Sustainable Communities and Waste

National Environmental Science Program

Measuring what matters for Australia

A scoping study and proposed framework for selecting environmental indicators of wellbeing and productivity

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“What we measure affects what we do; and if our measurements are flawed, decisions may be distorted.”
Joseph Stiglitz

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Acknowledgement of Country

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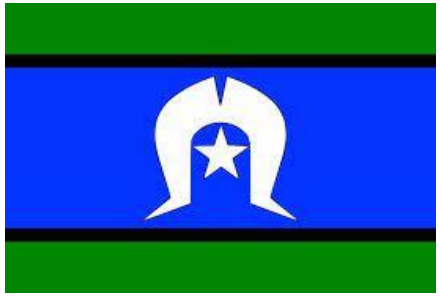
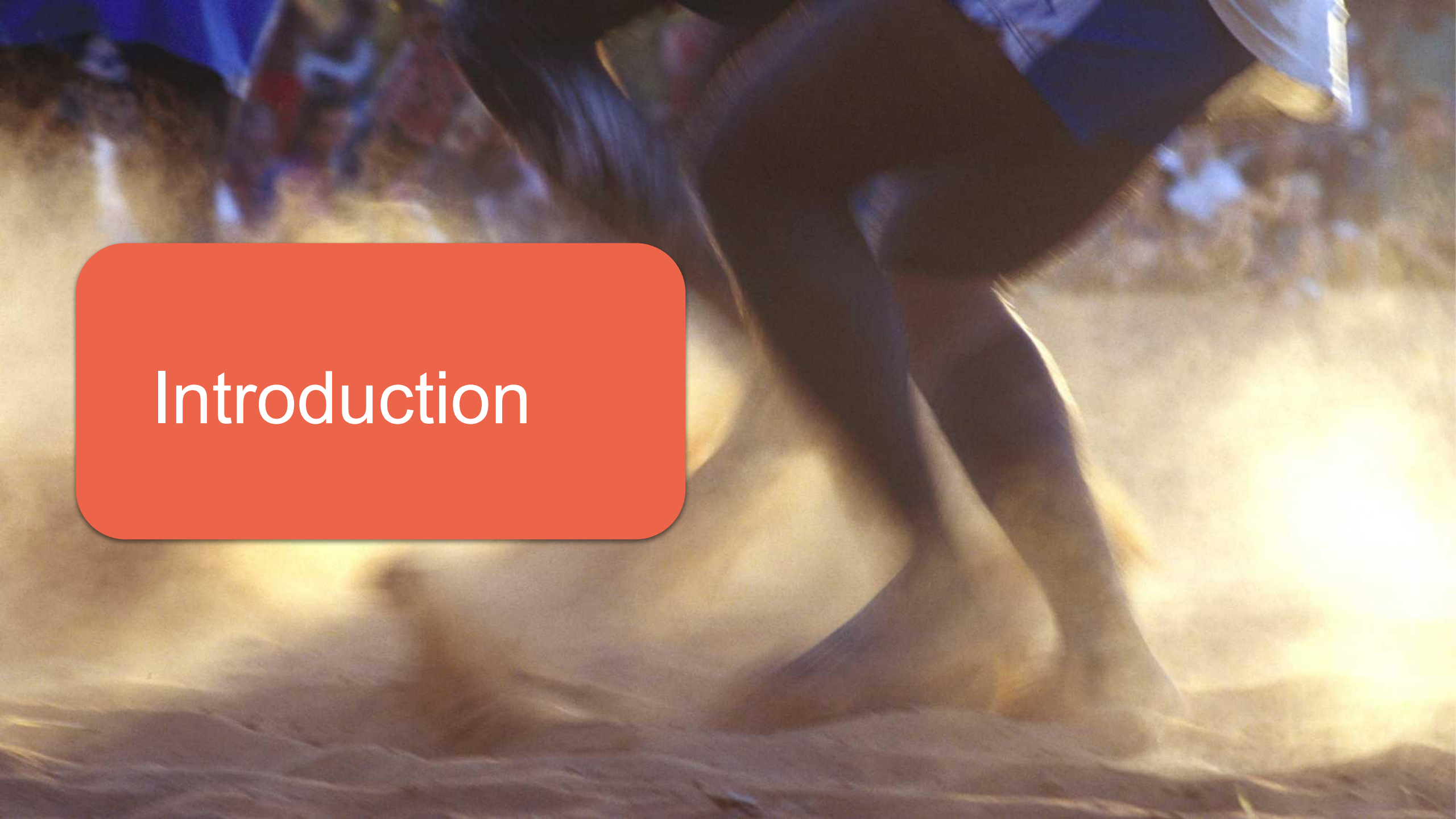
The authors of this report acknowledge Aboriginal and Torres Strait Islander peoples as the Traditional Owners and Custodians of Country throughout Australia and pay respect to their Elders and peoples. We acknowledge that Aboriginal and Torres Strait Islander peoples have an ongoing, intrinsic and deep connection to land, sea, and sky, and that these places are part of them. We recognise that their intimate knowledge of and management practices for our environments have operated sustainably for at least a couple thousand generations – since colonisation, has not been recognised and has been taken for granted.




Introduction

Introduction

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A two-month scoping study was undertaken by the National Environmental Science Program (NESP) Sustainable Communities and Waste (SCaW) Hub to inform the development of a framework of environmental indicators linked to the wellbeing and productivity of Australians.

The research team compiled and assessed 34 wellbeing indices from around the world, as well as proposed themes and indicators from the Department of Climate Change, Energy, Environment and Water, provided to the team as part of the initial research brief. The original intention was to narrow down this collated list of environmental indicators and provide the Department with a well justified shortlist of candidate indicators suitable for measuring what matters for the wellbeing and productivity of Australians.

As a result of a literature review to understand the linkages between wellbeing and the environment – a key outcome of which was that these linkages are not well defined or understood – it became clear that the framework linking the environment and wellbeing was critical for defining 'wellbeing' and therefore which indicators were appropriate for measuring it. The team then redirected efforts towards developing a conceptual framework to provide a robust theoretical underpinning for Australia's indicator selection. It is our view that both the framework and potential indicators require co-design by diverse Australians.

Therefore, rather than recommend a set of discrete measures and data sources for wellbeing indicators in Australia, this report presents a potential sustainable wellbeing framework and possible categories of environmental indicators that should be captured. To further assist with the process of indicator selection, a comprehensive set of guiding principles and selection criteria have also been developed. It is recommended that additional research be conducted to develop indicators and that a detailed consultation process seek out the voices of diverse Australians, particularly Indigenous Australians.

A flourishing economy and society requires a healthy, flourishing biosphere. Australia has an opportunity to create a world-leading sustainable wellbeing framework, one which values the health and wellbeing of people and planet, now and for the future.

"*The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased, and not impaired, in value; and behaves badly if it leaves the land poorer to those who come after it. That is all I mean by the phrase, Conservation of natural resources. Use them; but use them so that as far as possible our children will be richer, and not poorer, because we have lived*."

Theodore Roosevelt, Speech to the Colorado Livestock Association in Denver August 29, 1910


Project scope

Background

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The 2022 October Budget committed the Australian Government (Treasury) to produce a *"Measuring What Matters Statement"* in 2023. The Statement will *"lay out the government's proposed wellbeing measures…expected to draw on international frameworks established over the past half-century."*

"Traditional macroeconomic indicators provide important insights, but not a complete or holistic view of the community's wellbeing. A broader range of social and environmental factors need to be considered to broaden the conversation about quality of life…traditional macroeconomic measures such as GDP play an important role but they only provide a partial view of a community's living standards. They do not incorporate social or environmental ***outcomes****, or show whether certain groups are getting a fair share of national opportunities and prosperity…Broader measurement also allows society and governments to better evaluate the impact of decisions today on future outcomes. For example…environmental stewardship today will impact living standards and the future health of tourism and agricultural industries, as well as trade partnerships…"*

Treasury's Budget Paper 4

Project objectives and scope

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In October 2022, the Department of Climate Change, Energy, Environment and Water approached National Environmental Science Program (NESP) Sustainable Communities and Waste (SCaW) Hub to inform the development of a framework of environmental indicators linked to the wellbeing and productivity of Australians. The deliverables were:

1. The **selection and development** of a **suitable suite** of **environmental indicators** to inform Treasury's proposal to **"measure what matters for progress and wellbeing";**
2. To assist with supporting the development and production of **a single environmental index or headline indicator** (supported by the framework of environmental indicators recommended); and
3. A **proposal for the steps to develop an indicator framework**, including key consultation activities (and key stakeholders to be consulted/involved.

DCCEEW commissioned this initial scoping study with the ultimate goal of developing a set of environmental indicators to feed into the indicators the Treasury are developing under the heading of "Measuring what matters for progress and wellbeing".

Project objectives and scope

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The key outcome of this work is a recommended conceptual framework that will underpin the development of a suite of environmental indicators. These indicators will:

- Provide trends and statistics for 'measuring what matters' alongside economic and social indicators, including ecosystem services that impact human quality of life and material conditions, and the sustainability of natural capital
- Include measures of both the 'stock' of natural capital and the 'flow' of ecosystem services to people and the economy
- Underpin independent assessment of Australia's state of the environment every 5 years
- Provide trend data and statistics for a very wide range of policy development, evaluation, assurance, and reporting needs including environmental markets and National Environmental Standards
- Align with the UN Sustainable Development Goals, the OECD Wellbeing Framework and other significant international benchmarking and reporting requirements that are informed by the State of the Environment and sustainability of natural capital, biodiversity and ecosystem services.

The indicators developed under this framework should primarily be informed by a comprehensive set of common national environmental economic accounts, underpinned by clearly defined, prioritised and appropriately resourced, ongoing trend data supply chains.


Research
methodology

Research process

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Part 1

- Literature review of wellbeing and sustainability concepts
- Analysis of the OECD framework (outlining strengths and limitations in meeting Australia's needs)
- Consideration of relevant national frameworks (34 indices considered): identify, review and compare

Part 2

- Propose guiding principles for our framework, in response to the opportunities, challenges and limitations identified in the literature review
- Design a draft framework, including classes of indicators based on the proposed theoretical underpinning
- Develop indicator criteria to assist with indicator selection
- Identify a candidate headline indicator (considering approaches by other countries, particularly the USA)

Part 3

- Recommend next steps for consultation, ensuring that voices of diverse Australians, particularly Indigenous Australians, are considered

Key Findings

The overarching narrative

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The environment provides for all that we do and all that we are. Without it, there is no life. We are only able to satisfy our needs – be, do, have and interact – because of it. Going forward, therefore, we have an obligation to ensure our needs are satisfied in a way that is comparable with living in harmony with nature and provides inter-generational equity, (therefore we value, conserve, restore, wisely use, maintain our environment at all levels – from the local ecosystem to biogeographical realm to the planetary scale). Only by embedding ourselves into nature, recognising nature's intrinsic value, and acting as stewards for our planet, will we flourish - the aim of any wellbeing approach.

Three key findings

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1. Human wellbeing is dependent on a healthy environment.

2. It is critical that the Australian government develop a solid theoretical basis for its conceptual framework before selecting indicators to measure wellbeing and productivity.

3. Next steps: Australia's sustainable wellbeing framework and indicator set must be led by Indigenous knowledge keepers, with consultation that incorporates the diverse voices across Australia.

Finding 1

Human wellbeing is dependent on a healthy environment

Finding 1: Key messages

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- The health and wellbeing of Country and people are connected. The oldest continuing cultures in the world, Australian Aboriginal and Torres Strait Islander cultures, have held that truth for tens of thousands of years: if you take care of Country, Country will take care of you. (Source: https://soe.dcceew.gov.au/)
- The concept of sustainable wellbeing, in which the health and wealth of people is understood to be intricately connected to the health and wealth of the environment, should provide the foundation of Australia's framework for wellbeing and productivity.
- Sustainable wellbeing is founded on the principle that the integrity and resilience of the natural environment is a precondition of both individual and collective human wellbeing. As a policy goal, it integrates the flourishing of individuals, society, the economy, and the natural world.
- Sustainable wellbeing also recognises that satisfying human needs (particularly the material consumption levels of the most affluent individuals and nations) has had negative implications for the health and wealth of the natural environment, e.g., biodiversity loss and the impacts of climate change. Current material consumption patterns are also increasingly placing the health and wellbeing of future generations at risk.
- A sustainable wellbeing framework builds on this integrated perspective, recognising that the value of nature goes beyond the benefits (e.g., ecosystem services) that it provides for society: the environment holds cultural and intrinsic value as well.
- Placing both people and environment at the heart of a wellbeing approach provides a coherent basis from which Australia can continue to drive reform to embed environmental considerations across all facets of decision making, moving beyond economic growth towards measuring what matters (inclusive growth).

Foundational concepts

Summary of foundational concepts considered

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As part of a comprehensive literature review to understand the linkages between wellbeing and the environment, the following agreements, documents and concepts were considered:

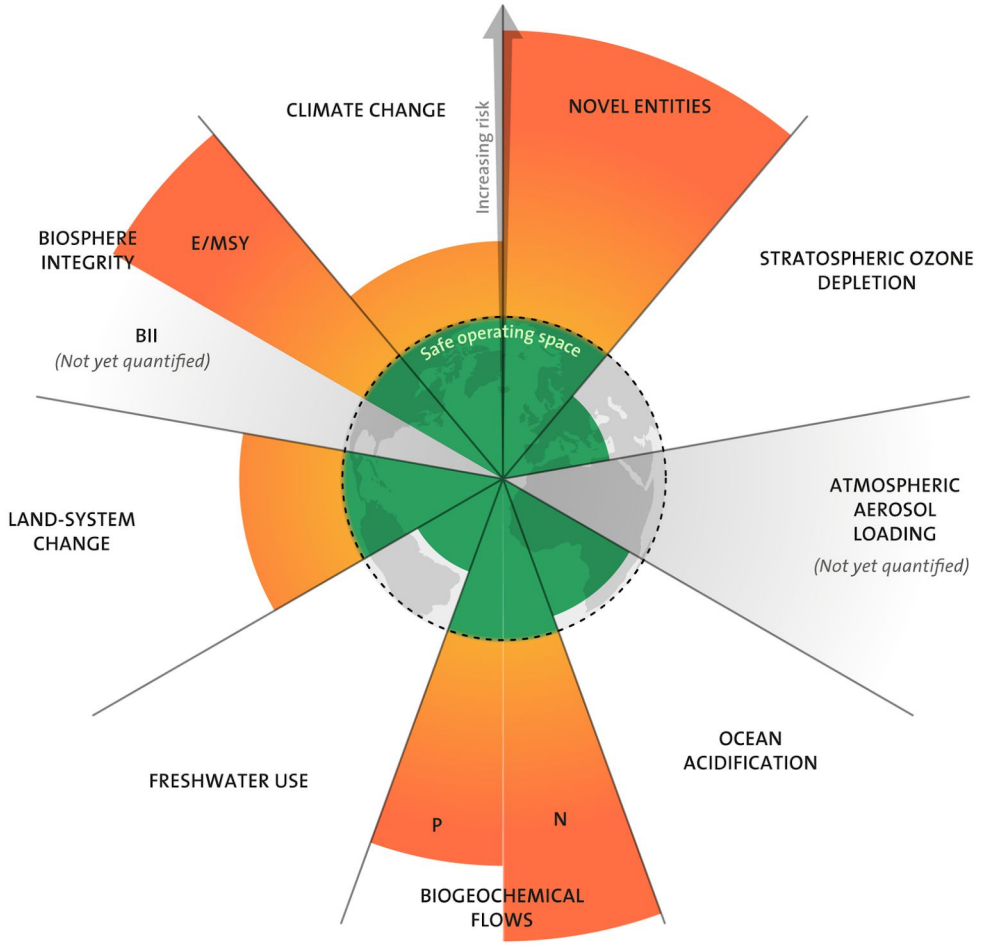
- The Sustainable Development Goals 2015
- Forthcoming Post-2020 Global Biodiversity Framework of the CBD
- United Nations Declaration on the Rights of Indigenous Peoples
- Australia's Strategy for Nature 2019-2030
- Australia's 2021 State of the Environment reporting
- Australia's common national approach to Environmental-Economic Accounting (based on the UN System of Environmental-Economic Accounting)
- United Nations Environment Program, Sixth Global Environment Outlook (2019)
- The Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services
- UN Right to a Healthy Environment
- He Ara Waiora, New Zealand

Context: the challenges of the Anthropocene

The planetary boundaries are being transgressed, reducing current and future generations' prospective wellbeing.

Addressing these crises is of paramount importance and urgency.

The wellbeing framework should not become a barrier to urgent action and resourcing to tackle these issues.



Key: P: Phosphorus, N: Nitrogen, BII: Annual rate of of loss of biological diversity, E/MSY: Extinction power million species.
Azote for Stockholm Resilience Centre, based on analysis in Persson et al 2022 and Steffen et al 2015

Context: the Sustainable Development Goals (SDGs)

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The SDGs were universally agreed to in 2015 by all countries United Nations Resolution 70/1.

The SDGs consist of 17 SDGs which, together, form the blueprint for the future we want.

The SDGs deliver on the five P's: people planet, prosperity, peace and partnership.

Source: UN Sustainable Development Group, https://unsdg.un.org/latest/videos/5ps-sdgs-people-planet-prosperity-peace-and-partnership

Context: the Sustainable Development Goals (SDGs)

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The Stockholm Resilience Centre conceptualises the SDGs as a layered wedding cake, where the integrity and resilience of our biosphere (Life on land (SDG 15), life below water (SDG 6), clean water and sanitation (SDG 6) and climate action (SDG 13) are the foundation for our society and economy.

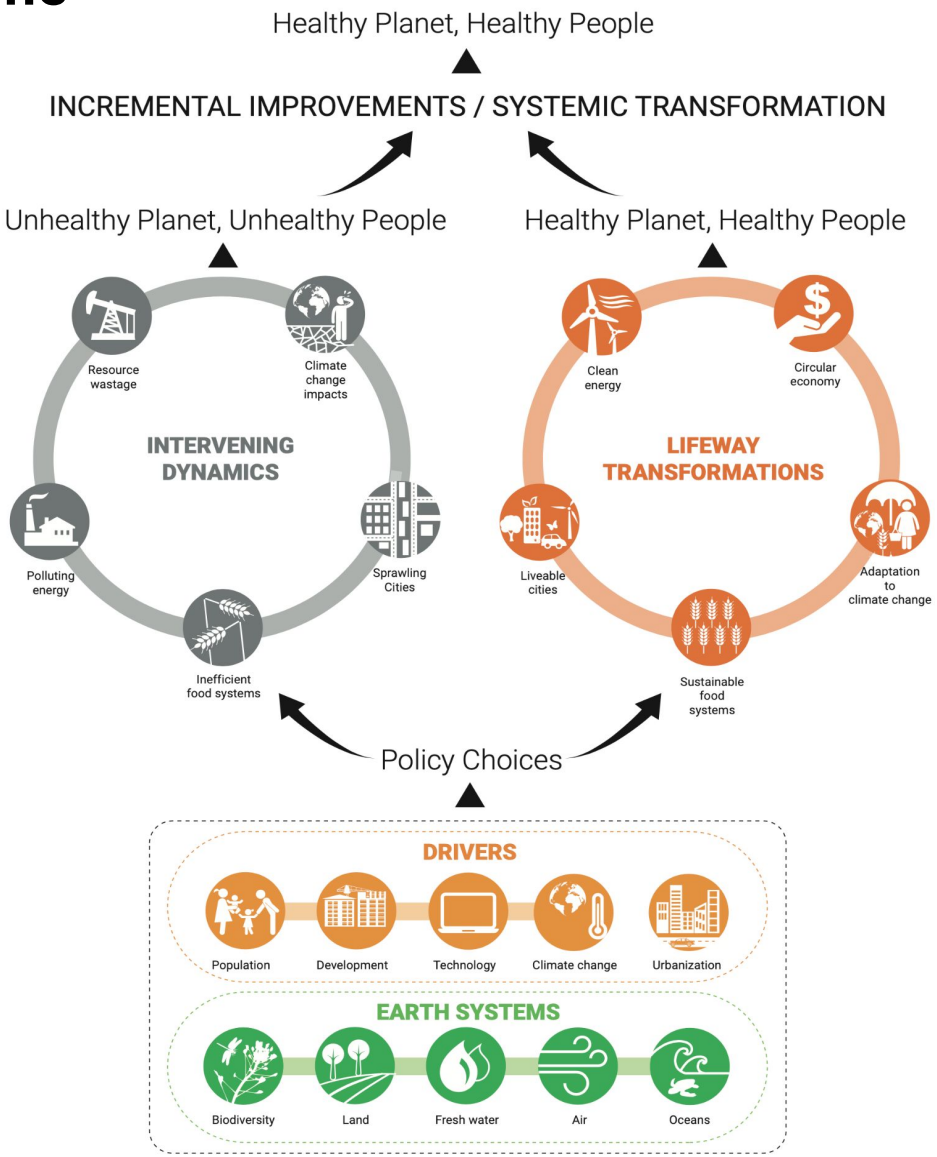
Put another way, societies and economies should be seen as embedded parts of the biosphere; a flourishing economy and society requires a healthy, flourishing biosphere.

Azote for Stockholm Resilience Centre, Stockholm University CC BY-ND 3.0.

Context: United Nations Environment Programme

The UN Environment's sixth Global Environment Outlook (2019) "shows that a healthy environment is both a prerequisite and a foundation for economic prosperity, human health and wellbeing."

"Unsustainable production and consumption patterns and trends and inequality, when combined with increases in the use of resources that are driven by population growth, put at risk the healthy planet needed to attain sustainable development. Those trends are leading to a deterioration in planetary health at unprecedented rates, with increasingly serious consequences, in particular for poorer people and regions."



Choices to be made to achieve a healthy planet for healthy people
https://www.unep.org/resources/global-environment-outlook-6

Context: The Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services - an integrated framework

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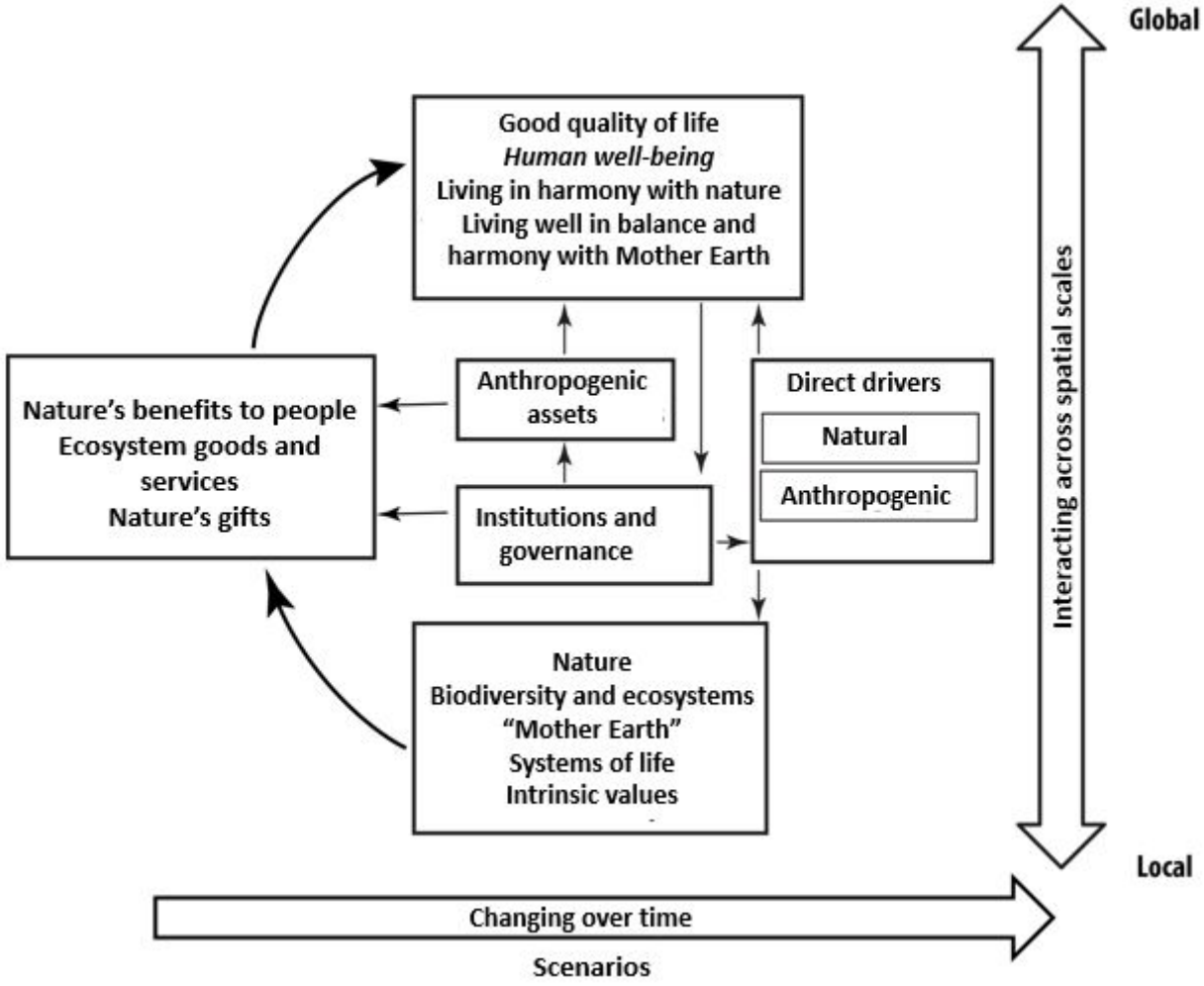
The Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES) is an intergovernmental science-policy platform for biodiversity and ecosystem services, established by the UN in 2012.

IPBES's "nature and people"conceptual framework, agreed to in 2014 (Decision IPBES-2/4) outlined a groundbreaking, systems thinking approach, showing a socio-ecological system which operates across time, space and scales. The conceptual framework identifies six interlinked elements:

- nature's benefits to people;
- anthropogenic assets;
- institutions and governance systems and other indirect drivers of change;
- direct drivers of change; and
- good quality of life.

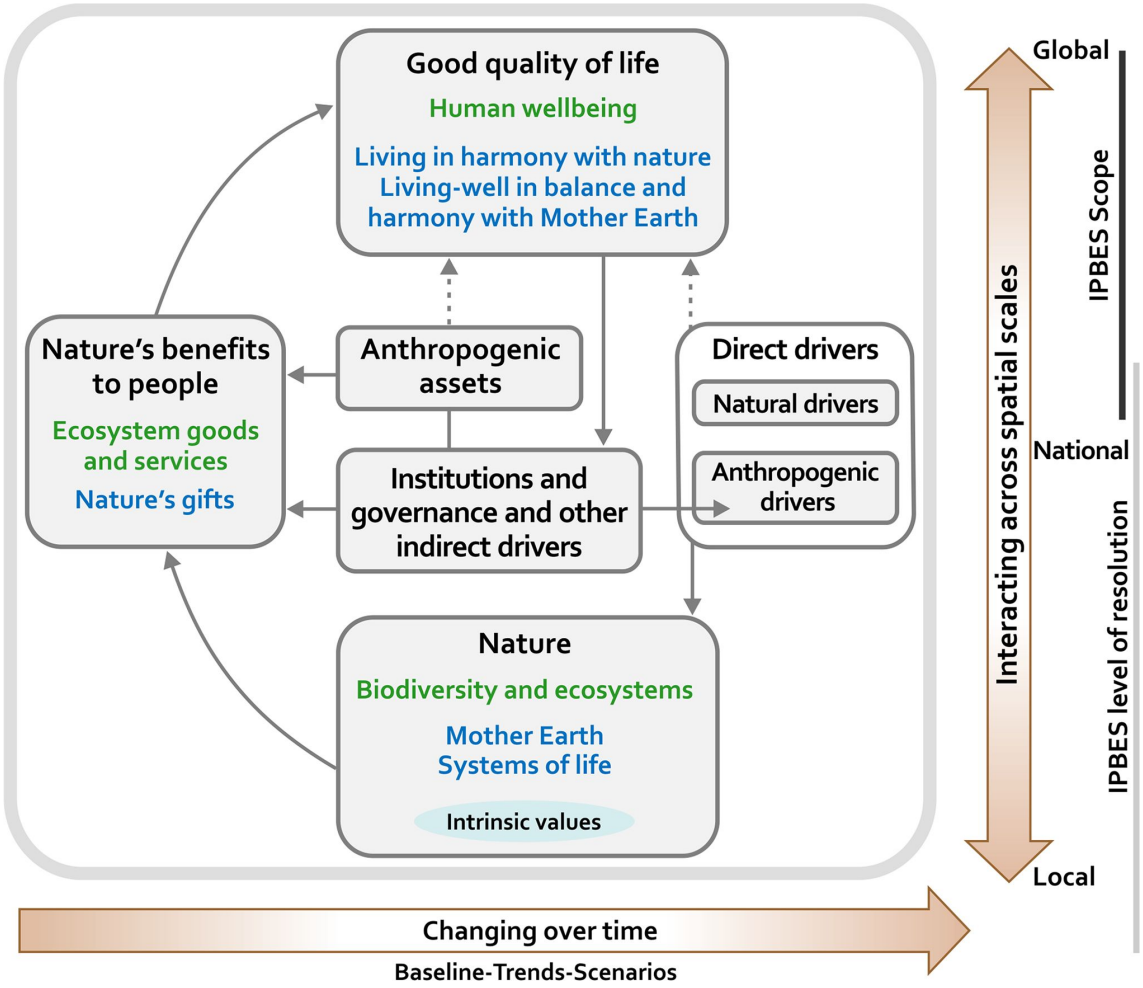


Díaz, S., Demissew, S., Carabias, J., Joly, C., Lonsdale, M., Ash, N., et al. (2015). The IPBES conceptual framework-connecting nature and people. Curr. Opin. Environ. Sustain. 14, 1–16. doi: 10.1016/j.cosust.2014.11.002

Context: The IPBES conceptual framework

IPBES's framework, and its resultant interpretation of a "good quality of life" is similar, and builds on the Millennium Ecosystem Assessment (MEA) 2003. Importantly, it brings into play the concept of the intrinsic value of nature.

"A major distinction adopted in the [IPBES] conceptual framework is between intrinsic values and anthropocentric values, including instrumental and relational values. Intrinsic values are those inherent to nature, independent of human judgement, such as non-human species' inherent rights to exist. Intrinsic values of nature as defined here have no relationship with possible benefits to humans or their quality of life; they thus fall outside the scope of anthropocentric values and valuation methods. Within anthropocentric values, instrumental values are closely associated with the notion of nature's benefits as far as they allow people to achieve a good quality of life, be it through spiritual enlightenment, aesthetic pleasure or the production or consumption of a commodity. They can be linked to economic values (including, but not restricted to monetary valuation)...But in many situations, when dealing with more complex services such as regulating or cultural services, such valuation may neither be appropriate nor necessary nor sufficient nor practical" (Diaz et al., 2015).



https://ipbes.net/conceptual-framework

Context: A right to a healthy environment

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The Special Rapporteur on Human Rights and the Environment (Special Rapporteur) defines the right to a healthy environment as being comprised of six substantive elements:

- **the right to clean air**
- **the right to a safe climate**
- **access to safe drinking water and sanitation**
- **the right to healthy biodiversity and ecosystems**
- **the right to live, work and play in toxic free environments and**
- **the right to healthy and sustainably produced food.**

It is important that this is not an exhaustive list. It can be expected to change (i.e. be added to) as understanding of the links between the health and wealth of humans and that of the environment evolves.

1972: First principle of the Stockholm Declaration states that humanity 'has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being'

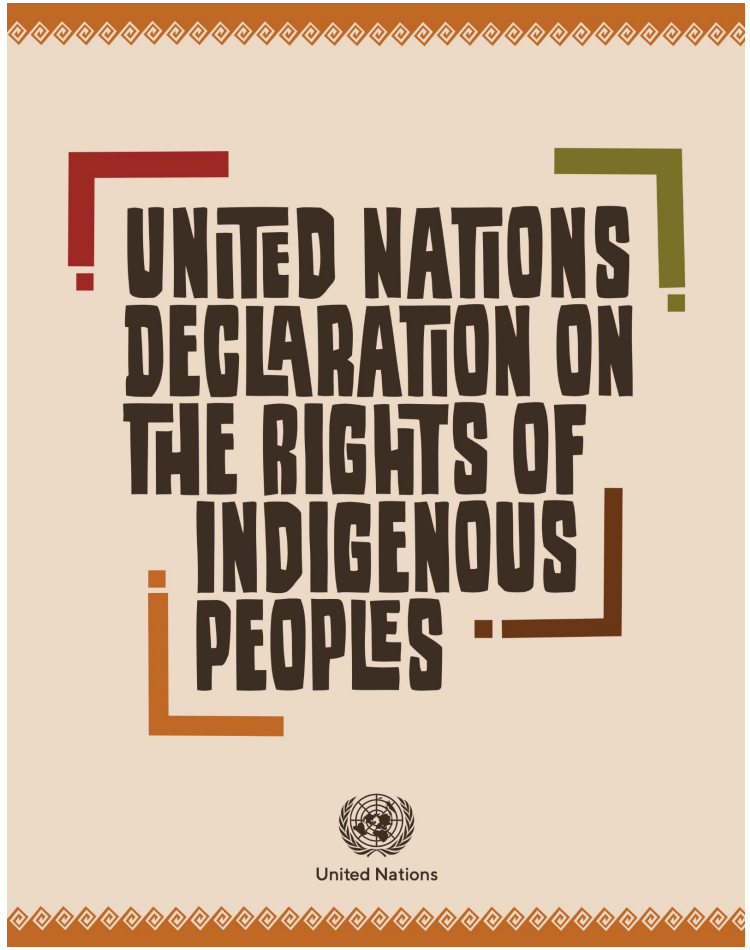
2021: The UN Human Rights Council (HRC) recognised that the right to a clean, healthy, and sustainable environment is a human right, important for the enjoyment of human rights.

28 July 2022: UN General Assembly reaffirmed recognition of the human right to a clean, healthy, and sustainable environment (Australia voted in favour along with another 160 UN Member States).

Context: UN Declaration on the Rights of Indigenous Peoples (UNDRIP)

"Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources."

Article 29 United Nations Declaration on the Rights of Indigenous Peoples



Concept of four capitals: Natural, Human, Social and Financial/Physical

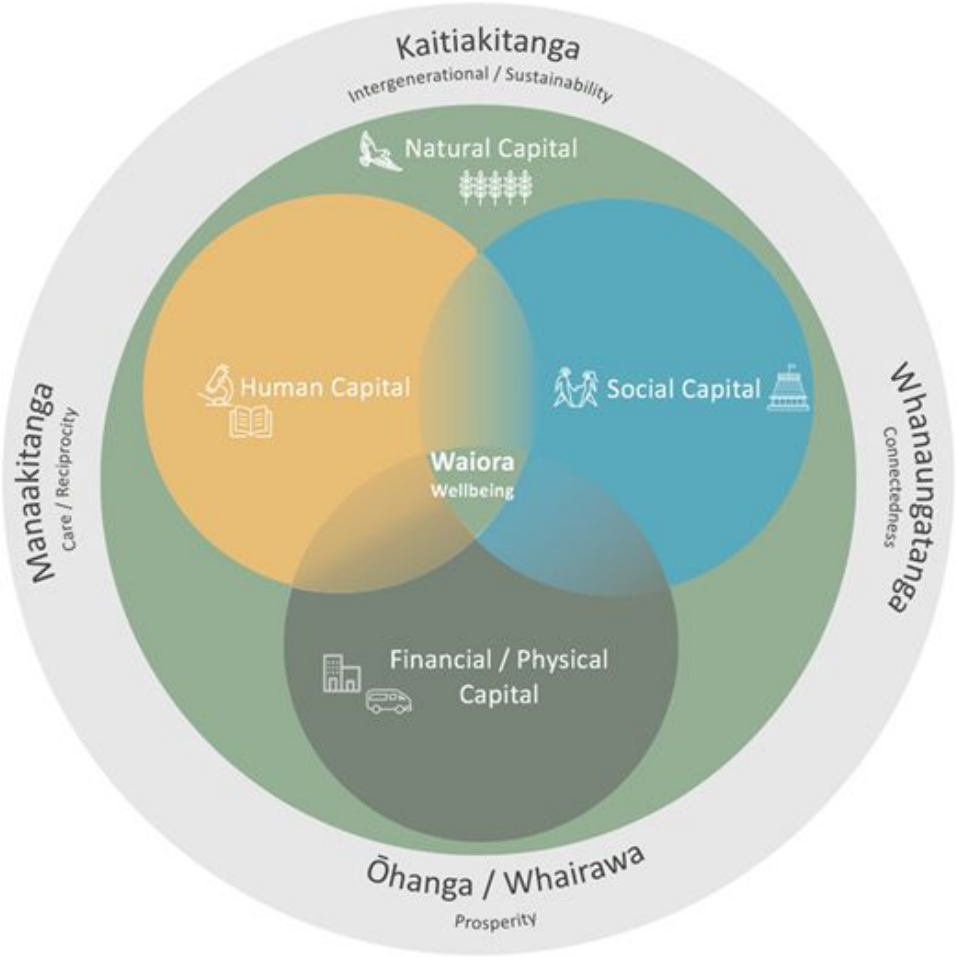
Capital is an asset (resource) that can be built up or can depreciate (*stock*), and which enables a future *flow (quantity added or removed)* of productive services.

Stocks are durable, physical elements of nature that can provide services either through harvest or through their regular functioning in the natural environment. When the services convey production, income, in-kind income, or future opportunities, then the stocks are capital or assets.

Physical flows are the creation, destruction, or movement of material. For example, the generation of particulate matter through combustion or the harvest of timber from a forest are physical flows.

*"The **four capital stocks** represent the main categories of productive resources that are used to **produce** human wellbeing. They are described as capitals since they are productive, and because they represent a stock that persists over time and which can be accumulated…**the four capitals fundamentally represent factors of production that are used together to produce wellbeing**, rather than each producing a stream of benefits on its own."*

Current wellbeing is a result of the flows produced by capital stocks now. **Future wellbeing** relies on potential flows that could be produced by capital stocks in the future.



He Ara Waiora — A Pathway towards Wellbeing. SOURCE: JOURNAL OF AUSTRALIAN TAXATION 2019 Vol 21(2) NEW ZEALAND SPECIAL EDITION ART 1 SCOBIE AND LOVE

Māori conceptualisation: Natural capital underlies the other types of capital.

New Zealand approach to indigenous understanding

He Ara Waiora, a pathway towards wellbeing, is a framework that helps Aotearoa/New Zealand's Treasury to understand waiora, often translated as a Māori perspective on wellbeing.

ENDS – what is important for waiora

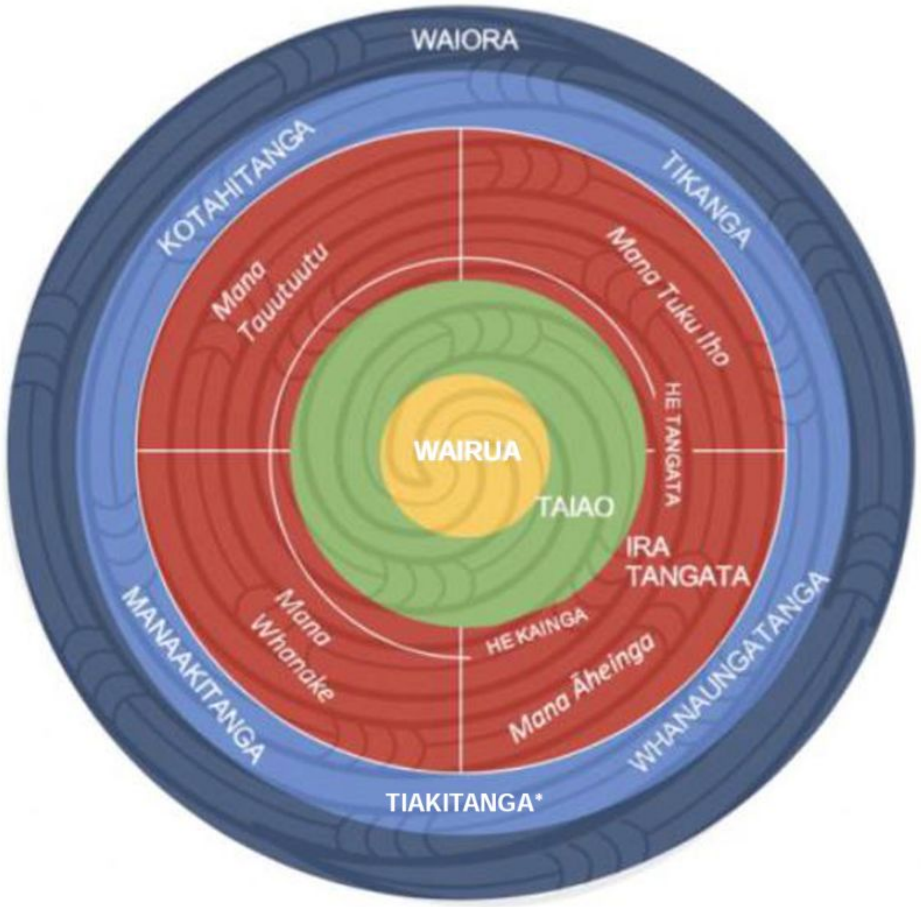
Wairua (spirit) is at the centre to reflect that it is the foundation or source of wellbeing. Values, beliefs and practices related to wairua are essential to Māori conceptions of health and wellbeing.

The wellbeing of **Te Taiao** (the natural world) is paramount and inextricable from human wellbeing. There are responsibilities and obligations to sustain and maintain the wellbeing of Te Taiao.

Te Ira Tangata (the human domain) encapsulates human activities and relationships.

People **(tangata)** and collectives **(kainga)** thrive when they:

- Have a strong sense of identity and belonging **(mana tuku iho)**
- Participate and connect within their communities, including fulfilling their rights and obligations **(mana tautuutu)**
- Have the capability to decide on their aspirations and realise them in the context of their own unique circumstances **(mana āheinga)**
- Have the power to grow sustainable, intergenerational prosperity **(mana whanake).**



MEANS – principles for how to approach the creation of waiora (wellbeing)

Kotahitanga means working in an aligned, co-ordinated way across the system and in partnership with business, communities, iwi and whānau.

Tikanga means that decisions have to be made in accordance with the right processes. This includes working in partnership with the Treaty partner.

Whanaungatanga means fostering strong relationships and networks, both through kinship and shared interests.

Manaakitanga means maintaining a focus on improved wellbeing and enhanced mana for all New Zealanders. It means supporting each other and demonstrating an ethic of care for our fellow New Zealanders. Distributional analysis is important to identify and address inequities.

Tiakitanga* means guardianship, stewardship (e.g. of the environment, or other important processes and systems that support wellbeing).

** Under discussion for inclusion in the framework*

Draft post 2020 Global Biodiversity Framework

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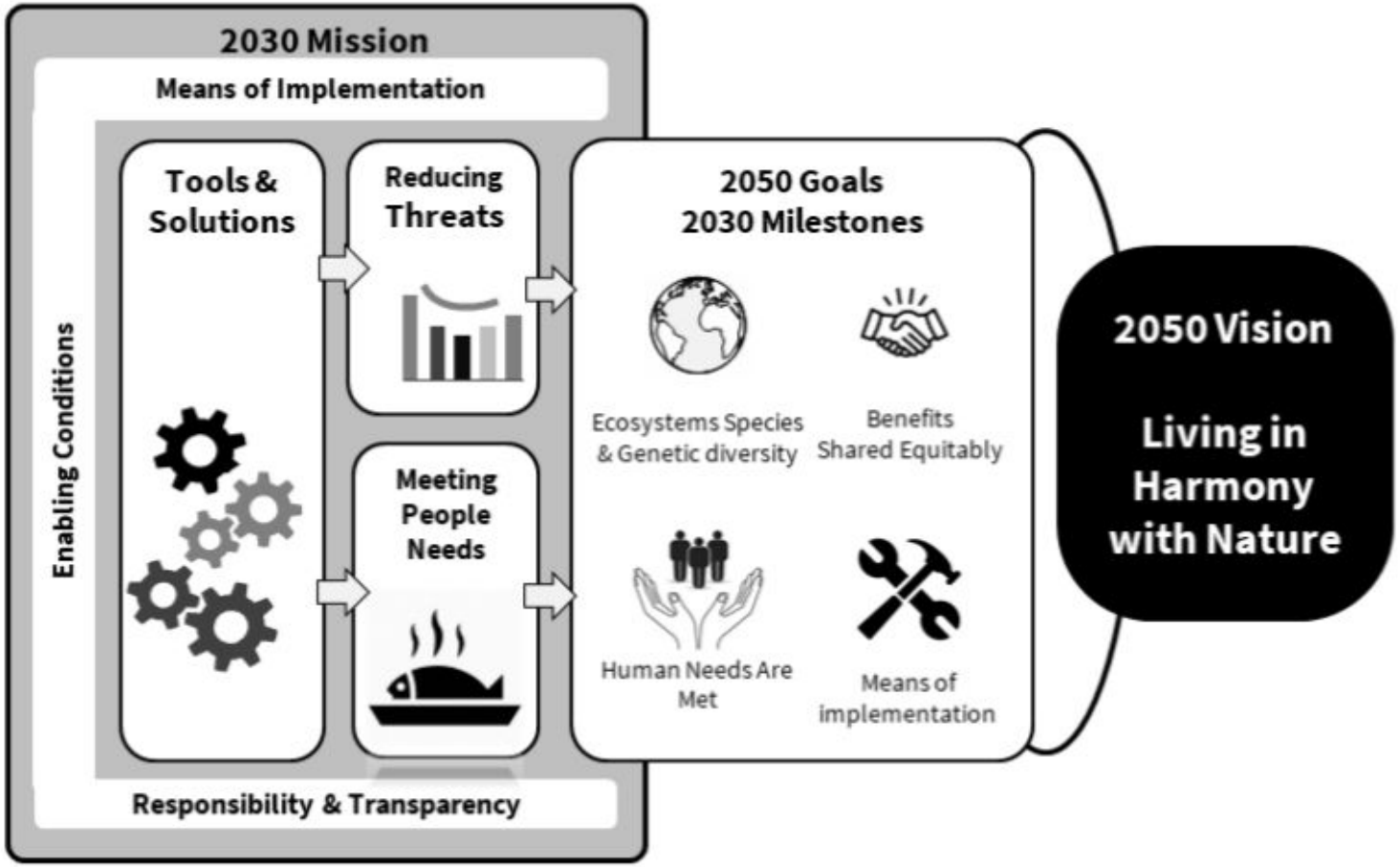
COP-15 was in progress at the time of this research. It is expected that the finalised agreement will better connect biodiversity goals to outcomes for climate and human wellbeing



"The vision of the framework is a world of living in harmony with nature where:

"By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people."

https://www.cbd.int/article/implementing-the-solutions

Draft post-2020 Global Biodiversity Framework

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Goal A: The integrity of all ecosystems is enhanced, with an increase of at least 15% in the area, connectivity and integrity of natural ecosystems, supporting healthy and resilient populations of all species, the rate of extinctions has been reduced at least tenfold, and the risk of species extinctions across all taxonomic and functional groups, is halved, and genetic diversity of wild and domesticated species is safeguarded, with at least 90% of genetic diversity within all species maintained.

- Milestone A.1: Net gain in the area, connectivity and integrity of natural systems of at least 5 per cent.
- Milestone A.2: The increase in the extinction rate is halted or reversed, and the extinction risk is reduced by at least 10%, with a decrease in the proportion of species that are threatened, and the abundance and distribution of populations of species is enhanced or at least maintained.
- Milestone A.3: Genetic diversity of wild and domesticated species is safeguarded, with an increase in the proportion of species that have at least 90 per cent of their genetic diversity maintained.

Goal B: Nature's contributions to people are valued, maintained or enhanced through conservation and sustainable use supporting the global development agenda for the benefit of all.

- Milestone B.1: Nature and its contributions to people are fully accounted and inform all relevant public and private decisions.
- Milestone B.2: The long-term sustainability of all categories of nature's contributions to people is ensured, with those currently in decline restored, contributing to each of the relevant Sustainable Development Goals.

Draft post-2020 Global Biodiversity Framework

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Goal C: The benefits from the utilisation of genetic resources are shared fairly and equitably, with a substantial increase in both monetary and non-monetary benefits shared, including for the conservation and sustainable use of biodiversity.

- Milestone C.1: The share of monetary benefits received by providers, including holders of traditional knowledge, has increased.
- Milestone C.2: Non-monetary benefits, such as the participation of providers, including holders of traditional knowledge, in research and development, has increased.

Goal D: The gap between available financial and other means of implementation, and those necessary to achieve the 2050 Vision, is closed.

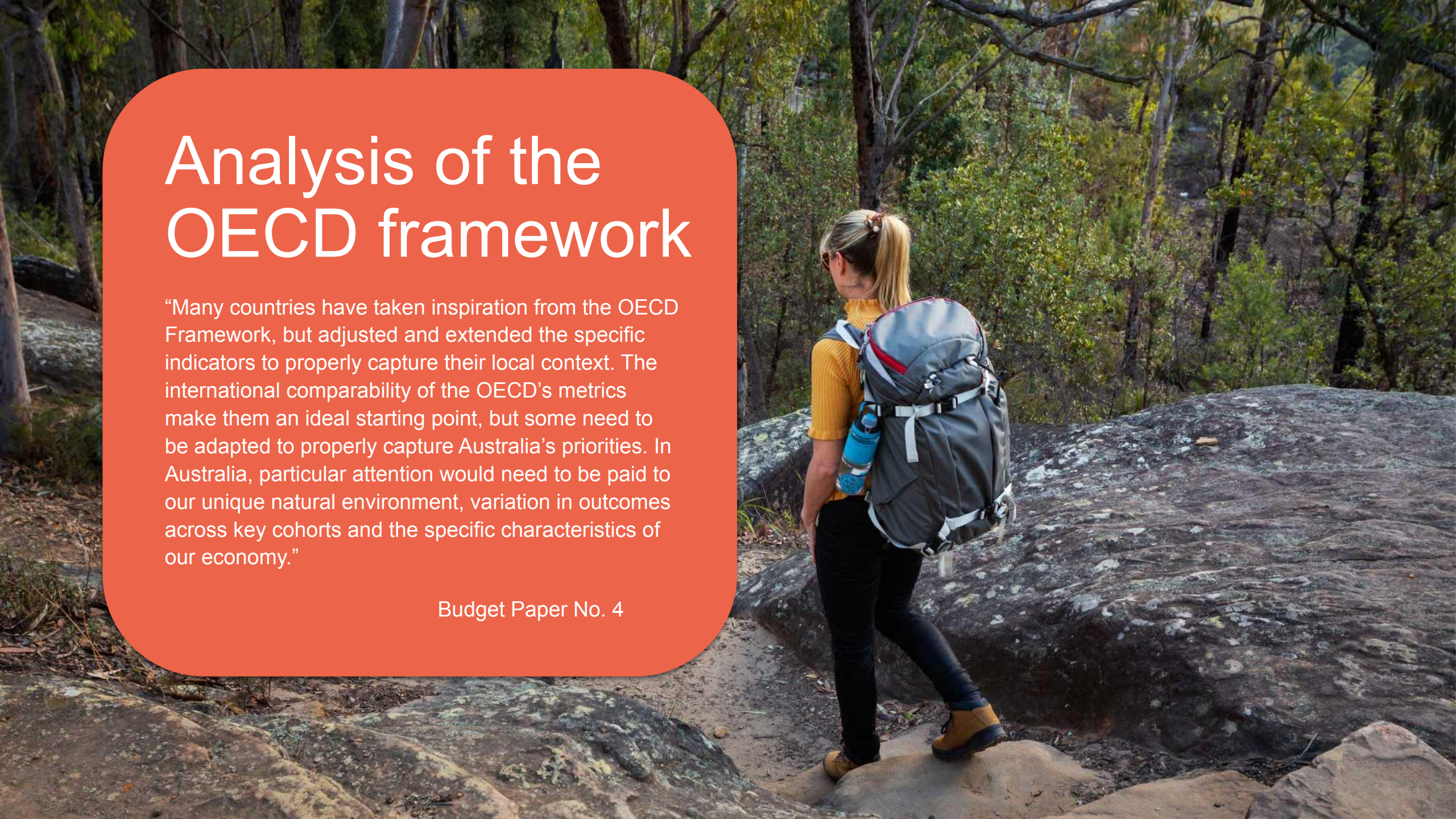
- Milestone D.1: Adequate financial resources to implement the framework are available and deployed, progressively closing the financing gap up to at least US $700 billion per year by 2030.
- Milestone D.2: Adequate other means, including capacity-building and development, technical and scientific cooperation and technology transfer to implement the framework to 2030 are available and deployed.
- Milestone D.3: Adequate financial and other resources for the period 2030 to 2040 are planned or committed by 2030.

CBD

Analysis of the OECD framework

“Many countries have taken inspiration from the OECD Framework, but adjusted and extended the specific indicators to properly capture their local context. The international comparability of the OECD’s metrics make them an ideal starting point, but some need to be adapted to properly capture Australia’s priorities. In Australia, particular attention would need to be paid to our unique natural environment, variation in outcomes across key cohorts and the specific characteristics of our economy.”

Budget Paper No. 4



OECD Framework for Measuring Wellbeing and Progress

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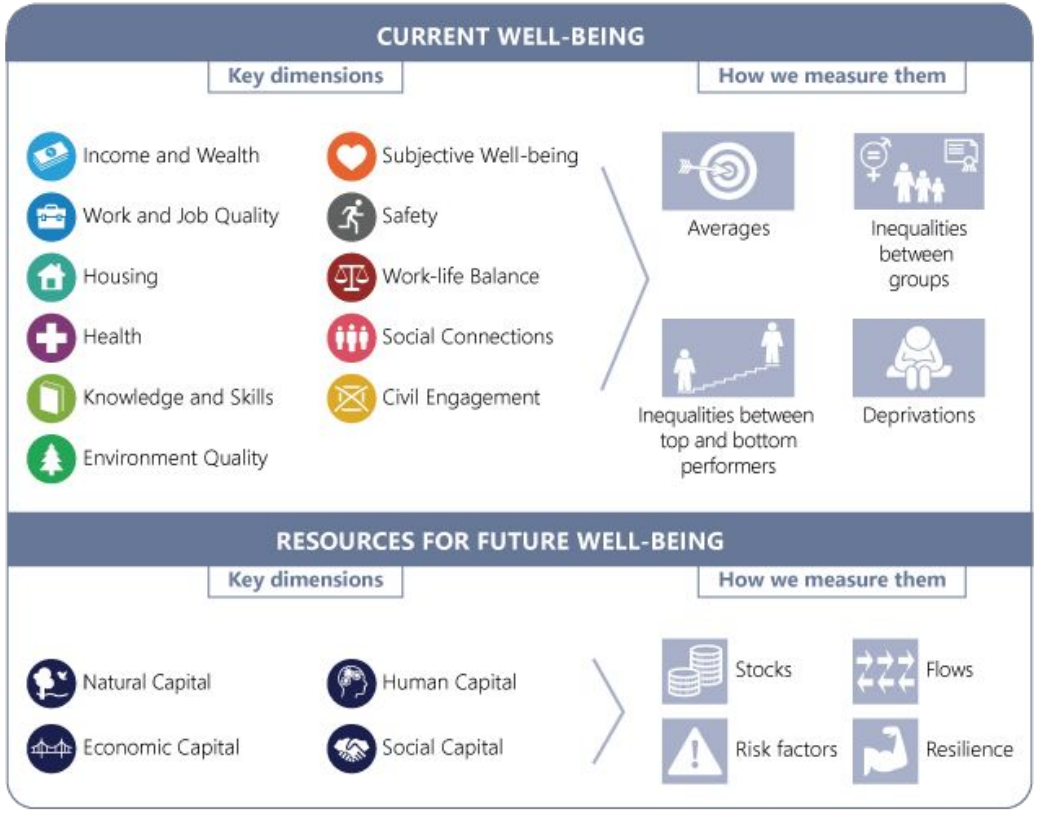
"Rather than starting from scratch, Australia can build on what has been developed by the OECD and governments such as Scotland, New Zealand, Wales and Canada, avoiding their mistakes and emulating their successes." **Budget Paper 4**

The Organisation for Economic Co-operation and Development (OECD) Framework for Measuring Well-Being and Progress, developed in 2011, is widely referred to and is used by many countries as the basis of their wellbeing approaches.

The framework consists of two levels: current wellbeing and collective future wellbeing. Eleven dimensions of wellbeing, falling under two categories, Material Living conditions (housing, income and wealth, and work and job quality) and Quality of Life (all others), are covered under current wellbeing. Four capitals, natural, economic, social and human, measured by reference to stocks, flows, risk and resilience, are identified as "key resources" and measured as part of resources for future wellbeing.



The OECD Framework for Measuring Well-Being and Progress

The OECD framework indicators

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Under the key dimensions (current wellbeing) section of the OECD Index, environment is referred to as “environment quality”. Three indicators assess environmental quality. These are:

- Exposure to outdoor air pollution;
- Access to recreational green space in urban areas, and
- Environmental inequalities between population groups.

Environment as ‘natural capital’, one of the four capitals measured under the OECD framework, covers:

- Biological resources and biodiversity;
- Climate change;
- Soil quality and freshwater resources; and
- Waste and materials.

Concept of human needs

The OECD framework is built around a "human wellbeing" lens based on meeting human needs.

In 1991, Max-Neef identified nine fundamental needs that are common to all humans The nine needs are:

- non-hierarchical;
- fundamental;
- finite;
- classifiable; and
- the same across all cultures and in all historical periods.

These needs are satisfied in four ways: **being, doing, having and interacting.** Which satisfier is used, or how these needs are satisfied, will vary between individuals and cultures

Max-Neef's matrix of needs and satisfiers (source: Smith & Max-Neef 2010: 143).

NEEDS	SATISFIERS			
	BEING (QUALITIES)	HAVING (THINGS)	DOING (ACTIONS)	INTERACTING (SETTINGS)
SUBSISTENCE	Physical, emotional and mental health	Food, shelter, work	Work, feed, procreate, clothe, rest/sleep	Living environment, social setting
PROTECTION	Care, adaptability, autonomy	Social security, health systems, rights, family, work	Cooperate, plan, prevent, help, cure, take care of	Living space, social environment, dwelling
AFFECTION	Respect, tolerance, sense of humour, generosity, sensuality	Friendships, family, relationships with nature	Share, take care of, make love, express emotions	Privacy, intimate spaces of togetherness
UNDERSTANDING	Critical capacity, receptivity, curiosity, intuition	Literature, teachers, educational and communication policies	Analyse, study, meditate, investigate	Schools, families, universities, communities
PARTICIPATION	Adaptability, receptivity, dedication, sense of humour	Responsibilities, duties, work, rights, privileges	Cooperate, propose, dissent, express, opinions	Associations, parties, churches, neighbourhoods
IDLENESS	Imagination, curiosity, tranquillity, spontaneity	Games, parties, spectacles, clubs, peace of mind	Day-dream, play, remember, relax, have fun	Landscapes, intimate spaces, places to be alone, free time
CREATION	Imagination, boldness, curiosity, inventiveness, autonomy, determination	Skills, work, abilities, method, techniques	Invent, build, design, work, compose, interpret	Spaces for expression, workshops, audiences, cultural groups
IDENTITY	Sense of belonging, self-esteem, consistency	Symbols, language, religion, values, work, customs, norms, habits, historical memory	Get to know oneself, grow, commit oneself, recognise oneself	Places one belongs to, everyday settings, maturation stages
FREEDOM	Autonomy, passion, self-esteem, open-mindedness, tolerance	Equal rights	Dissent, choose, run risks, develop awareness, be different from, disobey	Temporal/spatial plasticity (anywhere)

Limitations of the OECD's approach

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In 2011, when the OECD framework was adopted, there was limited knowledge of the links between wellbeing and the environment as well as little interaction between the fields of environmental sustainability and wellbeing. As a result, the indicators chosen by the OECD to report on the links between wellbeing and the environment were not necessarily based on a deep conceptual understanding but more on what data was available. As such, the conceptual underpinnings of the OECD framework in its entirety, and OECD-based approaches subsequently adopted by a number of countries, are perhaps simplistic at best, and reductionist and arbitrary at worst leading to the conclusion that the OECD framework is insufficiently robust to deliver wellbeing for people and planet.

Specific challenges or limitations with the OECD Framework include:

1. Limited conceptualisation of the extent of the human-nature relationship
2. The focus is on needs but with no guidance on prioritisation, reconciliation or connection between needs and capitals
3. A lack of recognition of the foundational underpinning of the environment to all wellbeing
4. Limited and unsatisfactory coverage of the different facets of 'Environment Quality' and how they are linked to different facets of human wellbeing.

Explanations on each of these challenges are contained in the following slides.

Limited conceptualisation of the extent of the human-nature relationship

There is a high degree of overlap in what is being measured by other countries who have adopted a wellbeing framework, e.g., most indices considered include some measure of air and water quality and access to urban green spaces. At the broadest level, the indices seem to categorise the link between the environment and wellbeing as falling into two categories:

- Access to the environment; and
- Benefit provided by the environment (amenity/recreation)

However, there is limited theoretical basis as to why those indicators have been chosen. In particular, It is unclear as to whether these indicators are either satisfactory or exhaustive to meet a human's needs as it relates to the environment.

It is also a very anthropocentric view of the relationship, basing the connection through the lens of services provided to humans.

"Wellbeing's value is frequently represented as being self-evident. This is not helpful."

NZ Parliamentary Commissioner for the Environment

Focus is on needs but with no guidance on prioritisation, reconciliation or connection between needs and capitals

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The OECD framework categorises all dimensions of wellbeing as equally important, providing no advice or guidance for how the 11 dimensions (which constitute meeting our needs) are to be prioritised or reconciled should they come into conflict with each other.

There is also insufficient connection between needs and capitals, leading to a situation where we are satisfying our (individual) needs in a manner that exceeds the ability of the capitals, natural capital in particular, to supply and provide for us; collectively, our stocks of natural capital are declining. This is contrary to the common definition of sustainable development:

*'Development that meets the **needs** of the present without compromising the ability of future generations to meet their own **needs**'.* **The Brundtland Report (UNWCED 1987)**

The anthropocentric focus - focusing only on what the environment provides to humans - also fails to capture the full extent of environmental services, excluding or ignoring the services nature provides to other species, nature's intrinsic value and nature's cultural aspect.

"...a wellbeing approach is potentially reductionist in the sense that it attempts to reduce nature to the benefits that are provided to people."

NZ Parliamentary Commissioner for the Environment

Lack of recognition of the foundational underpinning of the environment to all wellbeing

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The OECD framework offers a weak definition of sustainability, because substitutability is allowed between the capitals. By doing so, it fails to appreciate and recognise the foundational underpinning of the environment to regulate and support a safe operating space for all life.

The use of capitals, as a measure of future wealth (via level of stocks) provides for a weak definition of sustainability: it enables substitutability between capitals and fails to assist in making decisions as to how much (and in what state) should be left for future generations (intergenerational equity).

*"There is surely an intergenerational responsibility to **do no further harm** and **to create the systems** to allow future generations to thrive and prosper—mentally, physically, and materially."*

https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)61038-8/fulltext

Weak/soft sustainability

- Where the total value of the four capital stocks does not decrease over time
- There is substitutability between stocks because the different forms of capital are completely substitutable
- Future wellbeing can increase or be maintained so long as depletion of one type of capital is offset by increases in the other types.

Limited, unsatisfactory coverage (scale)

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The OECD framework considers wellbeing at the scale of individual (expressed as dimensions) and collective, measured at the level of the country (expressed as capitals).

Such a clear focus on meeting an individual or country's needs and preferences, inevitably ignores or diminishes the collective and the communal responsibilities to the region and the planet, especially those relating to planetary health (global greenhouse gas emissions and global biodiversity loss).

Measurements of wellbeing should incorporate wellbeing for all.

Finding 2

It is critical that the Australian government develop a solid theoretical basis for its conceptual framework before selecting indicators to measure wellbeing and productivity.

Part 2: Key messages

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- Australia has an opportunity to create a world-leading wellbeing framework based on the concept of sustainable wellbeing.
- The conceptual framework must be comprehensive and robust so that the resulting indicator set can inform policy, and ultimately support decisions that protect and provide for human and planetary wellbeing, now and for the future:
  "*What we measure affects what we do; and if our measurements are flawed, decisions may be distorted*." – Joseph Stiglitz.
- The Organisation for Economic Co-operation and Development (OECD) Framework for Measuring Well-Being and Progress, developed in 2011, used by many countries as the basis of their wellbeing approaches, has a number of widely recognised limitations and is not sufficiently robust for delivering on wellbeing for people and planet.
- Australia should instead base its framework on the "nature and people" model developed by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) in 2015. This model broadens the policy goal from poverty reduction to generalised wellbeing and goes beyond the focus on ecosystem services to socio-ecological systems thinking.
- Implementing a people and planet focused wellbeing approach leads to a framework which embraces Australia's Common National Approach to Environmental-Economic Accounting, a sophisticated way to measure changes and trends in the natural capital of Australia that was designed according to the international guidelines set forth by the United Nations System of Environmental-Economic Accounting (SEEA).
- The proposed sustainable wellbeing framework provides a theoretical base for selecting a headline indicator, i.e., 'summary statistic,' that, ideally, could be reported on annually. Here, the framework drives towards "the overall wealth and health of the environment" as the headline indicator.
- Australia should seek out lessons from the United States proposed system of Natural Capital Accounting and headline indicator reporting, as well as learnings from other countries attempting to use the United Nations SEEA guidelines.

Australians already care

According to recent research (October 2022) on the sentiment of Australians towards a wellbeing budget, most Australians agree with including the environment in measures of human wellbeing.

63% ranked **environment quality** as number 5 in terms of the measures of wellbeing that are most are important for the Federal Government to focus on. (The first four measures were: housing, mental and physical health, job, income security and rights at work and education, knowledge and skills.)

73%
Australians agree that economic success should include measures like health, fairness and sustaining the environment.

65% Agree
"I value enjoying nature more"

The state of our environment

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We are facing an existential crisis; the environment, on which many (if not most) of our needs depend, is in critical danger.

"...the ratio of demand to supply has been increasing since the 1960s (their data go back to that period), from 0.9 in the late 1960s to 1.7 in 2016, which they express vividly as the need for 1.7 Earths to meet our current demand on a sustainable basis. These estimates reconfirm that in the post-War period, humanity has been drawing down the biosphere, to dangerously unsustainable levels today."

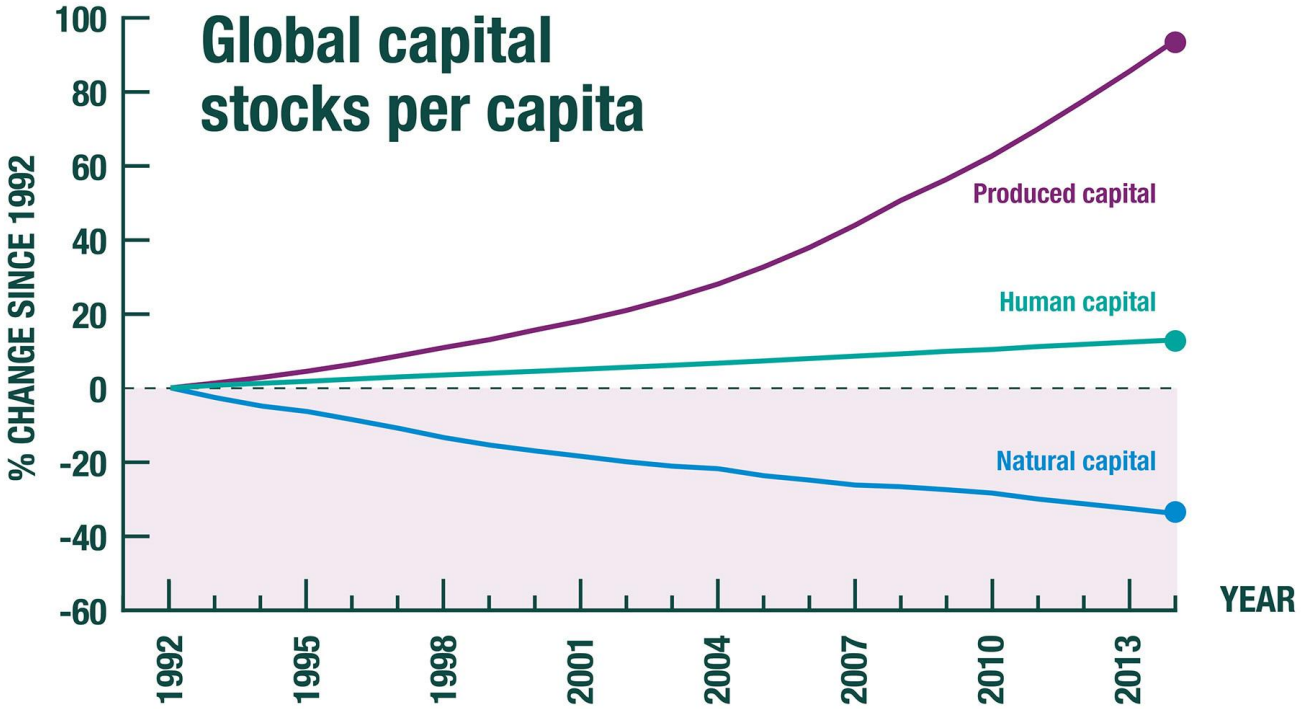

Image: The Dasgupta Review/HM Treasury

The state of our environment

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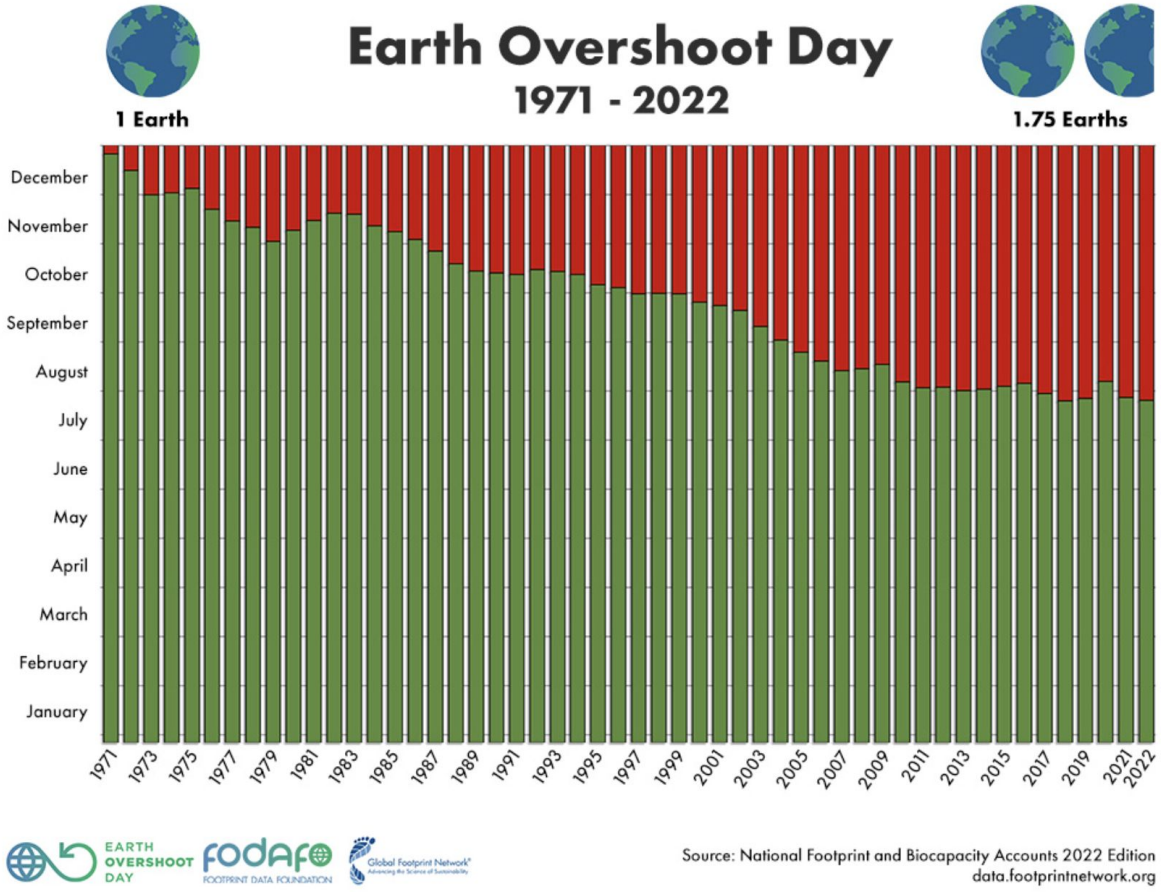
Earth Overshoot Day: the date when humanity has used all the biological resources that Earth regenerates during the entire year.

Each year, the day has moved closer and closer to the beginning of the year; we are in deficit, taking more than what the earth can provide, let alone replenish.



The state of our environment

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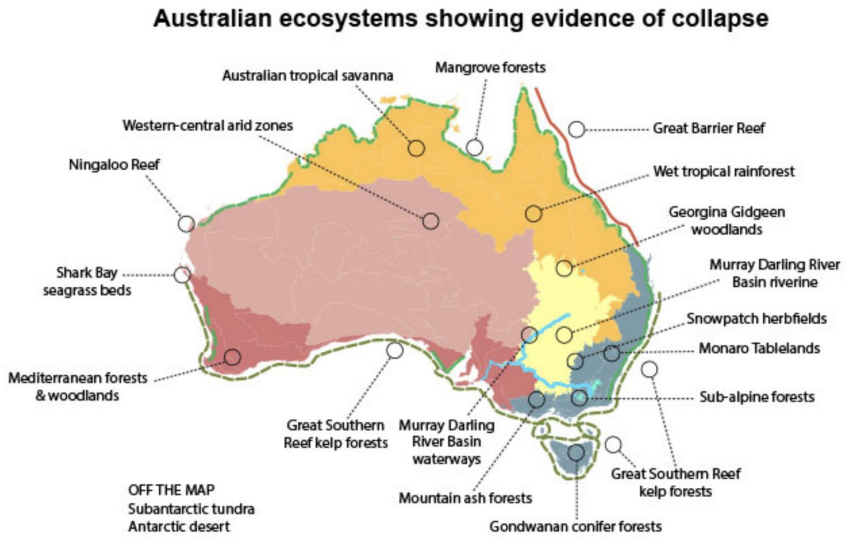
The 2021 Australia State of the Environment Report identifies that Australians are not immune to the impacts of environmental degradation on our health and wellbeing:

- the competition for land area in Australia caused by urban sprawl, combined with the impacts of climate change, is putting increasing pressure on fresh food provision and security;
- water quality is declining in many areas due to increased salinity, algal blooms, bushfire ash runoff and pollutants;
- Australia's air quality in general is good but is deteriorating. Air quality is experienced differently by certain communities - for example, people living near power stations and industrial facilities, in urban centres and along transport corridors generally live with poorer air quality, which will be further exacerbated by climate change;
- there is no 'safe' level of air pollution, particularly for sensitive populations exposed to ozone or particulate matter. In Australia in 2015, 2,566 deaths (1.6% of all deaths in Australia) were caused by air pollution;
- climate change impacts – including from heatwaves, dust levels, and extreme weather events like cyclones, bushfires and floods – are increasingly affecting human wellbeing, particularly for overburdened people and communities who are at greater risk of harm from such impacts. For example, the elderly, those with underlying health conditions, pregnant women and children are more susceptible to risk from exposure to pollutants in bushfire smoke and heat exposure; and
- degradation to Country and destruction of First Nations heritage – including cultural landscapes and other intangible heritage – is detrimental to First Nations Peoples' physical, mental and spiritual health and wellbeing.



Under threat: seven of the 19 ecosystems identified in the study are in World Heritage areas. Map credit: Mary Cryan.

"Intense competition for land and water resources in Australia has resulted in continued declines in the amount and condition of ***natural capital — native vegetation, soil, wetlands, rivers and biodiversity*** *— that Australians depend on for their food, water, wellbeing and livelihoods."*

State of Environment Report 2021

But…. our wellbeing - measured by GDP - is growing

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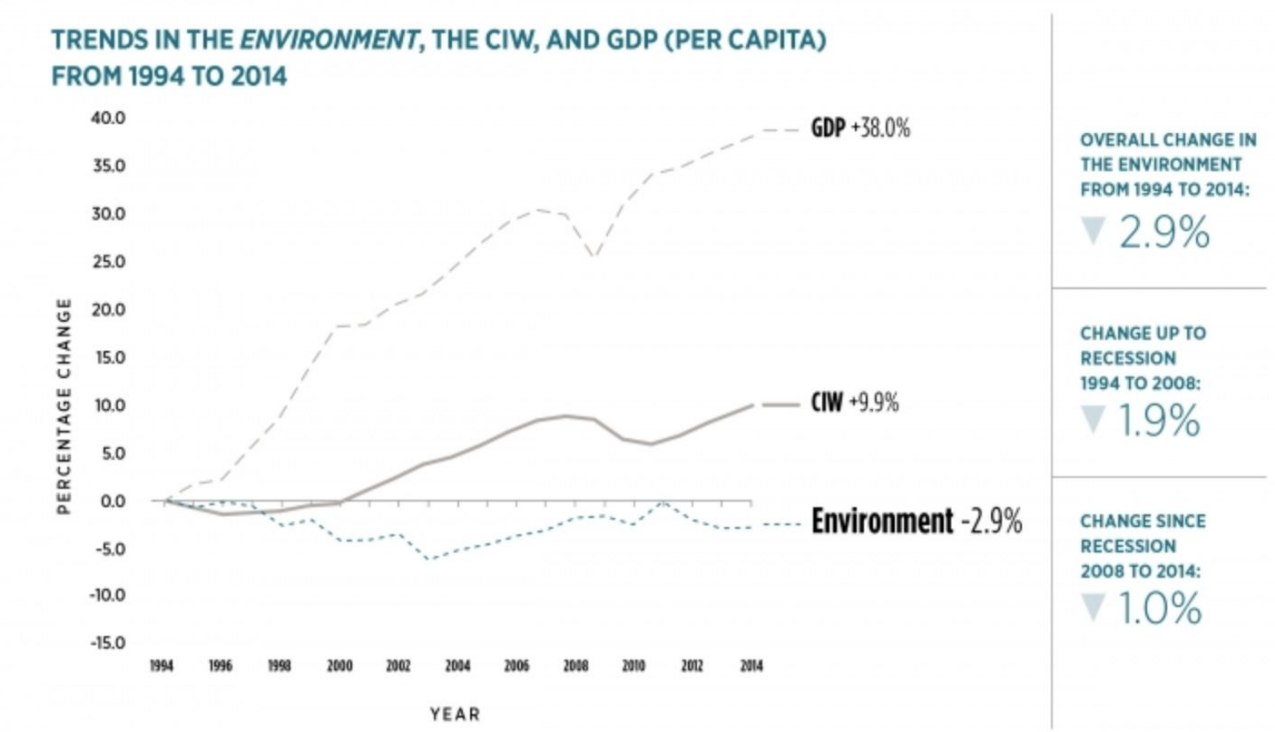
"Our growing prosperity has come at a cost: our demands for the biosphere's goods and services have overshot its capacity to supply them on a sustainable basis. Running in parallel with the rising prosperity that humanity has enjoyed over the past seven decades, there have been profound losses in biodiversity across continents and biomes, and dramatic changes in the biosphere" Dasgupta Review

"We have leveraged our entire civilisation on a bet that the life-supporting capacity of our physical world can sustain the demands we make of it. The biophysical indicators suggest the bet may be misplaced…We may have bought a measure of current wellbeing at terrible cost to future generations."
https://www.pce.parliament.nz/media/197166/wellbeing-budgets-and-the-environment-report.pdf



Key: CIW: Canadian Index of Wellbeing, GDP: Gross Domestic Product
https://uwaterloo.ca/canadian-index-wellbeing/reports/canadian-index-wellbeing-national-report/environment

Planetary and human wellbeing should be the dual focus of a wellbeing framework

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We have been satisfying our needs (meeting our wellbeing) in a way that is at odds with the health and wealth (the wellbeing) of the environment.

It is necessary to identify a way to meet our wellbeing whilst protecting the environment, now and for future generations for Australia, as well as for our neighbours and our planet. We have to understand and address how to:

1. Meet our wellbeing needs without impacting on our environment (which may involve shifting focus away from a focus on individual wellbeing);
2. Reconcile needs of economy and society with the health and wealth of the environment (i.e. decouple the economy from natural resources);
3. Increase understanding of the cultural significance and intrinsic value of the environment; and
4. Increase understanding that the environment underpins all that we can do, including underpinning our economy.

"Our desire to improve our wellbeing is the driver of many of the negative impacts that humans have on ecosystems and ecosystem services. Yet, ironically, research is increasingly demonstrating that our wellbeing is heavily dependent upon the ongoing provisioning of these ecosystem services. Therefore, we need to be more aware of how ecosystems support wellbeing in our day-today lives, and be clear about the impacts of our consumption on biodiversity and ecosystem functions. Only then can we hope to achieve the 'double dividend' of enhanced wellbeing and flourishing ecosystem services."

https://www.doc.govt.nz/globalassets/documents/conservation/human-values/nature-of-wellbeing-summary.pdf

Sustainable wellbeing is a better framing

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A framing of sustainable wellbeing enables us to see - and account for - the more complex links that exist between our wellbeing and the environment. The underlying premise is the environment enables (it **provides, supports and regulates**) the foundation for human wellbeing. As such, it follows how we **satisfy** our needs - present and future - must be done with the overriding principle that we must, at all times, **maintain** a healthy environment. Therefore we account fully for the benefits and interactions with the environment and understand and adhere to its thresholds, boundaries and tipping points.

Designing a wellbeing framework using the concept of sustainable wellbeing is consistent with approaches set out in various international conventions and reports such as the IPBES Nature and People conceptual framework and the draft Global Biodiversity Framework. It is also an approach in line with Australia's recently published "Nature Positive Plan: better for the environment, better for business", which asserts "*We want an economy that is nature positive – to halt decline and repair nature.*"

"After all, almost all of human activity on earth rests one way or another upon the condition of the natural environment, and if we don't address the deterioration of the natural environment sometime pretty damn soon, the rest of it's going to come crashing down." Ken Henry

Timeline of key conceptual and policy events linking wellbeing to the state of the environment.

Sustainable Wellbeing goes beyond current human wellbeing

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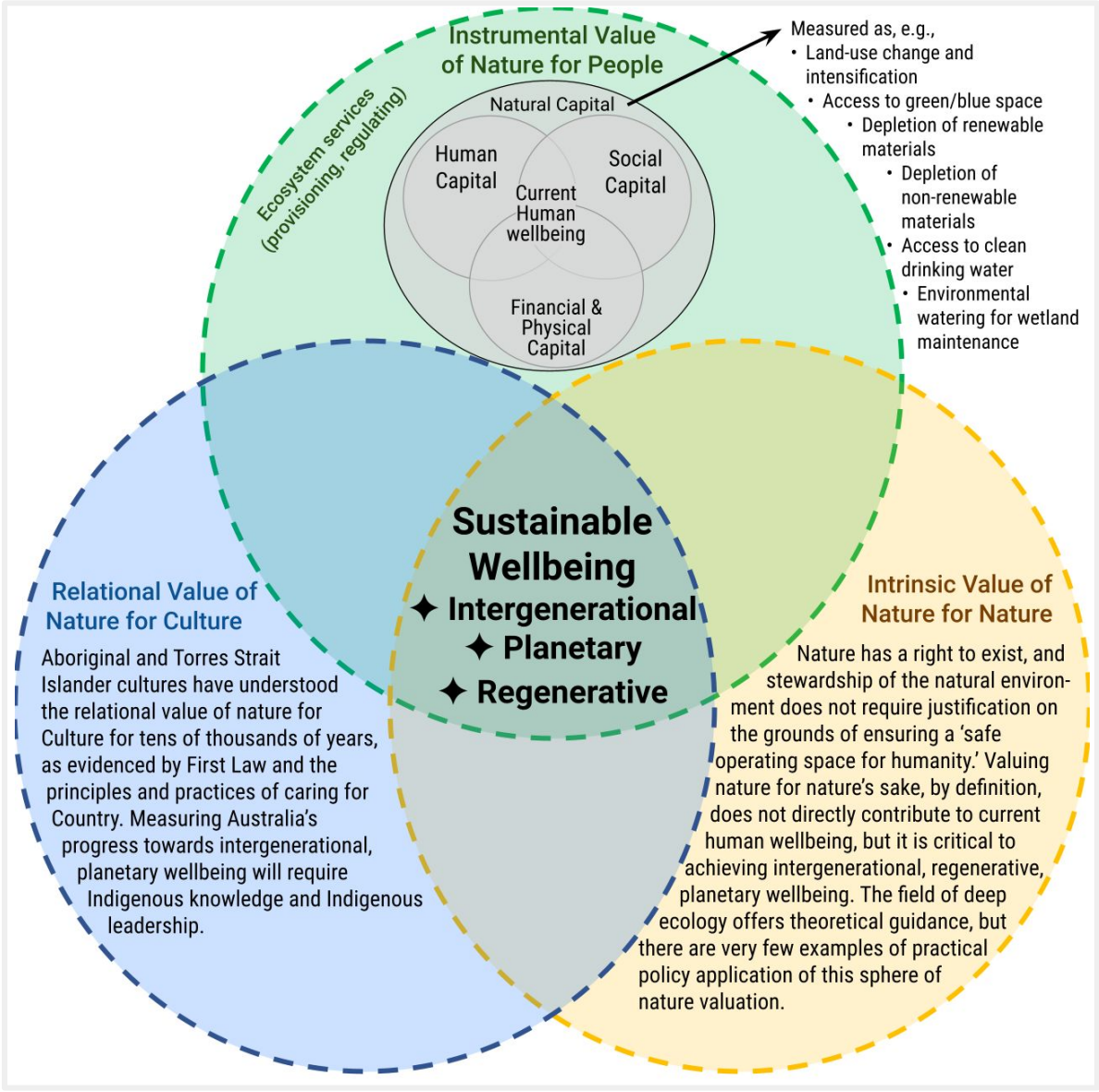
The figure on Slide 53 contextualises the indicator categories suggested in this report and in most global wellbeing frameworks as narrowly reflecting instrumental values of 'nature for people.' Ways of monitoring changes to stocks and flows of natural capital, which underpin the growth and sustainability of human, social, financial and physical capitals, can be modelled on the useful precedents set internationally that can be readily adapted for the Australian context. However, these measurements are relevant to only how nature can be valued.

The indicator categories suggested in this report can help monitor progress towards "current human wellbeing," rather than towards holistic sustainable wellbeing, which by definition is intergenerational in duration and planetary in scale. Natural capital underlies all other kinds of capital, and Environment-Economic Accounting systems have been developed recently to guide how natural capital stocks and flows are measured and monitored. Measuring the other capitals that contribute to current human wellbeing is not the focus of our research and so those circles have been left unpopulated in this figure. The authors of this report are not aware of any indicator sets or national guidelines for monitoring Nature for Nature or Nature for Culture.

If Australia can develop a framework that reflects all three value types, it will be world-leading and support decision-making for intergenerational, planetary wellbeing.

Sustainable Wellbeing goes beyond current human wellbeing



Sustainable wellbeing and scale

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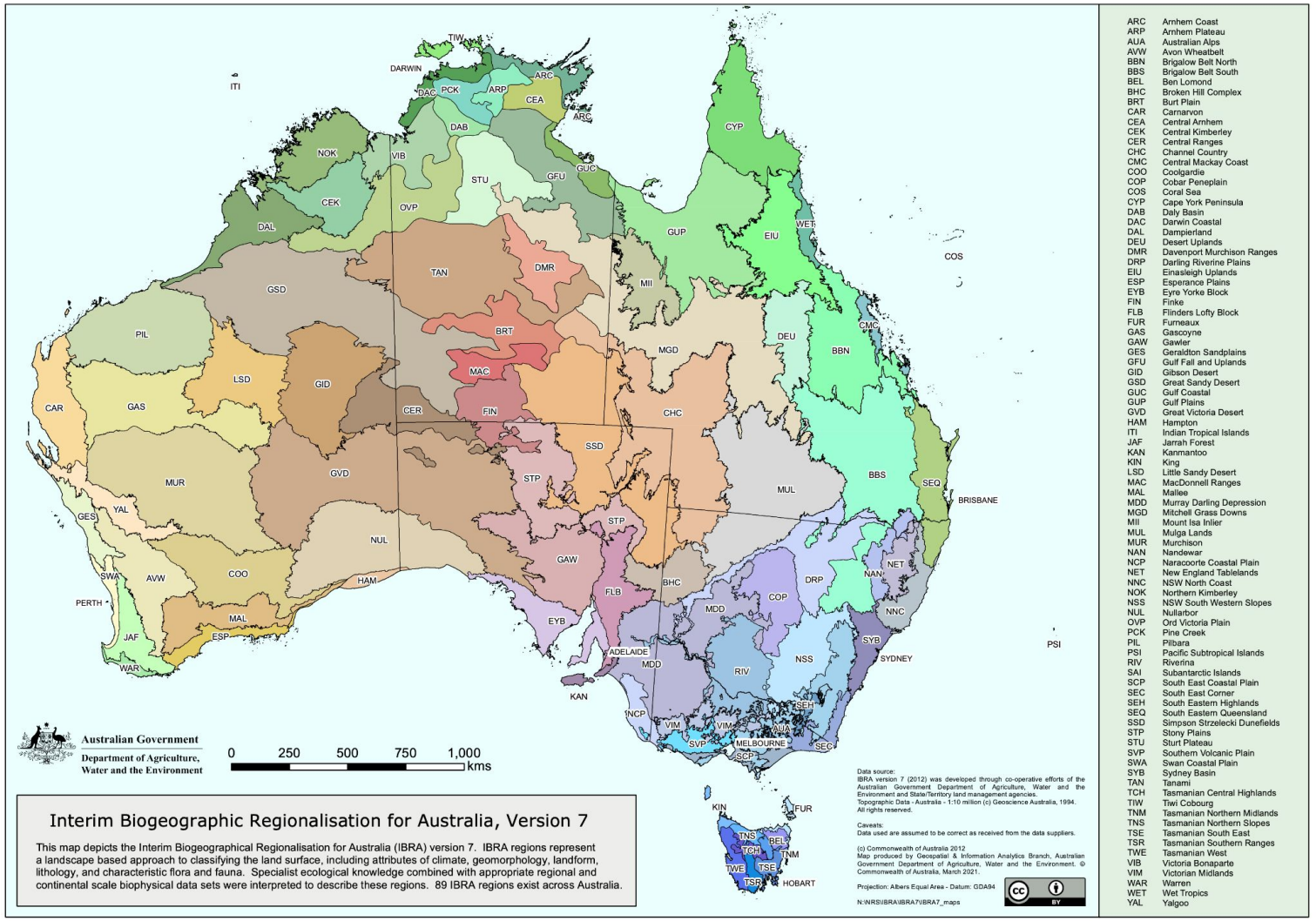
A sustainable wellbeing framework should account for sustainable wellbeing for all. This means including scales of wellbeing, from local to global.

The concept of planetary health is instructive here. It sees the health of the planet as a system. The concept recognises that human wellbeing over the long-term depends on the wellbeing of the earth - its living and non-living systems. It is then also logical to focus more on ecosystems and habitats. We note:

- The world contains 14 terrestrial habitats of which eight are shared by Australia; and
- Australia's land mass is divided into 89 bioregions, 419 subregions and thousands of regional ecosystems).



https://www.dcceew.gov.au/environment/land/nrs/science/ibra/australias-bioregion-framework

Categorisation of environmental services

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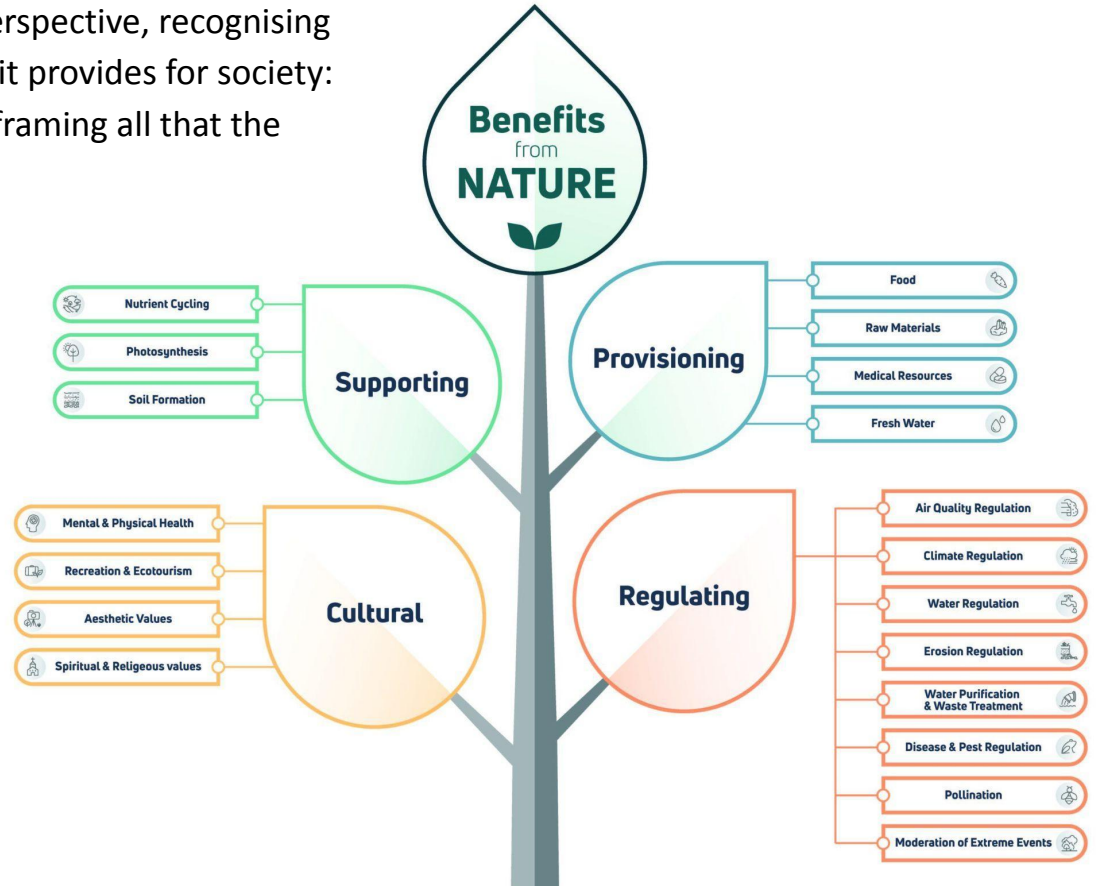
As part of the research, consideration was given to how the environment - the services it provides - is conceptualised independent of wellbeing frameworks. Understanding this - and incorporating it into a wellbeing framework - provides a strong, theoretical base for linking human wellbeing, and the concept of needs, to the environment. A key finding from this research is an integrated perspective, recognising that the value of nature goes beyond the benefits (e.g., ecosystem services) that it provides for society: the environment holds cultural and intrinsic value as well, and is a better way of framing all that the environment offers.

Millennium Ecosystem Services (MEA), 2015

MEA conducted a comprehensive assessment of the world's ecosystems, measuring 24 ecosystem services (carried out by more than 1300 natural and social scientists from 95 countries). The MEA report refers to natural systems as humanity's 'life-support system'.

Natural systems provide four types of services:

- Supporting (e.g. nutrient cycling, soil formation and primary production)
- Provisioning (e.g. food, fresh water, fibre, fuel)
- Regulating (e.g. climate regulation and water purification)
- Cultural (e.g. aesthetic, spiritual, educational and recreational).



https://www.tern.org.au/news-quantifying-ecosystem-services/

Categorisation of environmental services

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The Economics of Ecosystems and Biodiversity (TEEB)

TEEB is a global initiative focused on "making nature's values visible". It identifies four ecosystems services: provisioning, regulating, habitat and cultural and amenity.

It also recommends a tiered approach to managing ecosystem services:

1. Require the recognition of value
2. Demonstrate value
3. Capture value.

"The TEEB initiative seeks to draw attention to the invisibility of nature in the economic choices we make across the domains of international, national, and local policy-making, public administration, and business. TEEB sees this invisibility as a key driver of the ongoing depletion of ecosystems and biodiversity."

https://teebweb.org/about/approach/

Typology of ecosystem services in The Economics of Ecosystems and Biodiversity project (2010).

MAIN SERVICE TYPES	
PROVISIONING SERVICES	
1	**Food** (e.g. fish, game, fruit)
2	**Water** (e.g. for drinking, irrigation, cooling)
3	**Raw materials** (e.g. fibre, timber, fuelwood, fodder, fertilizer)
4	**Genetic resources** (e.g. for crop-improvement, medicinal purposes)
5	**Medicinal resources** (e.g. biochemical products, models, test organisms)
6	**Ornamental resources** (e.g. artisan work, decorative plants, pet animals, fashion)
REGULATING SERVICES	
7	**Air quality regulation** (e.g. capturing (fine) dust, chemicals)
8	**Climate regulation** (including C-sequestration, influence of vegetation on rainfall, etc.)
9	**Moderation of extreme events** (e.g. storm protection, flood prevention)
10	**Regulation of water flows** (e.g. natural drainage, irrigation, drought prevention)
11	**Waste treatment** (especially water purification)
12	**Erosion prevention**
13	**Maintenance of soil fertility (including soil formation) and nutrient cycling**
14	**Pollination**
15	**Biological control** (e.g. seed dispersal, pest and disease control)
HABITAT SERVICES	
16	**Maintenance of life cycles of migratory species** (including nursery service)
17	M**aintenance of genetic diversity** (especially through gene pool protection)
CULTURAL AND AMENITY SERVICES	
18	**Aesthetic information**
19	**Opportunities for recreation and tourism**
20	**Inspiration for culture, art and design**
21	**Spiritual experience**
22	**Information for cognitive development**

Source: Kumar (2010: 26).

Categorisation of environmental services

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Common International Classification of Ecosystem Services (CICES)

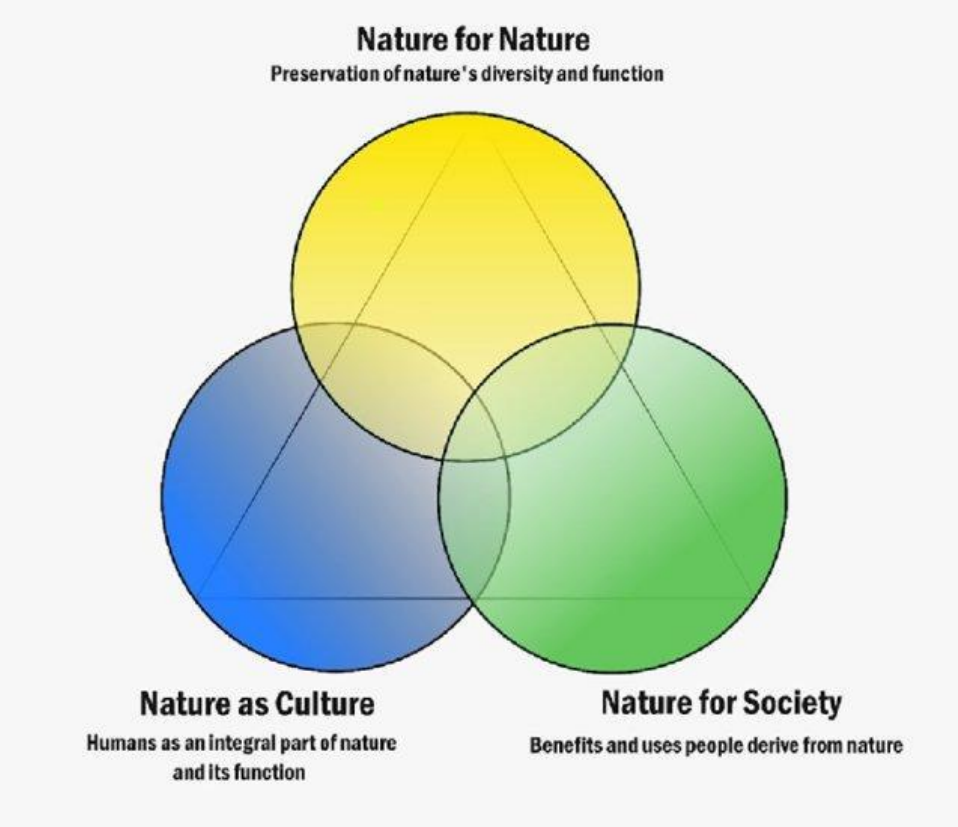
CICES identifies three categories of ecosystem services that contribute directly or indirectly to human wellbeing.

- **Provisioning Services:** the vast range of products we obtain from ecosystems. This includes food, freshwater, fuel (dung, wood, twigs and leaves), fibre (grasses, timber, cotton, wool, silk), biochemical and pharmaceuticals (medicines, food additives), genetic resources (genes and genetic information used for plant breeding and biotechnology), and ornamental resources (skins, shells, flowers).

- **Regulating and Maintenance Services:** regulates and maintains ecosystem processes. This includes maintaining the gaseous composition of the atmosphere; regulating both local and global climate (temperature, precipitation, winds and currents), controlling erosion (soil retention and prevention of landslides); regulating the flow of water (the timing and magnitude of runoff, flooding, and aquifer recharge); purifying water and decomposing waste; regulating diseases (controlling the abundance of pathogens such as cholera, and disease vectors such as mosquitoes); controlling crop/livestock pests and diseases; pollinating plants; and offering protection against storms (forests and woodlands on land, mangroves and coral reefs on coasts), recycling nutrients, and maintaining primary production and oxygen production through photosynthesis.

- **Cultural Services:** comprises non-material benefits that people obtain from ecosystems through recreation, tourism, intellectual development, spiritual enrichment, reflection and creative and aesthetic experiences. They offer life-enriching and life-affirming contributions to human wellbeing and health. The diversity of life has in part shaped by the diversity of cultures: the local ecosystem offers people a sense of place, their cultural landscape; religions attach significance to particular flora and fauna; and people find beauty in Nature, which gives expression in the private demand for gardens and public demand for parks and protected areas.

An alternative, systems-thinking framework



IPBES Nature Futures Framework

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services' (IPBES) 'pluralistic Nature Futures Framework' (2021) (Figure 2) outlines three perspectives relating to the value of nature:

- **nature for society** (where utilitarian values for nature dominate)
- **nature as culture** (where society lives in harmony with nature)
- **nature for nature** (where intrinsic values for nature, its species, habitats and ecosystems are given higher value than benefits to humans).

All three ways to value the natural environment are incorporated into a sustainable wellbeing framework. This thinking is also in line with the draft post 2020 Global Biodiversity Framework, which demands that the "*long-term sustainability of all categories of nature's contributions to people is ensured".*

The Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services' Nature Futures Framework

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Nature for society: Nature for Society perspective highlights the utilitarian benefits that nature provides to people and societies. This view is reflected in concepts such as ecosystem services, natural capital, green infrastructure, and nature-based solutions which exemplify nature as a provider of services to society.

Nature for nature: people view nature as having intrinsic value, and value is placed on the diversity of species, habitats, and ecosystems that form the natural world, and nature's ability to function autonomously.

Nature as culture: highlights perspectives of nature and people in harmony, where societies, cultures, traditions and faiths are intertwined with nature in shaping cultural landscapes. Relational values of nature are emphasized in cultural geography and social-ecological systems research and exemplify spiritual and other non-material nature relationships.

This conceptual framework is widely recognised as being more comprehensive and systematic than the OECD framework.

Nature as culture: Indigenous Culture and connection to Country

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Aboriginal and Torres Strait Islander cultures have understood the relational value of nature for culture for tens of thousands of years, as evidenced by First Law and the principles and practices of caring for and connection to Country. To embrace this mindset, indepth consultation with Indigenous knowledge keepers will be required, particularly to develop and incorporate access and relationship to culture and Country.

Examples of the mindset shifts needed include recognising and understanding that:

- human health, wellbeing, and protection of the natural world must co-exist; and
- a sense of identity extends to include the community and ancestral land (connection to Country).

Nature for culture links to the idea that we are stewards of the environment and, as such, have a responsibility to care for, restore and regenerate nature. It also calls for a focus on intergenerational equity: where resources are allocated across generations so that the wellbeing of each is equal. This means we focus on quantity and quality of stocks of natural capital.

Nature as culture: Indigenous Culture and connection to Country

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"Greater recognition of First Peoples as critical guardians of biodiversity and holders of nature knowledge Practices that are millennia old should be reconsidered or revisited to help restore greater biodiversity, including principles of restraint around only taking/using what is needed, rather than stripping ecosystems bare. As Traditional Custodians of the whole country, and rights holders of up to 50 per cent of the land and an increasing proportion of sea country too, challenges relating to biodiversity in Australia won't be solved without meaningful engagement with First Peoples."

A nature-positive Australia: The value of an Australian biodiversity market, PwC
www.pwc.com.au/government/A-nature-positive-Australia-The-value-of-an-Australian-biodiversity-market.pdf

SoE Report 2021: Indigenous knowledge and connections to Country are vital for sustainability and healing Australia

- *Indigenous people have cared for Country across generations for tens of thousands of years. With decreasing health of Country, Indigenous people continue to seek a larger role in managing its recovery back to health. Indigenous people seek greater participation in Australia's environmental management system. Respectful use of Indigenous knowledge, recognition of Indigenous knowledge rights, and Indigenous and non-Indigenous knowledge systems working together will lead to positive change.*

- *A renewed emphasis on engagement across all sectors of society is required to reverse environmental decline and to achieve ecologically sustainable development that underpins future prosperity and the wellbeing of future generations. Renewed focus on restoration of the landscape, and greater recognition and empowerment of Indigenous land management practices, where possible, across large parts of Australia can help us to heal Country and find new ways to gain a broad range of benefits.*

A draft sustainable wellbeing framework for Australia

Theory of change

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Underpinning a wellbeing framework for Australia is a need to understand the theory of change (ToC) to move to the future we want. The following ToC is proposed:

Current state

The environment is not valued in all the ways that it should, and needs to be. Monitoring and reporting is done in a piecemeal, inconsistent way. The Samuel Review and the State of Environment 2021 show the deteriorating state of our natural world yet attention, and the prime driver for the parlous state of the environment, remains on improvements to Gross Domestic Product. Little to no attention is given to the consequences that will be felt long term.

Future state

A world where we live in harmony with nature so that nature, people and our economy flourishes. Decisions are being made with the full acknowledgement that we (society and economy) are embedded within nature and environmental impacts (short and long term) are openly and transparently factored in. Regeneration is underway and biodiversity is being restored because a healthy environment is recognised as critical for a healthy society and economy.

Example outcomes

- Policy measures that better support the continuing health and wealth of our environment.
- All environmental impacts are costed and accounted for as part of business as usual.
- Creation and implementation of boundaries, limits and thresholds (reducing production and consumption to sustainable levels).
- Participatory and redistributive processes across national borders.
- Incentives established for the economy and society to deliver on environmental benefits.

Principles for framework design and indicator selection

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As a result of the research undertaken for this project, a number of significant, recurrent, findings became evident. These findings formed the basis of a set of principles which were used as a guide to develop a fit for purpose framework for Australia. These principles for a wellbeing framework should:

1. Provide a solid theoretical underpinning of the links between environment and human wellbeing, direct and indirect and individual and collective.
2. Capture all environmental services (all that the environment provides, supports and regulates).
3. Elevate the cultural and relational functions of the environment.
4. Measure changes to state of the environment (across all scales), reporting on trends.
5. Ensure the resilience of natural stocks by reporting against thresholds and tipping points.
6. Provide for intergenerational equity (where resources are allocated across generations so the wellbeing of each is equal).
7. Measure supply: rate at which biosphere regenerates and the stock of biosphere
8. Measure demand placed on biodiversity (using Dasgupta's formulation).
9. Ensure needs are satisfied in an ecologically sustainable way, meaning in a way that is within local, national, regional and planetary boundaries.
10. Link, where possible and practical, to the outcomes and milestones of the draft post 2020 Global Biodiversity Framework.

Wellbeing framework design

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Australia has a unique moment now to become a world-leader in positioning planetary and human wellbeing as the primary goal of fiscal policy. To embrace this opportunity, four fundamental shifts in our collective mindsets are required:

1. An **acknowledgement** (and understanding) that our society and our economy (human wellbeing) depends on the health and wealth of our natural assets.
2. A **recognition** of the complex and multifaceted contributions of the environment (environment for society, nature for nature and nature as culture) to human wellbeing.
3. That we need to shift from an anthropocentric view to one that is **eco-centred**, understanding the limits of our environment and recognising and celebrating the important role humans play as stewards of our environment, now and for the future (intergenerational equity).
4. That we need to learn, build and integrate **Indigenous values** of culture and connection with the environment into all elements of decision making.

Draft conceptual framework based on the IPBES model

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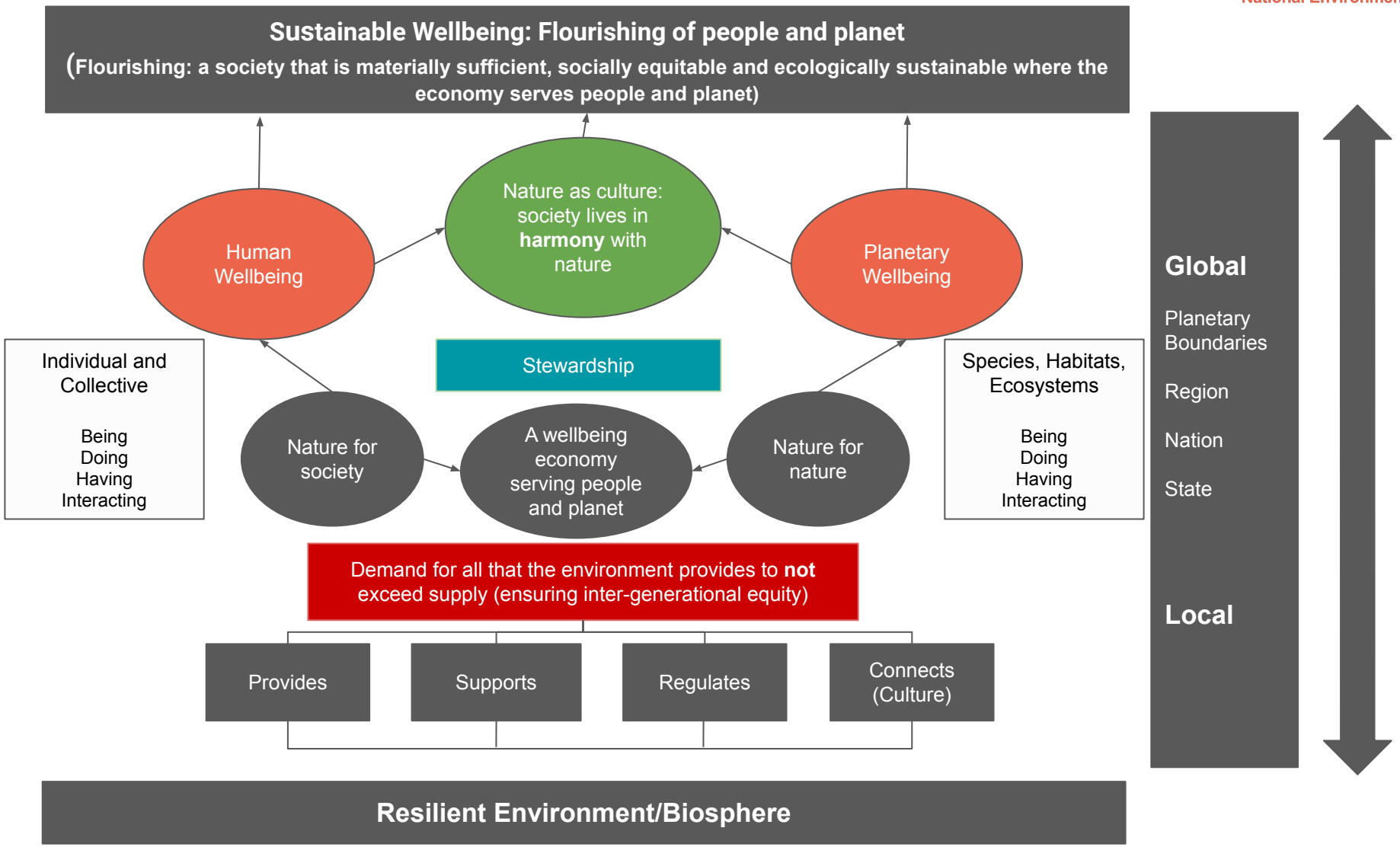

Applying the draft framework to identify environmental indicators of wellbeing

The link between the framework and the selection of indicators

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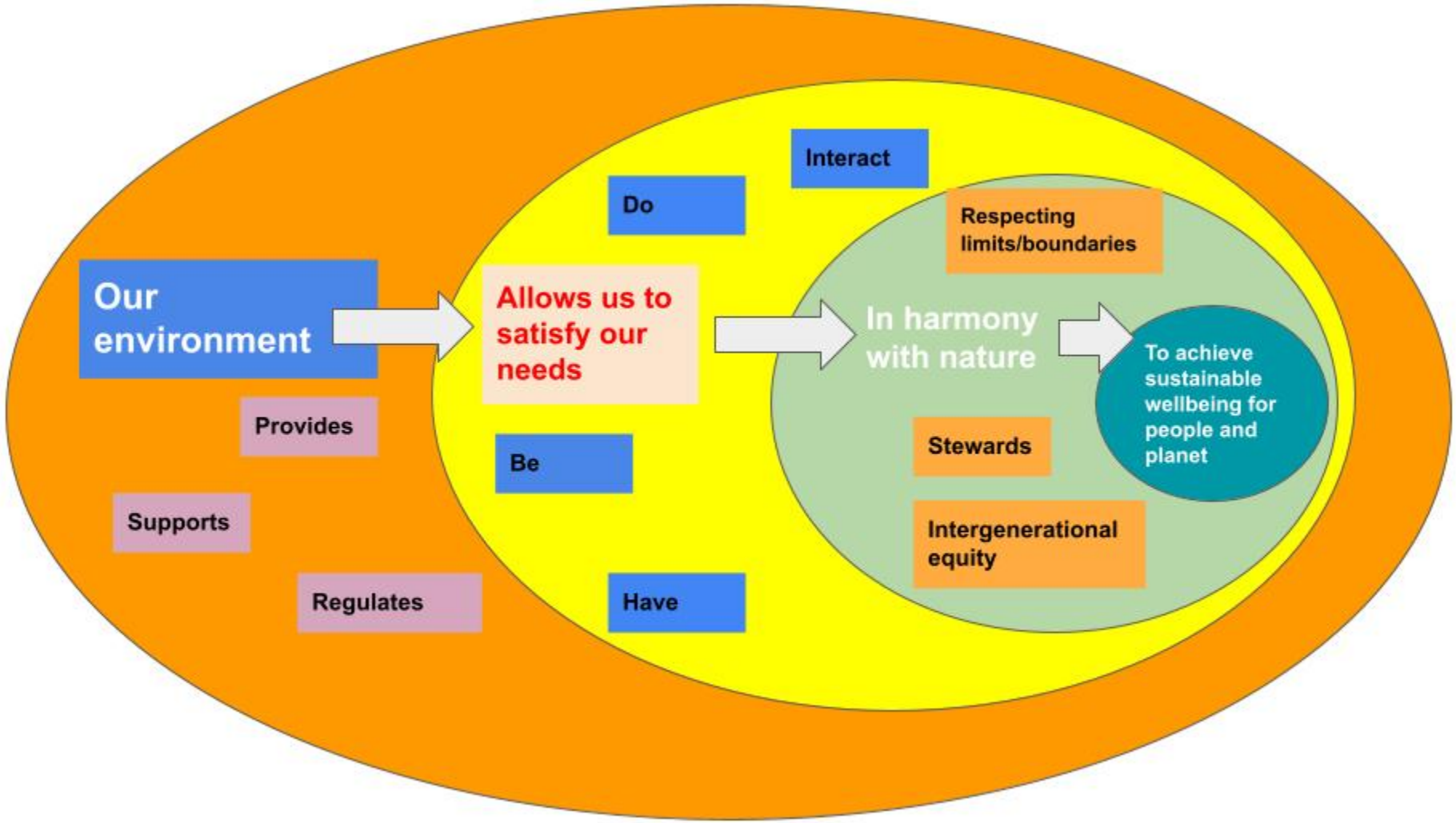
The draft proposed framework, outlined on page 67, places wellbeing for both people and planet at the centre of all that we do. This will transform both what we measure and how we monitor, and result in a new, and better way of appreciating our natural world.

Turning the framework into a set of indicators means that, logically, the focus is on three categories or domains:

1. **Our environment** and all that it provides for us.
2. Human wellbeing, expressed as satisfying **our needs**, using Max Neef's 1991 categorisation of nine fundamental needs common to all humans; we measure how these needs are satisfied by the environment.
3. **Sustainable wellbeing** achieved through acting as stewards of our environment, we place (and respect) boundaries on our needs to ensure intergenerational equity.

The following diagram and tables set out proposed classes of indicators aligned to this approach.

Conceptual framework



Level 1: A healthy planet forms the foundation of our wellbeing

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Domain	Proposed indicator categories	
Provides **food, water, raw materials (fibre, fuel, minerals, woods), genetic materials, medicinal resources, ornamental resources**	• Surface water • Groundwater • Ocean pollution levels (plastics, toxins, etc.) • Ocean productivity (including proportion of fish stocks within biologically sustainable levels, trends in fisheries certified by the Marine Stewardship Council, estimated fisheries catch and fishing efforts) • Ecosystems (Terrestrial & Freshwater) - extent, condition and integrity • Native vegetation – extent, condition and integrity • State of threatened species and threatened ecological communities (terrestrial and aquatic) • Forest coverage (and as a % of land)	• State of biodiversity (terrestrial and aquatic, including protected area coverage of Key Biodiversity Areas, Threatened Species Indices, Species Protection Index, Species Status Information Index, Biodiversity Habitat Index, proportion of local breeds at risk/not at risk) • Percentage, management effectiveness, representativeness and connectedness of all environmental protected areas • Food production, including inland fishery production, pesticide use and nitrogen deposition • Soil health • Percentage of area of forest production under Forest Stewardship Certification and Program for Endorsement of Forest Certification
Supports **nutrient cycling, soil formation and primary production**	• Surface water • Groundwater • Ocean acidification • Erosion rates/levels • Rainfall	• Air quality • Atmospheric carbon/GHG concentrations (emissions) • Carbon sequestration - ocean, vegetation, soils • Soil level/land degradation • Soil health • Food production - pollinators • Biodiversity
Regulates **air quality, climate regulation, moderation of extreme events, regulation of water flows, waste treatment (water purification), erosion prevention**	• Ocean temperatures • Land temperatures • Sea level • Air quality • Climate regulation • Number/frequency/duration extreme events • Water flows and regulation of water flows	• Waste generated • Erosion prevention • Chemical levels/contaminants/pollutants in water/soil • Wastewater treatment • Forest coverage as a % of land cover

Level 2: Individually and collectively, the environment enables us to satisfy (be, do, have and interact) our nine fundamental needs

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Domain	Proposed indicator categories	Domain	Proposed indicator categories
Subsistence	• Water (access, cleanliness, pollution levels, freshwater levels) • Air quality • Marine protected area – representativeness and connectedness • Availability and quality of Food (pollinators, nutrient cycling, control of pests and diseases, pesticide use and nitrogen deposition) • Human heath (i.e. mental , physical health) • Generation of energy sources - fossil fuels, solar, wind, hydro • Timber/materials • Clothing/fibre/materials	**Protection**	• Climate regulation • Liveability – e.g. number days hotter than 45°C in cities • Population suffering damage • Population exposed to risk • Population exposed to outdoor air pollution • Extreme events (floods, fire) – frequency and intensity • Erosion protection • Carbon storage levels in forests, oceans, soils • Climate regulation • Diversity of ecosystem • Forest coverage as a percentage of area • Air filtration services • Natural liquid and solid waste treatment, processing and storage • Restoration/regeneration rates of the landscape
Affection	• Access to 'green' and 'blue' spaces • Connection to nature (including Indigenous caring for Country) • Connection to heritage (natural, cultural, Indigenous) • Opportunity to experience strong affections and respect for nature - biophilia • Human health (i.e. mental (i.e. levels of solastalgia) and physical health) • Sense of place • Experiences in and access to natural setting, including national parks • People value the resources the land provides	**Understanding**	• Learning and development in and about natural settings • Personal development experiences in nature (i.e. outward bound) • Indigenous knowledge about environment • Research and education (ecosystems function and our impacts, sustainable development education) • Respectful use of Indigenous knowledge • Recognition of Indigenous knowledge rights • People value the resources the land provides • Experiences in and access to natural setting, including national parks

Level 2: Individually and collectively, the environment enables us to satisfy (be, do, have and interact) our nine fundamental needs

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Domain	Proposed indicator categories	Domain	Proposed indicator categories
Participation	• Access to 'blue' spaces • Access to green spaces • Volunteers participating in landcare or other such biodiversity restoration/caring/protecting/regeneration projects • Availability of environment for range of activities - hiking, skiing, swimming, running, etc. • Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources (United Nations Declaration on the Rights of Indigenous Peoples) • Experiences in and access to natural setting, including national parks	**Identity**	• Connection to nature (including Indigenous caring for Country) • Connection to heritage (natural, cultural, Indigenous) • Indigenous people seek (and are provided with) greater participation in Australia's environmental management system • Greater recognition and empowerment of Indigenous land management practices • People value the resources the land provides • A sense of place • Alignment with the United Nations Declaration on the Rights of Indigenous Peoples, in particular the right of Indigeous peoples to the conservation and protection of the environment and the productive capacity of their lands or territories and resources (Article 29 (1)).
Creation	• Inspiration for artists • Use by artists • Inspiration for science, technology, engineering, business • Experiences in and access to natural setting, including national parks	**Freedom**	• Access to environment - blue/green spaces • Experiences in and access to natural setting, including national parks
Idleness Leisure	• Access to 'blue' spaces • Access to green spaces • Passive/active leisure activities and recreation • Tourism • Experiences in and access to natural setting, including national parks		

Level 3: We are stewards of our environment, placing boundaries around our needs (intergenerational equity)

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Domain	Proposed indicator categories
Planetary boundaries **Regional boundaries** **Local boundaries**	We recommend that the indicators under here be grouped together to form the **headline indicator:** changes to natural assets wealth (the natural wealth on which economies depend). Consultation with work already underway on environmental-economic accounts is required here. Suggestions of possible indicators - which measure all aspects of resilient environment (function, stocks, trends, health and flows) at all scales, will be required, including (but not limited to): ● Renewable energy – supply, benefits, value and use ● Land use - change and intensification ● Woody vegetation extent and condition (land clearing) ● Material footprint (renewable but depletable, and nonrenewable resources) ● Access to environment green/blue space ● All ecosystems – extent and condition ● Waste disposal ● Waste recycled ● Restoration/regeneration rates of the landscape
Stewardship and Inter-generational equity	● Resilience of ecosystems ● Regeneration/restoration rates ● Access to 'blue' and 'green' spaces ● Connection to nature (including Indigenous caring for Country) ● Listed heritage places and properties – natural, cultural, Indigenous, built and condition ● Participation in environmental programs (i.e. landcare projects) ● Extent of protected areas ● People value the resources the land provides ● Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources - United Nations Declaration on the Rights of Indigenous Peoples ● Experiences in and access to natural setting, including national parks ● Signatory and compliance with relevant international conventions

Criteria for selecting indicators aligned to the framework

Criteria for indicator selection

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As part of the process in determining applicable criteria for selecting indicators, consideration was given to the following two guides: ANZECC and the Treasury's Budget Paper 1, Statement no. 4, 2022.

Australia and New Zealand Environment Conservation Council (ANZECC) guidelines 2000

ANZECC proposed criteria for core environmental indicators are that each indicator should:

- reflect a valued element of the environment or an important environmental issue;
- have relevance to policy and management needs;
- be useful for tracking environmental trends at a range of spatial scales from the local to the continental;
- be scientifically credible;
- be cost effective;
- serve as a robust indicator of environmental change;
- be readily interpretable;
- be monitored regularly, either by existing programs or by new programs that might be established in the future at reasonable cost; and
- reflect national programs and policies.

Box 4.1 – What makes a good progress and well-being indicator?

According to the OECD and the internationally-accepted Civitas initiative, indicators should be:

- **Relevant:** indicators should be relevant to policy priorities.
- **Complete:** indicators should adequately cover all policy priorities.
- **Measurable:** indicators should have the potential for objective measurement.
- **Comparable:** indicators should be defined and measured consistently, to enable comparisons within a country and internationally.
- **Reliable:** preference should be given to indicators underpinned by objective and accurate data, which is not subject to different interpretations.
- **Understandable:** indicators should be unambiguous, easy to understand by decision-makers and key stakeholders, and be standardised where possible.

An effective framework will minimise the number of core indicators to support decision-making by avoiding unnecessary complexity.

Source: OECD (2011), 'Compendium of OECD Well-being indicators'; Civitas (2020), 'CIVITAS 2020 process and impact evaluation framework'

The Treasury's Budget Paper 1, Statement No. 4:

Selection criteria

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The following criteria were developed based on what would be relevant for the proposed framework, what makes for a good indicator and what would best suit Australia's circumstances. We suggest that consideration be given to these criteria as work continues on selecting relevant indicators.

Framework specific

1. Pre-existing indicator relates to one or more of the categories identified in the proposed framework and, as such, is relevant to the framework.
2. Indicators selected primarily be informed by a comprehensive set of national environmental economic accounts.
3. Indicator is underpinned by clearly defined, prioritised and appropriately resourced, ongoing trend data supply chains.
4. Indicator is relevant for both now and into the future.
5. Indicator links to our Common National Approach to Environmental Economic Accounting.
6. Indicator tells a compelling story relevant to the framework (can easily be understood as contributing to the framework).
7. Indicator has the potential/ability to be included in a group of indicators as part of one single metric (which will be the headline measurement).
8. Indicators that are not already in existence but match/embrace/adhere/elucidate on the proposed draft framework.
9. Indicators are relevant for Australia's globally agreed commitments.

Advice From Treasury

1. Must include all species groups of significant conservation concern to Australia, like reptiles and the majority of plants native to Australia
2. Must be relevant to Australia's specific biodiversity challenges.

Selection criteria

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Non-negotiable: Specific, Measurable, Achievable, Relevant and Time-bound.

1. Indicator is understandable - unambiguous, easy to understand by decision makers and key stakeholders and be standardised wherever possible.
2. Indicator is measurable (objectively or subjectively) - has accepted methodology for its collection sitting behind it and data is collected according to the accepted methodology AND/OR indicator is underpinned by objective and accurate data and data is of high quality - based on well established standards - and therefore reliable (Scientifically robust and consistent methods).
3. Data pertaining to the indicator is collected regularly (timeliness).
4. Indicator is comparable over time (can be “regularly produced”, meaning that the data is collected sufficiently regularly (i.e. at least every five years) using a consistent methodology and therefore can be used to create a time series.
5. Indicator is scalable across time and spatial scales allowing for both aggregation at the national level (and at the regional and global level) and disaggregation at a geographic level (an ecosystem level) - indicator is policy relevant and useful for decision makers.
6. The indicator is sensitive to change to detect changes through time and spatial scales.

Desirable

1. Indicator can be reported with existing, already publicly available data (availability of data).
2. Data collection for the indicator commits to using the same methods into the future across relevant spatial scales.
3. Indicator is comparable with relevant international agreements and country frameworks OR indicator is required or used for other reportings, either domestic (i.e. National Environmental Standards or SoE report) or international (SDGs and international agreements).


Headline
indicator

Headline indicator

The draft framework (see diagram on page 69) provides the theoretical basis upon which an environmental headline indicator can be selected:

- The vision is **sustainable wellbeing for people and planet;**
- The context (the base or surrounding layer) is that **the environment provides, supports and regulates** all aspects of life; and
- The content (or the specifics for the domains and categories) is the recognition that **we are stewards of our environment** and, therefore, we place **boundaries around satisfying our needs,** both in the present and for the future **(intergenerational equity).**

As such, the proposed headline indicator that aligns with the draft framework's thinking - and will communicate progress in a simple and concise way - is: **changes to natural assets wealth.**

This indicator would provide a measure that gives a long-term perspective that is complementary to economic headline indicators such as GDP and inflation. This is in line with the work underway with National Capital Accounting/System of Environmental Economic Accounting and work of the USA and the draft Global Biodiversity Framework (Milestone B.1). Coordination with work that is already underway on environmental-economic accounts will be required here.

This suggestion is similar to that of inclusive wealth approach, being the aggregate value of human and natural capital (the productive base). It is also an approach that is in line with the Dasgupta Review (UK) and the current US approach. It is recommended that Australia engages closely with other countries and organisations already undertaking this process.

Headline indicator

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As the proposed draft framework shows, reporting against the headline indicator, **changes to natural assets wealth**, will require measuring all components that constitute a resilient environment (function, stocks, trends, health and flows) and at all scales.

Suggestions of possible categories of indicators (sub-indicators) include (but are not limited to):

- Renewable energy – supply, benefits, value and use
- Land use - change and intensification
- Woody vegetation extent and condition (land clearing)
- Material footprint (renewable but depletable, and nonrenewable resources)
- Access to environment green/blue space
- All ecosystems – extent and condition
- Waste disposal
- Waste recycled
- Restoration/regeneration rates of the landscape

In developing a headline indicator, care should be taken to ensure no double counting, that important information for decision making is not lost and that transparency exists around what sits underneath the indicator.

The Economics of Biodiversity: The Dasgupta Review

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The Economics of Biodiversity: The Dasgupta Review was an independent, global review on the economics of biodiversity, led by Professor Sir Partha Dasgupta. The review was commissioned by HM Treasury (the UK government) in 2019 and the final report was released in February 2021. The report makes several important findings relevant to this research.

"If the societal goal is to protect and promote well-being across the generations (i.e. 'social well-being'), governments should measure inclusive wealth (societal means to those ends). Inclusive wealth is the sum of the accounting values of produced capital, human capital and natural capital. The measure corresponds directly to well-being across the generations: if a change enhances social well-being, it raises inclusive wealth; if the change diminishes social well-being, it reduces inclusive wealth. Social well-being and inclusive wealth are not the same object, but they move in tandem. There lies the value of inclusive wealth in economic accounts.

Natural capital accounting serves as a necessary step towards the creation of inclusive wealth accounts. It enables us to understand and appreciate the place of Nature's services in our economies, including the services that are otherwise overlooked; it enables us to track the movement of natural capital over time (a prerequisite for sustainability assessment); and it offers us a way to estimate the impact of policies on natural capital (a prerequisite for policy analysis).

Accounting for Nature in economic measures is a key to interpreting productivity - improving and using measures of productivity that account for the use of, and impact on, Nature are therefore crucial for understanding the productivity of capital goods."

USA approach

The White House announced in August 2022 a 15-year plan to develop a new summary statistic showing how **changes to natural assets — the natural wealth on which economies depend — affect GDP**.

The Plan recommends that natural capital accounts produce a new headline measure focused on the change in wealth held in nature: Change in Natural Asset Wealth.

The USA approach was specifically considered as a result of advice from the Department.

"The data we rely on to describe and measure our economy are largely disconnected from the realities of the natural world. This disconnect in data prevents us from reaching our full economic potential while protecting the environment, and ensuring future opportunity for Americans."

"The draft National Strategy recommends that the Federal government produce a new, ongoing set of statistics to take stock of our wealth of natural assets, how those assets are being enhanced or depleted, and the impact that has on our economic strength."

https://www.whitehouse.gov/omb/briefing-room/2022/08/18/a-new-national-strategy-to-reflect-natural-assets-on-americas-balance-sheet/

Finding 3

Next steps: Australia's sustainable wellbeing framework and indicator set must be led by Indigenous knowledge keepers, with consultation that incorporates the diverse voices across Australia.

Finding 3: Key messages

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- The design and consultation process must prioritise diversity and inclusivity.
- Significant shifts in perspective are necessary:
  - The development of indicators that capture the value of nature for Culture should be a priority: this process must be led by Indigenous peoples to ensure a reciprocal relationship with nature is at the centre of our framework, which must be suitably resourced and funded. Indigenous knowledge keepers are best positioned to advise on ways to measure the health and wellbeing of Country.
  - Valuing nature for nature's sake means embracing an eco-centric, rather than, anthropocentric worldview. This enables us to make decisions that are better aligned with the goal of planetary wellbeing. Consultation with the research sector should seek out experts in the field of deep ecology to advise on this aspect.
- Appropriate indicators need to be purpose-driven, not selected due to convenience. Pre-existing indicators, for which data is already available, can form part of a sustainable wellbeing framework. However, new indicators for which data may not yet exist are very likely needed in order to enable us to measure and monitor the many intrinsic relational and instrumental values of nature.
- Appropriate investment in the development of the framework and indicator set for measuring the wellbeing of people and planet will position Australia as world-leading, and, importantly, will provide a coherent basis from which Australia can embed environmental considerations across all facets of decision making.

Recommendations for next steps

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When quantifying the linkages between the state of the environment and human wellbeing in Australia two factors must be taken into account:

1. A potentially transformative and progressive paradigm shift towards positioning Australians' wellbeing as the primary goal of fiscal policy must acknowledge:
    - the historical context, whereby Australian Aboriginal and Torres Strait Islander cultures have developed complex ontologies and epistemologies that explain how the wellbeing of Country is directly related to the wellbeing of people; and
    - that co-design with Aboriginal and Torres Strait Islander Traditional Custodians is the only way to truly embed Indigenous understandings of the links between the environment and wellbeing in the underpinning conceptual framework for measuring these linkages.
2. The complexity of the many ways that environmental factors impact the many dimensions of human individual and collective wellbeing, both current and intergenerational, must not become a barrier to budgetary resources being allocated to address the time-sensitive, critically important and immediate environmental crises (e.g., climate change and biodiversity collapse).

Recommendations for next steps

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Recommendations for the next steps in this process are:

1. Treasury pursue genuine co-design of this recommended new way of measuring Australia's national progress;
2. Meaningful consultation on the proposed framework;
3. Communicate the shift in foundational thinking;
4. Build a better understanding of the link between how we satisfy human needs and impacts on our environmental wellbeing and long-term human wellbeing;
5. Co-design of the indicators that measure what matters within the agreed framework with Indigenous knowledge keepers;
6. Finalisation and consultation on and indicator set;
7. Develop targets as a means to measure progress on the indicators;
8. Embed the framework into decision-making processes;
9. Connect to Systems of Environmental Economic Accounts and National Capital Accounts; and
10. Ensure consistency over framework terminology.

Each recommendation is discussed in more detail in the coming pages.

Recommendations for next steps

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1. **Treasury pursue genuine co-design of this new way of measuring Australia's national progress**, both in terms of the underpinning conceptual framework and the suite of indicators designed to measure changes.

2. **Consultation on the framework:** In collaboration with Indigenous knowledge keepers and other subject experts **gain agreement on the sustainable wellbeing framework** proposed here. This will ensure the framework covers all aspects of planetary and human wellbeing. Since the proposed sustainable wellbeing framework has been developed without reference to other work underway we recommend that all strands, such as health and economy, will need to come together and consider the proposed framework and refine as necessary to get to an agreed sustainable wellbeing framework.

3. **Communicate the shift in foundational thinking** that underpins this framework. This is critical if it is to gain broader acceptance. Part of the communication strategy should be to align the rationale with other environmental reforms currently underway, raising awareness of broader changes that are required in how we perceive, interact and relate to the environment.

Recommendations for next steps

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4. **Build a better understanding of the link between how we satisfy human needs impacts on our environmental wellbeing and long-term human wellbeing**. There needs to be a focus on communicating **ecologically responsible ways to satisfy human needs**. There also needs to be a better understanding of the links between pressures and the impacts (short and long term) from human behaviour (individual to collective) to the state of environment across all scales.

   "*Despite the evident merit and opportunities, the conceptual literature that integrates sustainability and wellbeing remains embryonic*" (O'Mahony 2022).

5. **Co-design of the indicators that measure what matters within the agreed framework with Indigenous knowledge keepers.** Such a potentially transformative and progressive paradigm shift towards positioning Australians' wellbeing as the primary goal of fiscal policy can only be achieved through genuine co-design with Aboriginal and Torres Strait Islander peoples. Indigenous understandings of the links between the environment and wellbeing are critical to developing a robust conceptual framework and indicator set. Tokenistic, shallow and uncompensated involvement of First Nations knowledge keepers will fail. The Australian Government must approach Indigenous consultation from the heart, and the first step to doing so requires acknowledgement that Australia is the direct product of invasion of Indigenous peoples' lands and waterways by a foreign power; the assertion of foreign sovereignty in Australia has involved many atrocities, including separation of the generations through forced child removal, violent dispossession, and suppression of Indigenous people's languages and agency. The Traditional Owners and ongoing Indigenous custodians of Australia that have survived these centuries of atrocities are now being increasingly turned to by the Western governance systems for 'Indigenous consultation and engagement,' and their time and effort should be compensated appropriately.

Recommendations for next steps

Furthermore, indicators that value nature for culture may not fit neatly into pre-established ideas of what the categories or characteristics of a useful indicator must be. *"Academics and governments struggle to describe Aboriginal views of wellbeing, reducing it to a matrix of standard socio-economic indicators and bio-medical measures rather than complex Aboriginal concepts which include issues like kinship, connection to Country and the like…it is critical not to simplify and obscure Indigenous worldviews in order to reduce the complexity of the Aboriginal concept of wellbeing into measurable indicators…The gap in understanding of the Indigenous view of wellbeing is demonstrated in most definitions, especially by governments who compartmentalize elements into separate areas of measurement"* (Kingsley et al., 2013).

6. **Finalisation and consultation on indicator set**: A large number of indicator sets have been identified as relevant to the proposed draft framework, however, this list is not exhaustive as many relevant indicators remain unidentified. Further research (and additional budget) is required to address indicator gaps. Consultation on the full suite of indicators will also be required not only within government but with the community, particularly with the custodians of specific knowledges. This is likely to take some time, potentially several years.

7. **Develop targets as a means to measure progress on the indicators:** An analysis of appropriate targets, with reference to global, national and local agreements and standards, as well as known thresholds and tipping points should be undertaken and consideration given to the adoption of targets as a way to further entrench the framework. This will help ensure decisions are made to improve wellbeing and not cause further damage to our ecosystems.

Recommendations for next steps

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8. **Embed the framework into decision-making processes:** The framework will need to be used as part of decision-making processes if it is to be considered successful. While this framework provides more guidance for decision-makers than the current OECD framework (which provides no guidance for priority over its 11 domains of wellbeing and allows for substitutability between capitals), additional guidance may need to be developed to ensure decision-makers are able to apply the framework. This will require a separate or complementary decision-making guide.

9. **Connect to Systems of Environmental Economic Accounts and National Capital Accounts:** Capturing the wealth of our natural capital becomes a central task when the health of our natural environment is seen as the basis of a wellbeing framework. To ensure consistency of approach with efforts that are already underway, close cooperation and collaboration with NCA/SEEA areas is required, particularly with regards to the indicators that are selected. Better capturing the impacts of our satisfiers (consumption) on the environment and ensuring that we measure what is specific to Australia should be driving factors here.

10. **Consistency over framework terminology:** Improving or ensuring consistency in terminology (e.g., 'framework', 'domain,' 'dimension,' 'category,' and 'indicator') is important here, especially as work continues to develop across a number of areas and jurisdictions. This will help with connecting different scales and types of reporting so that they are more easily comparable.

“Humanity and our economies are embedded in the biosphere. The biosphere’s future evolution will be strongly influenced by our choices. Conversely, future opportunities for human prosperity depend on the future of the biosphere.”

Dasgupta Review

The fundamental and foundational importance of the environment to be recognised

The complexity of the ways that human individual and collective wellbeing, both current and intergenerational, impact and interact with the environmental must be considered. Yet, this must not become a barrier to budgetary resources being allocated to address the time-sensitive, critically important environmental crises that we face in the Anthropocene. As New Zealand's Parliamentary Commissioner for the Environment wrote, "*I have a concern that the complexity of the requirements for wellbeing budgets could end up disadvantaging environmental proposals since the informational requirements are, in practice, often much more demanding than they are for proposals that seek social and economic outcomes in the nearer term. Challenges such as trying to eliminate fossil fuel emissions to the atmosphere, stopping the flow of microplastics into the environment or arresting the decline in native biodiversity all require urgent action because a failure to do so will bring about changes that irreversibly commit current and future generations to a world with greatly reduced options*."

Fundamentally, we need a broader focus on increasing environmental protection across government. In this vein, it is acknowledged that the proposed framework has been designed within the prism of wellbeing; a wellbeing approach may not provide for all the protection that the environment needs. Additional and related work is required across a number of areas, including reforms to the State of Environment reports and the Environmental Protection and Biodiversity Act. Taking a holistic, systems approach here - where the health and wealth of the environment is recognised as the underpinning (a sustainable wellbeing approach) is the necessary first step.

Final word

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To ‘measure what matters for wellbeing and productivity’ to inform wellbeing budgets there needs to be a change in frame that recognises that a healthy and flourishing environment is the basis for our life. The environment is more than raw materials for our economy, it is where we live, play, build relationships, learn and discover. Our wellbeing can not be good if the environment is not well.

A sustainable wellbeing lens provides the framework for us to holistically measure what matters for human wellbeing. Without this lens where human wellbeing is dependent on a flourishing environment, the health of the environment will continue to be left behind with dire long term consequences for the future of humanity and all the call our planet home.

We have provided a draft sustainable wellbeing framework as the beginning of a process of co-design where Indigenous knowledge keepers and other subject experts including deep ecology experts can agree on a framework. This framework would then have embedded in it Indigenous perspectives of wellbeing that includes caring for place and all things in that place. From this process, indicators that can together measure sustainable wellbeing can be developed that will inform wellbeing budgets into the future. This can, in time, produce flourishing human wellbeing and planetary wellbeing if it is embedded in decision making. Using this sustainable wellbeing framing for decision making will make Australia a world-leader in positioning wellbeing as the primary goal of fiscal policy.

Glossary of key terms

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- **Conceptual framework:** "a concise summary in words or pictures of relationships between people and nature, which depicts key social and ecological components, and the relationships between these components. They provide common terminology and structure for the variables that are the focus of a system analysis, and propose assumptions about key relationships in the system. Conceptual frameworks have the ability to provide a shared language and a common set of relationships and definitions to make complex systems as simple as they need to be for their intended purpose. Integrative conceptual frameworks are particularly useful tools in fields requiring interdisciplinary collaboration where they are used to make sense of complexity by clarifying and focusing thinking about relationships, supporting communication across disciplines and knowledge systems and between knowledge and policy" (Diaz et al., 2015).

- **Environmental indicators** express changes in a particular environmental variable in terms of various physical, chemical or biological units. Measuring changes in environmental quality (e.g. concentrations of ambient air pollution) using biophysical units provides important information for establishing the link between changes in the physical state of the environment and human wellbeing.

- **Dashboard approach:** A series of indicators that collectively measure progress. The OECD Better Life Index and New Zealand's Living Standards Framework are two high-profile examples of a dashboard approach to measuring 'national progress' and/or wellbeing.

- **Headline indicator/statistic**: sometimes referred to as a 'composite indicator,' a single 'score' based on a set of multiple individual indicators that have, for example, been combined through spatial or conceptual aggregation. "Spatial aggregation refers to the situation where values for the same indicator (or set of indicators) are aggregated over a number of ecosystems or sub-areas to derive at a single value per indicator for a particular region; conceptual aggregation refers to the situation whereby either key-environmental indicators are selected that are considered to be indicative of the condition and trends of an ecosystem as a whole or whereby a (hierarchical) index is computed [e.g., through weighted averaging or by using baselines and z-score techniques] from a number of conceptually related indicators…though it should be kept in mind that any form of aggregation can lead to biases…Aggregate figures do not reveal the underlying relations and results therefore need to be severely scrutinized, especially as aggregate figures of an index will come to dominate the policy arena much faster then the individual figures of their underlying indicators. As such aggregate figure can easily be abused to tell the wrong story" (Niemeijer, 2002). "Headline summaries are important for communicating statistical information. This has contributed heavily to GDP's influence; GDP provides a single estimate summarising recently mobilised resources for consumption, complemented by a rich data set underlying the statistic. A similar headline summary would be useful for natural capital accounts" (White House, 2022).

- **Wellbeing:** Defining 'wellbeing' is a challenge because it is intangible, and there is no one wellbeing – only *wellbeings* – and they are distributed through time (Upton, 2022). Wellbeing may be considered, as in the New Zealand Wellbeing Budget, to have three basic and interacting dimensions: a material dimension (what people have), a relational dimension (how people are able to use what they have), and a subjective dimension (the level of satisfaction that people have – that is, the quality of life people derive from the material and relational dimensions of their wellbeing). However, it is important to note that to think of wellbeing in this sense is fundamentally anthropocentric. It is concerned with *human* wellbeing, and insofar as the environment is relevant to wellbeing, it is as a means to human ends. It may refer to the wellbeing of people currently alive, intergenerational wellbeing of generations not yet born, or planetary wellbeing which goes beyond the narrow focus on human material, relational, and subjective fulfilment (Upton, 2021).

- **The environment** is sometimes described as a stock of 'natural capital', which refers to land, soil, water, flora and fauna, as well as the broader ecosystems they are part of. However, the environment is more than a stock that produces a flow of ecosystem services. Many aspects of the environment are not substitutable with other capital stocks (nor with each other). [Simon Upton also emphasises the importance of distinguishing between the natural environment and the built environment].

- **Natural capital:** That the direct contribution the environment makes to wellbeing [e.g., the ecosystem service of wetlands purifying water] is not delivered through the market does not make it any less valuable or important to current wellbeing. Nevertheless, estimating the monetary value of such services can provide a broad sense of the scale of what is at stake and its relative importance, given the competing uses that exist for some environmental services. Without a developed concept of natural capital, a policy-relevant set of indicators would only be assembled by chance. While individual indicators are illuminating, a developed concept of natural capital is a precondition for ensuring that advice to decision makers is cognisant of both what is known and what is not known concerning the state of the environment, proximity to tipping points, historical trends, and likely future states.

- **Intergenerational equity**: where resources are allocated across generations so that the wellbeing of each is **equal** (requires consideration of quantity of capital stocks that will be left - same, larger or smaller).

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