

The biggest adventure of humanity

Linear to regenerative transition

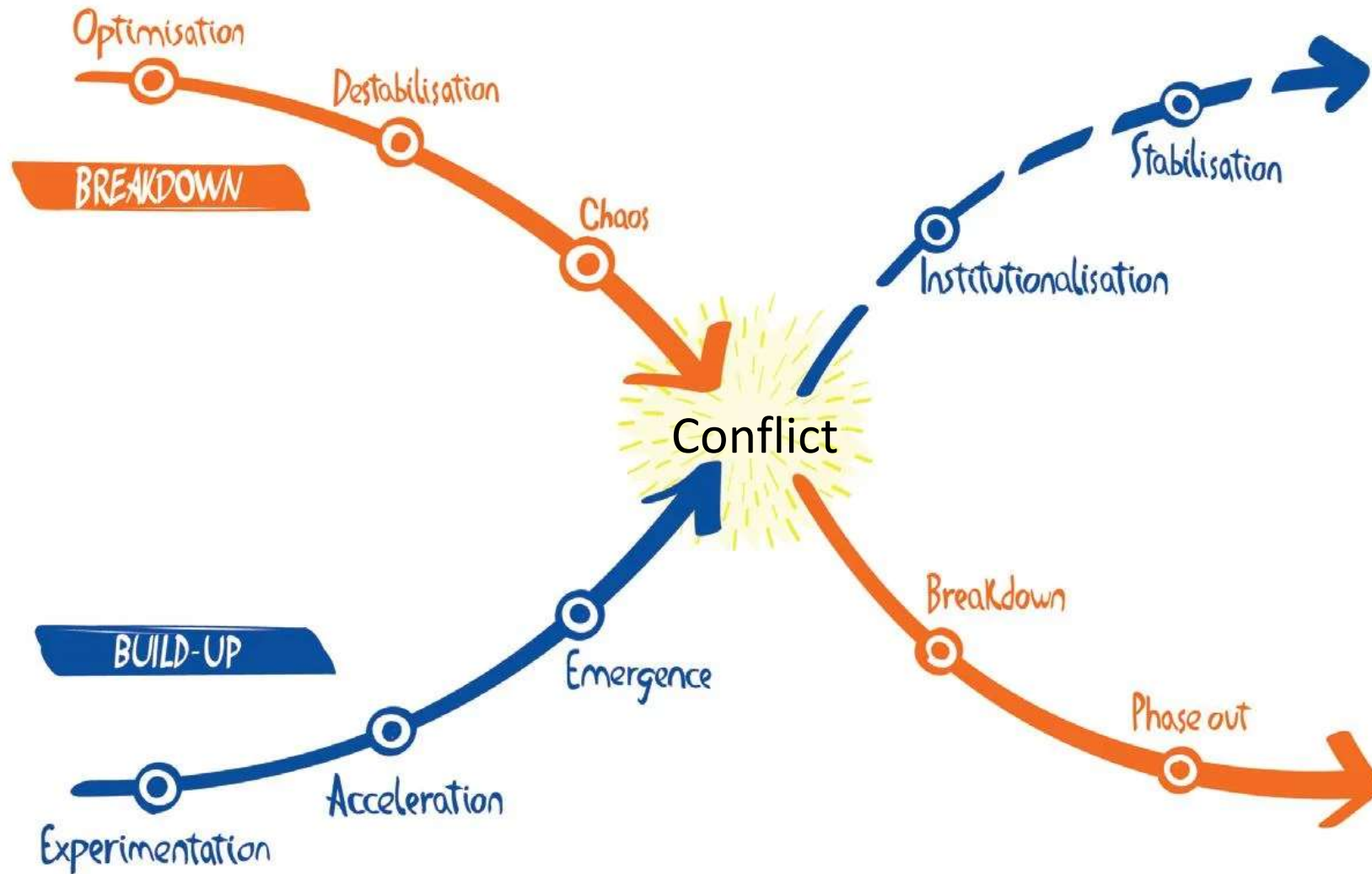
Florian Graichen

38th Australasian Polymer Symposium (APS)

Auckland - February 19th 2024

Why do I care?

Systemic Change is disruptive – The X-curve





We don't need a world without plastics – we need a world without waste

Agenda

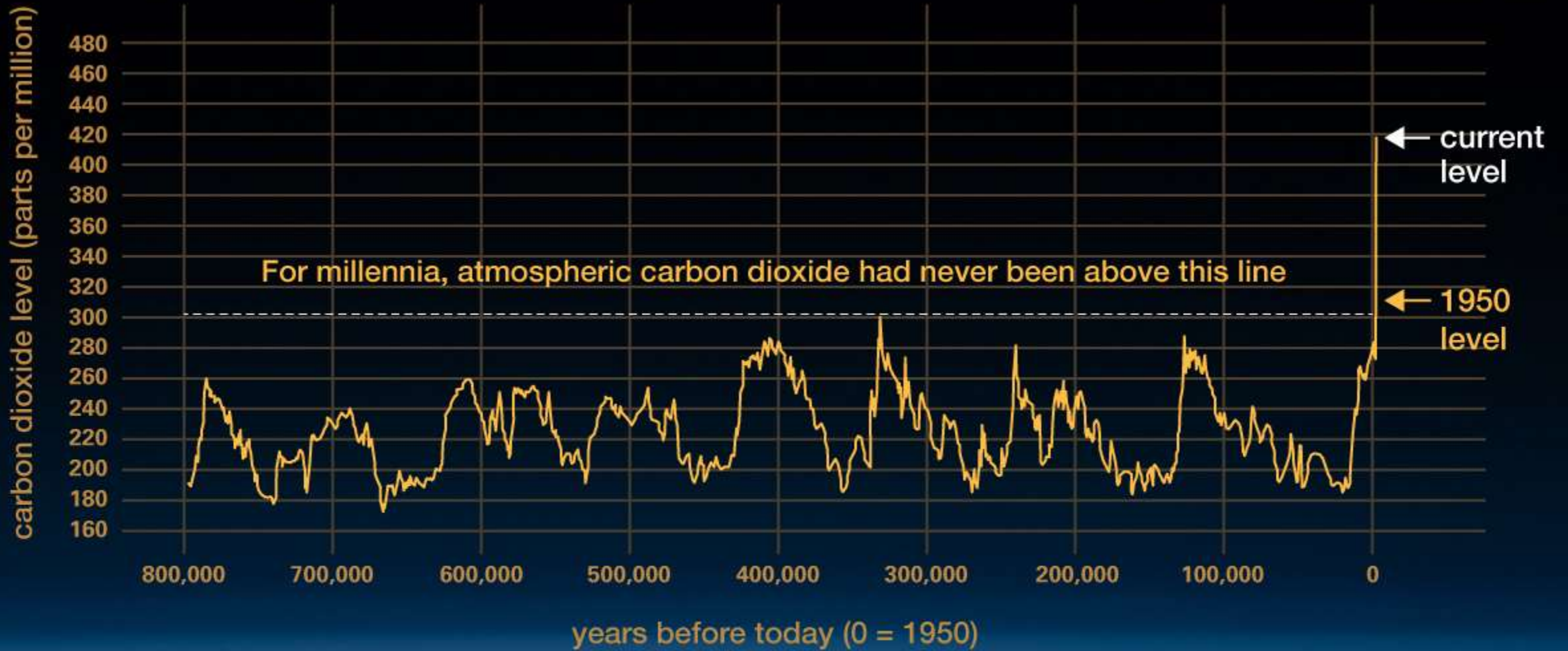
- The burning Platform
- So What?
- Stories of opportunities
- You matter – It matters



*Get in touch! – scan the
QR code to connect*



The burning platform

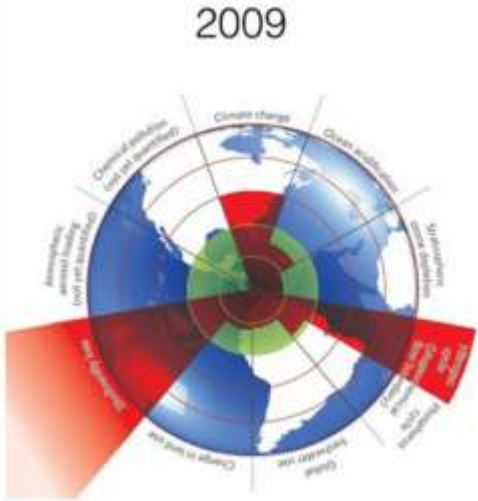


Levels – never seen before

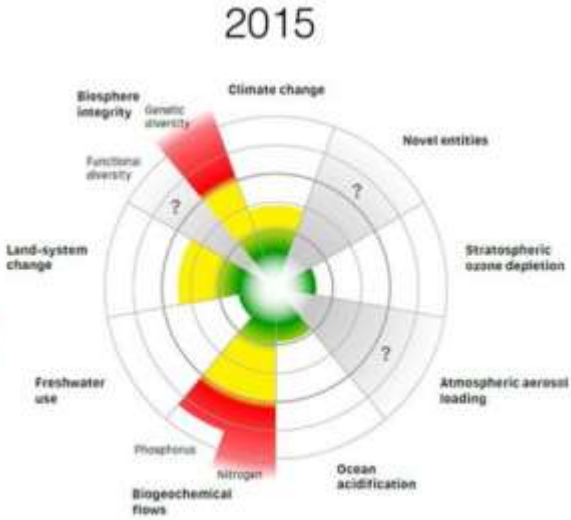
Major Challenges....



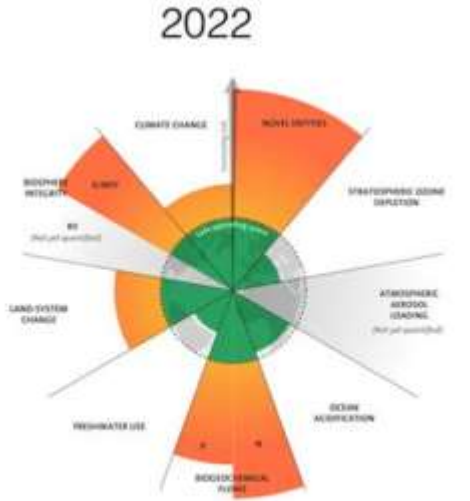
Living Beyond Our Means



3 boundaries crossed



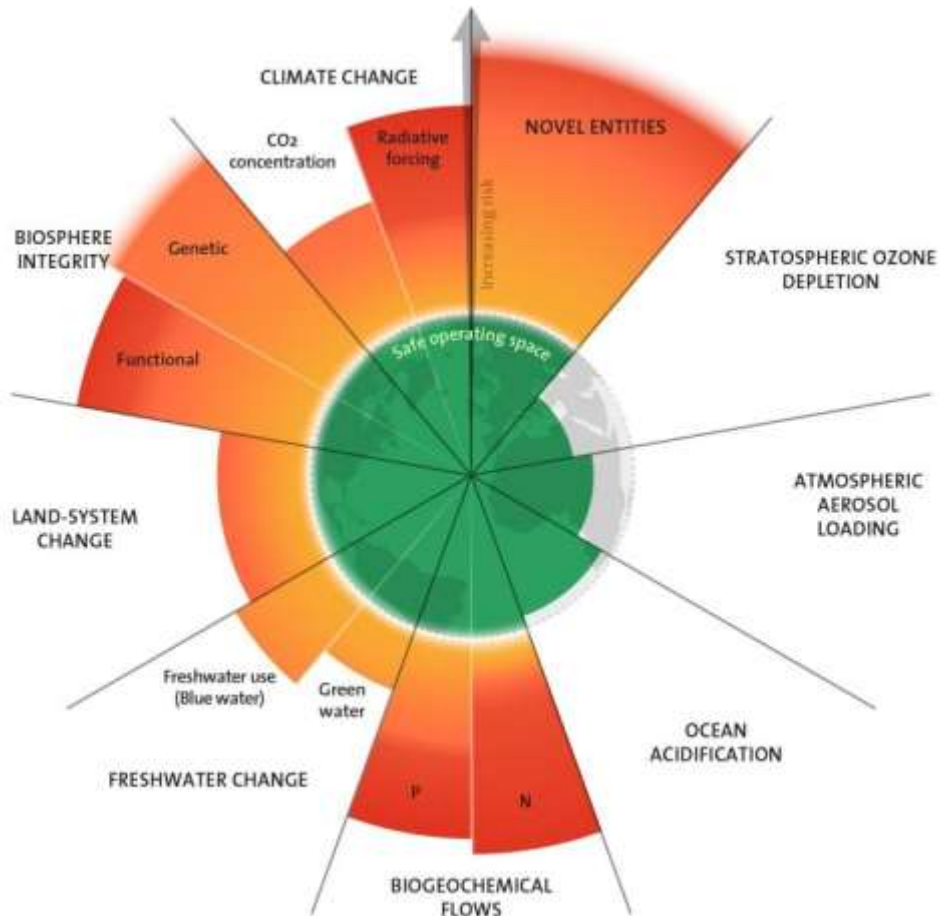
4 boundaries crossed



5 boundaries crossed

Planetary Boundaries

**2024 update -
All planetary
boundaries
are assessed,
and six are
crossed**



It is not getting easier....

WORLD POPULATION	YEAR REACHED
1 Billion	1804
2 Billion	1927
3 Billion	1960
4 Billion	1974
5 Billion	1987
6 Billion	1999
7 Billion	2011
8 Billion	TODAY

Time each billion step took:

0 > 1: 300,000 years

1 > 2: 123 years

2 > 3: 33 years

3 > 4: 14 years

4 > 5: 13 years

5 > 6: 12 years

6 > 7: 12 years

7 > 8: 11 years

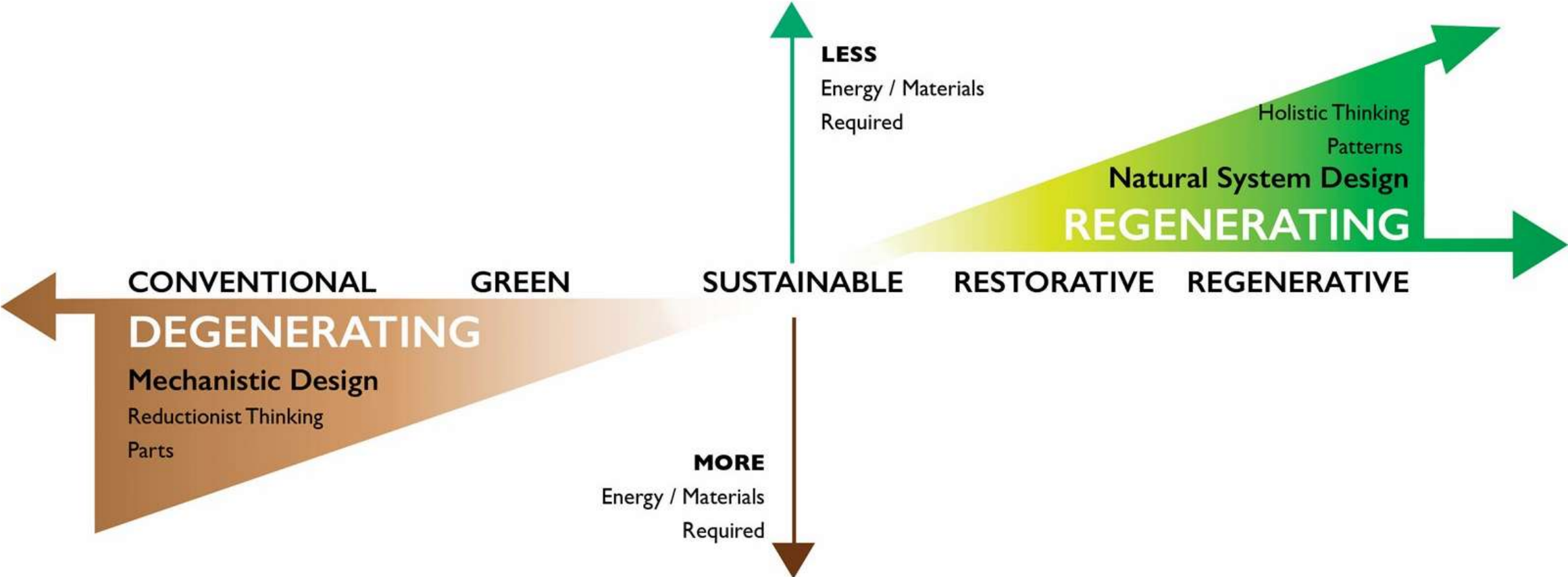
UN predictions:

8 > 9: 15 years

9 > 10: 21 years

So what?

How quickly can we change our economy?



**....and
every
year
thereafter**



Carbon **MUST** stay in the ground

From 2010 to 2050, to meet the target of

2°C

Fossil Carbon has to remain unused

33%



Oil reserves

50%



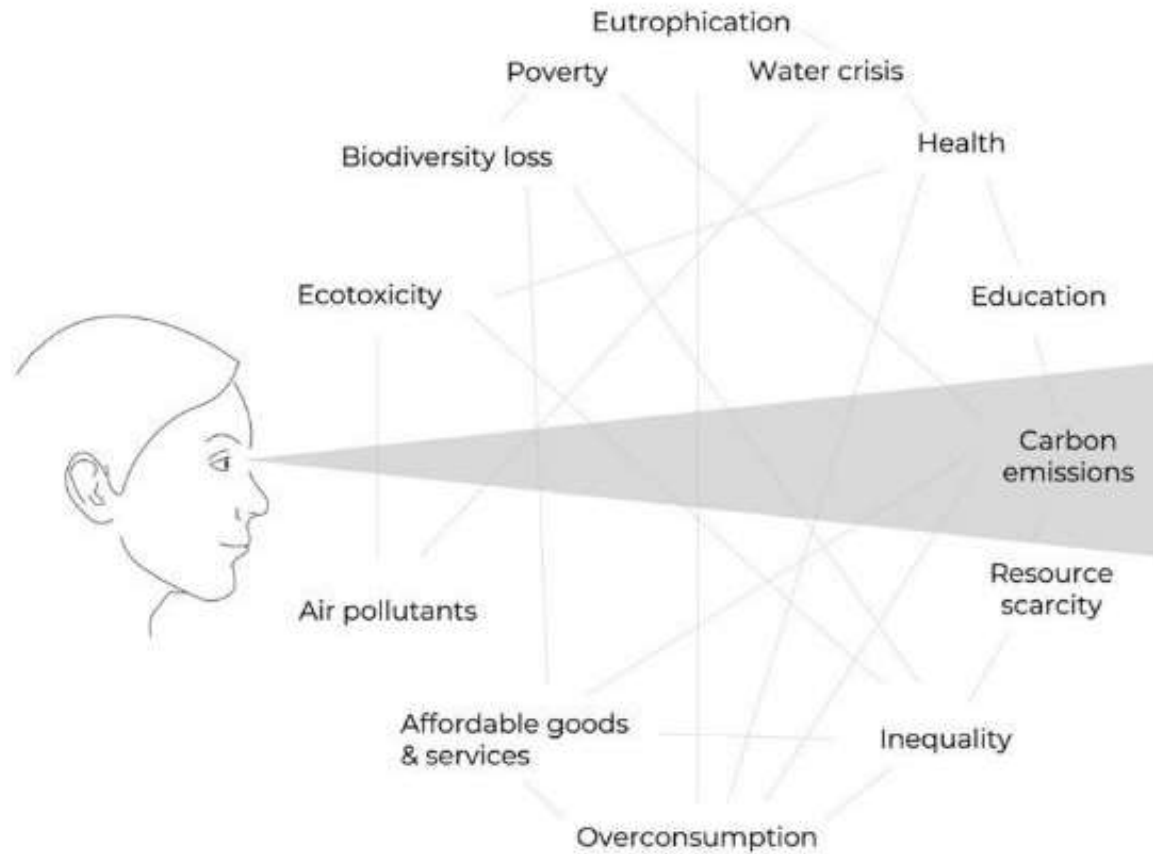
Gas reserves

80%



Coal reserves

Carbon Tunnel Vision



Sustainability transition

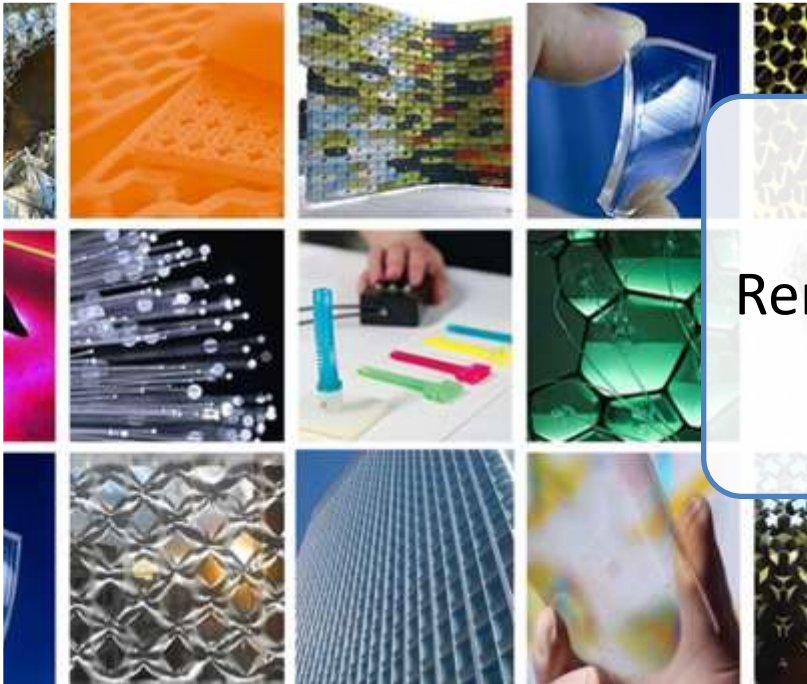
The Consequences

ENERGY



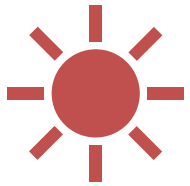
Decarbonization

MATERIALS



Renewable

We need toolboxes of solutions....



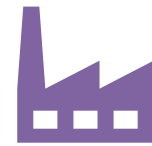
55%

of emissions can be tackled by the transition to renewable energy



45%

of emissions come from the way we make & use products and food, and manage land



Engineering, manufacturing and

polymers

are critical

Three Sources of Renewable Carbon



**Biosphere -
Biomass**



**Atmosphere
– CO₂**

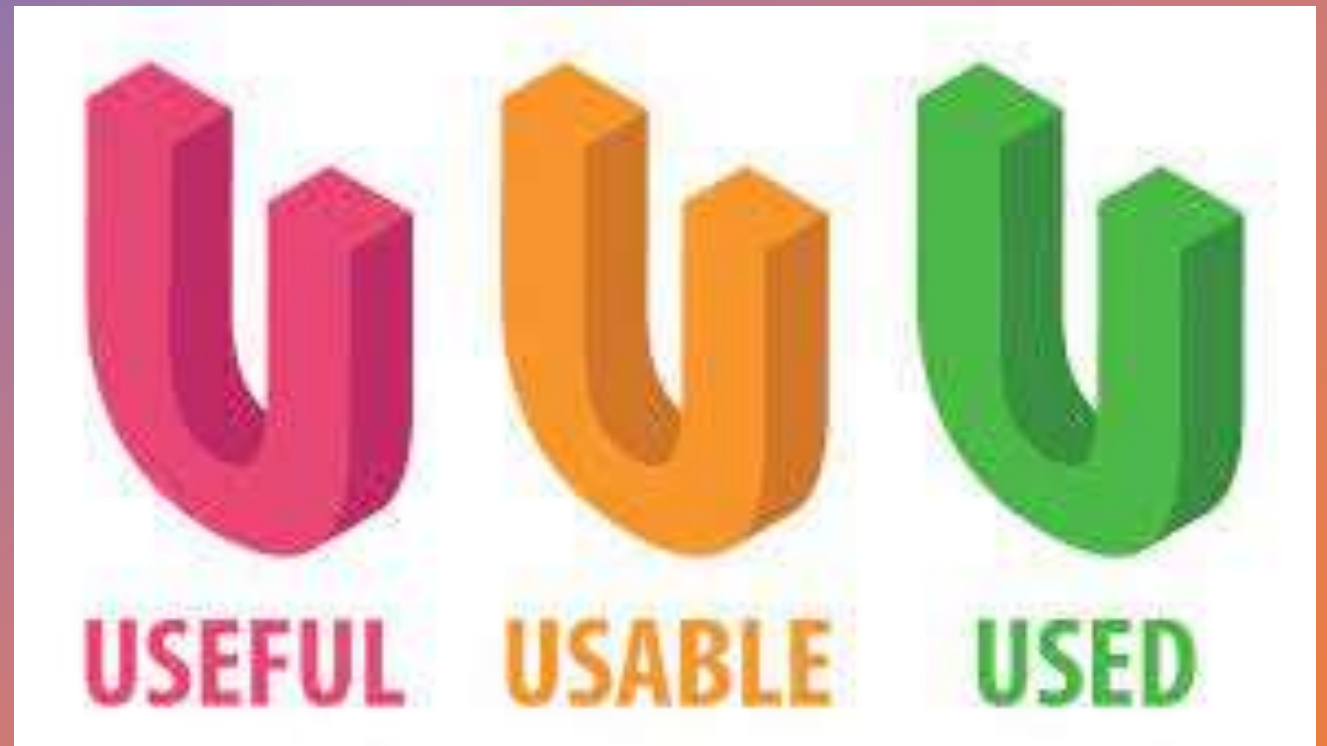


**Technosphere
Recycling**

Stories of Opportunities



Science,
Technology
and Innovation
that is



Polymers for a sustainable future - toolboxes of solutions....



Bioplastics – from feedstock to product



Plentyful.

Manufacturing bioplastics in New Zealand



Humble Bee Bio

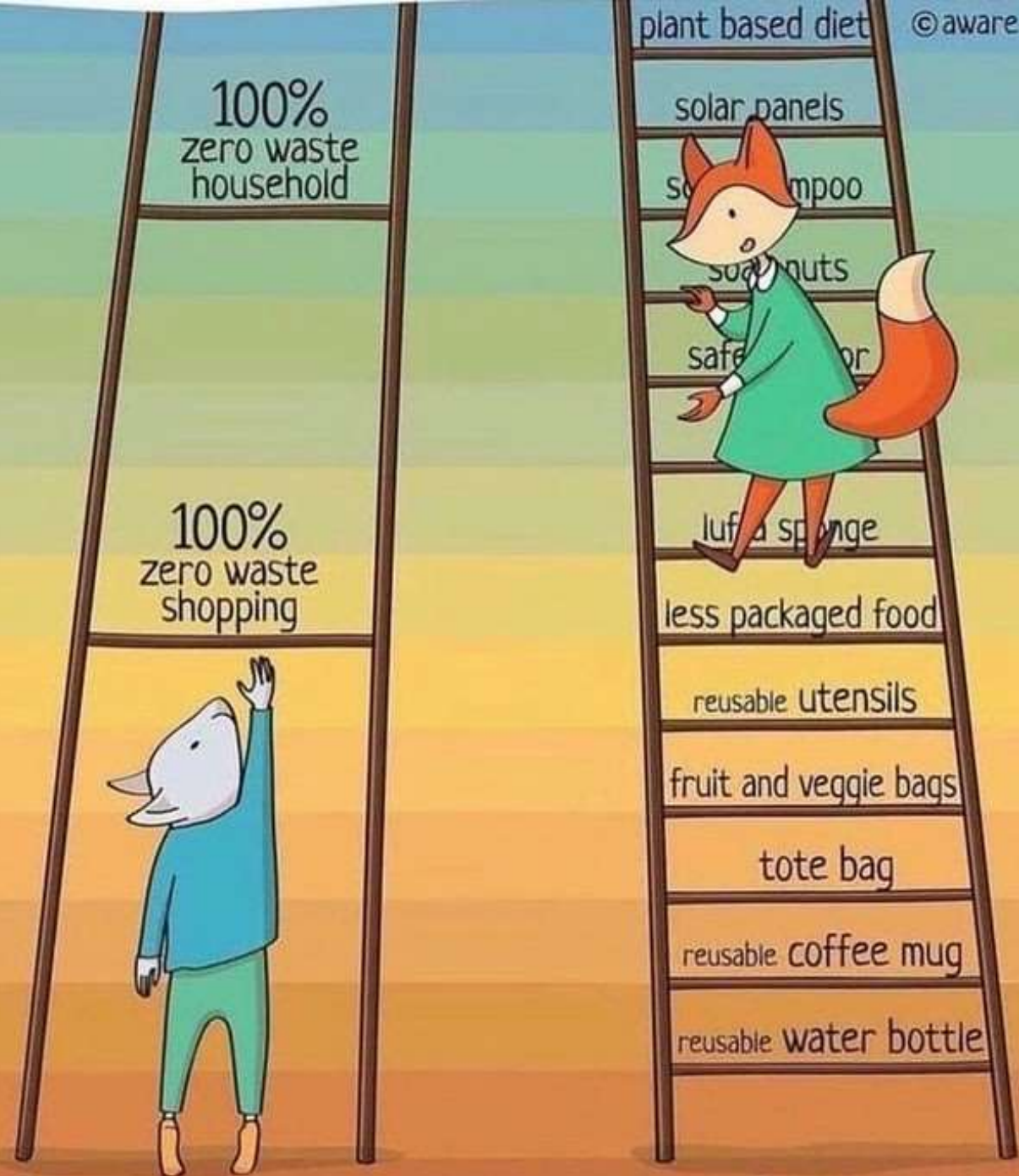


LanzaTech



CETOGENIX

Leading NZ in Biotech Space



Sometimes smaller steps get us further along

“Don’t underestimate the power of small steps to build a great future”

New biodegradable plant pots offer alternative to plastic trays

Auckland Reporter

October 03, 2022, · 01:50pm

→ Share



New biodegradable pot plants offer an alternative to the millions of plastic trays used every year by nurseries and gardeners.

MPI / SUPPLIED

A new biodegradable plant pot has been developed as an alternative to the 350 million plastic trays used per year by nurseries and gardeners.

Tackling plastic waste for primary sectors

Wilson & Ross

Viticulture: Christchurch firm's biodegradable vine clips going global

The Country

10 Sep, 2023 05:01 AM 3 mins to read

Save Share



The eco-friendly vine clips are made from biodegradable polymers and waste materials sourced from wood processing. Photo / Clinton Lloyd

A Christchurch company is set to export biodegradable vine clips to fulfil demand from global winegrowers for more sustainable practices on their vineyards.

PolyNatural says it has begun taking commercial orders for its eco-friendly vine clips from South Australia and from vineyards across New Zealand.

Innovation going global

PolyNatural



Scion innovation leads to flexible 4D printing filament

Rotorua Weekender

27 Mar, 2023 01:41 PM 4 mins to read

Save | Share



The Scion team that helped bring Morph to life (from left): Beatrix Theobald, Robert Abbel, Angelique Greene, Ben Davy and Rob Whitton. Photo / Stephen Parker

A colour-changing and flexible 4D printing filament developed by Scion scientists is set to benefit educators, industry and New Zealand's fast-growing home-based 3D printing community.

And during the upcoming school holidays, Scion is holding a 4D printing interactive workshop at Rotorua Library | Te Aka Mauri to introduce young people aged 11 and over to the new filament and the world of 3D printing.

Flexing creativity through innovation



NZ Expo in Dubai features David Trubridge biomaterial pendant by Scion

Rotorua Daily Post

4 Feb, 2022 06:20 AM 4 mins to read

Save Share



The Navicula pendant light. Photo / Stephen Parker

Visitors walking into New Zealand's Expo Restaurant Tiaki in Dubai will be in awe of the David Trubridge pendant lights suspended above their heads.

And one of those has been made from a shimmering biomaterial formulation developed by Crown research institute Scion.

The Navicula pendant light features a composite of sustainable bio-based plastics and native pāua shells developed by Scion scientists with an iridescent sparkle.

Beautiful and Biobased

) david
trubridge

Paeroa's world first: Seaweed nanocellulose facility announced for AgriSea



By [Alison Smith](#)

18 Aug, 2022 09:42 AM 5 mins to read

Save Share



Minister of Economic and Regional Development Stuart Nash at AgriSea. Photo / Alison Smith

Paeroa will be home to the world's first commercial seaweed nanocellulose facility at AgriSea.

The \$1.5 million project will create nine new full-time roles at AgriSea, which is receiving a \$750,000 loan announced by Stuart Nash in Paeroa on Wednesday.

High Value Natural Polymers



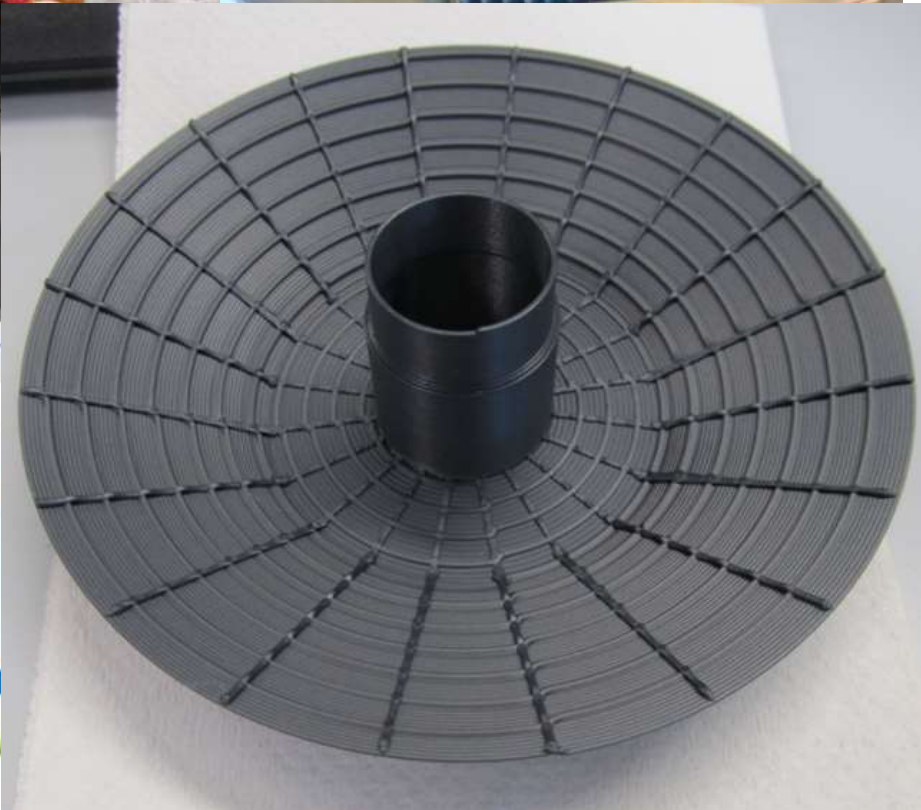
Council laying the groundwork for circular economy roading trial

Wellington City Council started a trial this week using textiles as a performance additive in asphalt on our roads - a first for New Zealand.



Textiles need to be circular





UPF
UNIVERSITÉ
DE LA POLYNÉSIE FRANÇAISE

You matter – It matters

The Stone Age did not end for lack of stones...



... and the Oil Age will end long before the word runs out of oil



Disrupt before being disrupted.....



If you think you are too small
to make a difference, try
sleeping with a mosquito.

Dalai Lama XIV

quote fancy

A large, powerful blue wave is crashing, with a surfer visible in the barrel. The water is a deep, vibrant blue, and the white foam of the wave is prominent. The sky is a clear, bright blue. The text "A tidal wave of change is coming..." is overlaid in white, sans-serif font across the middle of the image.

A tidal wave of change is coming...

Thank you



Florian Graichen
General Manager @ Scion | Honorary
Professor @ The University of Waikato | Circ...

