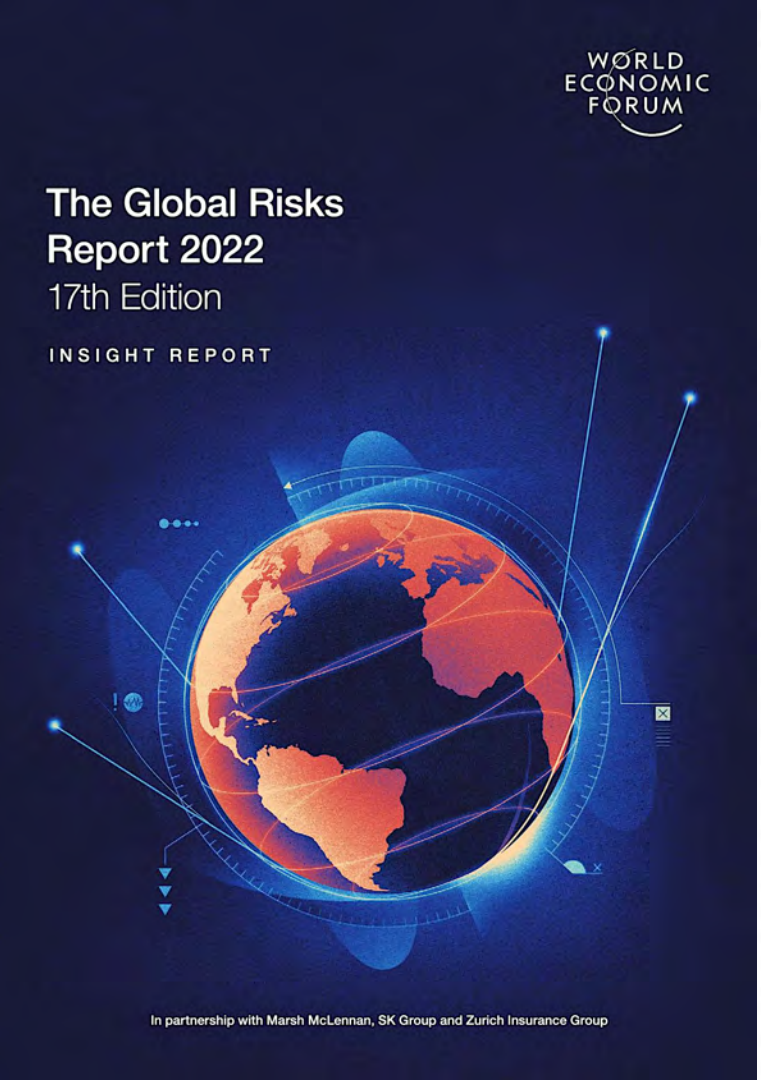
**Rod Oram's presentation to**
**RIAA's Workshop**
**Nature Related Investment in Aoteraroa**
**via Zoom, July 5th, 2022**

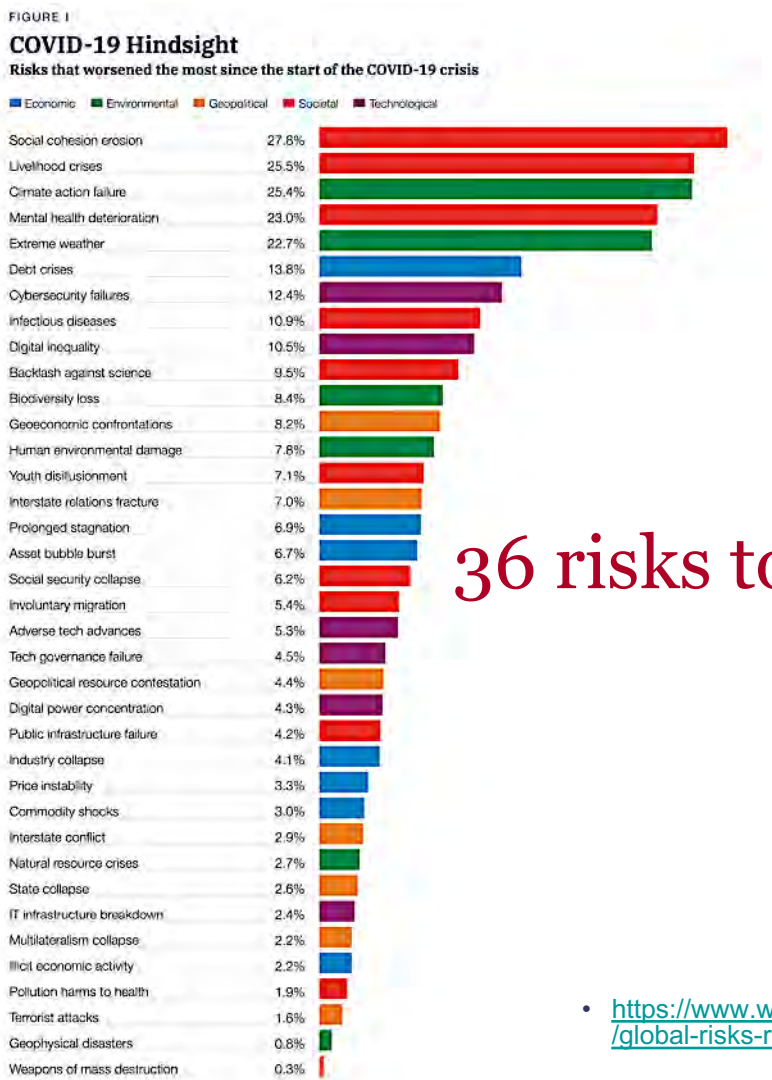
# The gist of it…

- We depend utterly on the living Earth. It is our life-support system.
- We are rapidly destroying the Earth's ability to support us.
- The climate crisis is crucial. But only a subset of our utter unsustainability.
- We must radically change our ways. So we work with nature, not against it.
- This is the greatest opportunity we all have. Particularly for our farmers.
- How we invest will help. But money is only a tool.
- Our prime imperative is to re-establish our right relationship with nature.

# Agenda

- Risks
- Earth
- Aotearoa




# 36 risks to humanity

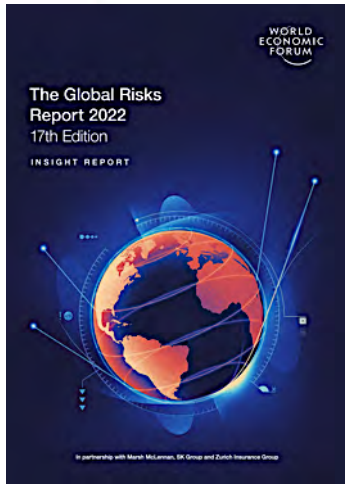
- https://www.weforum.org/reports/global-risks-report-2022/

# COVID-19 Hindsight

## Risks that worsened the most since the start of the COVID-19 crisis

Economic Environmental Geopolitical Societal Technological

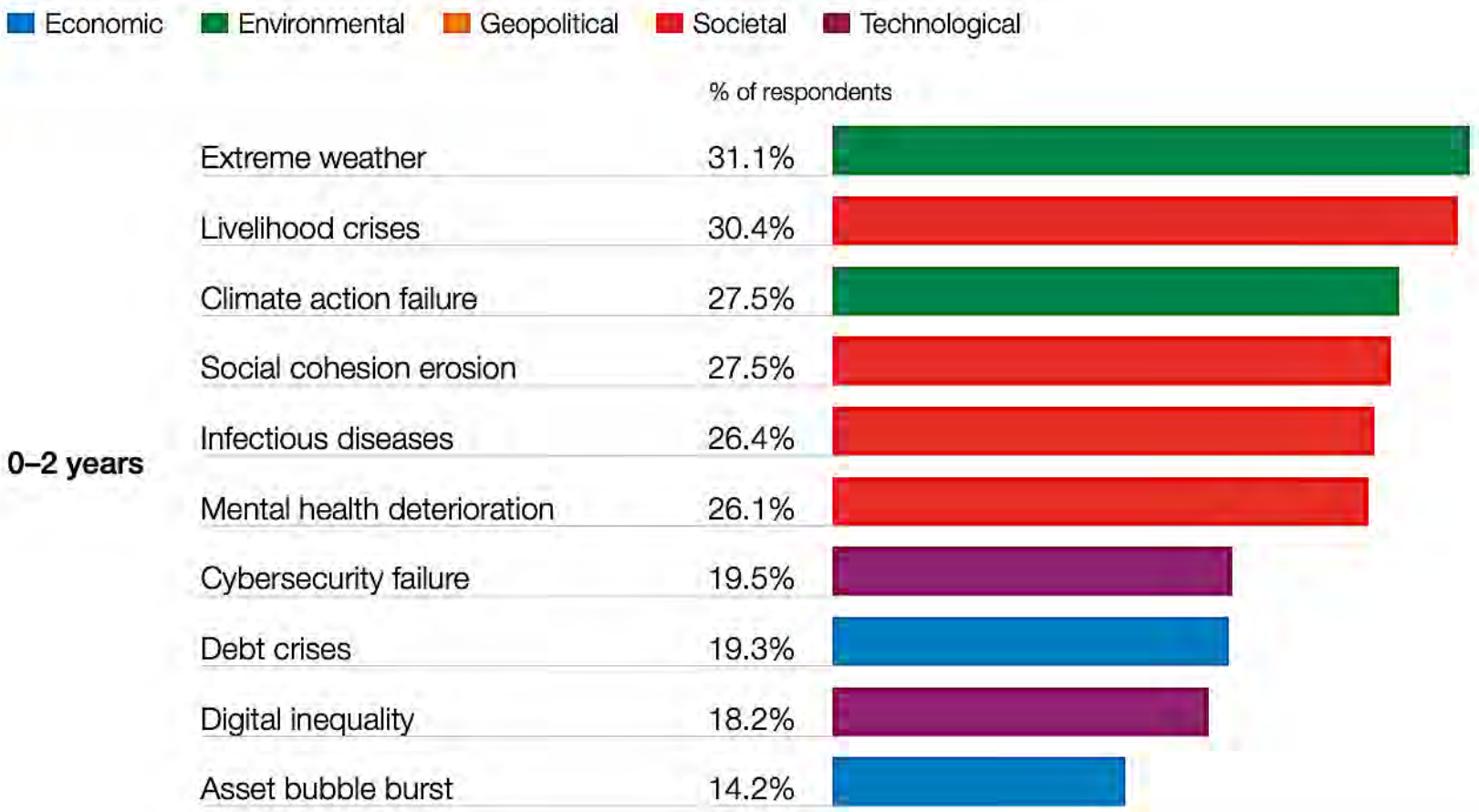
| | |
|---|---|
| Social cohesion erosion | 27.8% |
| Livelihood crises | 25.5% |
| Climate action failure | 25.4% |
| Mental health deterioration | 23.0% |
| Extreme weather | 22.7% |
| Debt crises | 13.8% |
| Cybersecurity failures | 12.4% |
| Infectious diseases | 10.9% |
| Digital inequality | 10.5% |
| Backlash against science | 9.5% |
| Biodiversity loss | 8.4% |
| Geoeconomic confrontations | 8.2% |
| Human environmental damage | 7.8% |



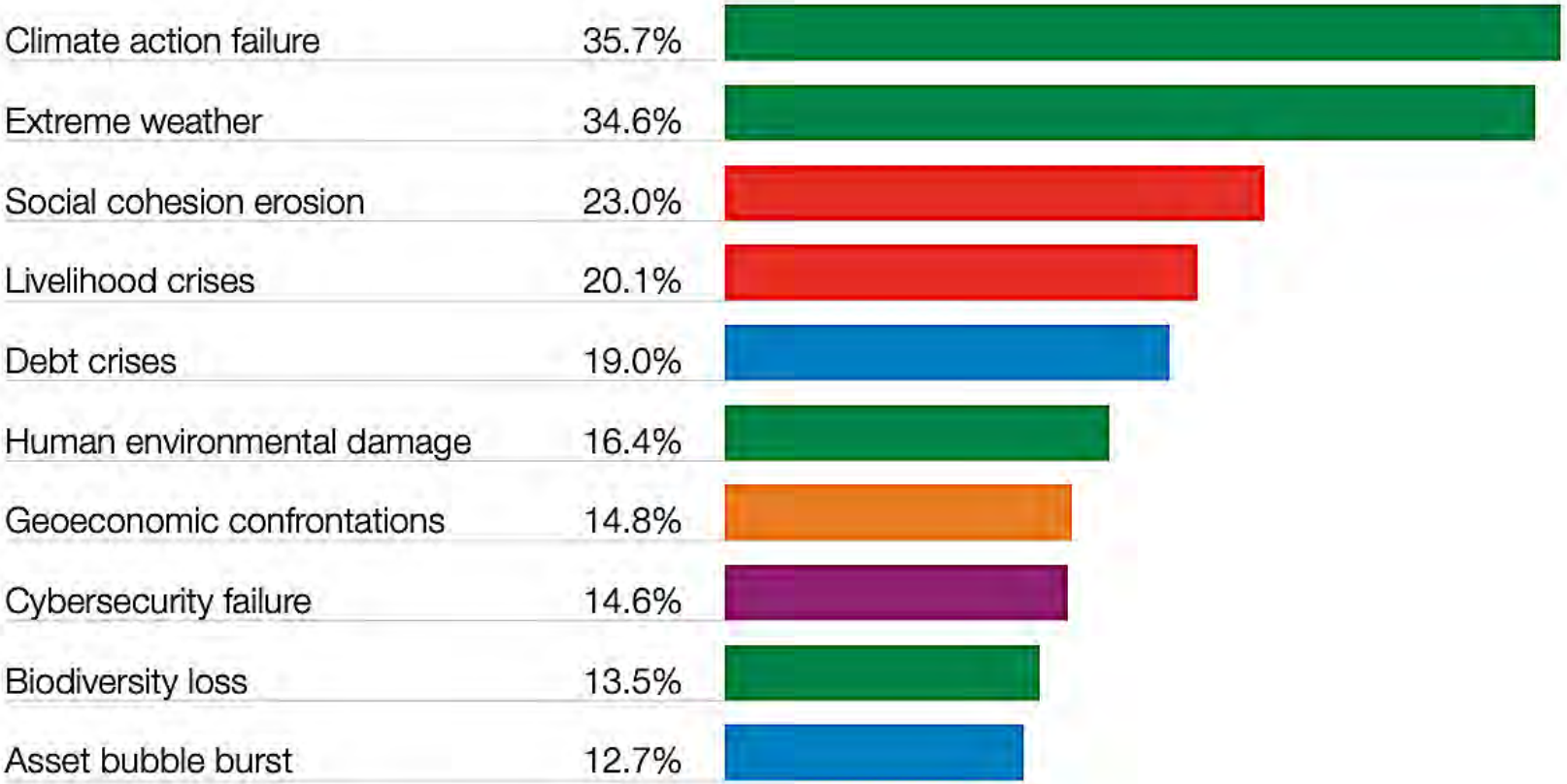
| | |
|---|---|
| Environmental | |
| **Biodiversity loss** and ecosystem collapse | Irreversible consequences for the environment, humankind, and economic activity, and a permanent destruction of natural capital, as a result of species extinction and/or reduction |
| **Climate action failure** | Failure of governments and businesses to enforce, enact or invest in effective climate-change adaptation and mitigation measures, preserve ecosystems, protect populations and transition to a carbon-neutral economy |
| **Extreme weather** events | Loss of human life, damage to ecosystems, destruction of property and/or financial loss at a global scale as a result of extreme weather events: cold fronts, fires, floods, heat waves, windstorms etc. |
| **Human**-made **environmental damage** | Loss of human life, financial loss and/or damage to ecosystems as a result of human activity and/or failure to co-exist with animal ecosystems: deregulation of protected areas, industrial accidents, oil spills, radioactive contamination, wildlife trade etc. |
| Major **geophysical disasters** | Loss of human life, financial loss and/or damage to ecosystems as a result of geophysical disasters: earthquakes, landslides, geomagnetic storms, tsunamis, volcanic activity etc. |
| **Natural resource crises** | Chemical, food, mineral, water or other natural resource crises at a global scale as a result of human overexploitation and/or mismanagement of critical natural resources |

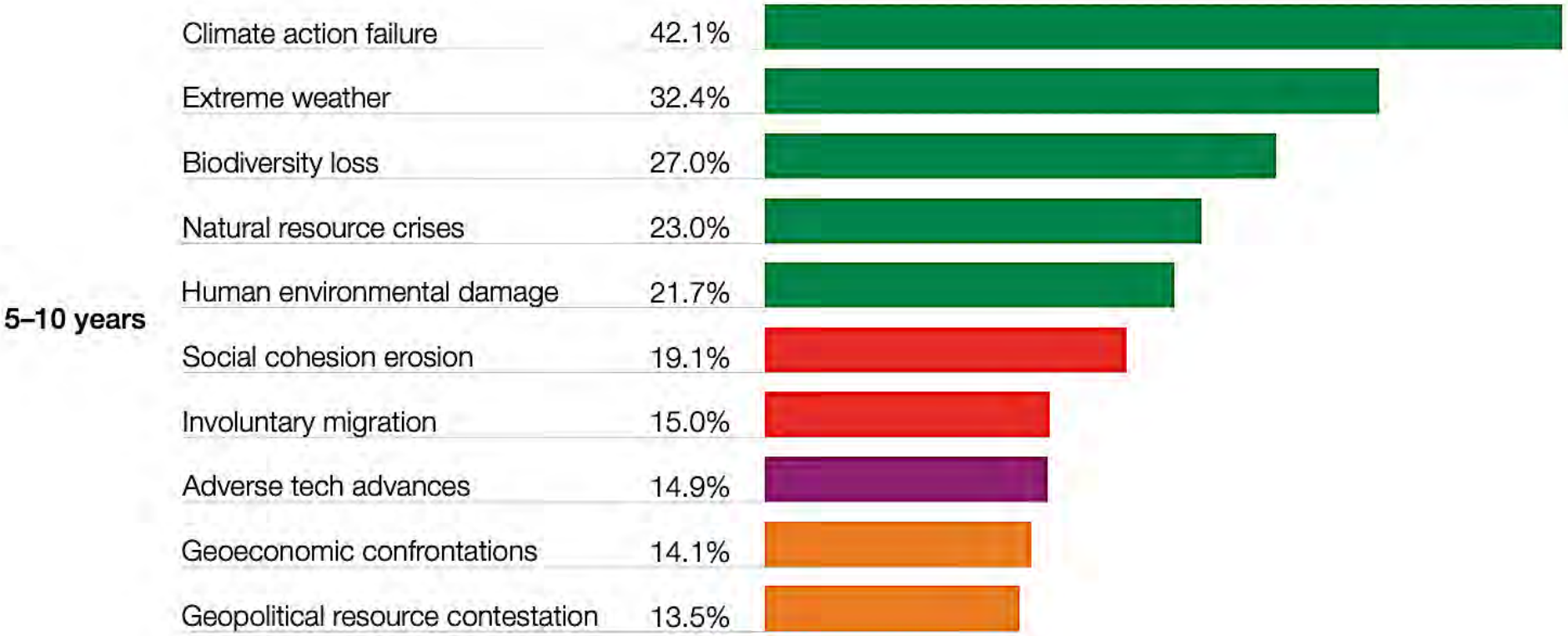
# Global Risks Horizon

## When will risks become a critical threat to the world?



**2–5 years**


Climate action failure 35.7%
Extreme weather 34.6%
Social cohesion erosion 23.0%
Livelihood crises 20.1%
Debt crises 19.0%
Human environmental damage 16.4%
Geoeconomic confrontations 14.8%
Cybersecurity failure 14.6%
Biodiversity loss 13.5%
Asset bubble burst 12.7%




…so we can delay a bit longer?

No! Humanity has ***to act very fast now***!

# Top 5 risks – WEF poll of 12,000 business leaders in 124 nations

- Climate action failure: #1 risk for 10 countries / #2 for 3 / #4 for 6 / #5 for 5

| Economy | Risk 1 | Risk 2 | Risk 3 | Risk 4 | Risk 5 |
|---|---|---|---|---|---|
| Netherlands | Climate action failure | Erosion of social cohesion | Failure of cybersecurity measures | Asset bubble bursts in large economies | Debt crises in large economies |
| Ireland | Climate action failure<br>Failure of cybersecurity measures | … | Fracture of interstate relations | Debt crises in large economies<br>Prolonged economic stagnation | … |
| New Zealand | Failure of cybersecurity measures | Asset bubble bursts in large economies<br>Infectious diseases<br>Prolonged economic stagnation | … | … | Climate action failure<br>Extreme weather events |

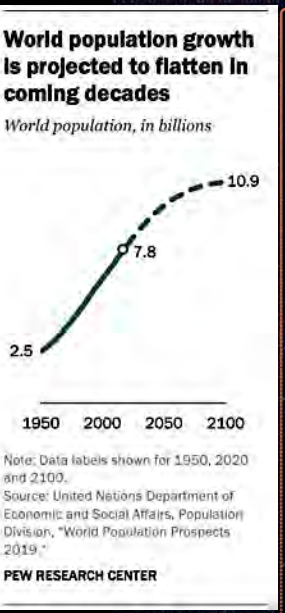
# Agenda

- Risks
- **Earth**
- Aotearoa

Stockholm Resilience Centre

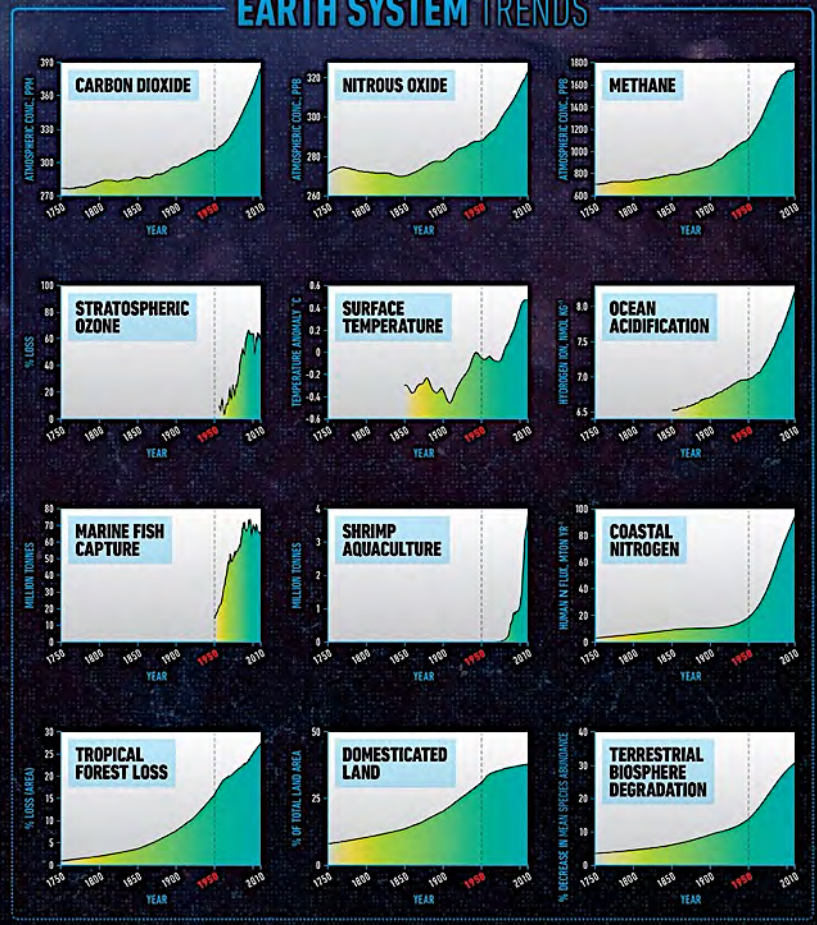
# THE GREAT ACCELERATION

## SOCIO-ECONOMIC TRENDS





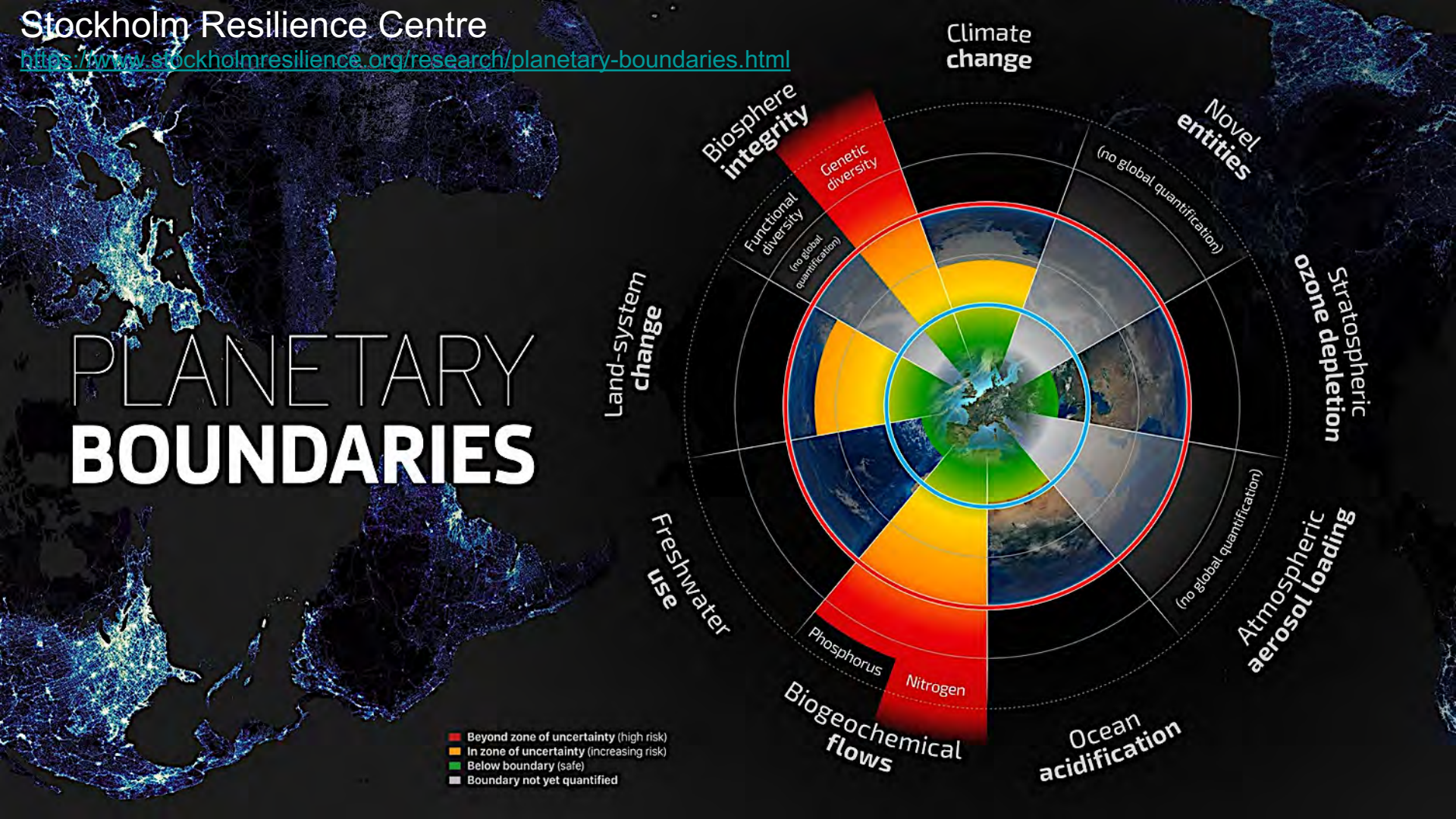
## EARTH SYSTEM TRENDS



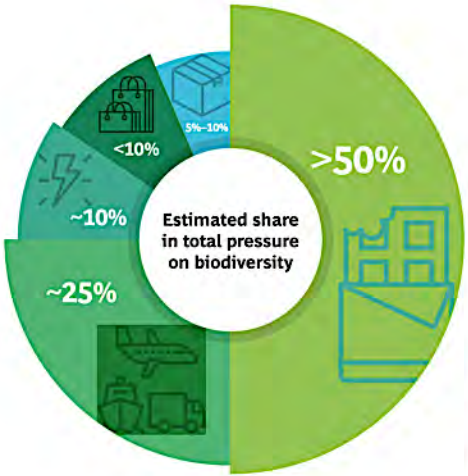

**REFERENCE:** Steffen, W., W. Broadgate, L. Deutsch, O. Gaffney and C. Ludwig, The Trajectory of the Anthropocene: the Great Acceleration, *The Anthropocene Review*, 16 January 2015.

Stockholm Resilience Centre

https://www.stockholmresilience.org/research/planetary-boundaries.html

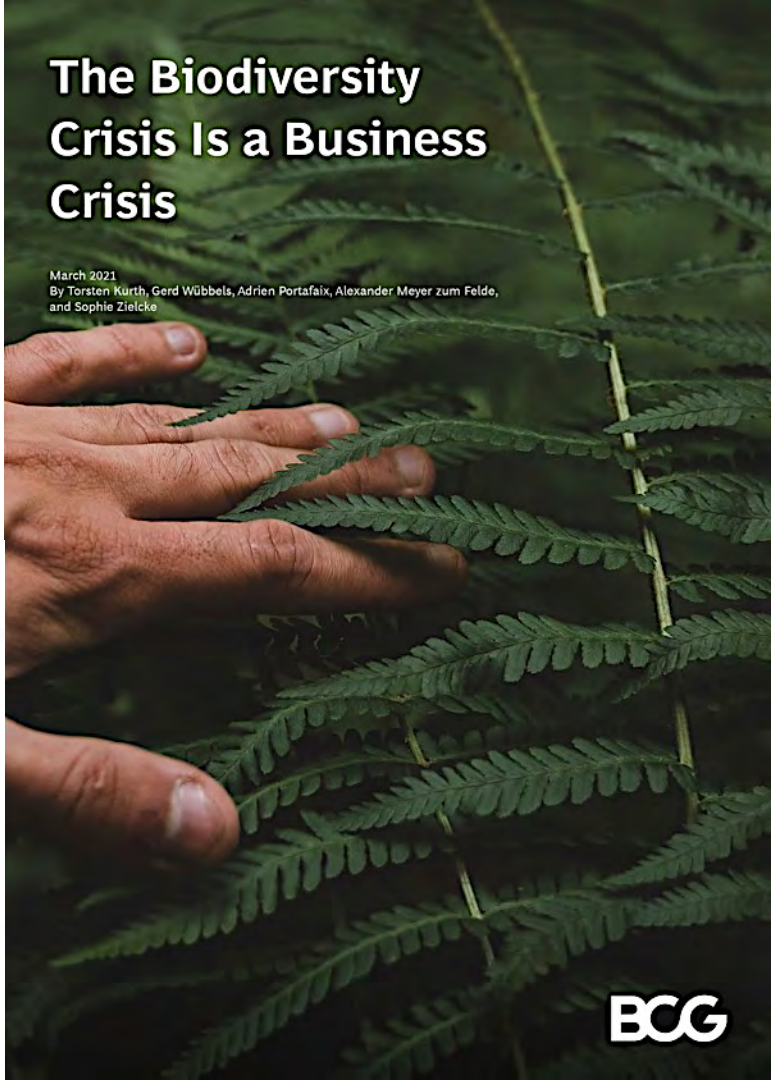


# 4 value chains have caused 90% of biodiversity loss




- **Food** and beverages, including packaging
- **Infrastructure and mobility,** including housing, public infrastructure, and vehicles
- **Energy,** including fuels, power, and other commodities
- **Fashion** and related FMCG, including luxury goods
- **All other,** including pharma, cosmetics, and consumer electronics

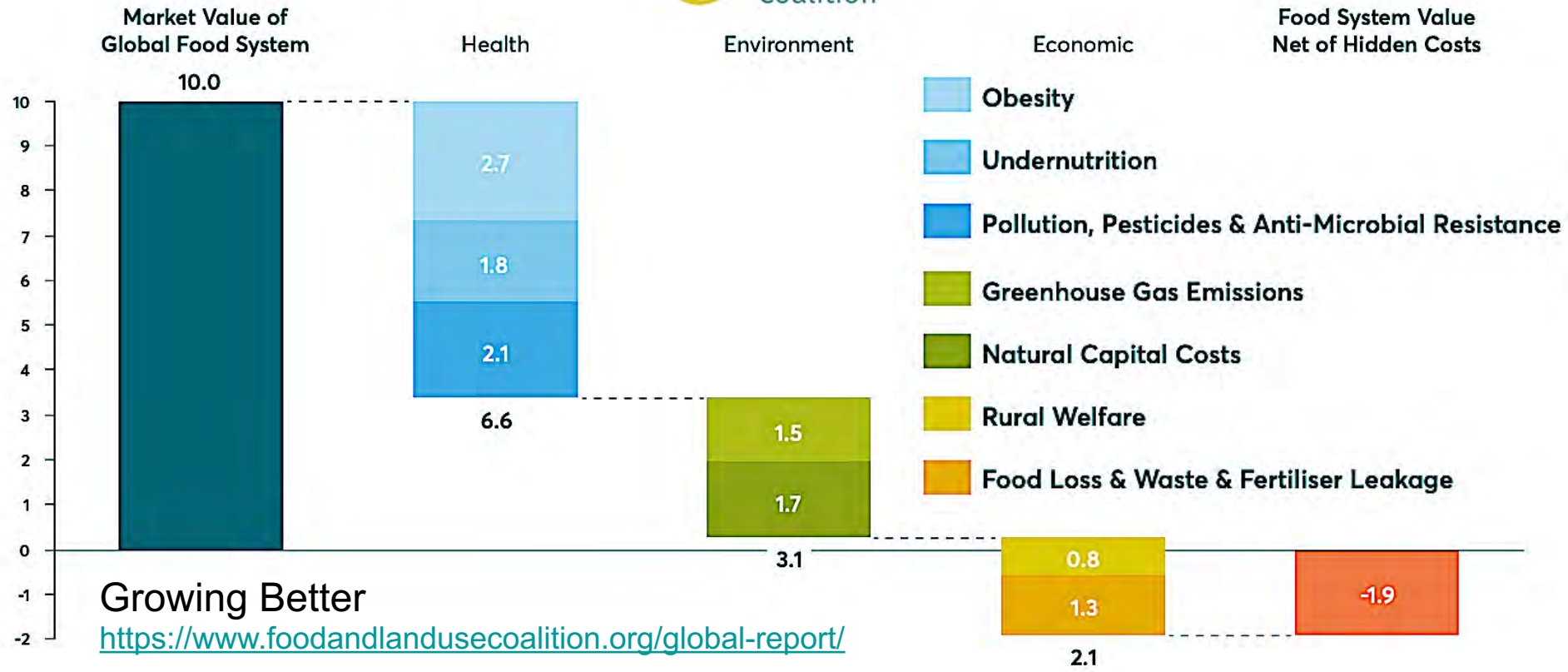
- https://web-assets.bcg.com/fb/5e/74af5531468e9c1d4dd5c9fc0bd7/bcg-the-biodiversity-crisis-is-a-business-crisis-mar-2021-rr.pdf



# The hidden costs of global food and land use systems sum to $12 trillion, compared to a market value of the global food system of $10 trillion

Trillions USD, 2018 prices

The Food and Land Use Coalition




Growing Better

https://www.foodandlandusecoalition.org/global-report/

# Climate impacts by farming – and on farming - are rising

ScienceDaily

Your source for the latest research news

## Climate change cut global farming productivity 21% since 1960s

*Date:* April 1, 2021

*Source:* Cornell University

*Summary:* Despite important agricultural advancements to feed the world in the last 60 years, a new study shows that global farming productivity has fallen 21% since the 1960s - the equivalent of losing about seven years of farm productivity increases - all due to climate change.

*Share:*

**FULL STORY**

Despite important agricultural advancements to feed the world in the last 60 years, a Cornell-led study shows that global farming productivity is 21% lower than it could have been without climate change. This is the equivalent of losing about seven years of farm productivity increases since the 1960s.

- https://www.sciencedaily.com/releases/2021/04/210401112554.htm

# Intense, new competition from clean food technology

**The cost of cultivated meat has come down at an even faster rate than another well-known biotechnology—genome sequencing.**

**Comparative cost of changing technologies (logarithmic scale)**

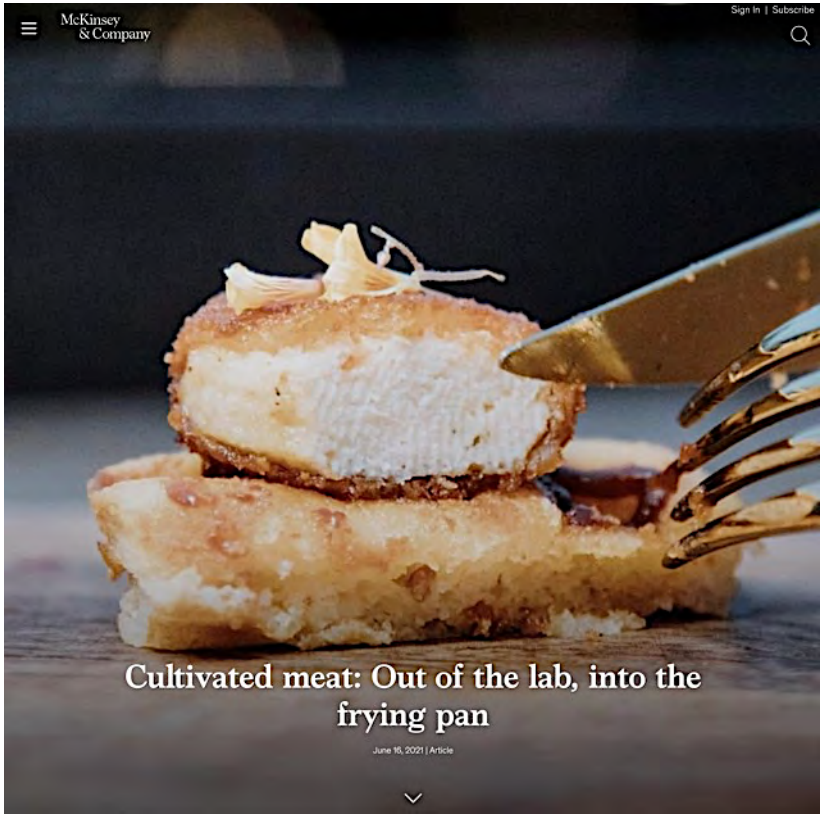

**a** 2013: Dutch scientist developed and produced first cultivated meat at ~$300,000 a burger[2]

**b** 2016: Memphis Meats produced a "cultivated meatball" for ~$20,000/lb

**c** 2019: Future Meat Technologies reduced production costs of chicken to $150/lb and beef to $200/lb

**d** 2021: Future Meat Technologies announced it produced a 4 oz chicken breast at $4 (with mixed plant protein)

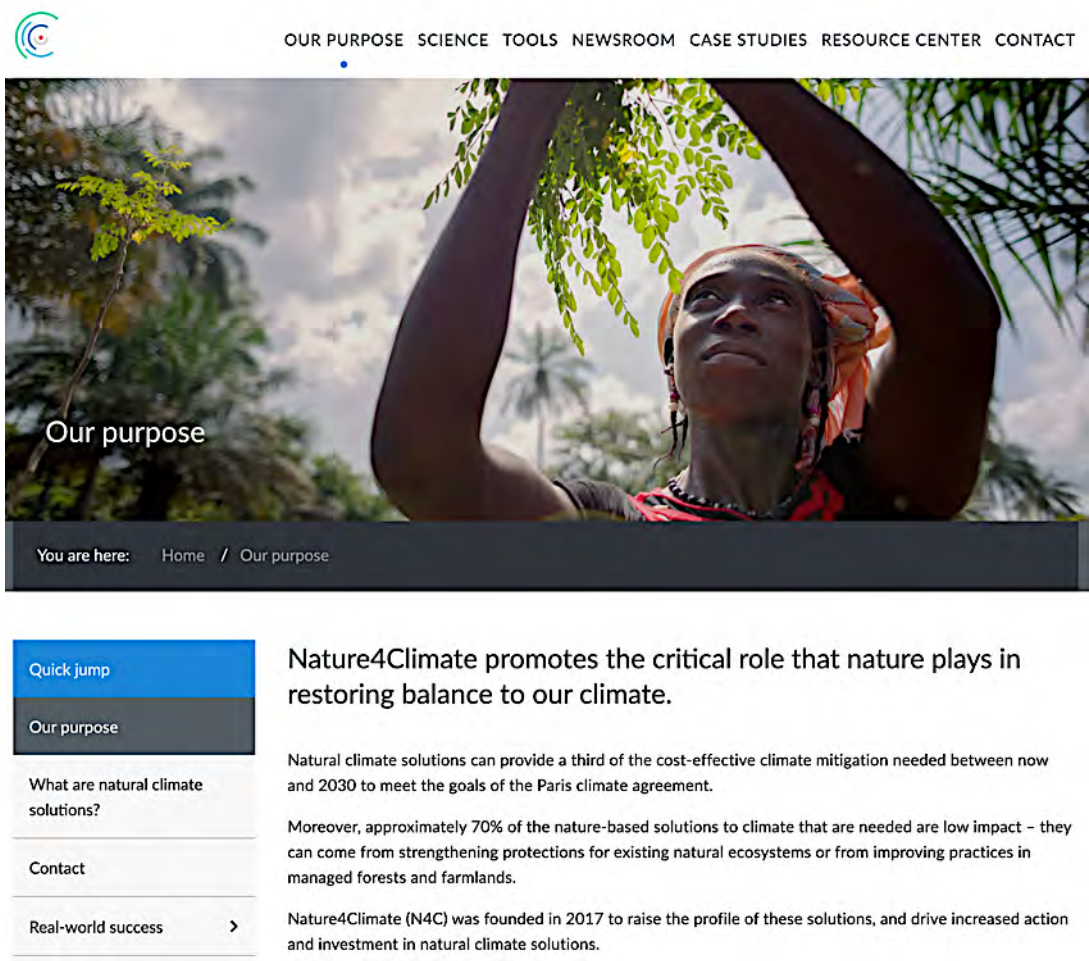
[1]Cultivated-meat curve smoothed out to show straight line between key data points. Cultivated meat year 0 = 2013; Human genome year 0 = 2001.
[2]Based on €250,000 cost; however, Mosa Meat CEO Maarten Bosch has shared in an interview that the real number is "a bit higher."
Source: National Human Genome Research Institute; press search




- https://www.mckinsey.com/industries/agriculture/our-insights/cultivated-meat-out-of-the-lab-into-the-frying-pan

# Nature-based Solutions

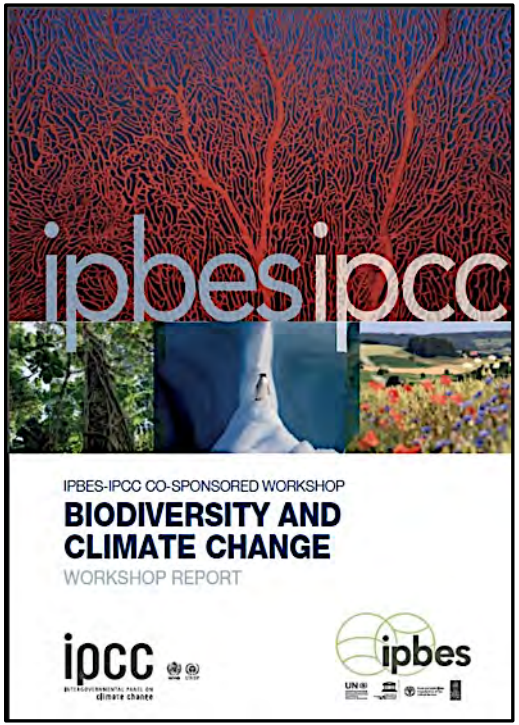
- Nature4Climate says these…
- Can reduce global emissions by 1/3 in cost-effective ways
- …while lifting 1bn people out of poverty; create 80m jobs; add US$2.3tr to the global economy, and prevent US$3.7tr of climate change damages
- The are available today, are scalable, and can transform key industry sectors, such as forestry and agriculture




https://nature4climate.org/

# UN: Climate and Biodiversity protocols…linking ever more closely

- UN Framework Convention on Climate Change
  - Next meeting COP27, Sharm el-Sheikh, Egypt, November
- UN Convention on Biological Diversity
  - Next meeting COP15, Montreal, December
- …likewise their science panels
  - IPCC and IPBES



# “Healthy people, healthy planet”

“Food in the Anthropocene represents one of the greatest health and environmental challenges of the 21st century”

EAT–*Lancet* Commission on healthy diets from sustainable food systems

THE LANCET

The best science for better lives

# Growing Better: Ten Critical Transitions to Transform Food and Land Use

## Growing Better

https://www.foodandlandusecoalition.org/global-report/


**Economic Prize**

$5.7 trillion economic prize by 2030 and $10.5 by 2050 based on avoided hidden costs

**Investment Requirements**

$300-$350 billion required each year for the transformation of food and land use systems to 2030

**Business Opportunity**

$4.5 trillion annual opportunity for businesses associated with the ten critical transitions by 2030

## Cross Cutting Reforms to Transform Food and Land Use

**Government:** Establish targets; break down governmental silos; put a price on carbon; land use planning; repurpose agricultural support and public procurement; massively increase R&D and target it on healthy, natural solutions.

**Business & Farmers:** Organise pre-competitively to support government reform agendas and set internal standards for specific sectors; establish true cost accounting for food and land use.

**Investors & Financial Institutions:** Build on the Task Force on Climate-related Financial Disclosures to cover nature; develop a set of financing principles for food and land use; develop innovative finance instruments, including blended finance, to manage risks and leverage opportunities.

The Food and Land Use Coalition

**Participants in multilateral processes and multi-stakeholder partnerships:** Raise ambition in the United Nations Framework Convention on Climate Change 2020 stock-take and ensure an ambitious outcome in the 2020 Convention on Biological Diversity in Kunming, China.

**Civil Society:** Drive information campaigns for food and land use reform and direct campaigns against serial offenders (public and private).

Incremental improvement = reduced damage

**But zero damage = ecosystems still depleted**

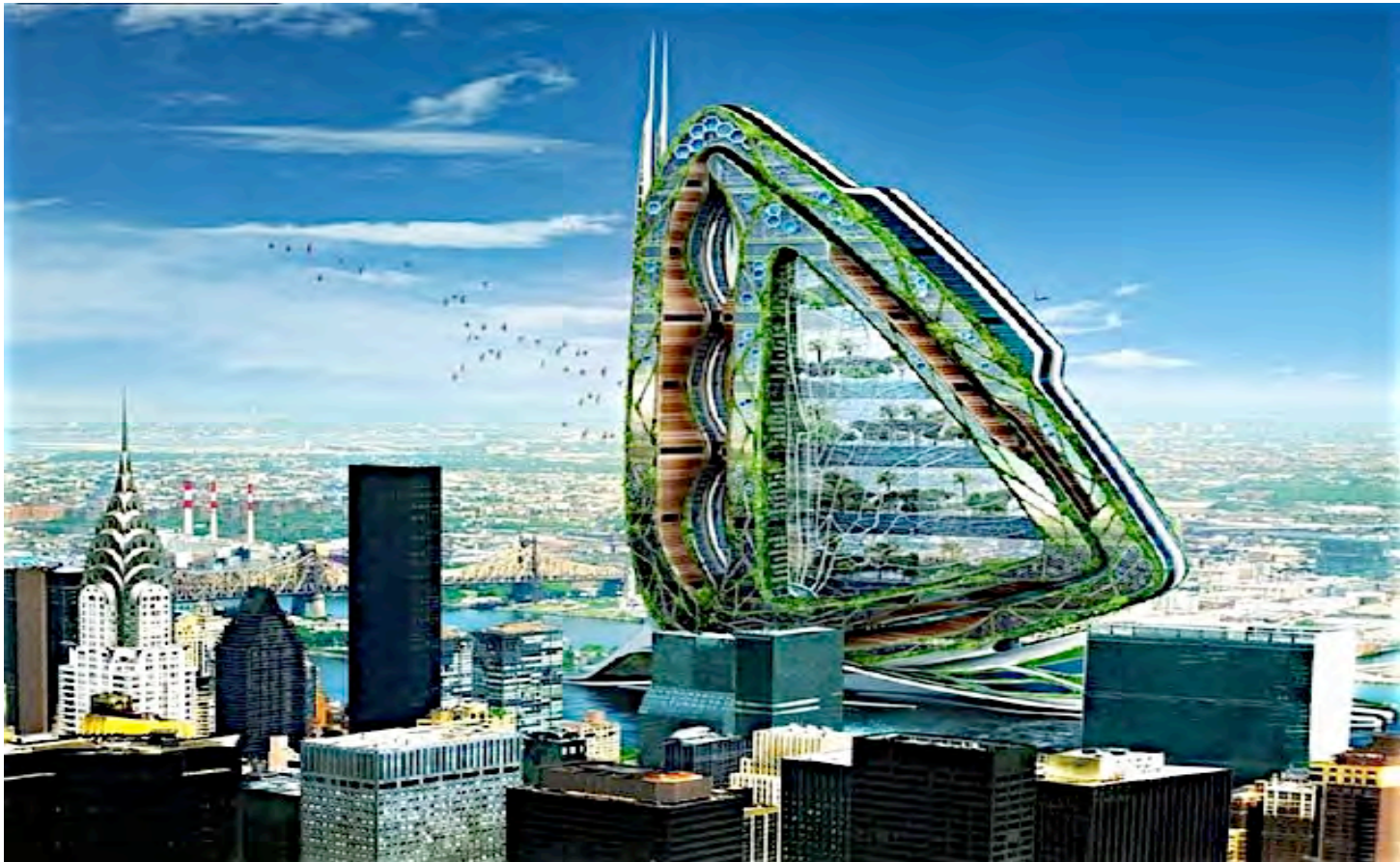
Radical reinvention = e.g. regenerative agriculture

**Healthy ecosystems =**

**healthy food and healthy planet**

# Cities must change fundamentally

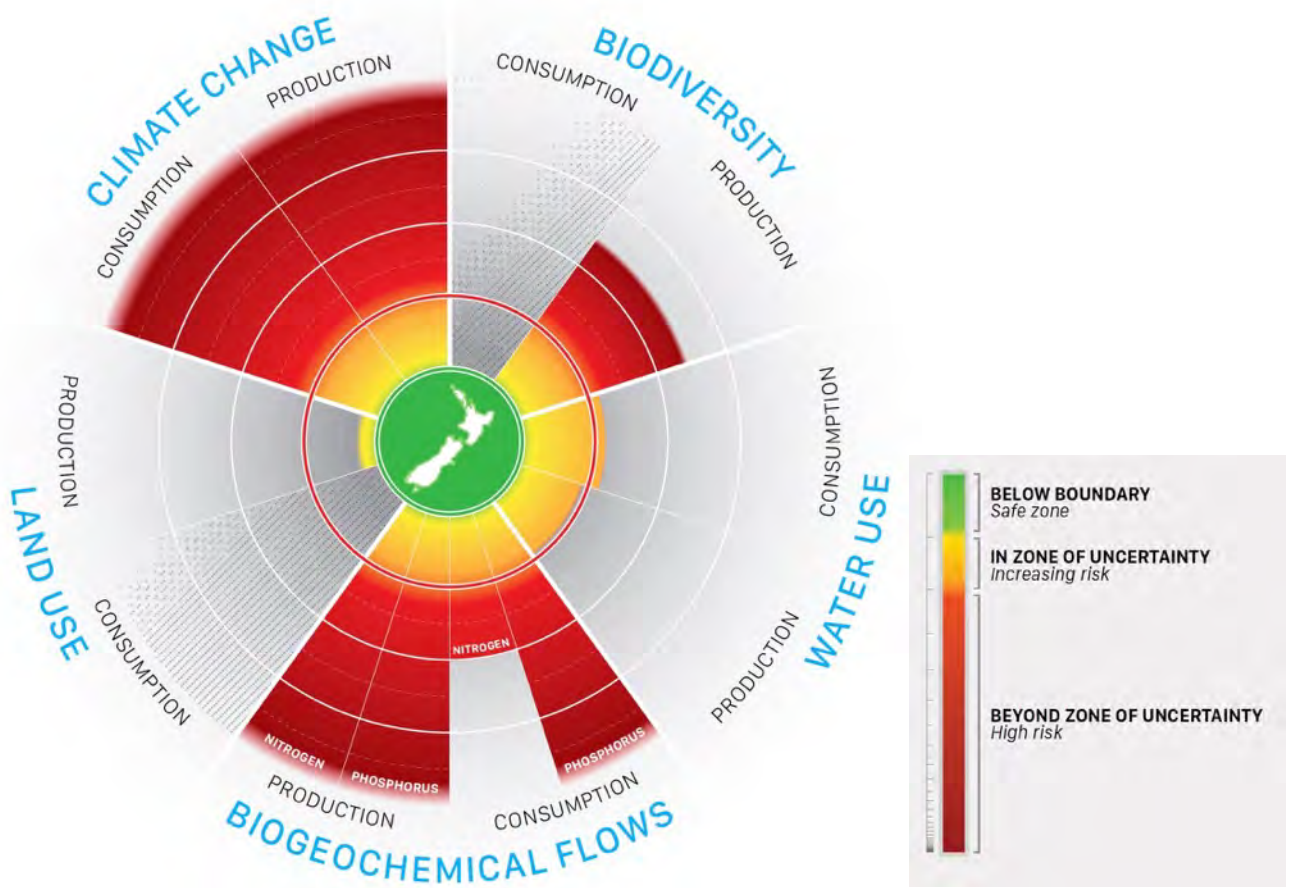
- …to bring nature back into cities
- …making them largely sufficient for energy, food and other resources
- …be delightful, inspiring places to live and work
- …to restore our relationship with ecosystems



# Agenda

- Risks
- Earth
- **Aotearoa**

# New Zealand's boundary breaches



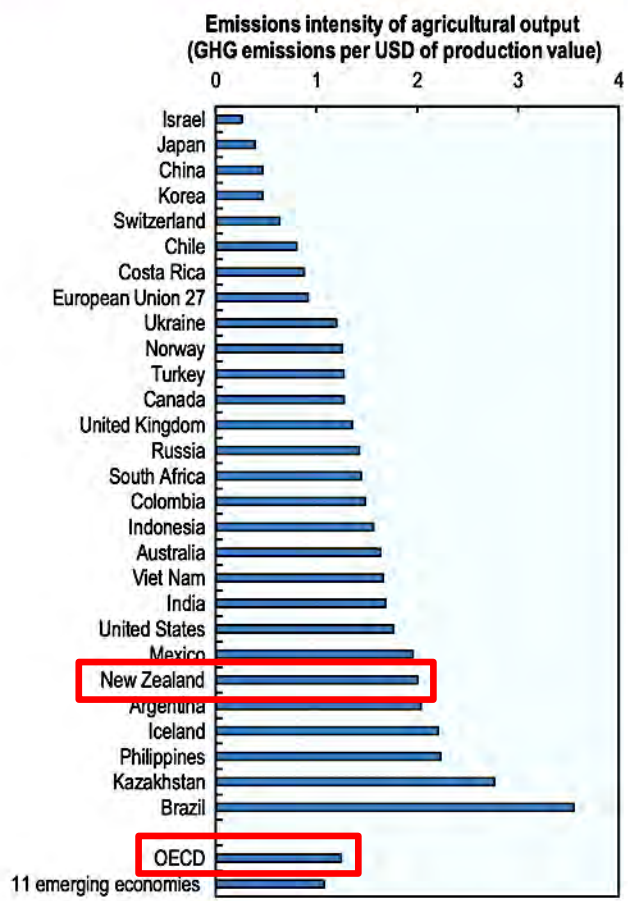


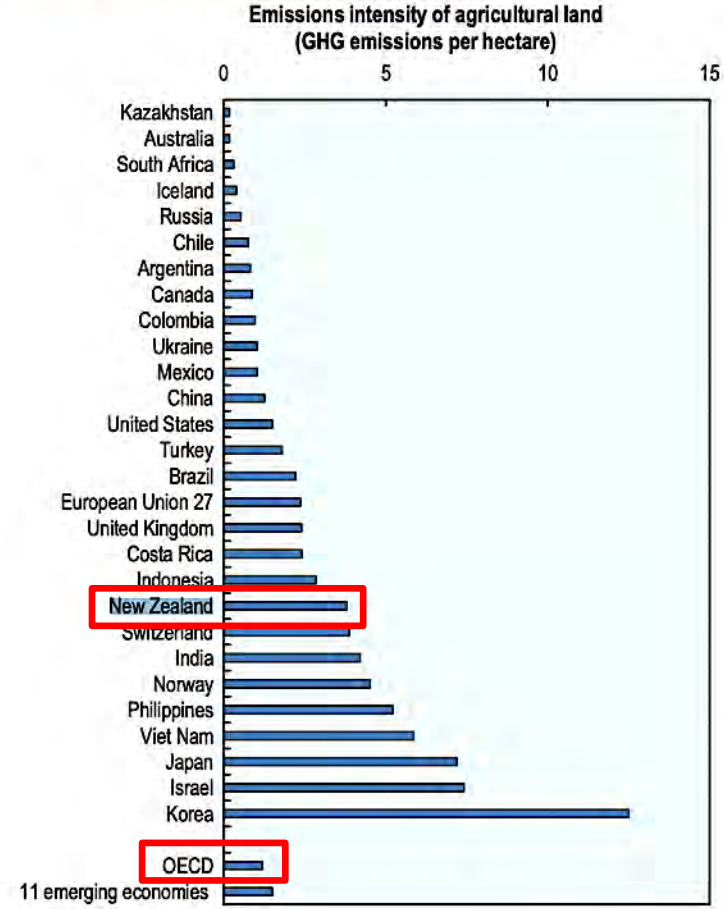
- https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/A%20Safe%20Operating%20Space%20for%20NZ%20Aotearoa%20-%20Translating%20the%20planetary%20boundaries%20framework.pdf

# NZ ag's high GHG emissions

- NZ 6th highest per US$ of production value
- NZ 9th highest per ha of agricultural land


Figure 1.4. Emissions intensity of agricultural output and land across countries



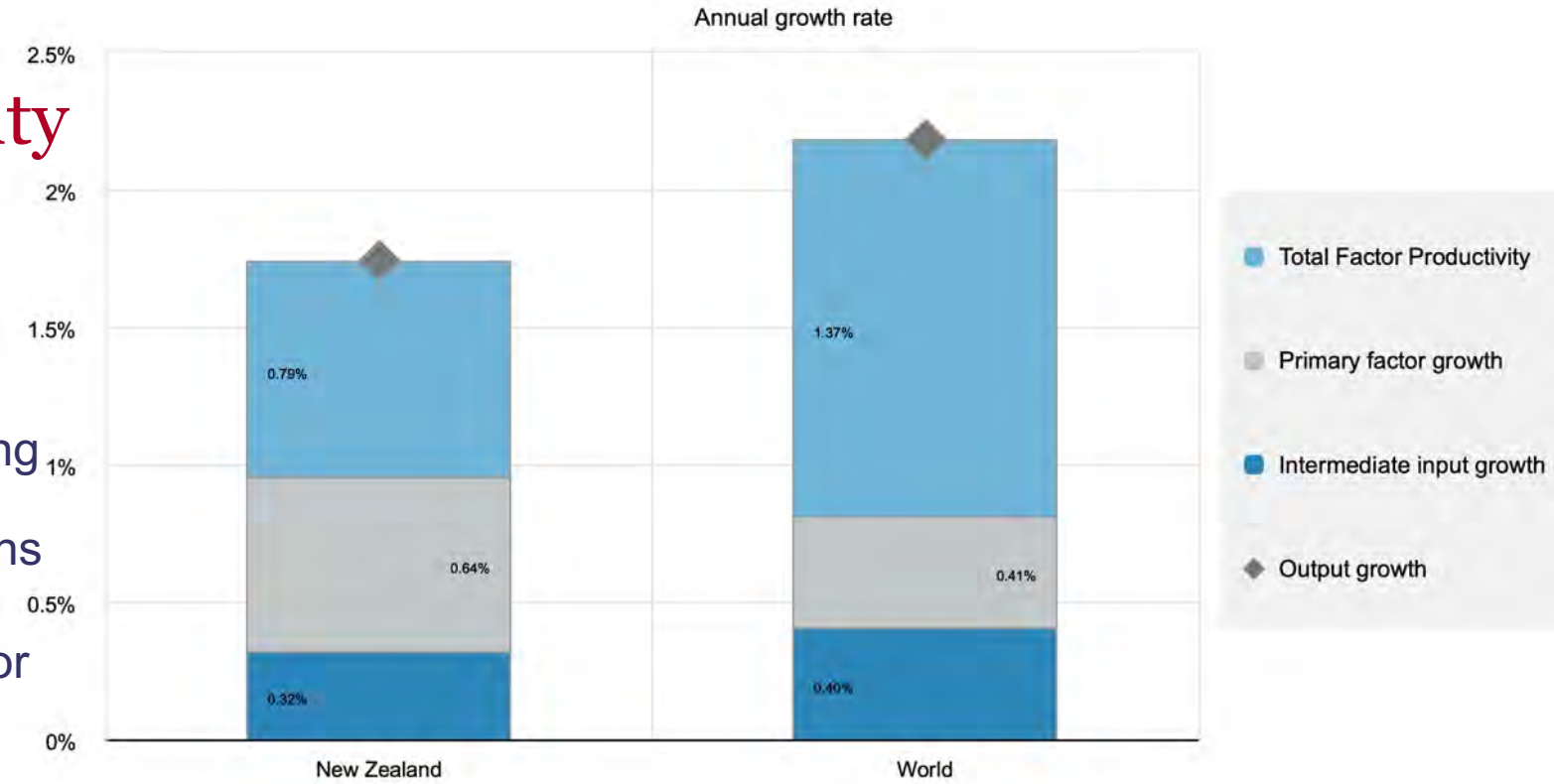




- https://www.oecd-ilibrary.org/agriculture-and-food/agricultural-policy-monitoring-and-evaluation-2022_7f4542bf-en

# NZ ag's poor productivity growth

- Farmers' business & ecological models showing diminishing marginal returns
- Urgent need for pro-nature models

Figure 21.7. New Zealand: Composition of agricultural output growth, 2010-19

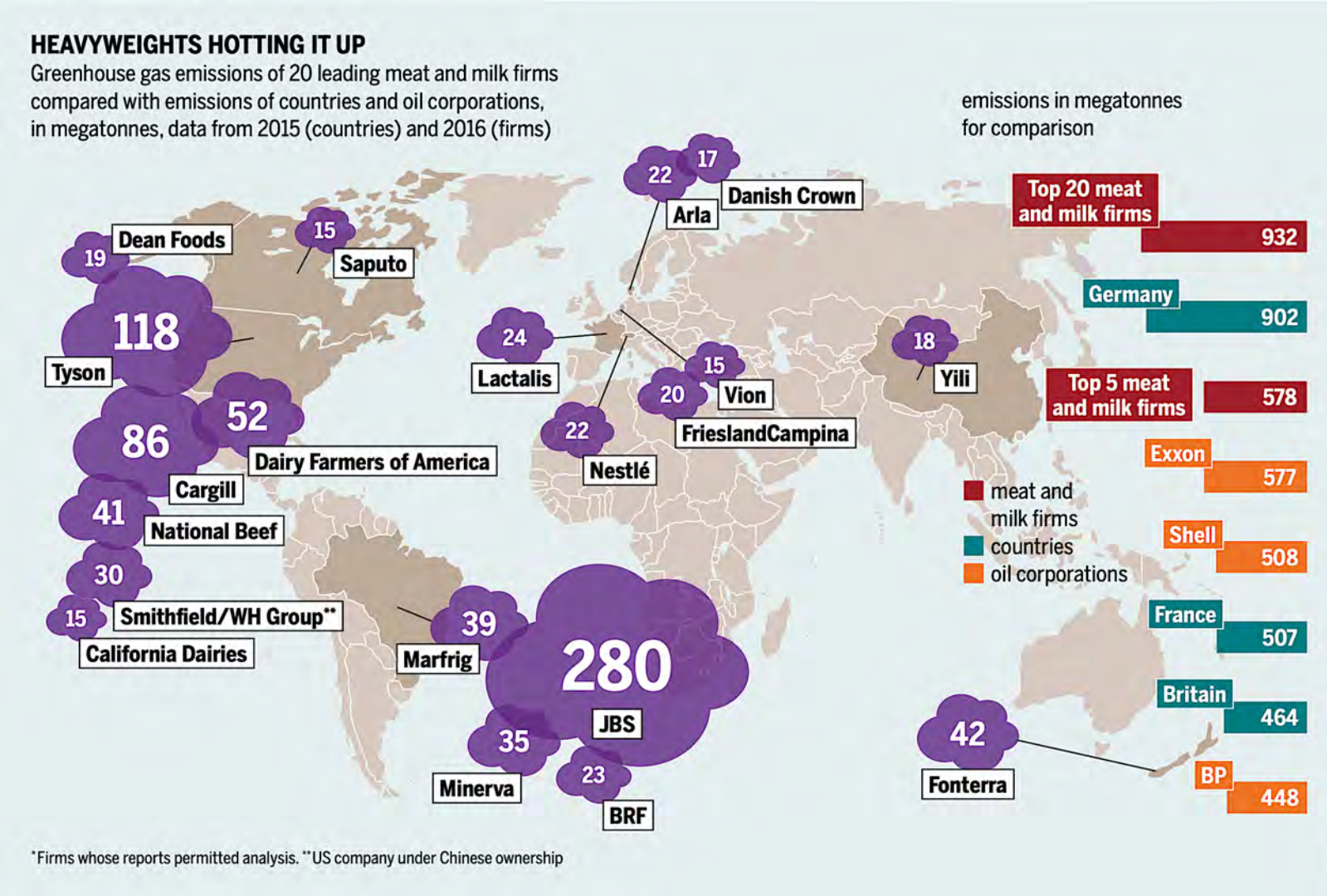



Note: Primary factors comprise labour, land, livestock and machinery. Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

## Table 21.4. New Zealand: Productivity and environmental indicators - 6 negative trends

| | New Zealand | | International comparison | |
|---|---|---|---|---|
| | 1991-2000 | 2010-2019 | 1991-2000 | 2010-2019 |
| | | | World | |
| TFP annual growth rate (%) | 3.3% | 0.8% | 1.7% | 1.4% |
| | | | OECD average | |
| **Environmental indicators** | **2000*** | **2020*** | **2000*** | **2020*** |
| Nitrogen balance, kg/ha | 36.7 | 66.0 | 32.1 | 30.0 |
| Phosphorus balance, kg/ha | 13.2 | 9.6 | 3.4 | 2.9 |
| Agriculture share of total energy use (%) | 3.5 | 4.3 | 1.7 | 2.0 |
| Agriculture share of GHG emissions (%) | 50.0 | 48.1 | 8.6 | 9.7 |
| Share of irrigated land in AA (%)[1] | 3.7 | 7.3 | - | - |
| Share of agriculture in water abstractions (%) | .. | 61.7 | 46.3 | 43.7 |
| Water stress indicator | 0.7 | 2.2 | 9.7 | 8.6 |

Note: * or closest available year.
1. Data are not comparable between time periods due to change in methodology.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.



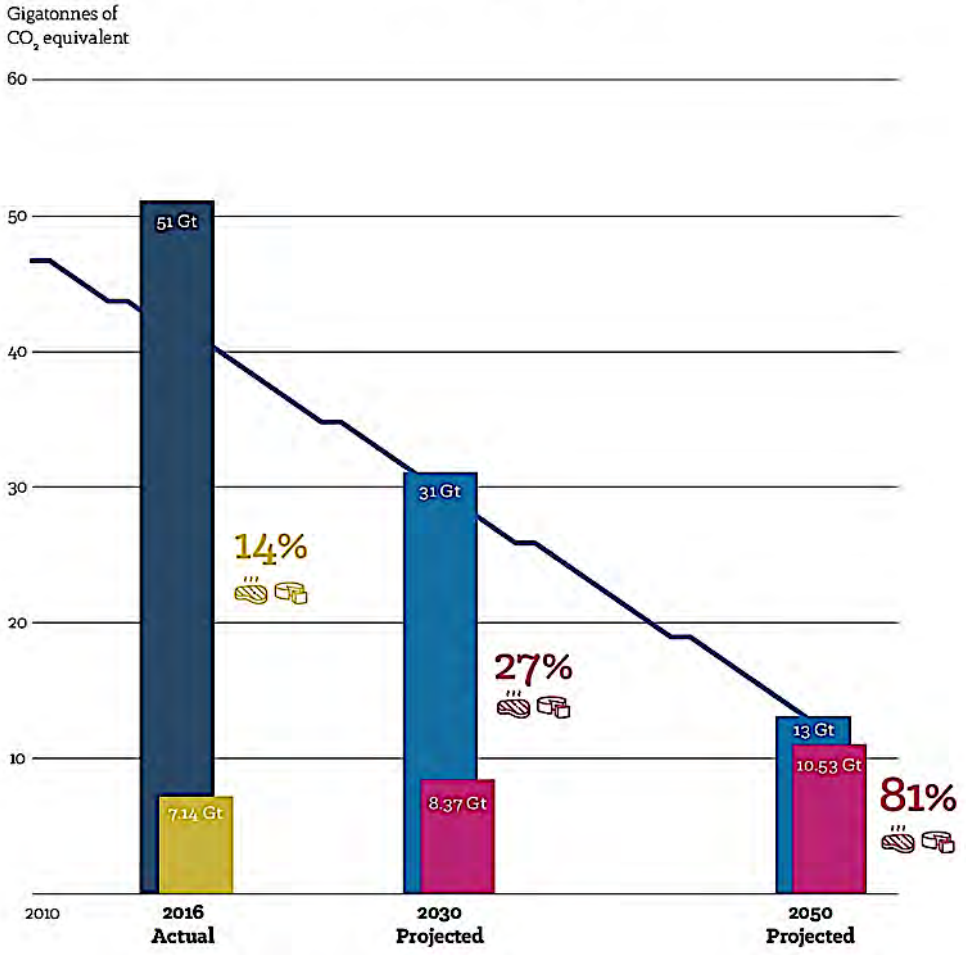


- https://eu.boell.org/sites/default/files/2021-09/MeatAtlas2021_final_web.pdf?dimension1=ecology

# Meat and dairy's unsustainable emissions

- To meet humanity's 1.5C target, we have to drastically cut all human-induced GHG emissions
- But if meat and dairy producers increase production without cutting emissions per kg of meat and milk solids…
- …meat and dairy producers will be by far the largest emitters
- …and face huge public hostility

**FIGURE 1:** Estimated global greenhouse gas emission (GHG) targets to keep within a 1.5°C rise in temperature compared to emissions from global meat and dairy production based on business-as-usual growth projections.

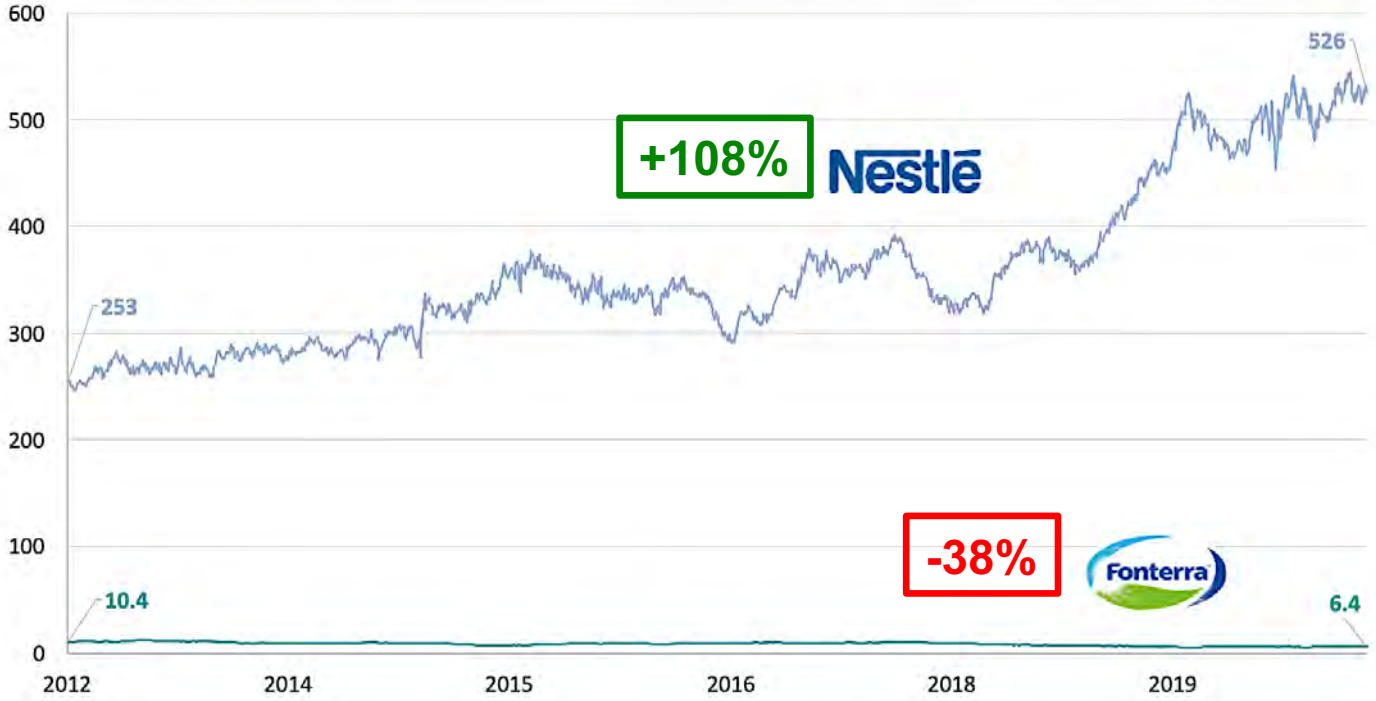


# Fonterra's value destruction

- Inadequate
  - Strategy
  - Culture
  - Competence


- https://www.productivity.govt.nz/assets/Inquiries/frontier-firms/a977484e51/The-dairy-sector-in-NZ-TDB-Advisory.pdf

**Figure 3: Fonterra vs Nestlé market capitalisation,** 2012-2020, $ billion




[4] Fonterra's share market capitalisation of approximately $6.4b is consistent with the value of the company's reported net worth as at 31 July 2020 of $6.7b. The market value of Fonterra would probably be higher if the company was not a co-operative, as the share price is likely to be discounted for the reduced liquidity of the shares and the absence of a premium for control.

NZ ag
*vs.*
NZ economy
*vs.*
All countries

## Table 21.3. New Zealand: Contextual indicators

| | New Zealand | | International comparison | |
|---|---|---|---|---|
| | 2000* | 2020* | 2000* | 2020* |
| **Economic context** | | | **Share in total of all countries** | |
| GDP (billion USD in PPPs) | 83 | 225 | 0.2% | 0.2% |
| Population (million) | 4 | 5 | 0.1% | 0.1% |
| Land area (thousand km²) | 263 | 263 | 0.3% | 0.3% |
| Agricultural area (AA) (thousand ha) | 15 413 | 10 345 | 0.5% | 0.4% |
| | | | **All countries[1]** | |
| Population density (inhabitants/km²) | 15 | 19 | 53 | 63 |
| GDP per capita (USD in PPPs) | 21 472 | 44 011 | 9 281 | 20 929 |
| Trade as % of GDP | 25 | 18 | 12.3 | 14.0 |
| **Agriculture in the economy** | | | **All countries[1]** | |
| Agriculture in GDP (%) | 8.3 | 6.2 | 2.9 | 4.9 |
| Agriculture share in employment (%) | 8.5 | 6.0 | - | - |
| Agro-food exports (% of total exports) | 50.7 | 69.2 | 6.2 | 8.5 |
| Agro-food imports (% of total imports) | 7.9 | 13.4 | 5.5 | 7.7 |
| **Characteristics of the agricultural sector** | | | **All countries[1]** | |
| Crop in total agricultural production (%) | 17.7 | 22.5 | - | - |
| Livestock in total agricultural production (%) | 82 | 78 | - | - |
| Share of arable land in AA (%) | 10 | 5 | 32 | 34 |

Note: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

# Aotearoa's opportunities

- We have the largest stock of natural capital per capita of any nation – says World Bank
  - …after fossil fuel countries.

- We've caused one of the fastest descents from pristine to degraded ecosystems
  - …yet our indigenous knowledge base is one of the most complete, continuous

- We can be leaders in one of the world's fastest regenerations of ecosystems
  - …we're leaders in indigenous knowledge & western science working together

- Working with nature is just as big an urban challenge / opportunity as it is a rural one

- Achieving both is a massive business opportunity across society

- …in which nature-aligned investment is vital – and non-aligned must be purged

*"When we try to pick out anything by itself, we find it hitched to everything else in the Universe"*

*John Muir*
*Scottish-born, US environmentalist*
*1838-1914*

# Wrap up and closing Karakia

**Simon O'Connor,** Chief Executive Officer at Responsible Investment Association Australasia

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# Disclaimer

The information included in this presentation (written and verbal) is not a recommendation to invest in any investment products. It does not take into account your particular investment objectives, financial situation or investment needs, all of which should be considered prior to making an investment decision. You should seek professional financial advice before making any investment decision.

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