



Reinventing Paradise

*Helping Zealandia
recover its
biosphere health*

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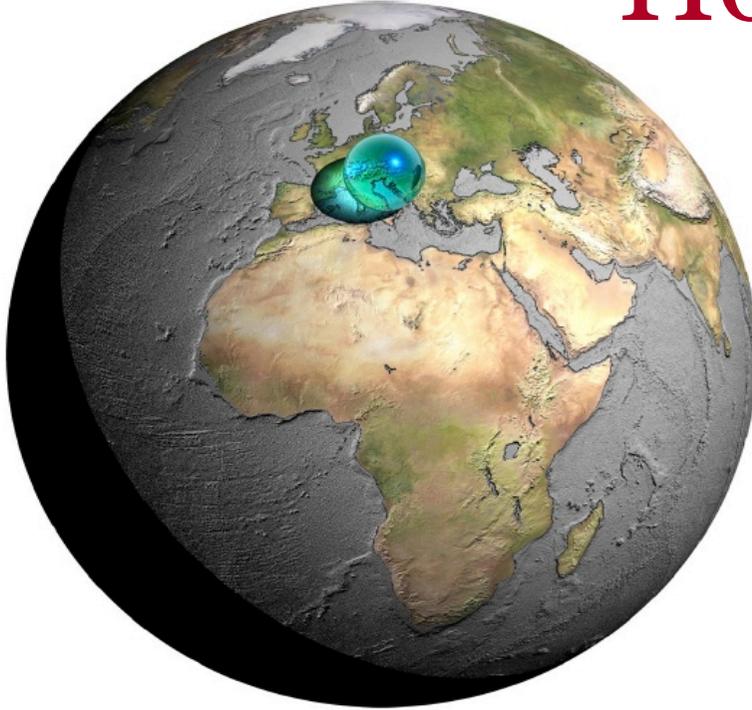
Rod Oram's presentation to the
Cawthron Marlborough Environment Awards
Blenheim, March 22nd, 2019

Home





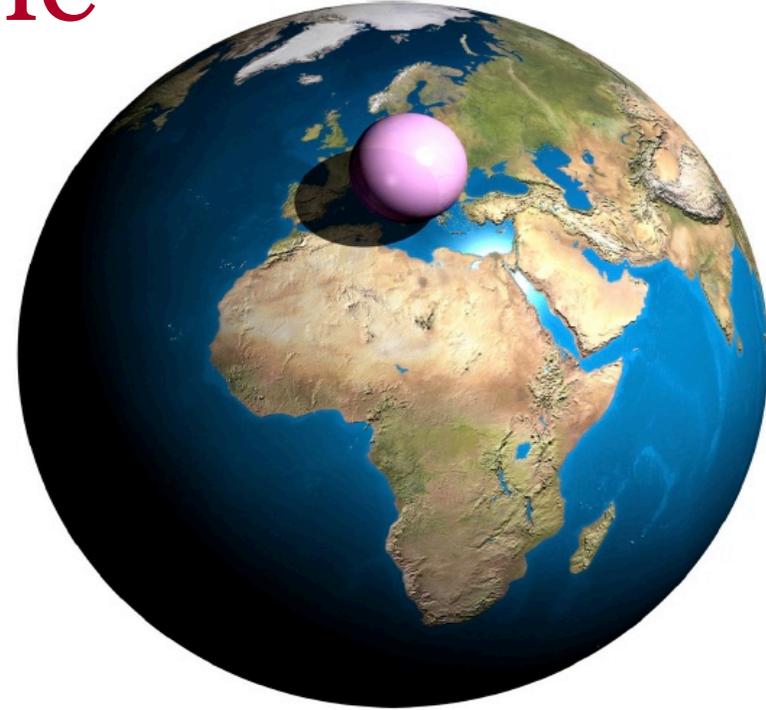
Home



- All water

1,390 km across

(All fresh surface water: 62 km)



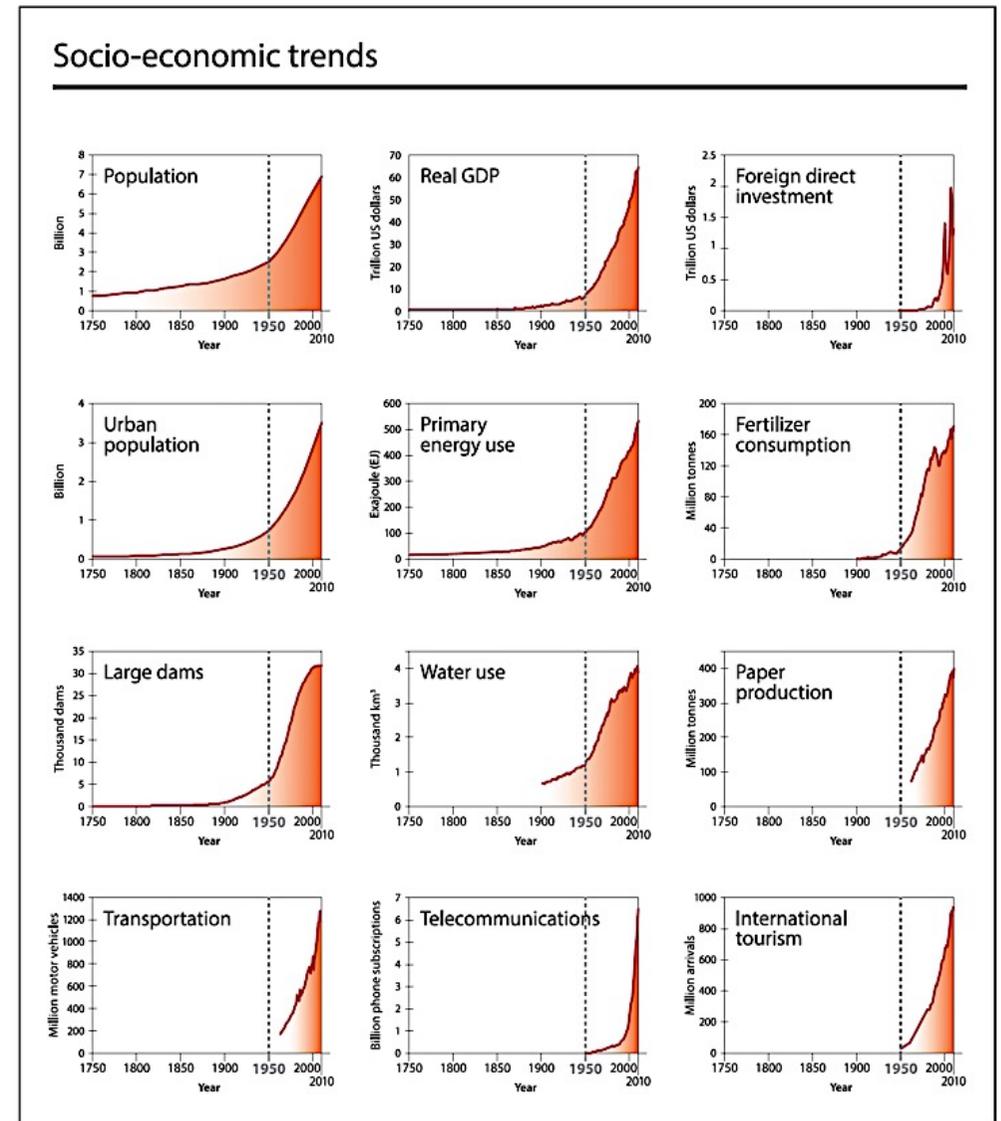
- All air

1,999 km across

- *Source: Dr Adam Nieman*

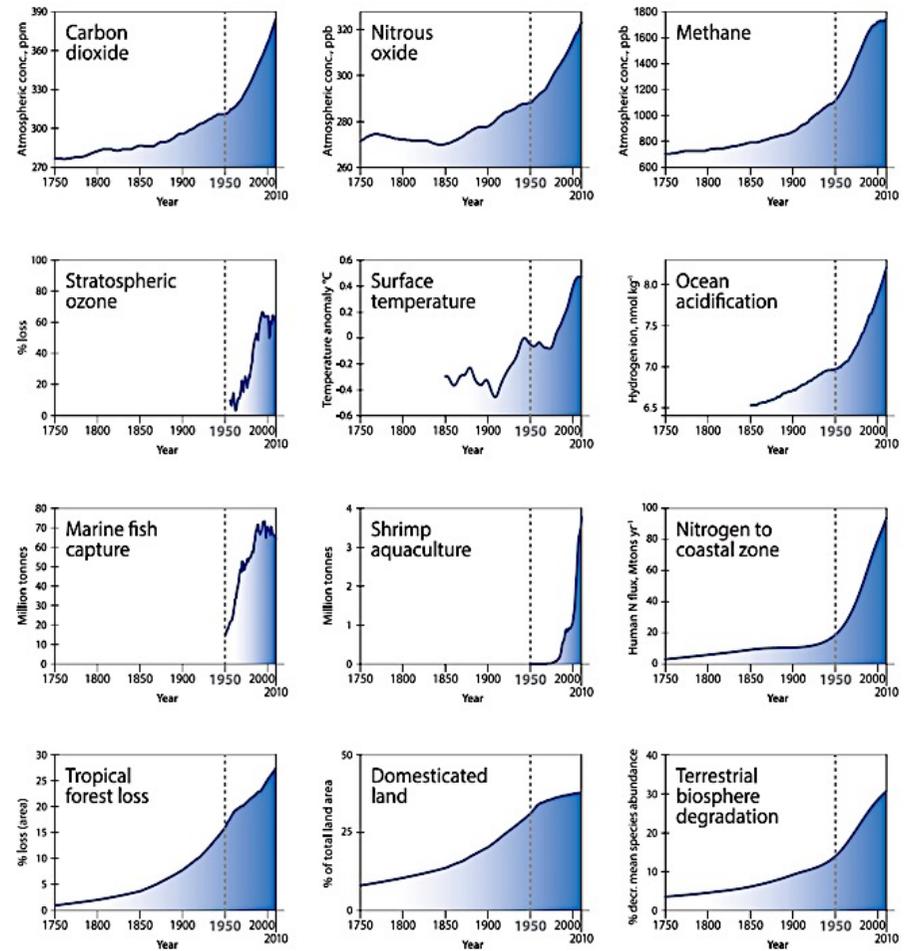
1950 – the critical turning point when our resource use took off

- Charts from:
Steffen W, Sanderson A, Tyson PD et al.
(2004) *Global Change and the Earth System: A Planet Under Pressure*. The IGBP Book Series. Berlin, Heidelberg, New York: Springer-Verlag
- Updated 2015 in
<http://journals.sagepub.com/doi/abs/10.1177/2053019614564785?journalCode=anra>
- And used by one of the authors, Johan Rockström, in *Big World, Small Planet*, Yale University Press, 2015

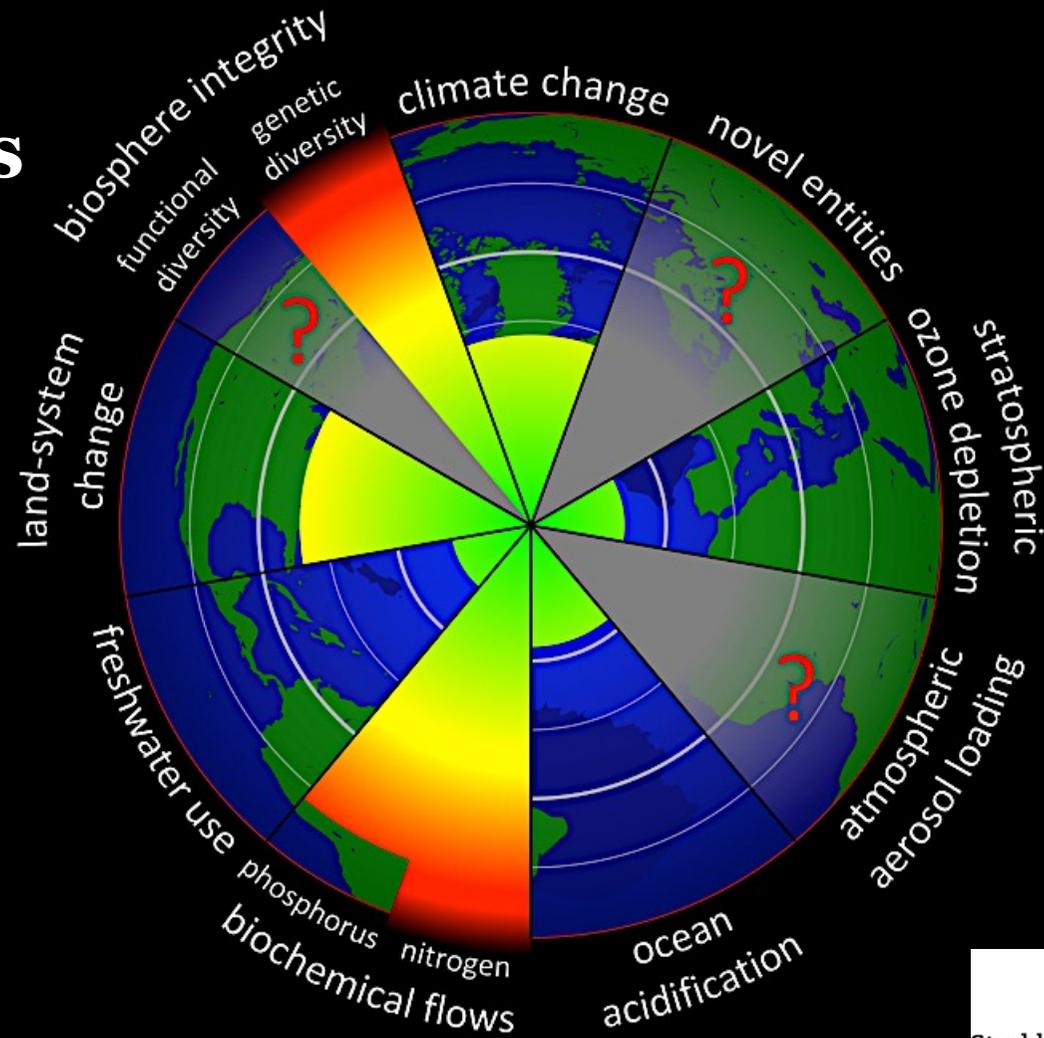


...with planetary impact

Earth system trends



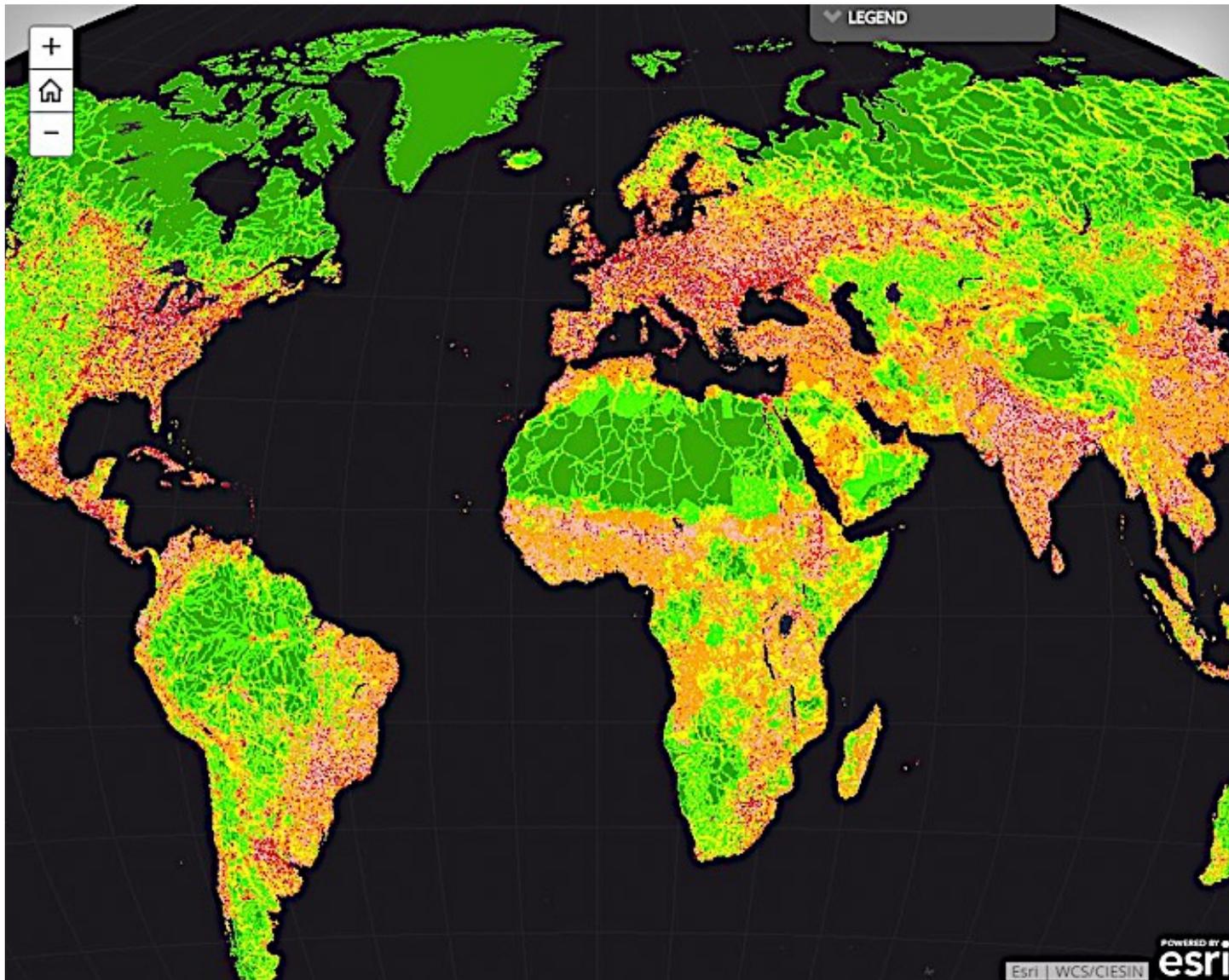
Planetary boundaries



Stockholm Resilience Centre
Sustainability Science for Biosphere Stewardship



Stockholm University



A story map



We are Living in The Age of Humans

75%

of Earth's land surface outside of ice sheets is managed by humans.

The map at left, developed by the Wildlife Conservation Society, reflects patterns of roads, urban concentrations, agriculture and other factors to show the extent of human modification of the landscape. Green represents minimal human impact; orange, red and purple reflect a high degree of human activity.

CLICK on the locations below to see examples of highly managed landscapes:

The Netherlands is home to this geometric array of fields and villages called the *Zuiderzeewerken*, an expanse of reclaimed land created by diking and draining portions of the *Zuiderzee*, a shallow inlet of the North Sea.

British Columbia, Canada has been transformed by intensive clear-cut logging. Vast woodland tracts in western Canada and the United States have become

The 6th Great Extinction

- but the first caused by humans



https://en.wikipedia.org/wiki/The_Sixth_Extinction:_An_Unnatural_History

Rockström in NZ - at New Frontiers, April 2018 - session 1



- https://www.youtube.com/watch?v=qLV4wjdac8A&list=PLxTt2Nm5dTv3awnK1ren4BtHNctW_v7zY&index=1

Rockström in NZ - at New Frontiers, April 2018 –session 2



- https://www.youtube.com/watch?v=sA4SnQ6cPR8&index=13&t=0s&list=PLxTt2Nm5dTv3awnK1ren4BtHNctW_v7zY

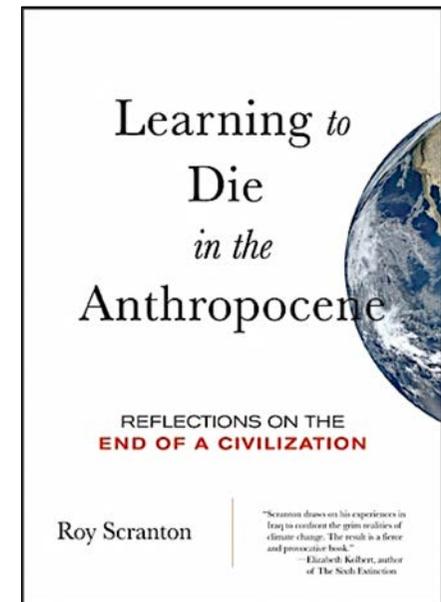


Civilisation

- “The greatest challenge we face is a philosophical one:
 - understanding that this civilisation is already dead.

The sooner we confront our situation and realize that there is nothing we can do to save ourselves,

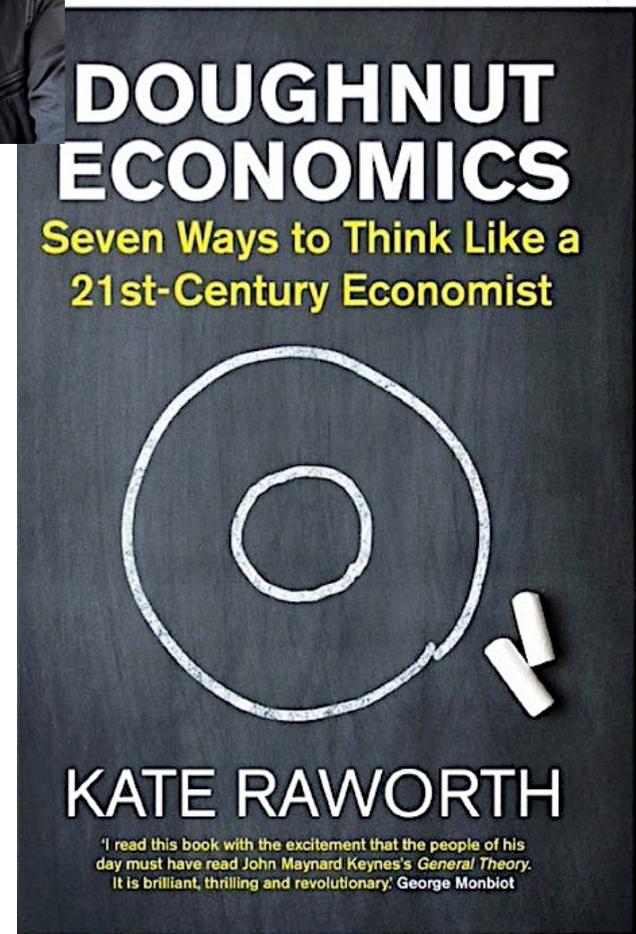
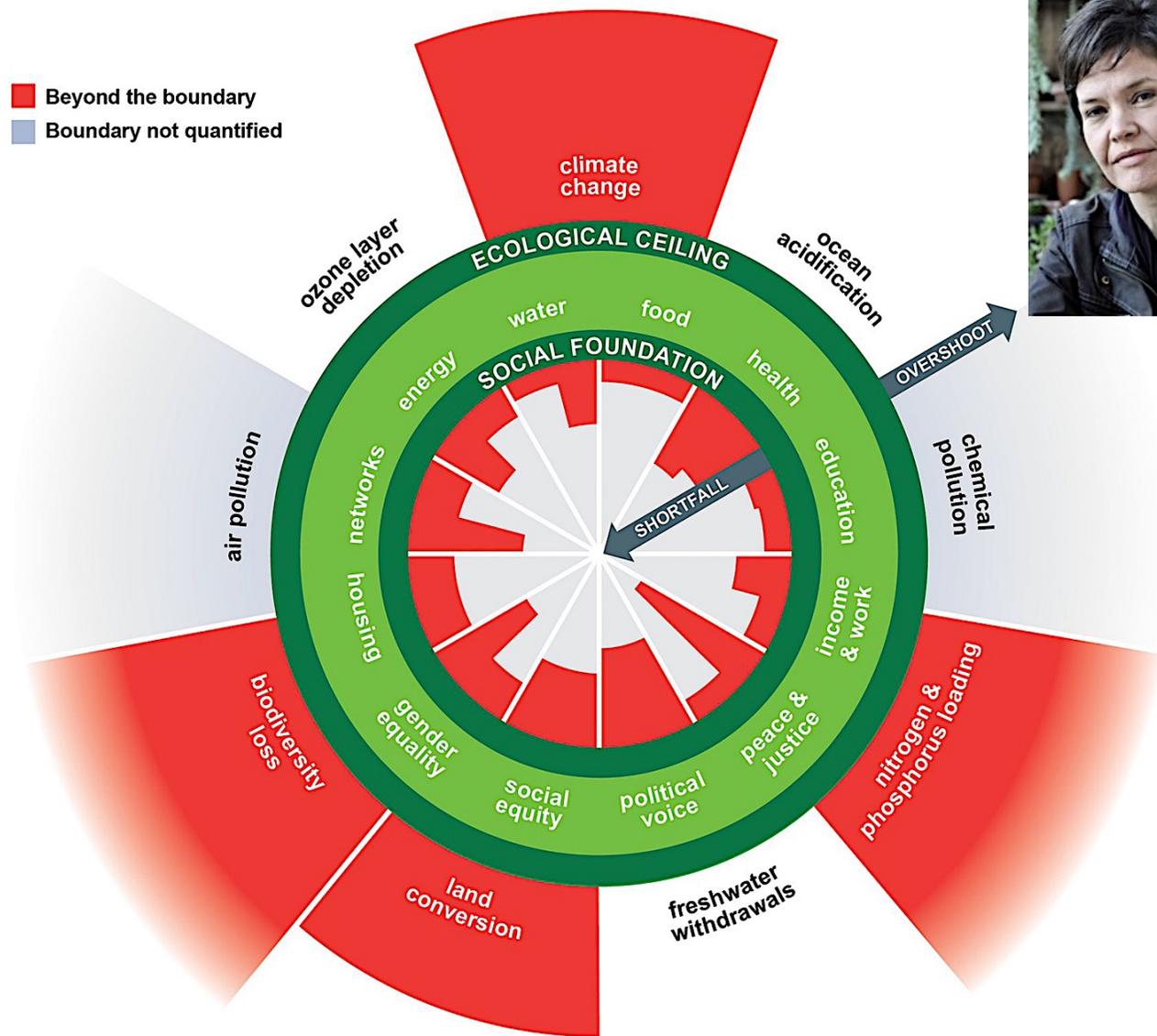
the sooner we can get down to the difficult task of adapting, with mortal humility, to the new reality”



Some goals to guide our new civilisation

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION 	7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 			12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE AND JUSTICE STRONG INSTITUTIONS 			17 PARTNERSHIPS FOR THE GOALS

THE GLOBAL GOALS
For Sustainable Development



Raworth rewrites the OECD's charter

The Aims of the OECD shall be to promote policies designed to...

1960

...achieve the highest sustainable rate of growth and employment and a rising standard of living in member countries.



2020

...create regenerative and distributive economies that enable humanity to thrive, whether or not they grow.



Circular economy

- Unmake everything we make
- Reuse all natural and human-made resources
- Maximize resources, minimise pollution
- Working with nature ...not against it

OUTLINE OF A CIRCULAR ECONOMY

PRINCIPLE

1

Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows
ReSOLVE levers: regenerate, virtualise, exchange



Regenerate Substitute materials Virtualise Restore

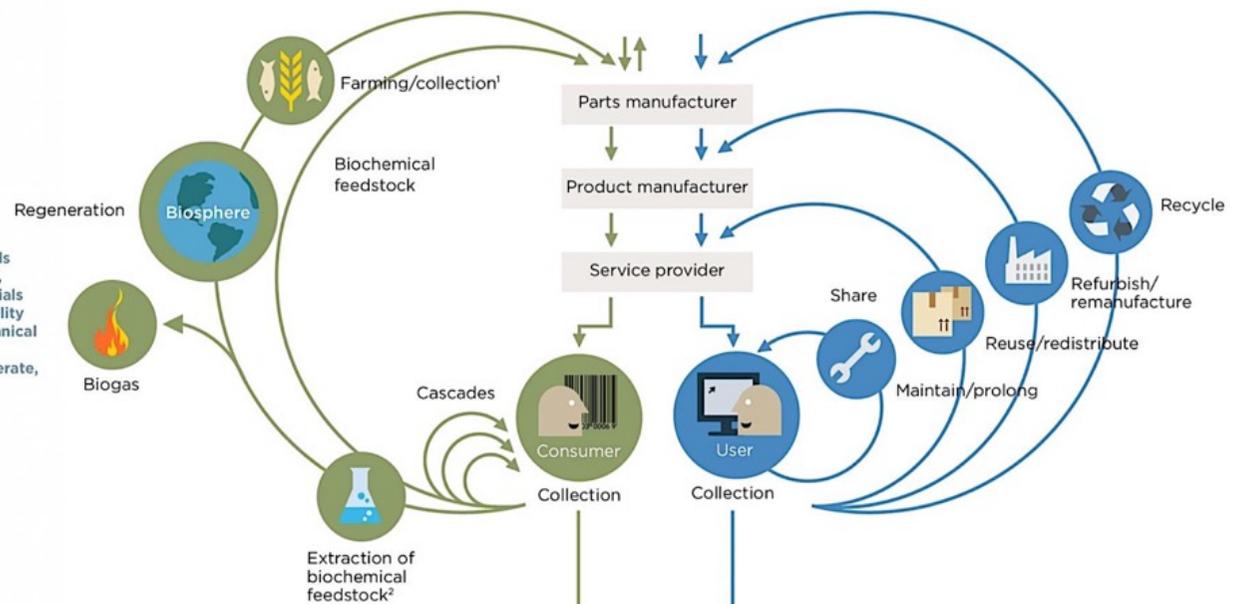
Renewables flow management

Stock management

PRINCIPLE

2

Optimise resource yields by circulating products, components and materials in use at the highest utility at all times in both technical and biological cycles
ReSOLVE levers: regenerate, share, optimise, loop



PRINCIPLE

3

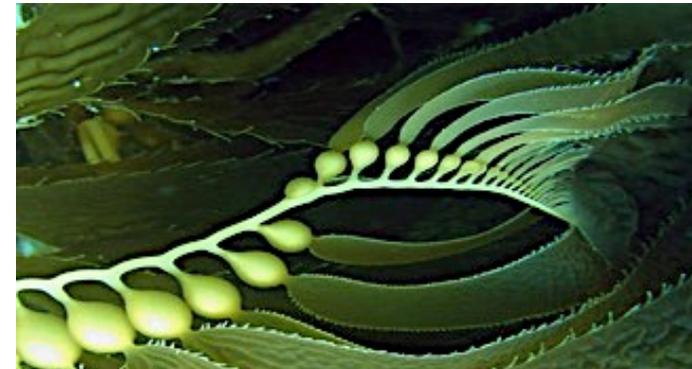
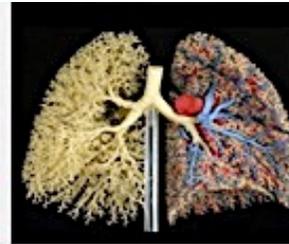
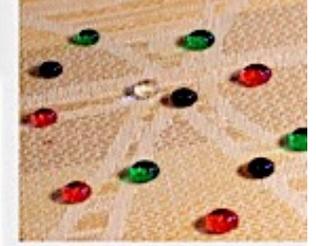
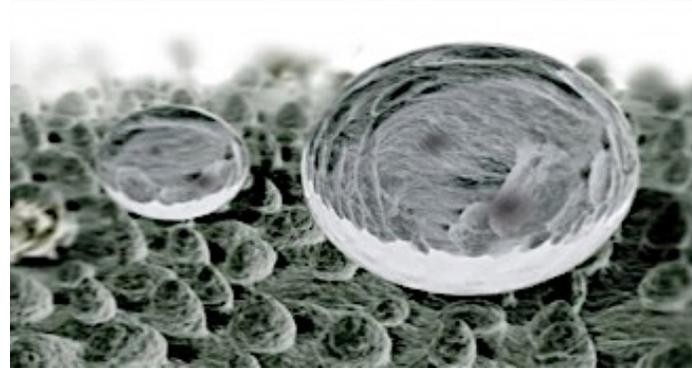
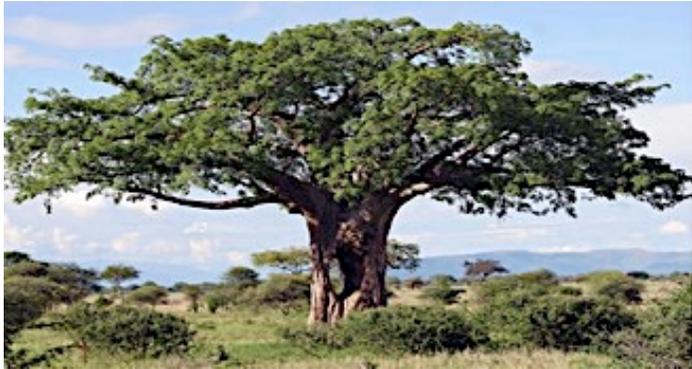
Foster system effectiveness by revealing and designing out negative externalities
All ReSOLVE levers

Minimise systematic leakage and negative externalities

1. Hunting and fishing
2. Can take both post-harvest and post-consumer waste as an input
Source: Ellen MacArthur Foundation, SUN, and McKinsey Center for Business and Environment; Drawing from Braungart & McDonough, Cradle to Cradle (C2C).

Biomimicry

- Learning, borrowing, adapting from nature
- ...massive transformation of technology



Incremental change = reduced damage

But zero damage = ecosystems still depleted

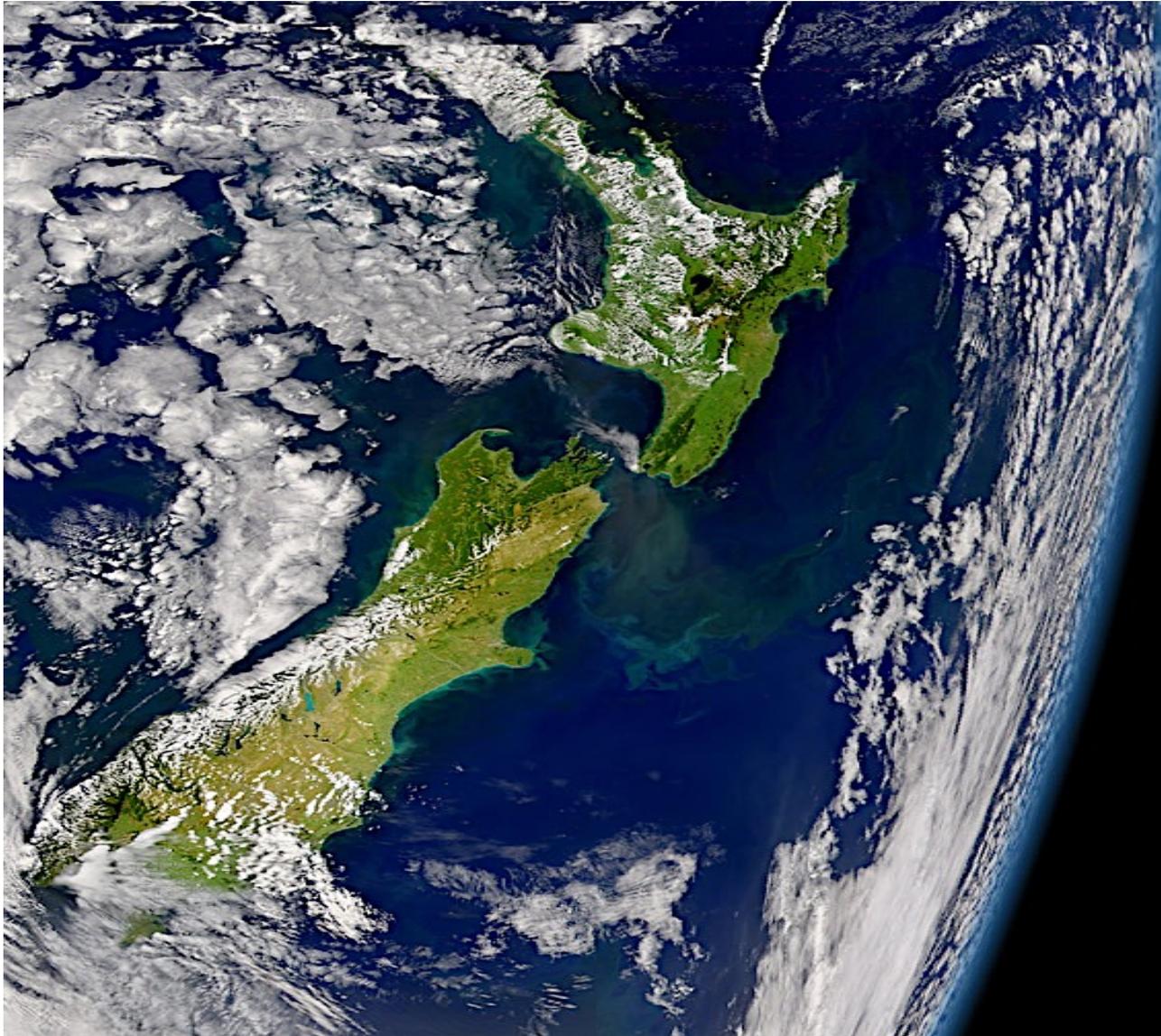
Radical reinvention = e.g. regenerative agriculture

Healthy ecosystems =

healthy planet

healthy food

healthy people

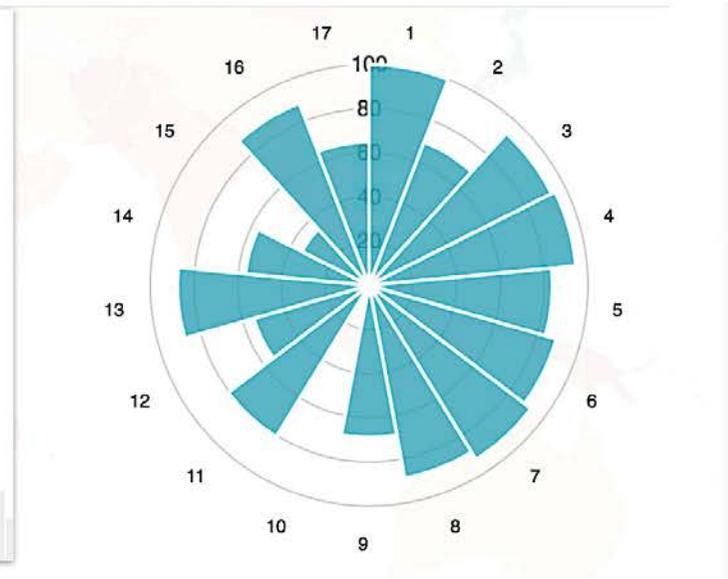


Aotearoa...
and our oceans
= Zealandia



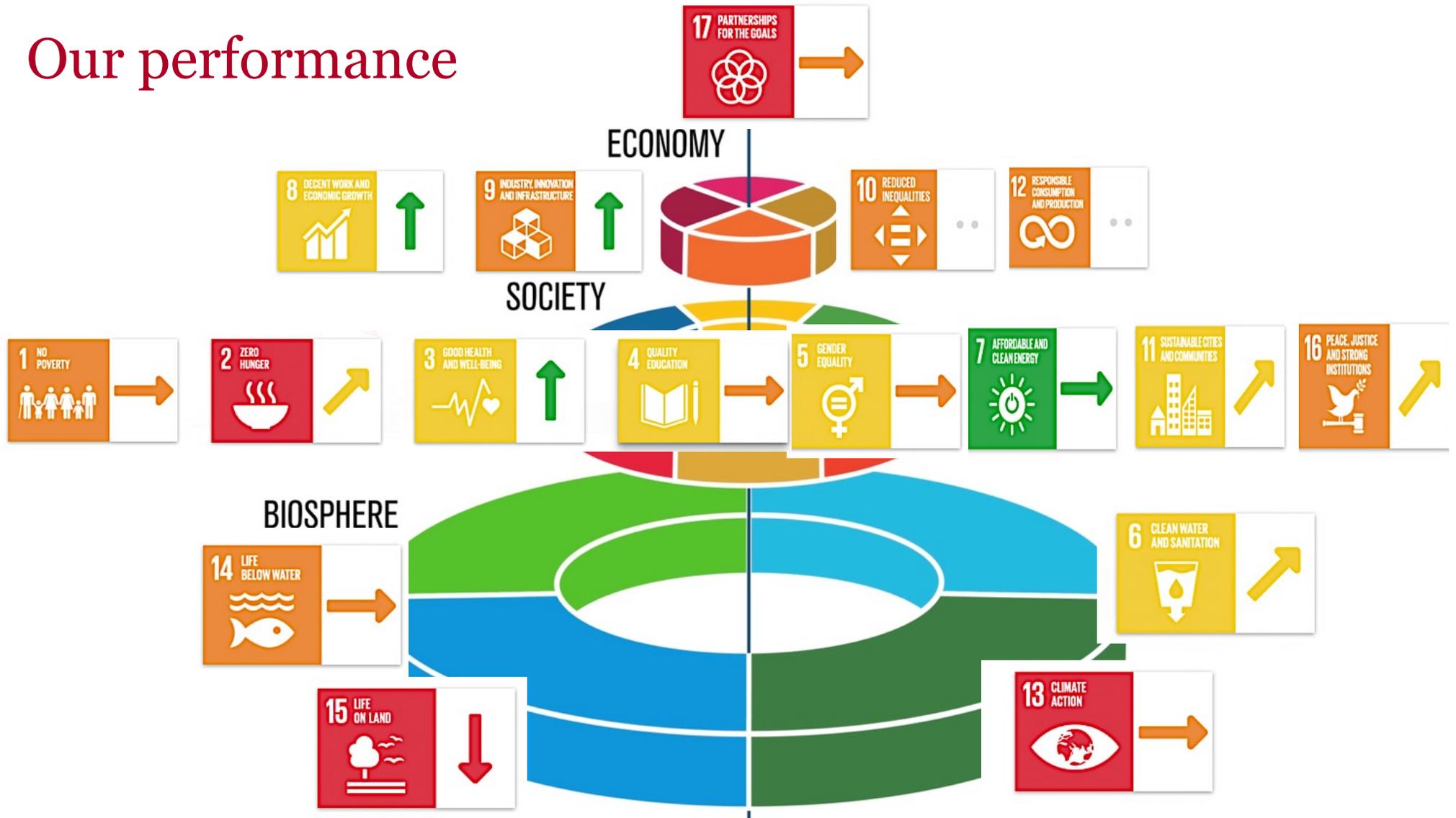
Our score

 **New Zealand**
OECD members



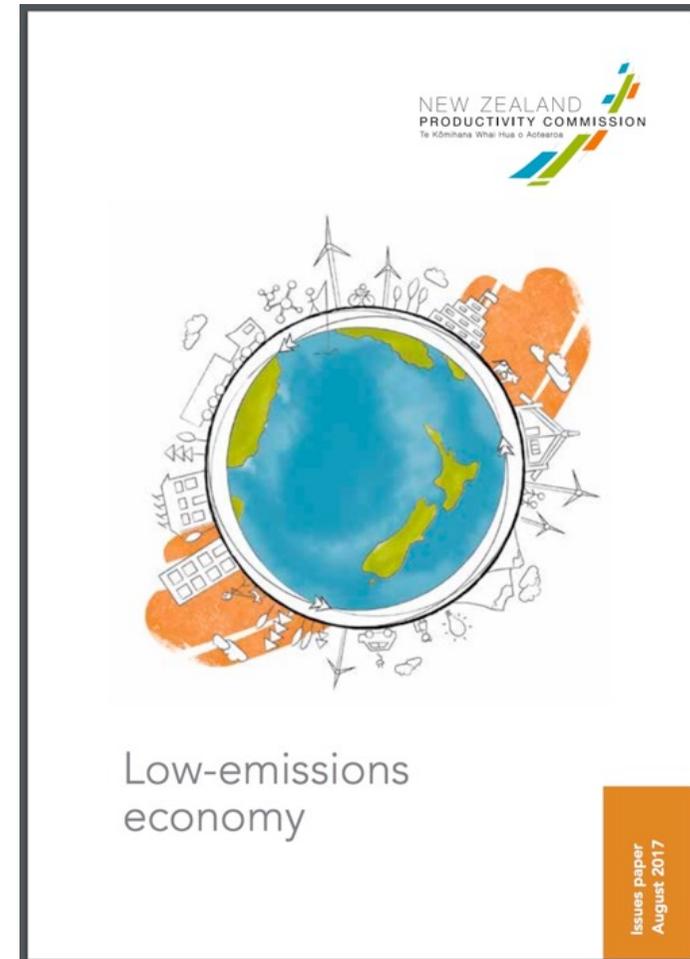
- <https://dashboards.sdindex.org/#/NZL>

Our performance



“...the shift...will be profound and widespread”

- “...the shift from the old economy to a new, low-emissions economy will be profound and widespread, transforming land use, the energy system, production methods and technology, regulatory frameworks and institutions, and business and political culture.”
- New Zealand Productivity Commission
Low carbon economy, August 2017



We're all in this together

Half of New Zealand's **greenhouse gas emissions** come from agriculture. This is the highest share in the OECD.



GHG emissions by sector, 2014, excluding emissions/removals from land use, land-use change and forestry. Source: *OECD Environment Statistics* (database).
Icons by Chris Pyper, Jason Dilworth, Krisada, Edward Boatman for TheNounProject.com

OECD Environmental Performance Reviews: New Zealand

<http://oe.cd/epr-newzealand>

- Achieving sustainable growth and ecosystem restoration is a huge challenge for all of us across New Zealand (...as everywhere in the world)
- We all need to play our part...and to help each other play our part

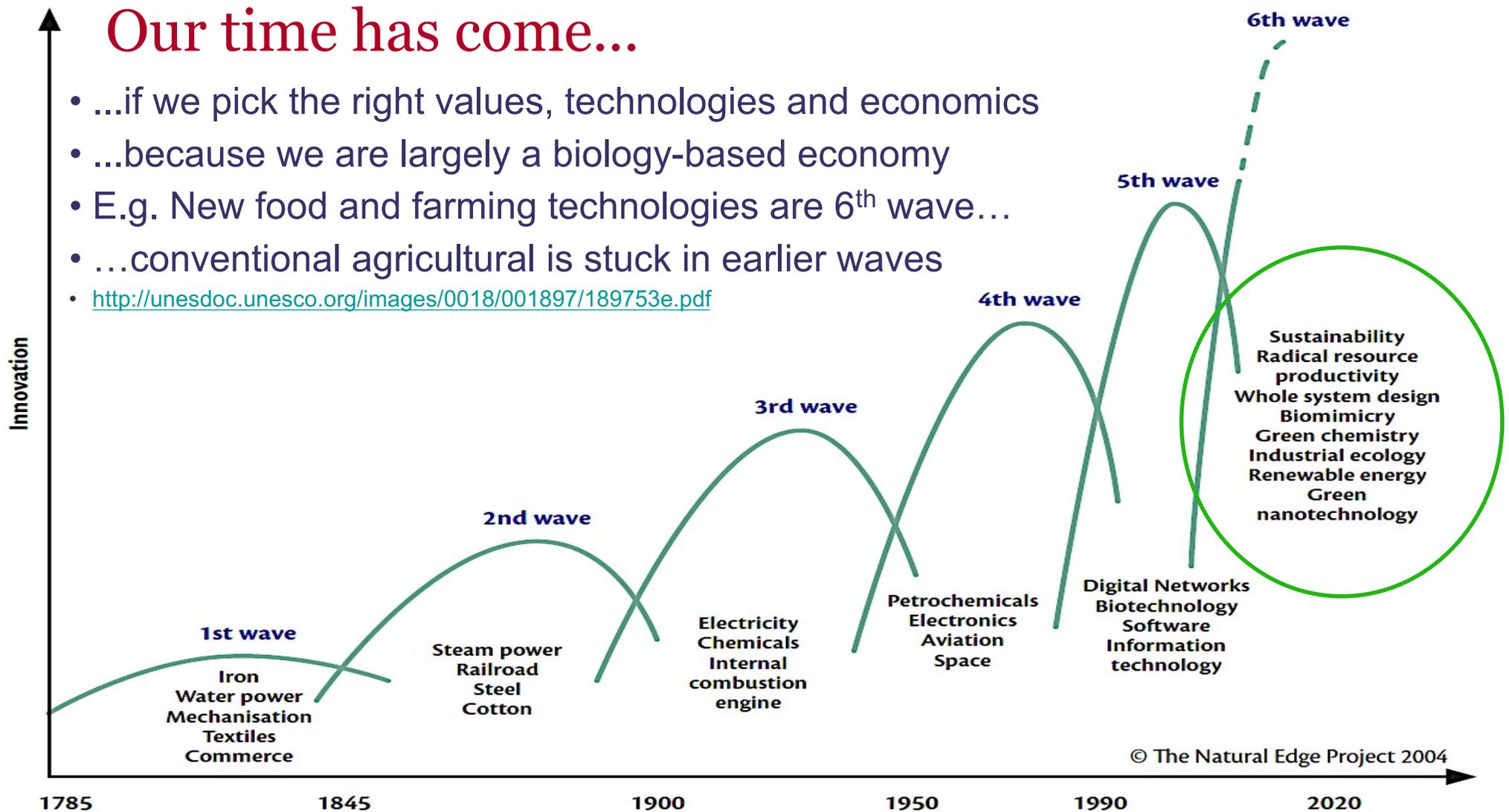
Just one of our urban challenges



Figure 2.4 A global comparison of Auckland's emissions per person (Tonnes of CO₂e per person)

Our time has come...

- ...if we pick the right values, technologies and economics
- ...because we are largely a biology-based economy
- E.g. New food and farming technologies are 6th wave...
- ...conventional agricultural is stuck in earlier waves
- <http://unesdoc.unesco.org/images/0018/001897/189753e.pdf>



The 11 National Science Challenges

A Better Start
E Tipu e Rea

Launched 19 February 2016

Ageing Well
Kia eke kairangi ki te
taikaumātuatanga

Launched 4 March 2015

Building Better Homes, Towns and
Cities

Ko ngā wā kāinga hei
whakamāhorahora

Launched 5 May 2016

Healthier Lives
He Oranga Hauora

Launched 4 December 2015

High-Value Nutrition
Ko Ngā Kai Whai Painga

Launched 1 April 2014

New Zealand's Biological Heritage
Ngā Koiora Tuku Iho

Launched 29 August 2014

Our Land and Water
Toitū te Whenua, Toiora te Wai

Launched 26 January 2016

Resilience to Nature's Challenges
Kia manawaroa - Ngā Ākina o Te Ao
Tūroa

Launched 30 June 2015

Science for Technological
Innovation
Kia kotahi mai - Te Ao Pūtaiao me
Te Ao Hangarau

Launched 16 September 2015

Sustainable Seas
Ko ngā moana whakauka

Launched 4 September 2014

The Deep South
Te Kōmata o Te Tonga

Launched 5 August 2014

Community

- Issues are increasingly global...solutions are increasingly local
- ...to achieve an unprecedented speed, scale and complexity of change
- Solutions require very strong, learning communities...some attributes:
 - Common sense
 - Common purpose
 - Common wealth
- Places where individuals are valued, helped, encouraged...
- ...in return, we all participate, change
- We each can only do our infinitesimally small part...
- ...but if an infinitely largely number of do so, we can change the world

But now there are no more islands to be found
And the eye scans risky horizons of its own
In unsettled weather, and murmurs of the drowned
Haunt their familiar beaches –

Who navigates us towards what unknown
But not improbable provinces. Who reaches
A future down for us from the high shelf
Of spiritual daring?

Allen Curnow *Landfall in Unknown Seas*

