



# GREATER BENDIGO 2030

# ZERO EMISSIONS ROADMAP

#### MAJOR PARTNERS



COMMUNITY PARTNERSHIP PROGRAM



#### FOUNDING PARTNERS



#### PREMIUM PARTNERS



#### COMMUNITY PARTNERS



# THE ROADMAP ON A PAGE

## Why?

A Liveable  
Climate

A better Greater  
Bendigo

## How?

Collaboration

Equity

Local economy



## What?



### Electrify everything

Support homes and businesses to get off gas, become energy efficient and install solar power.



### Transport revolution

Prioritise active travel, buses and the train and accelerate the transition to electric vehicles.



### Protect and enhance nature

Deliver Council's Biodiversity Strategy.



### Sustainable food

Support zero carbon farms and urban/peri-urban local food production.



### Circular economy

Support homes and businesses to eliminate the concept of waste. Support reprocessing of resources locally.

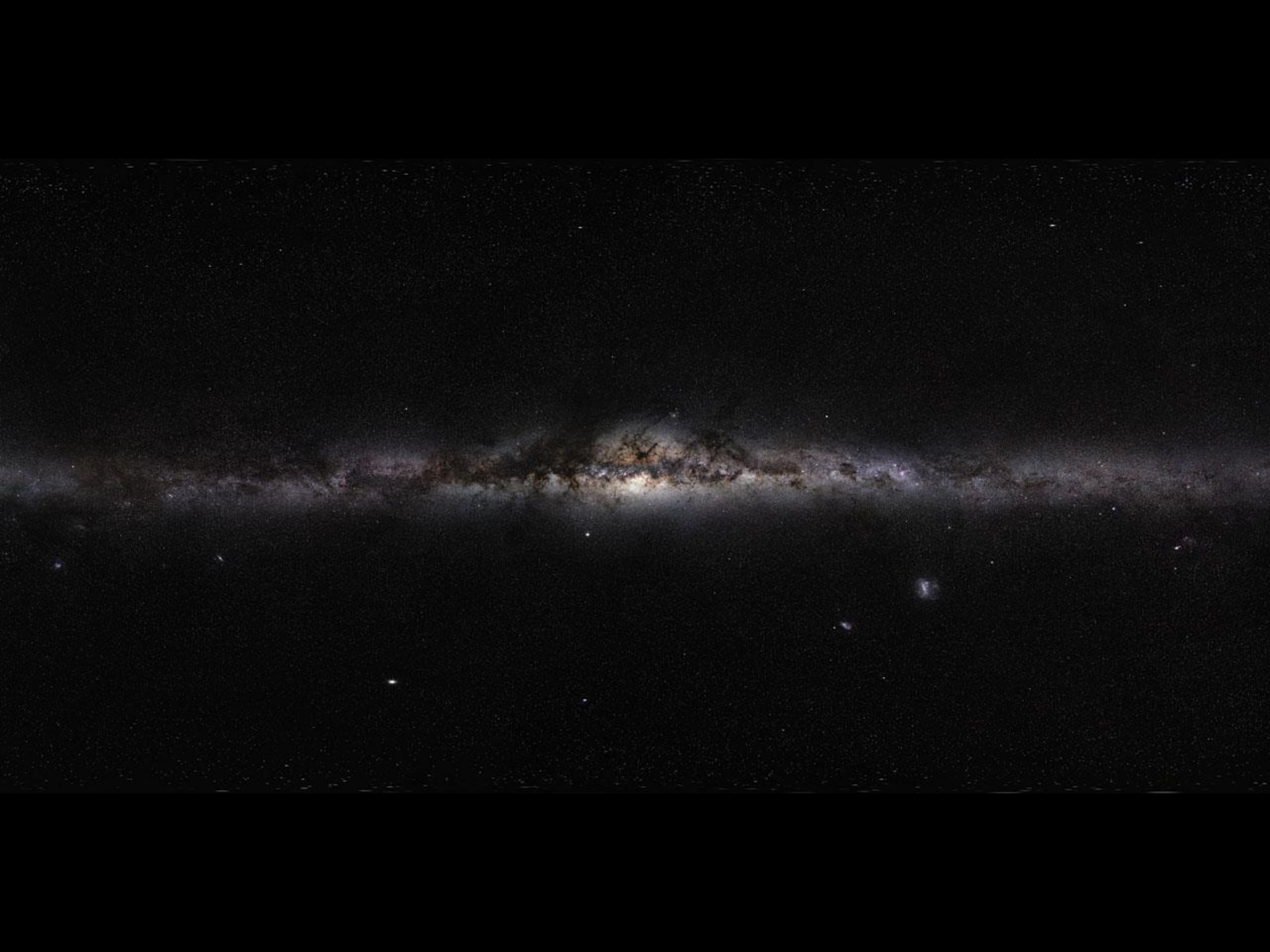


## Today's Presentation

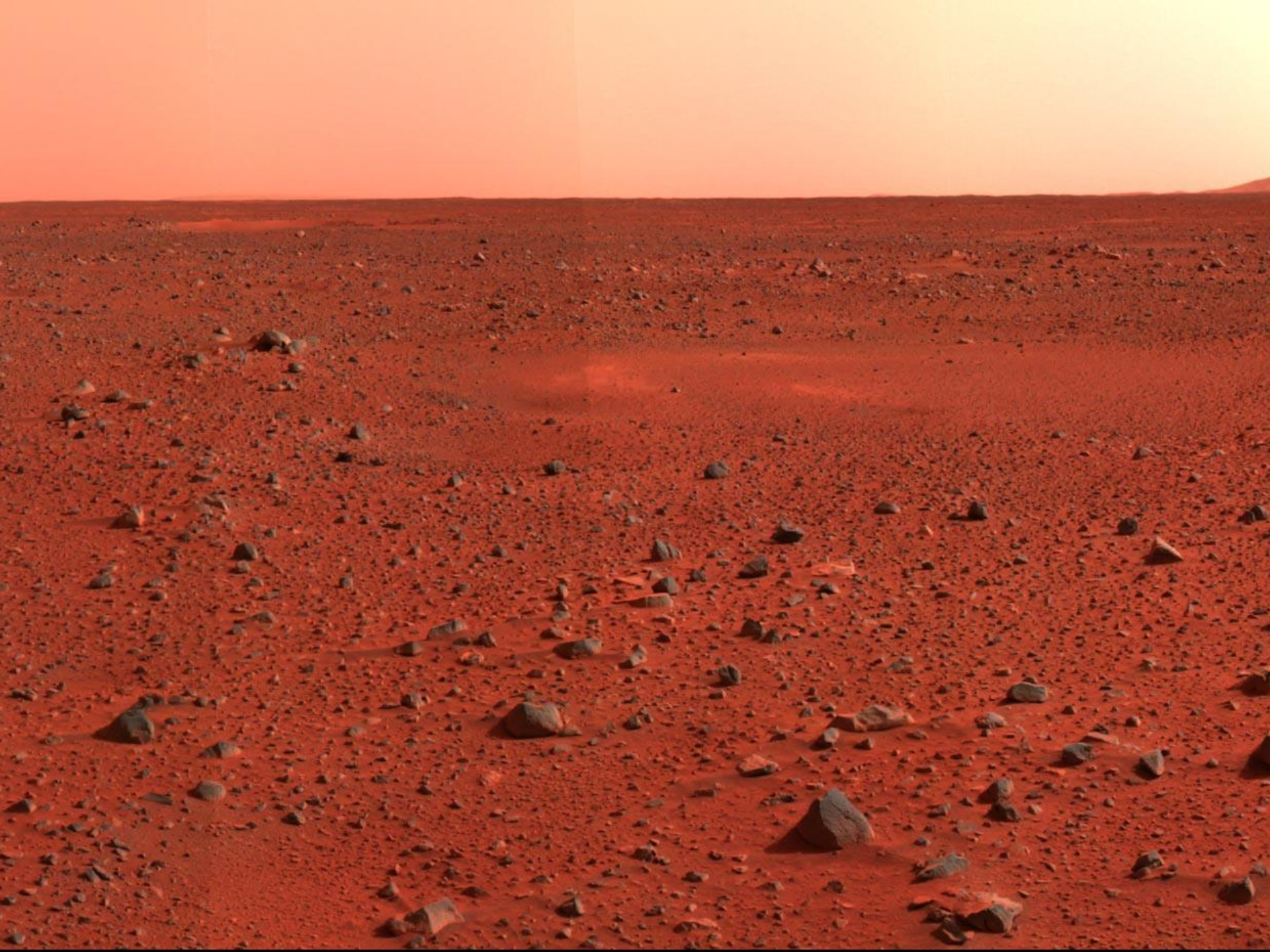
- **Healthy planet, healthy people**
- **Climate change 101**
- **Climate and health**
- **What can I do?**
- **What can we do together?**
- **What can we advocate for?**













“Our health  
is ultimately **inseparable**  
from the health of  
the **natural world**”

- Dr. Aaron Bernstein, Harvard Medical School

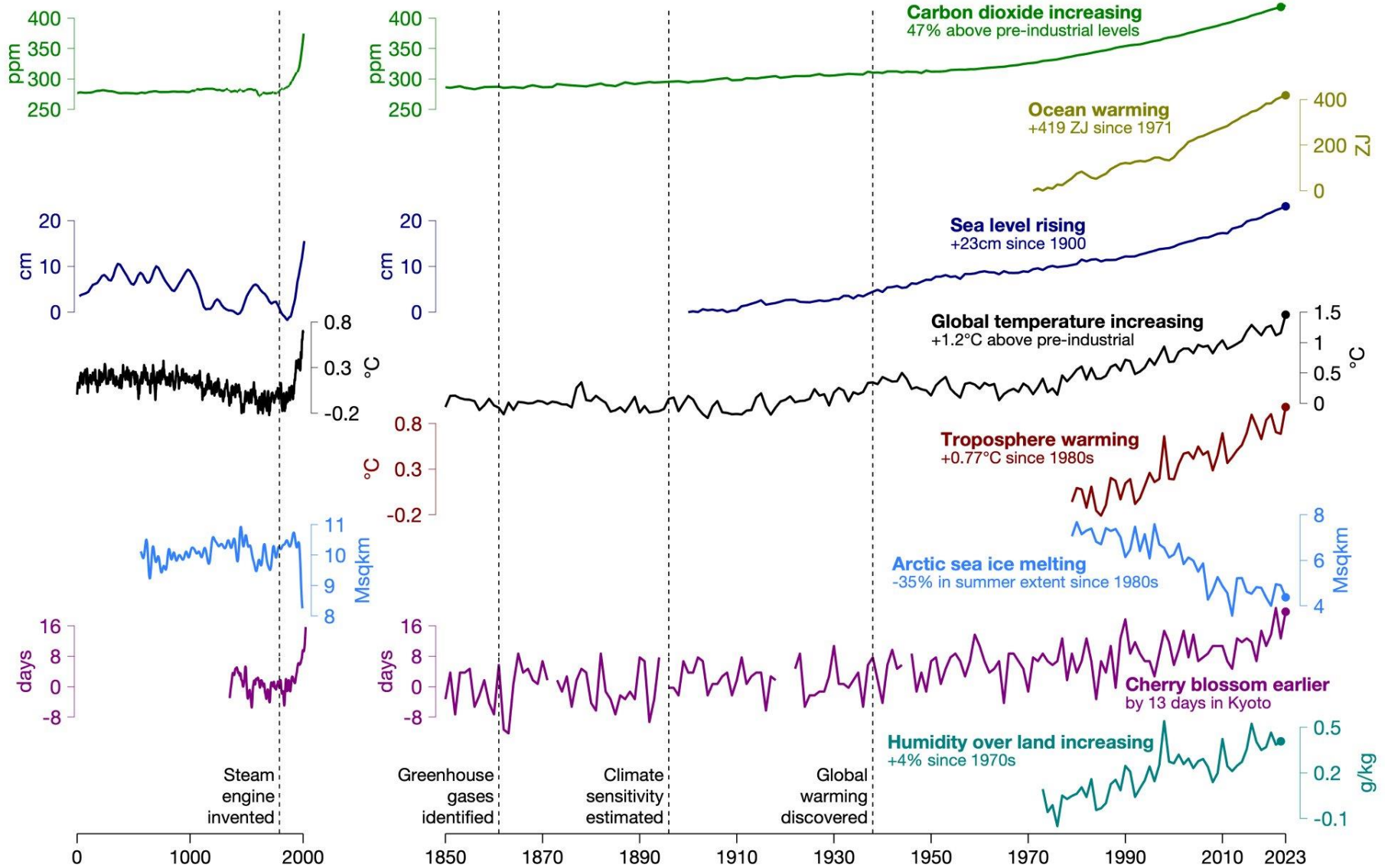


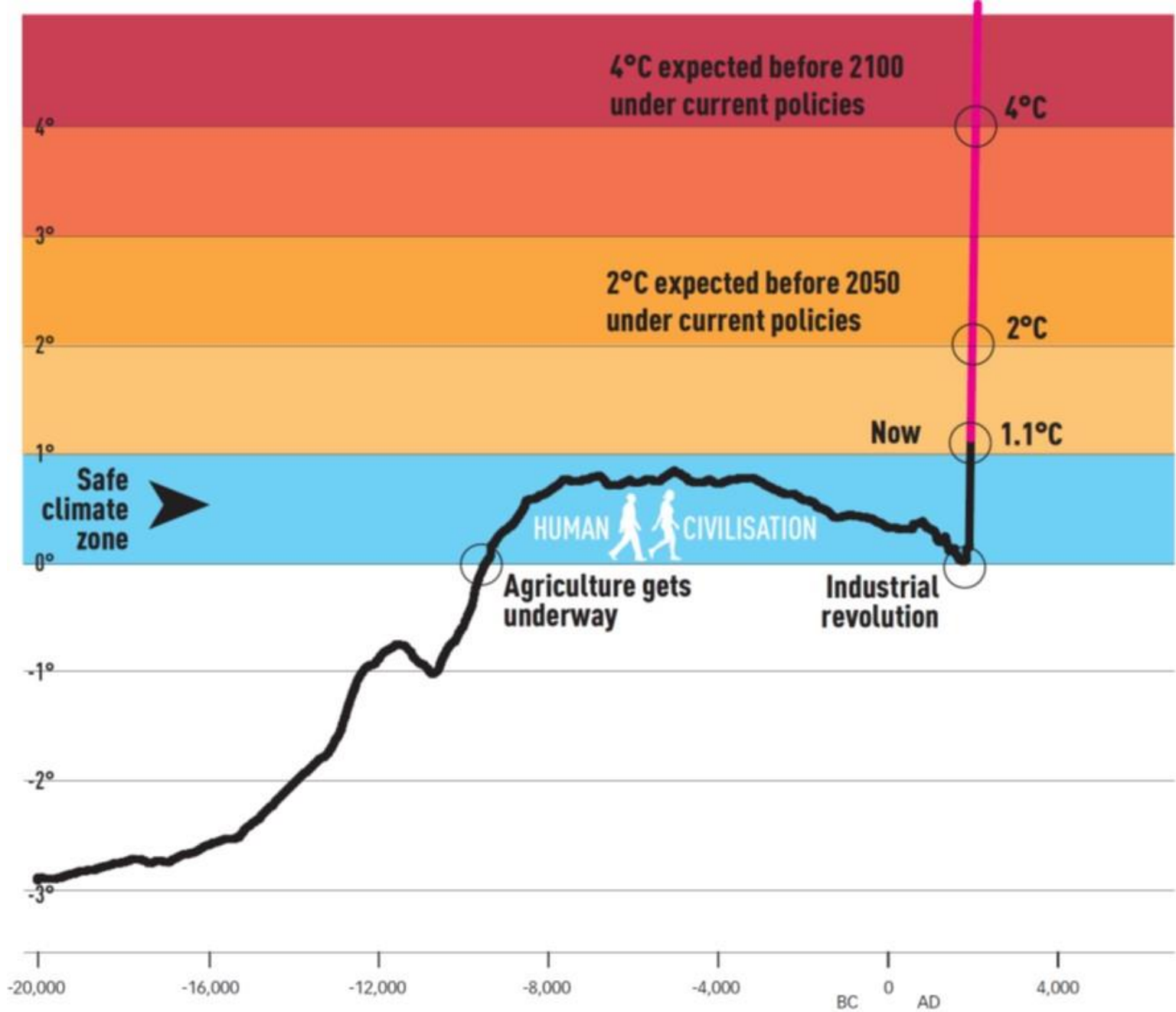


# Changes emerging across the climate system

Last 2000 years

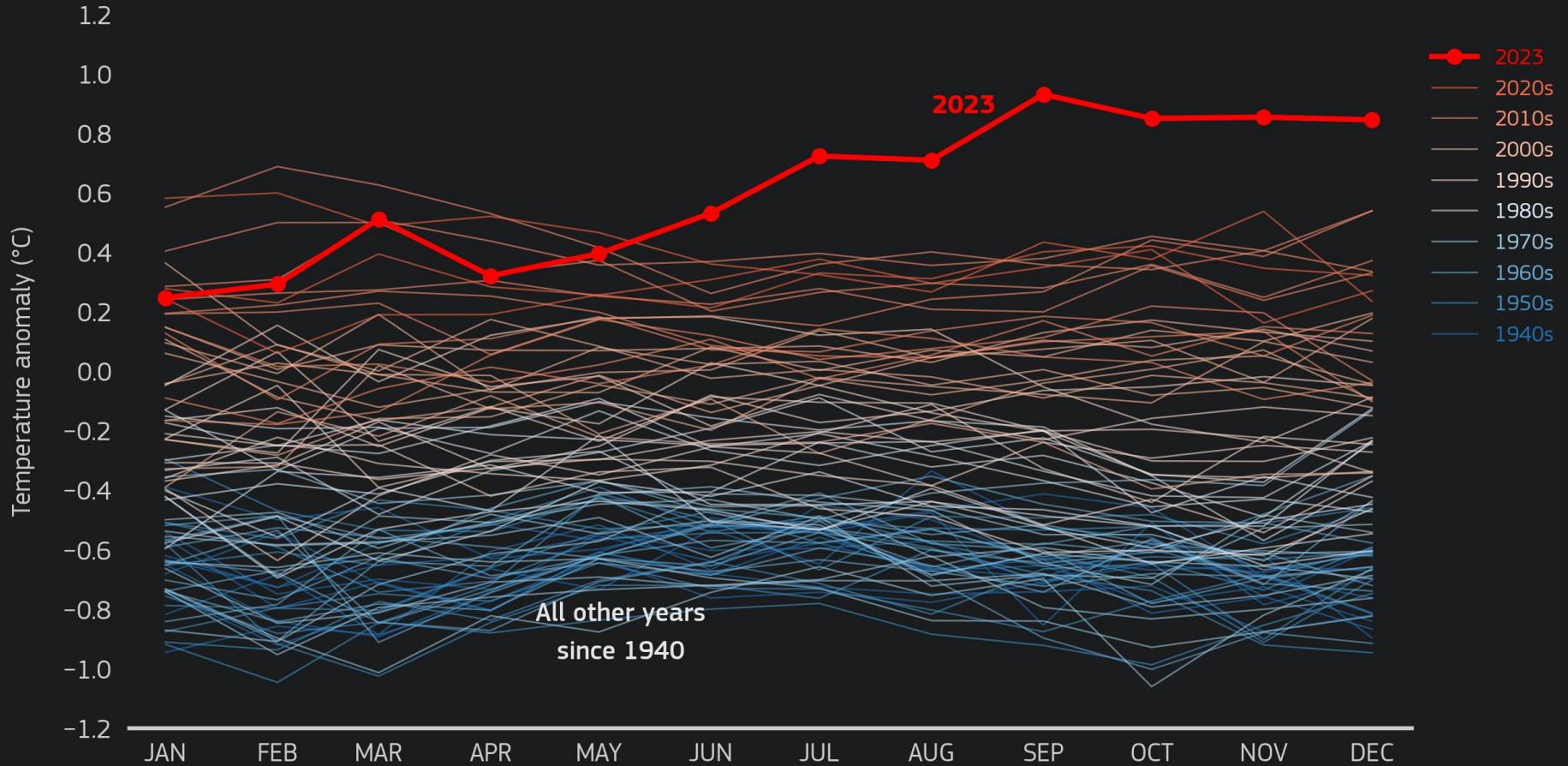
Instrumental period





# GLOBAL SURFACE AIR TEMPERATURE ANOMALIES

Data: ERA5 1940–2023 • Reference period: 1991–2020 • Credit: C3S/ECMWF



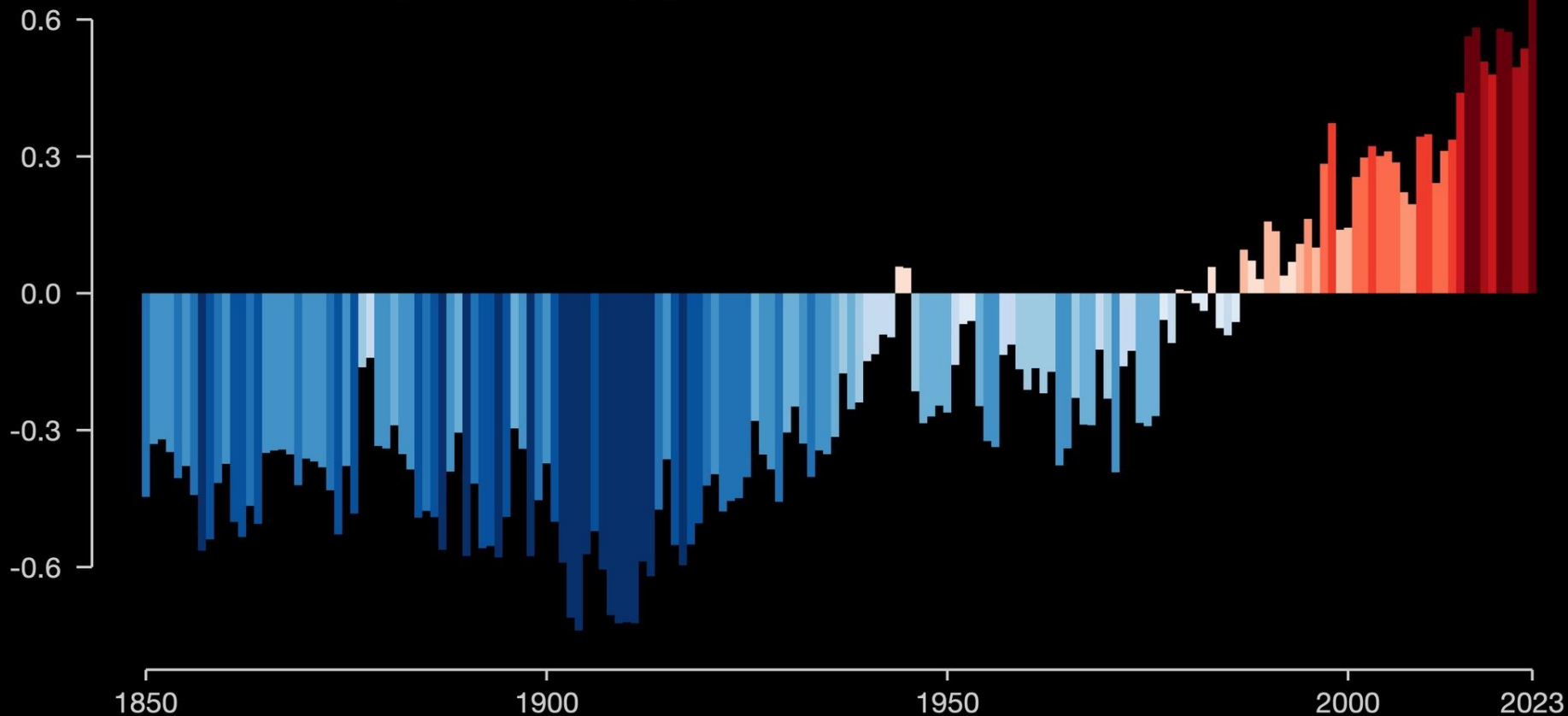
PROGRAMME OF THE  
EUROPEAN UNION



Climate  
Change Service  
climate.copernicus.eu

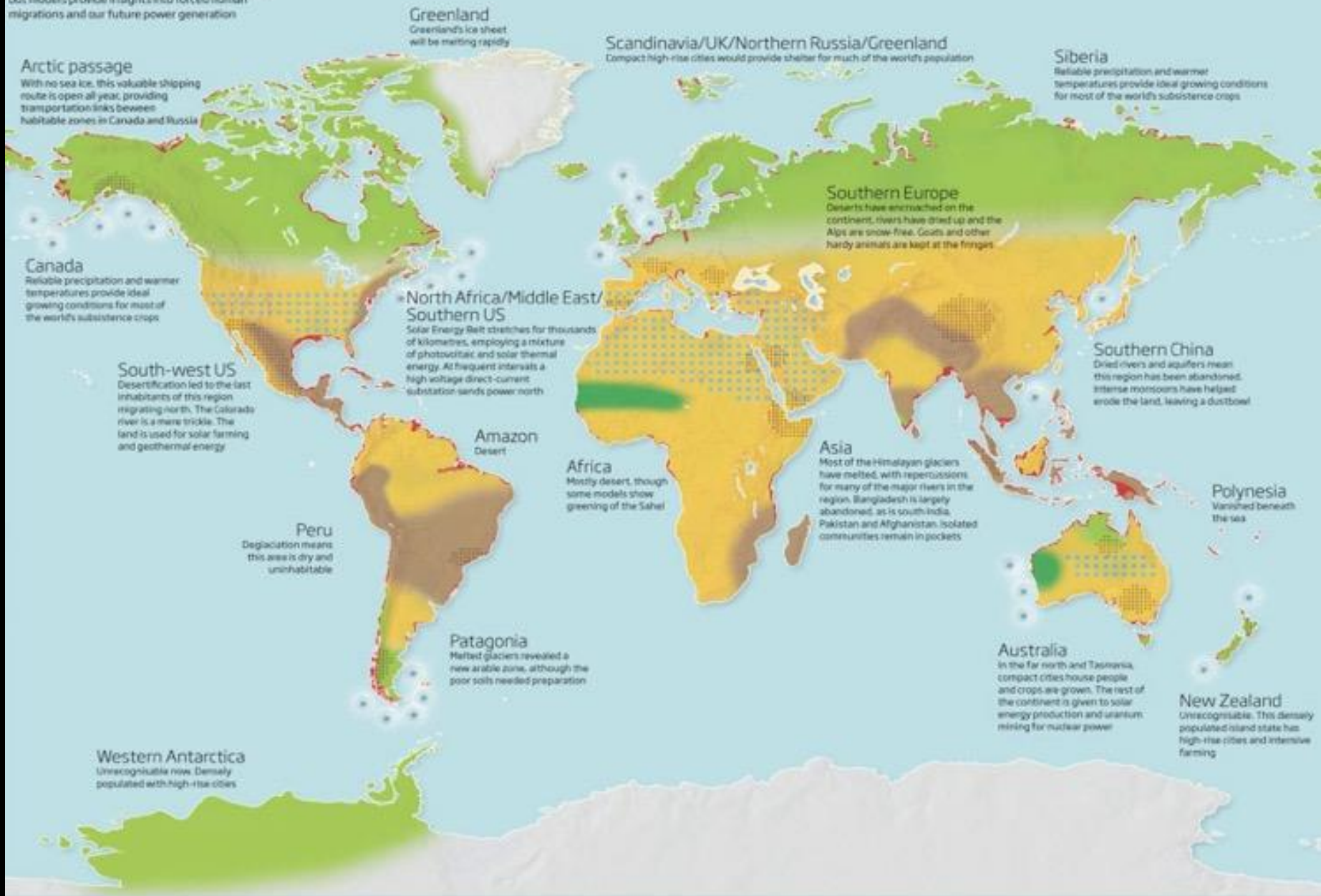
# Global ocean surface temperature change

Relative to average of 1971-2000 [°C]



# The world: 4°C warmer

No one knows exactly what this world will look like, but models provide insights into forced human migrations and our future power generation



Food-growing zones / Compact high-rise cities

Uninhabitable desert

Uninhabitable due to floods, drought or extreme weather

Potential for reforestation

Land lost due to rising sea levels, assuming a 2-metre rise

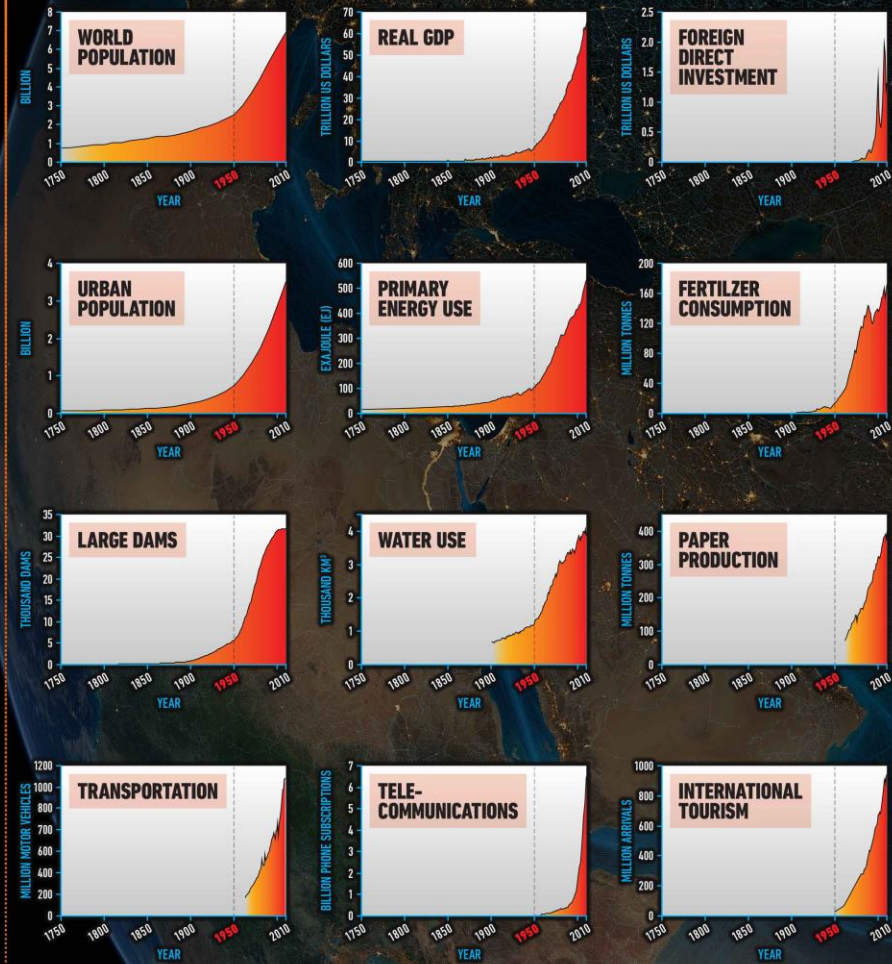
Solar energy

Geothermal energy

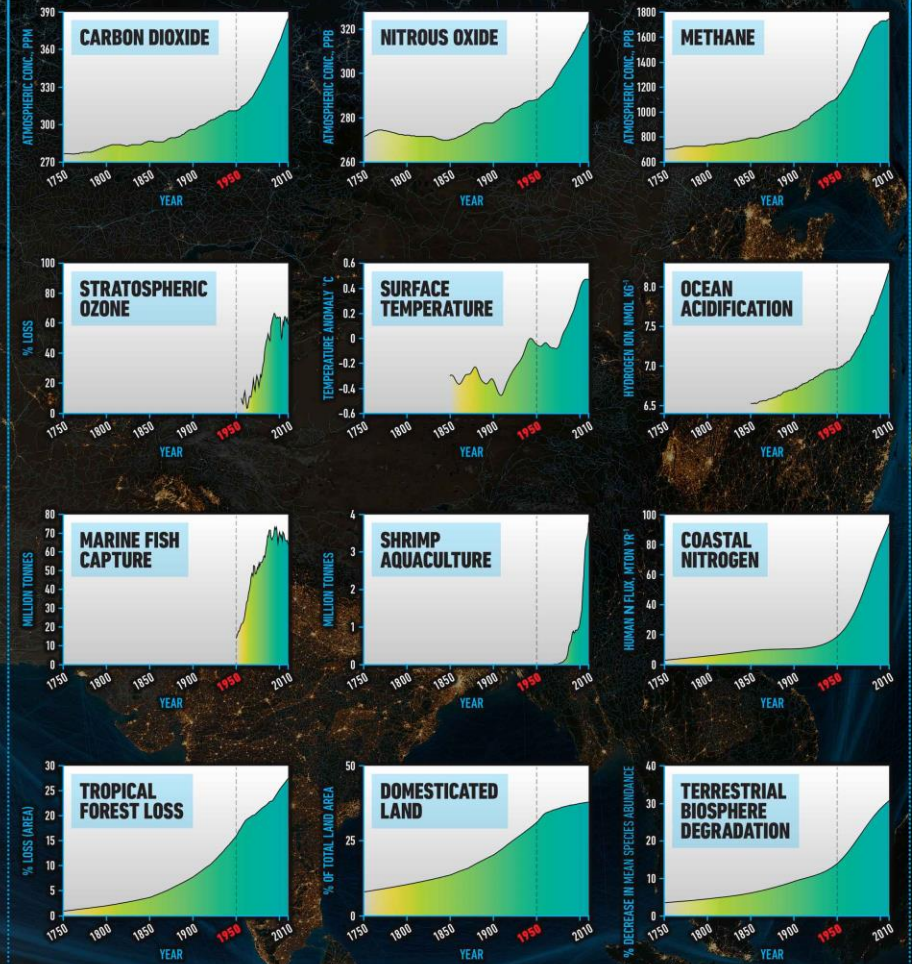
Wind energy

# THE GREAT ACCELERATION

## SOCIO-ECONOMIC TRENDS



## EARTH SYSTEM TRENDS



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

MAP & DESIGN: Félix Pharand-Deschênes / Globaïa



## IUCN Red List, Feb 2012:

“40% of all  
assessed species  
of life are now  
threatened”



# Living Planet

## Report 2014

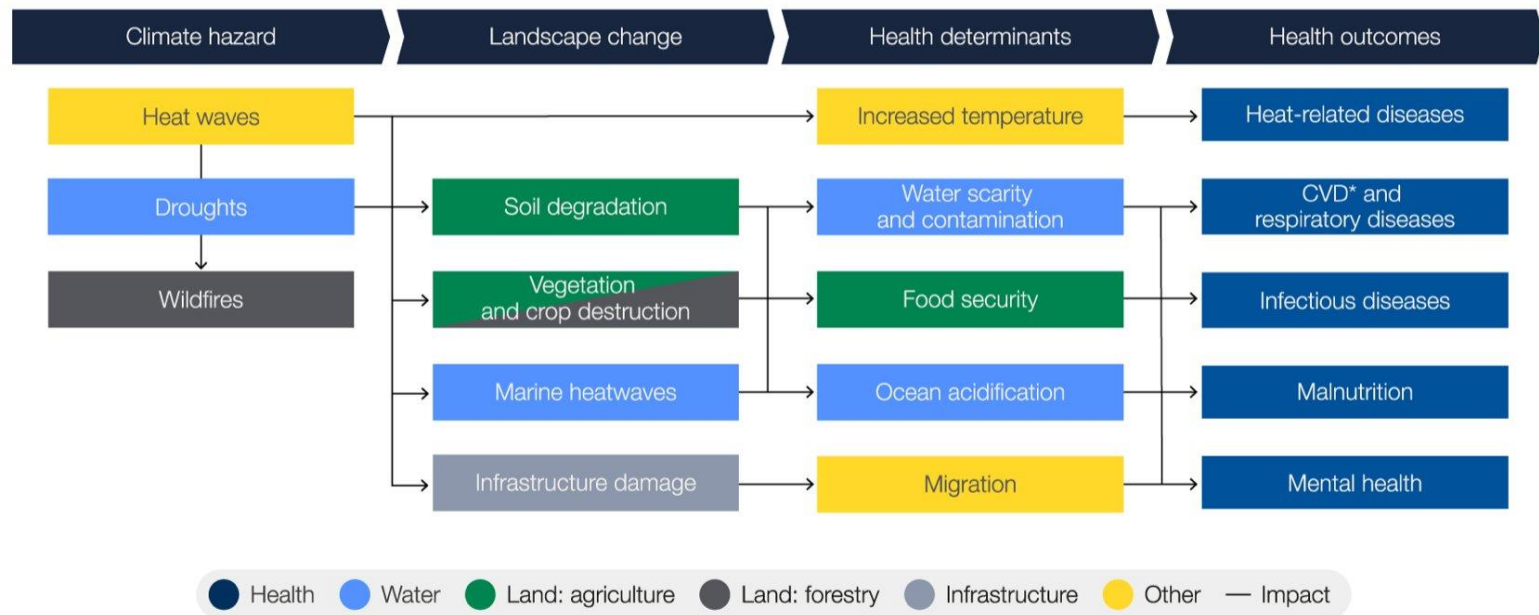
### Summary

**SPECIES POPULATIONS WORLDWIDE HAVE DECLINED 52 PER CENT SINCE 1970.**





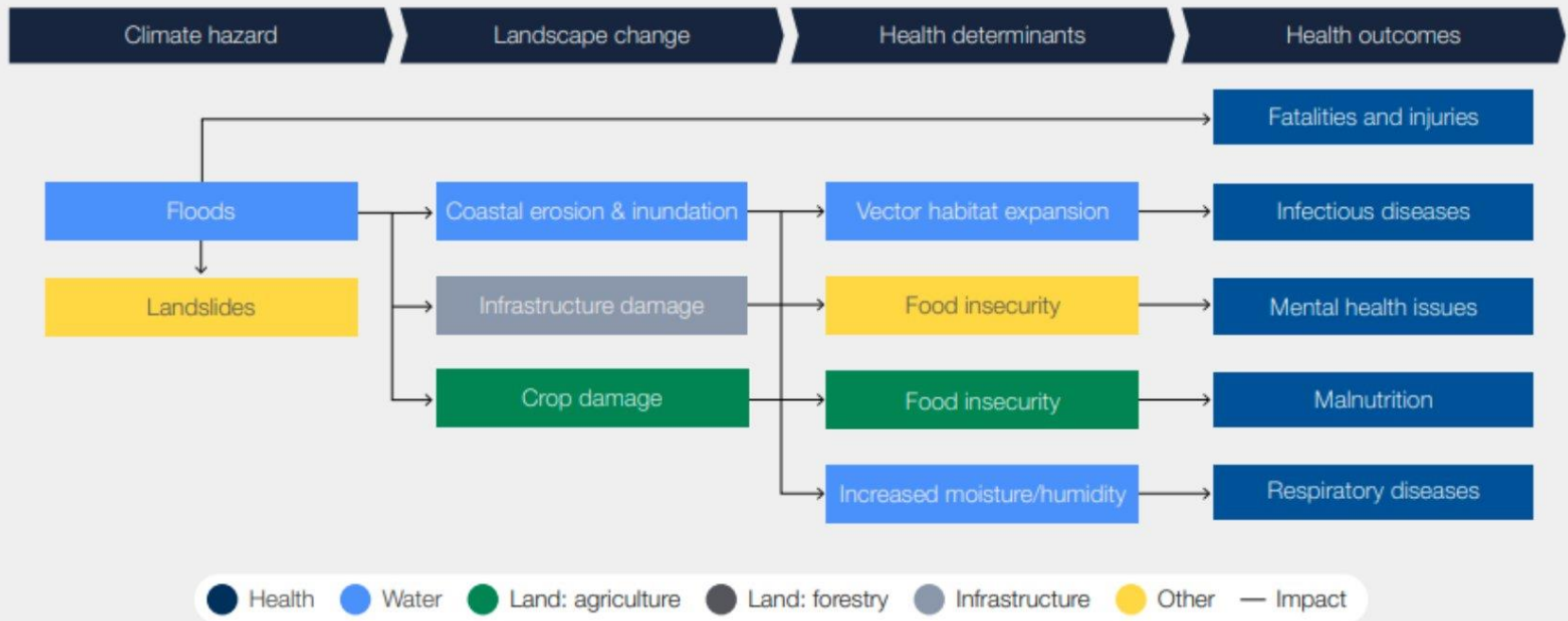
# Overview of heat waves impact on health outcomes



**Sources:** IPCC 6th Report; PubMed; UN Environment Programme; Oliver Wyman analysis

**Note:** \*Cardiovascular diseases

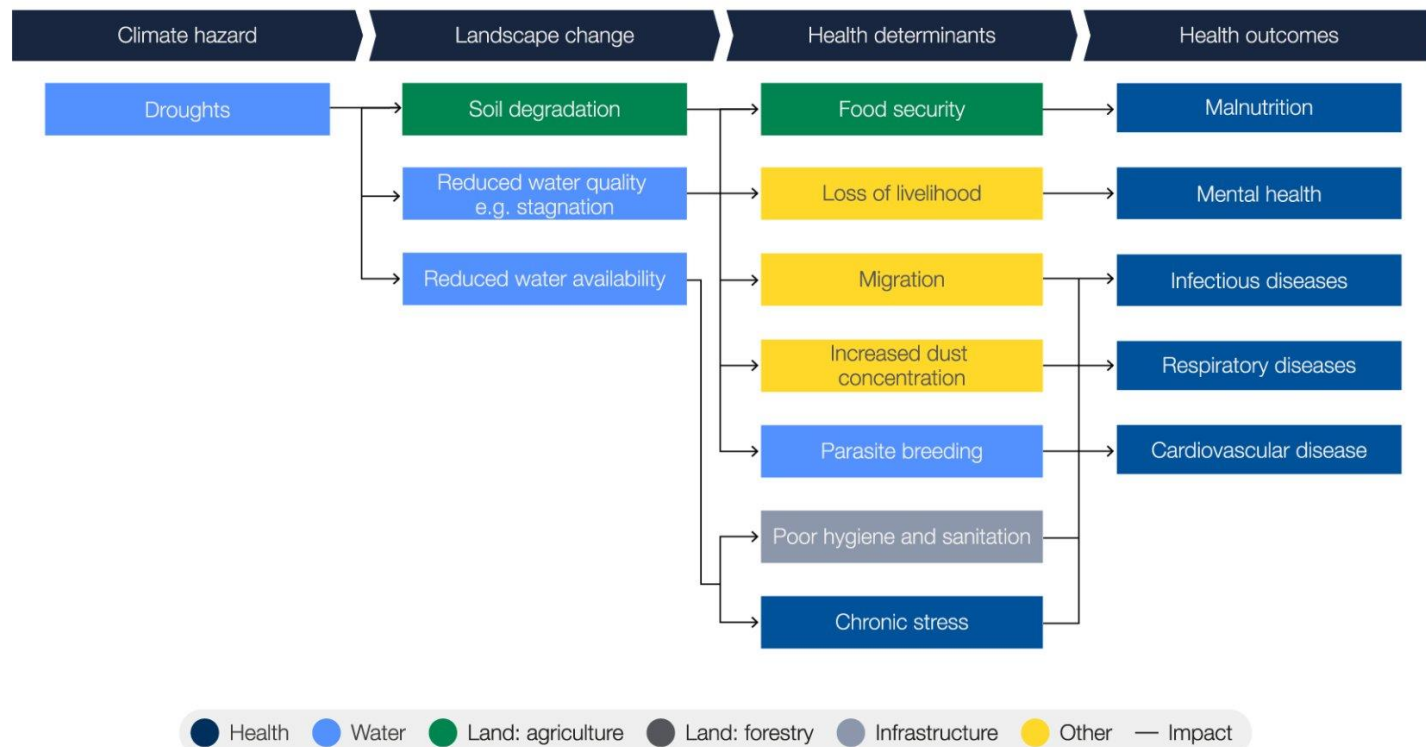
FIGURE 9 | Overview of floods impact on health outcomes



Source: Oliver Wyman analysis

Floods cause not only physical damage, they can also affect the mental health of victims. Image: World Economic Forum

# Overview of droughts impact on health outcomes



**Sources:** Stanke et al., 2013; Berman et al., 2017; Bryan et al., 2020; IPCC Sixth Assessment Report; Center for Climate and Energy Solutions; Center for Disease Control and Prevention (CDC); World Health Organization; Oliver Wyman analysis

**Note:** Spread of vector-borne diseases such as dengue also noted, but literature indicates cholera impact has a more prominent impact e.g. Mali cholera epidemic (Tauxe et al. 1988).

**\$2.97  
trillion**

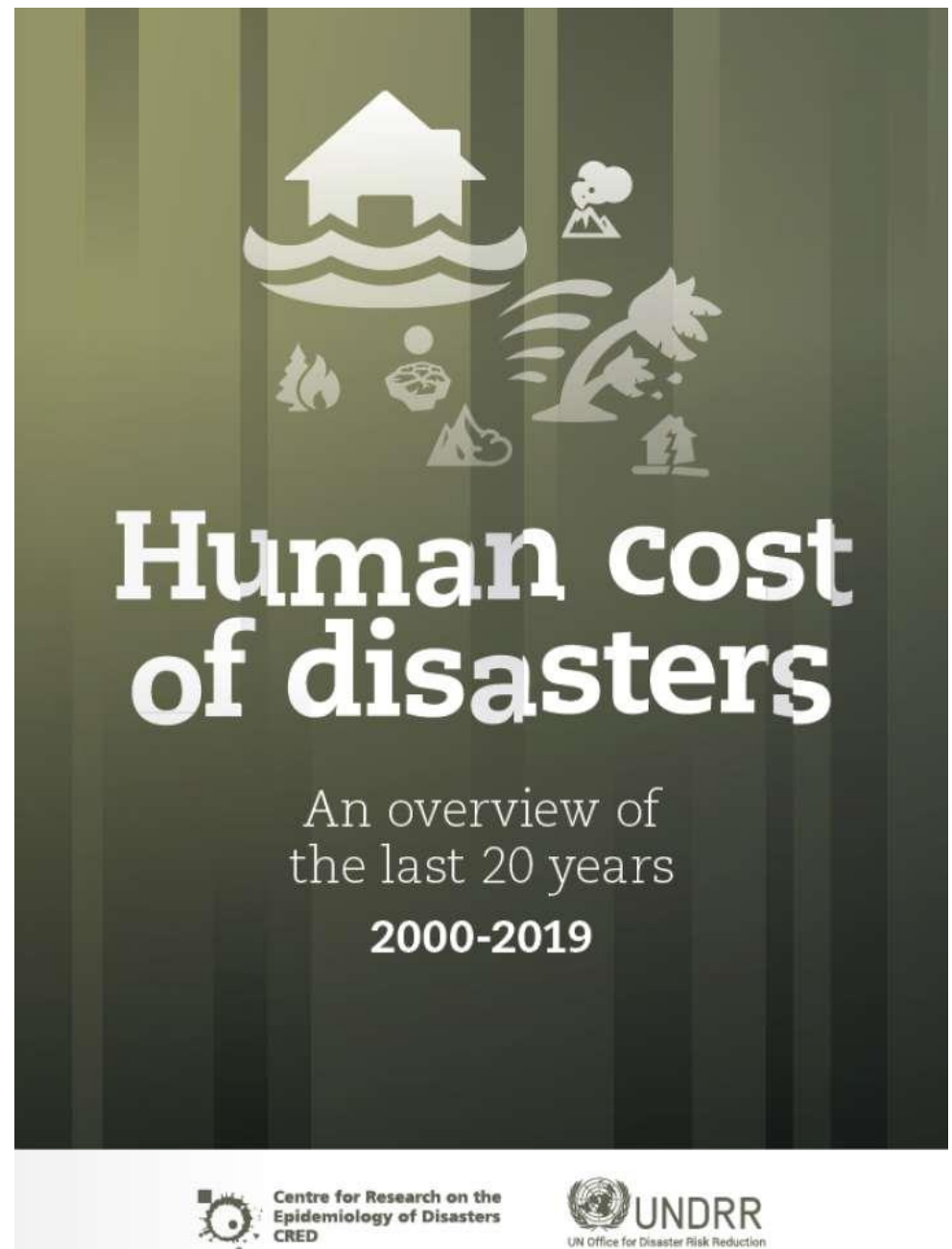
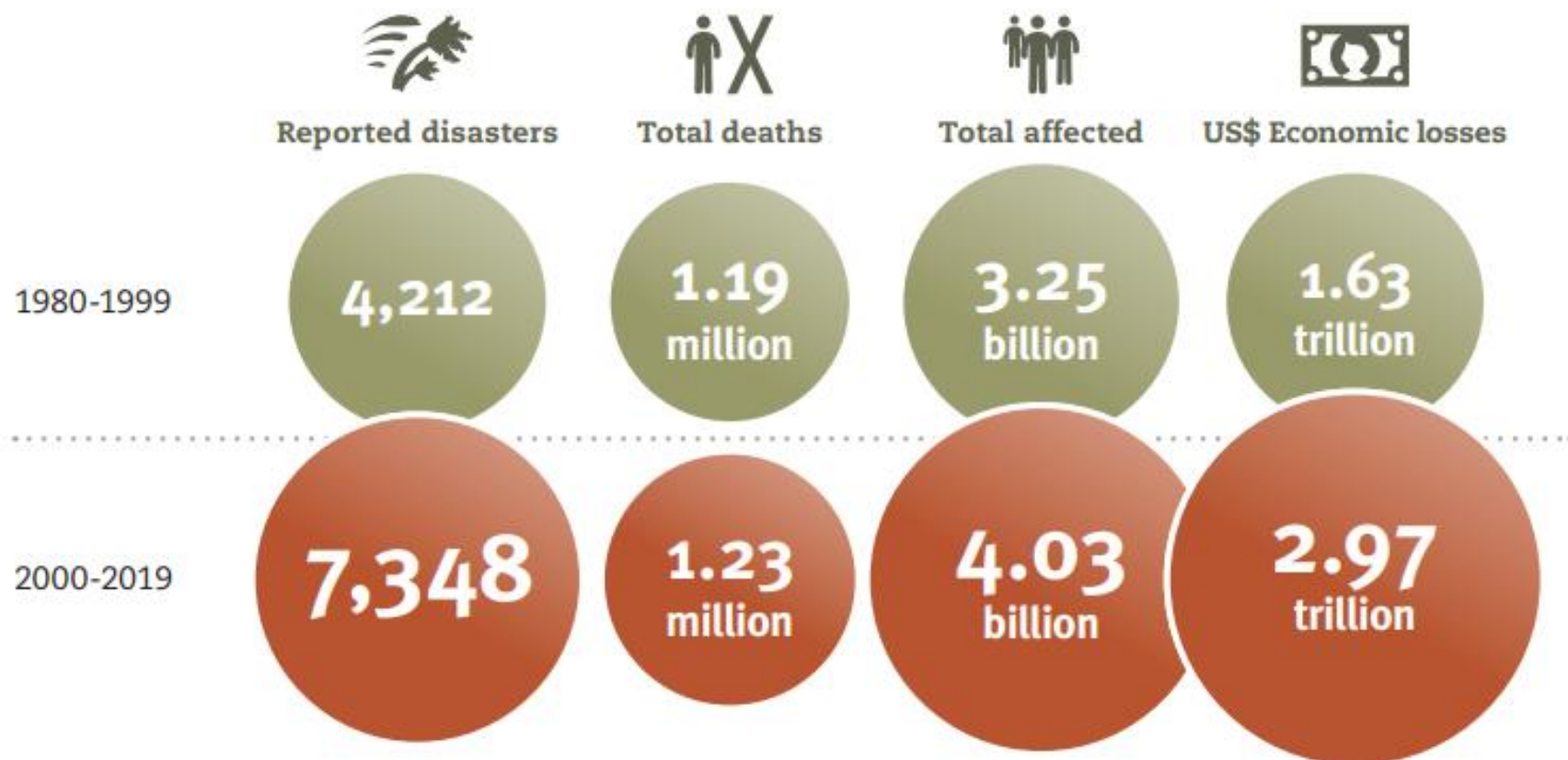




Figure 1

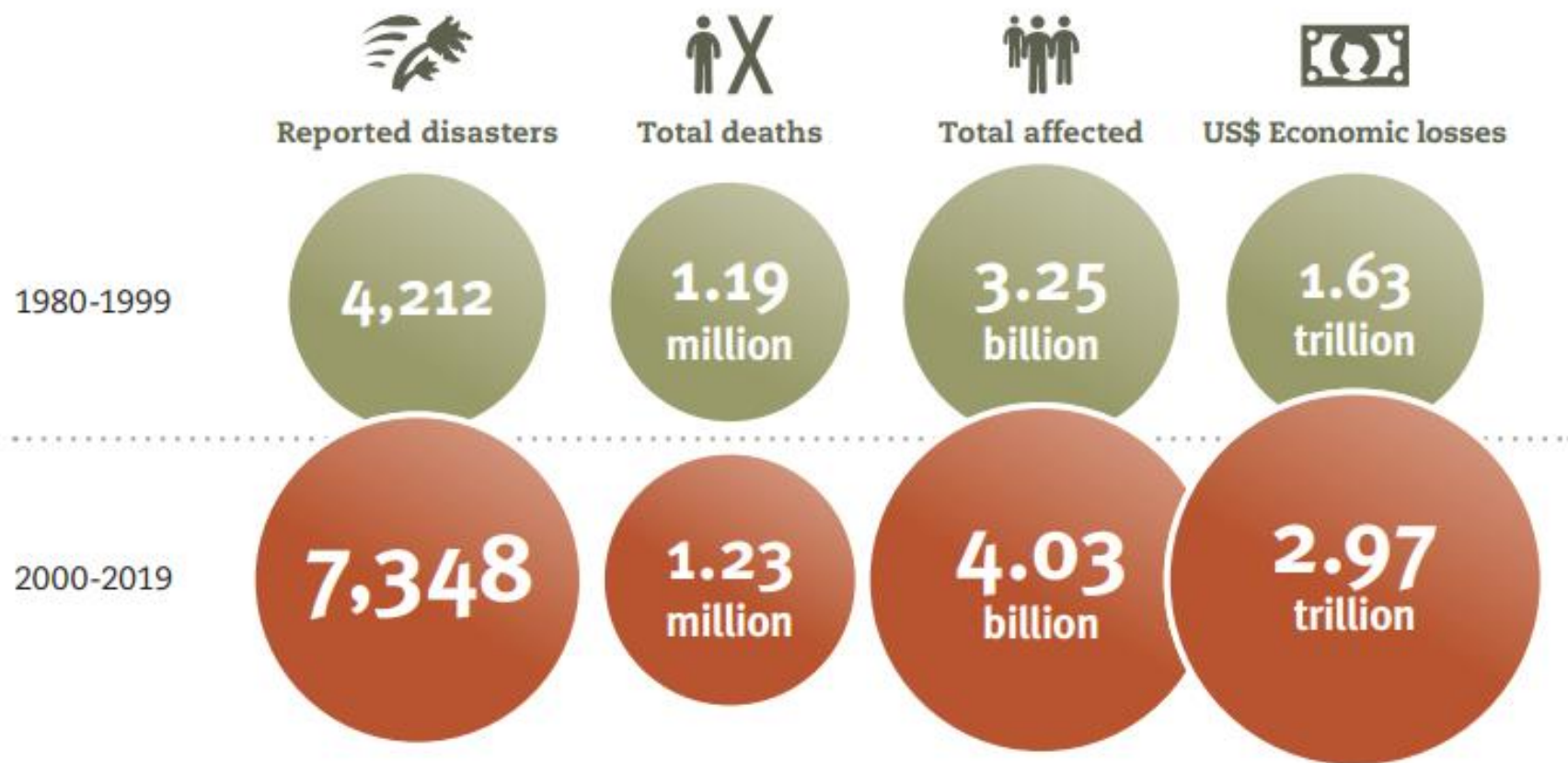
Disaster Impacts:  
1980-1999 vs. 2000-2019



# DOES NOT INCLUDE “INDIRECT” HEALTH COSTS

Figure 1

Disaster Impacts:  
1980-1999 vs. 2000-2019





THE MONEY



## Climate Change Costs

The rising cost of extreme weather events and climate change.

Thu

**2019/2020 Black Summer \$10b direct, \$110b indirect costs**

**2019 Tasmanian Fires \$25m extra health costs**

**2023 USA Health \$1b in climate induced health costs**

**2020 Global cost of carbon \$255/tonne\***

***\*More than half of this was health costs.***

**2020 global health cost of carbon \$127.5/t**

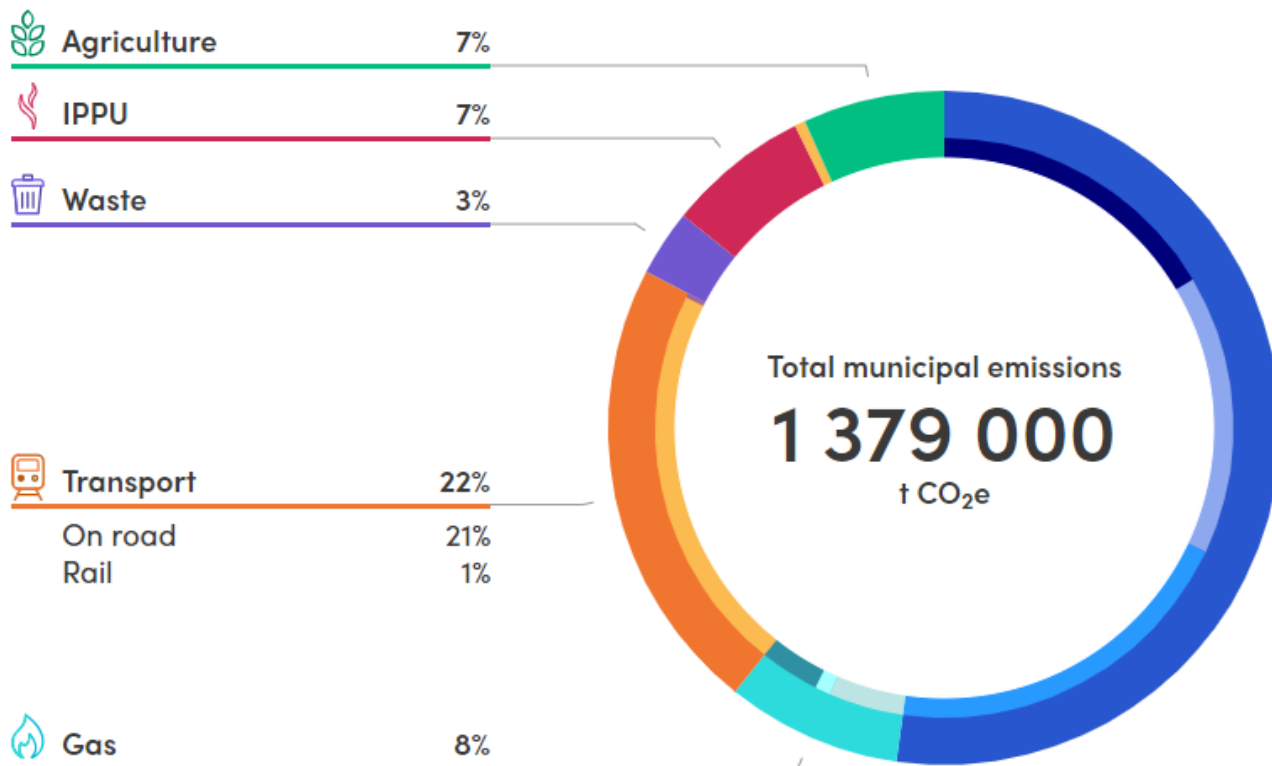


**10m tonnes/pa \$1.28B**



**15 tonnes/pa \$1912**

# Greater Bendigo's emissions 2021/22



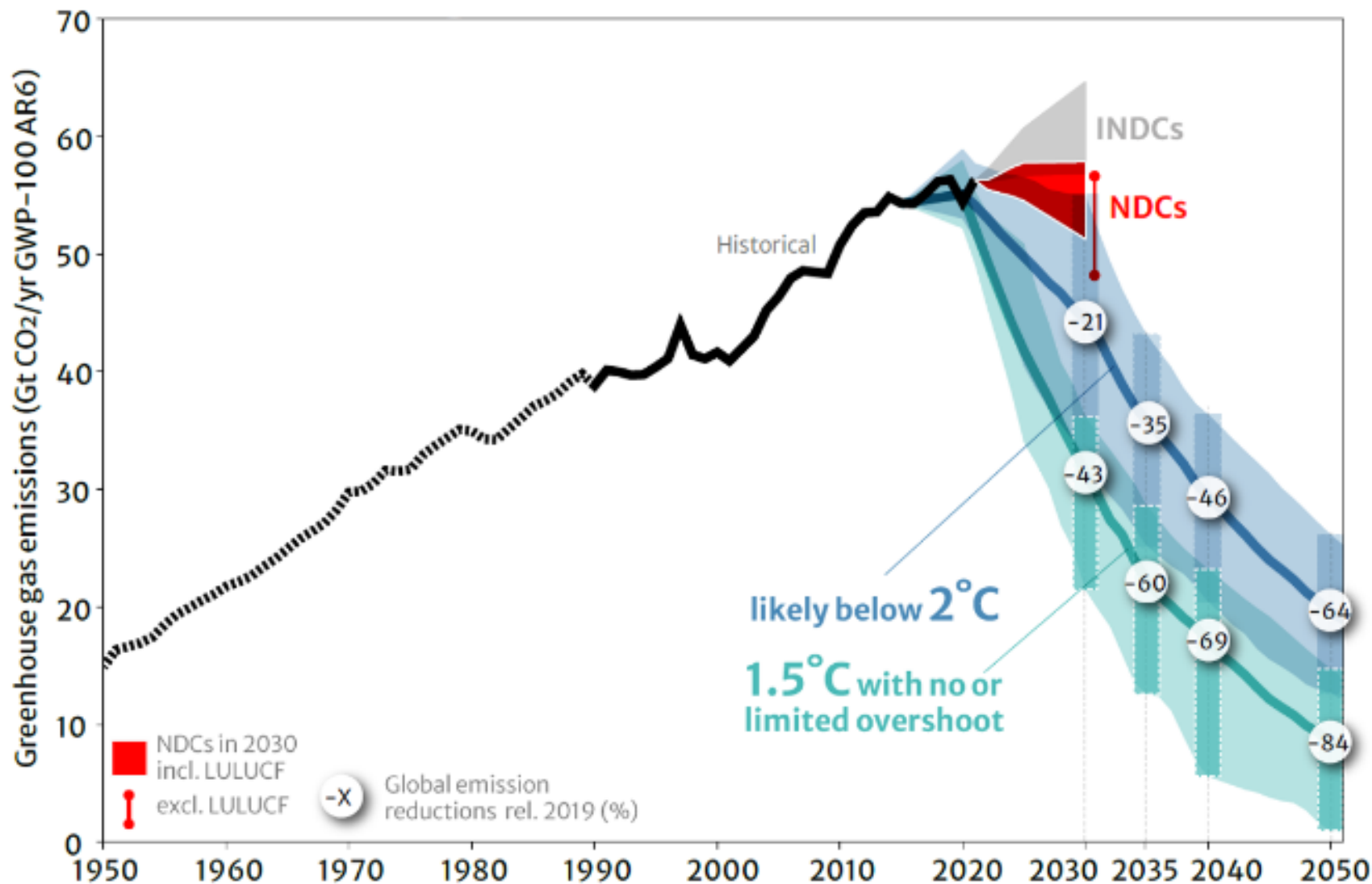
Electricity	52%	
Residential	16%	
Commercial	16%	
Industrial	20%	



**Greater Bendigo's emissions  
2021/22 had a health cost of:**

**\$175,822,500**

# The climate challenge



# Climate Challenge



## Three levels of action

### 1. What can I do?

Habits? Values? Behaviour?

### 2. What can we do together?

City? Community? Organisations?

### 3. What can we advocate for?

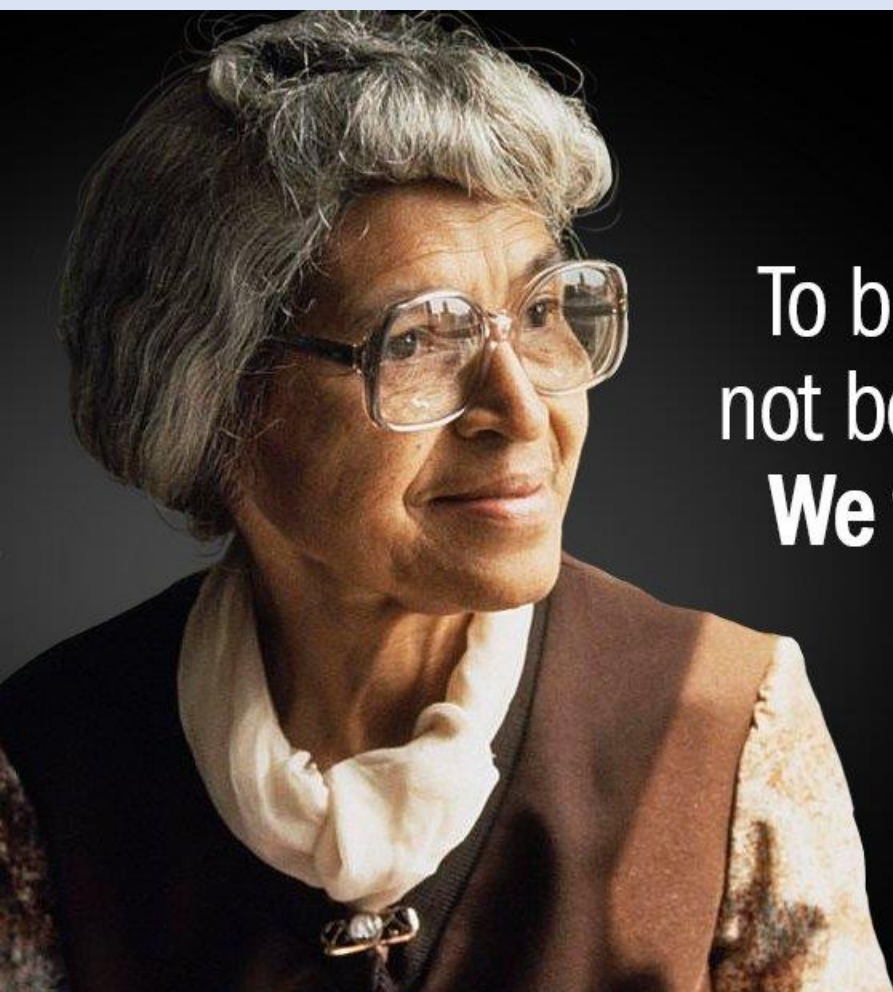
Letters? Campaigns? Politics?



# Climate Challenge



## 1. What Can I do?



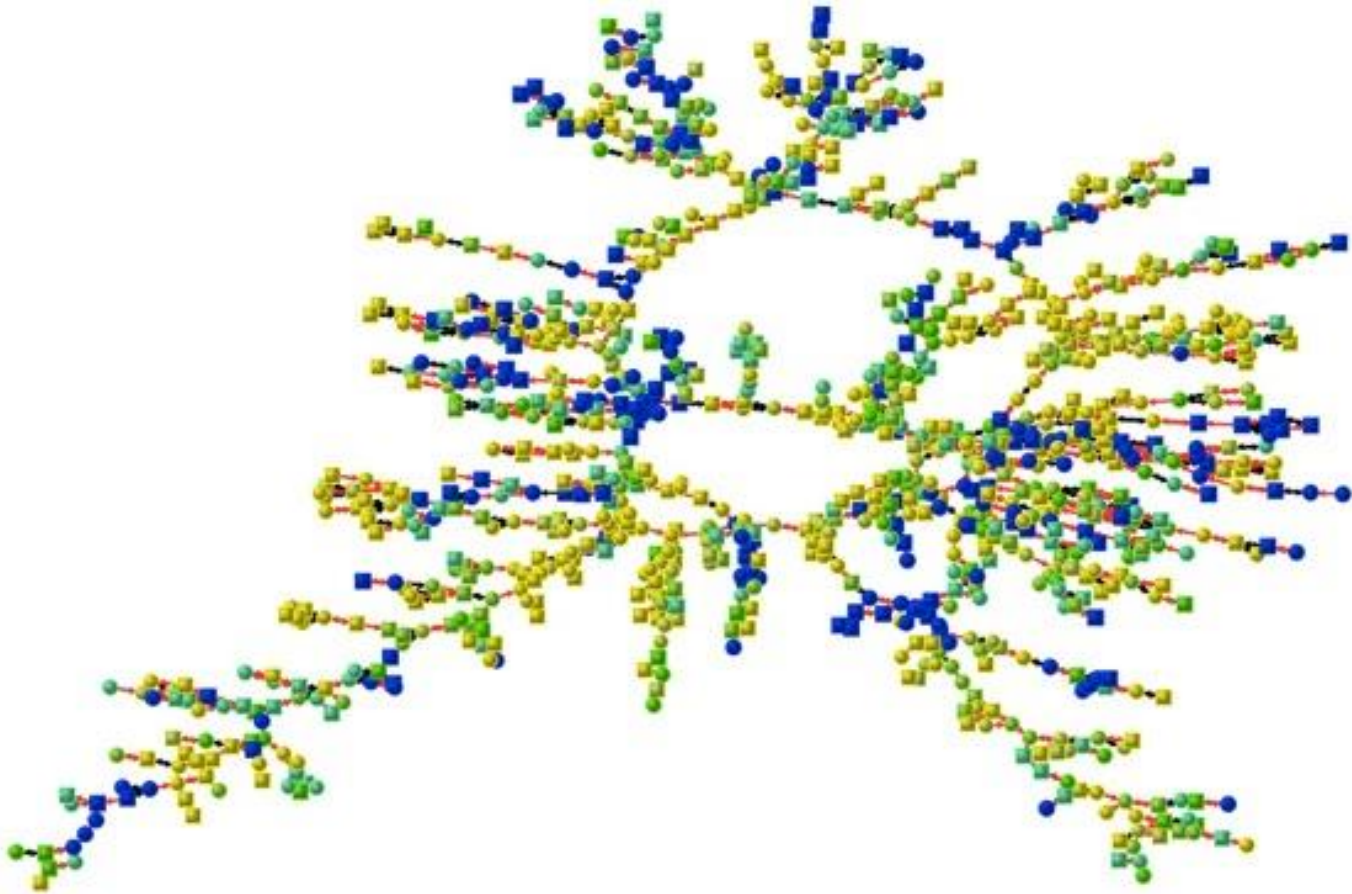
To bring about change, you must not be afraid to take the **first step**.  
**We will fail when we fail to try.**

– *Rosa Parks*



What's your driver?

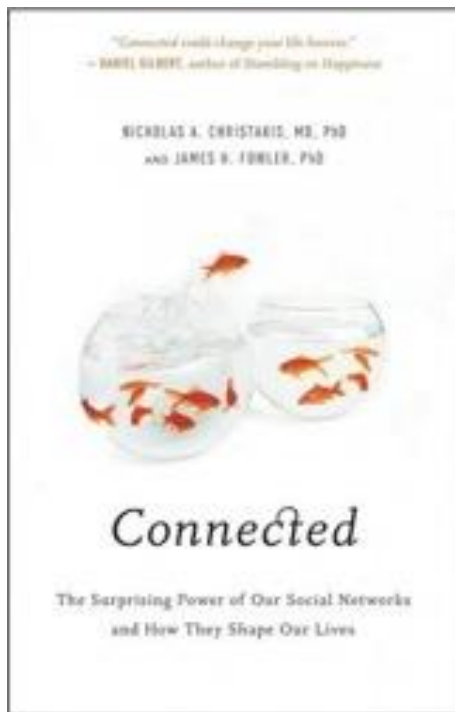




# Social Networks

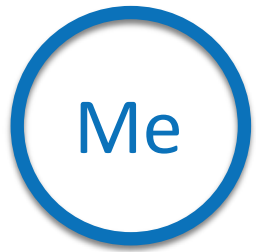


*“Everything we do affects not just ourselves & not just our friends and relatives ...*



*... but also dozens, or hundreds & sometimes possibly thousands of other people.”*

**- Nicholas Christakis**



# My Influence?



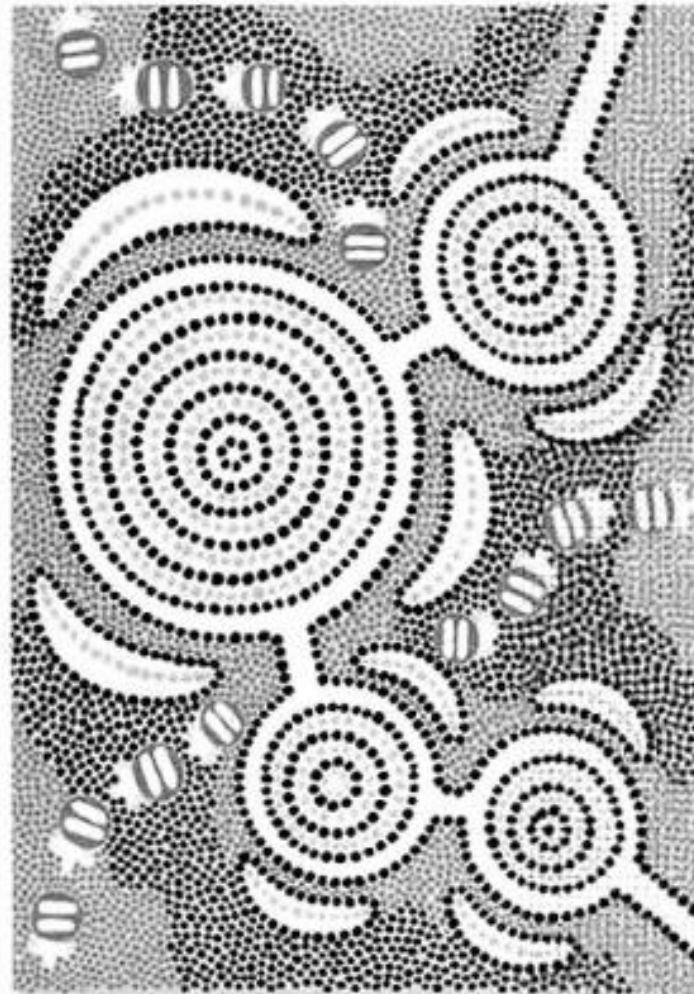
Me

My Network

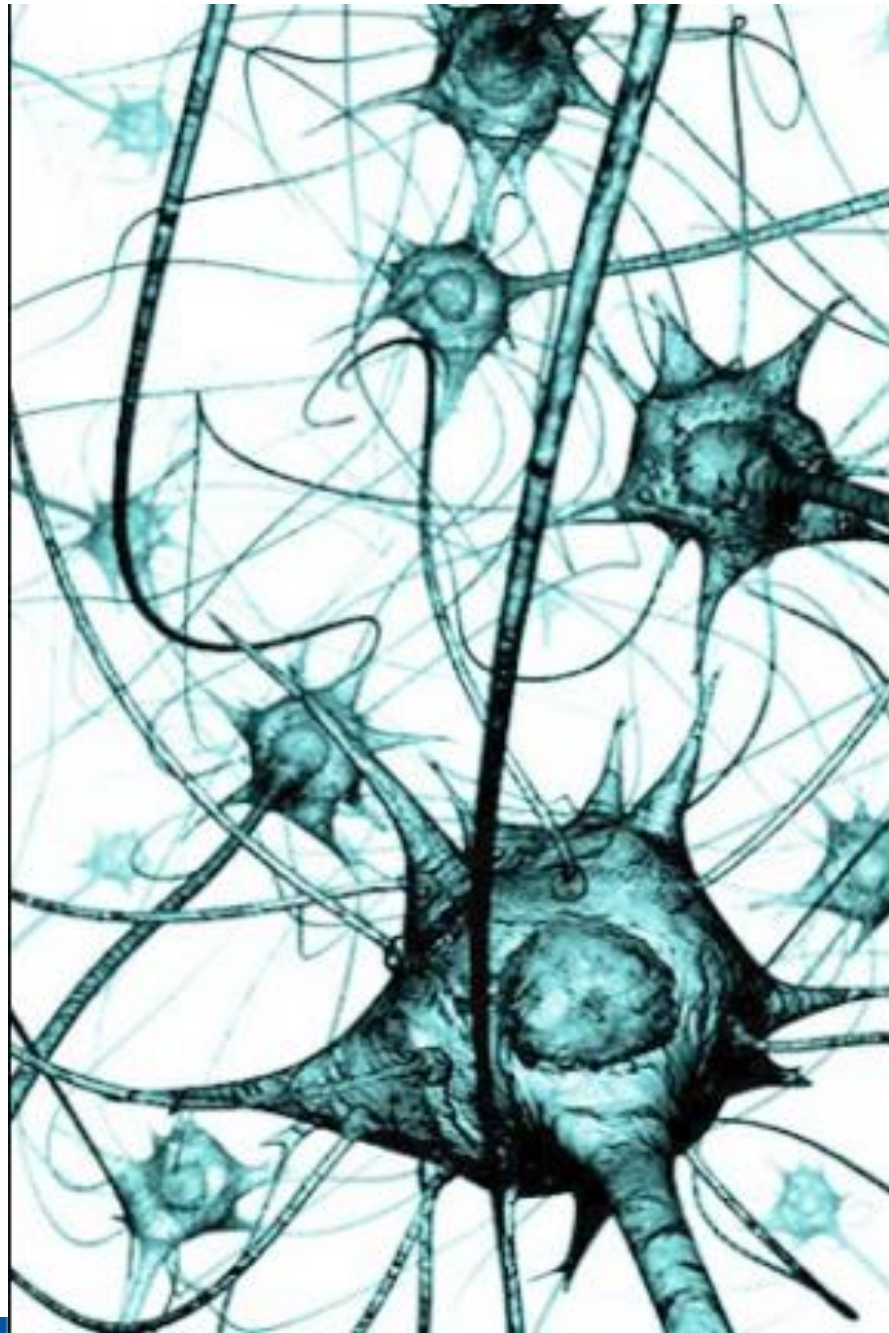
Their Networks

Organisation





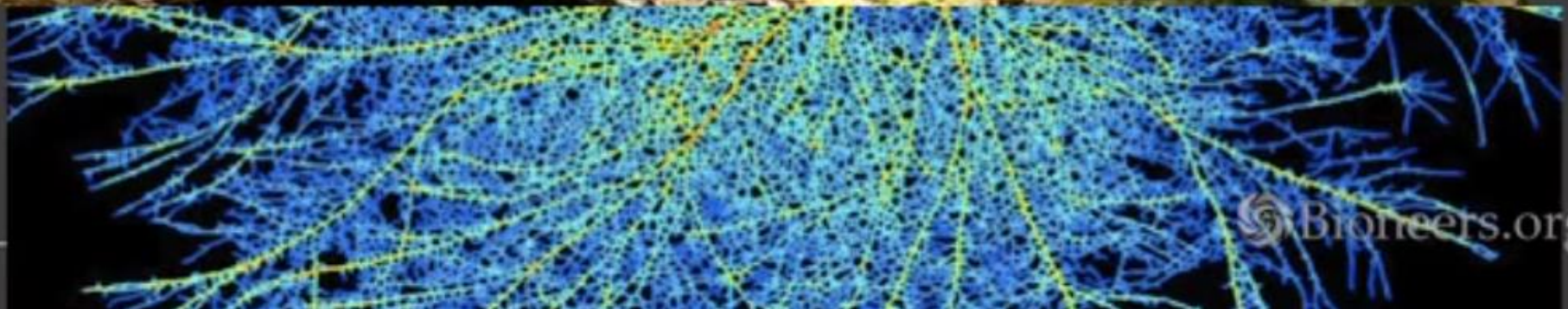






“Tomorrows leaders will be flexible, selfless and ready to collaborate”





 Bioneers.org

**What skills do we need?**

**Curiosity**

**Creativity**

**Connection**

**Confucius**



# Behaviour Change

~~Fear~~

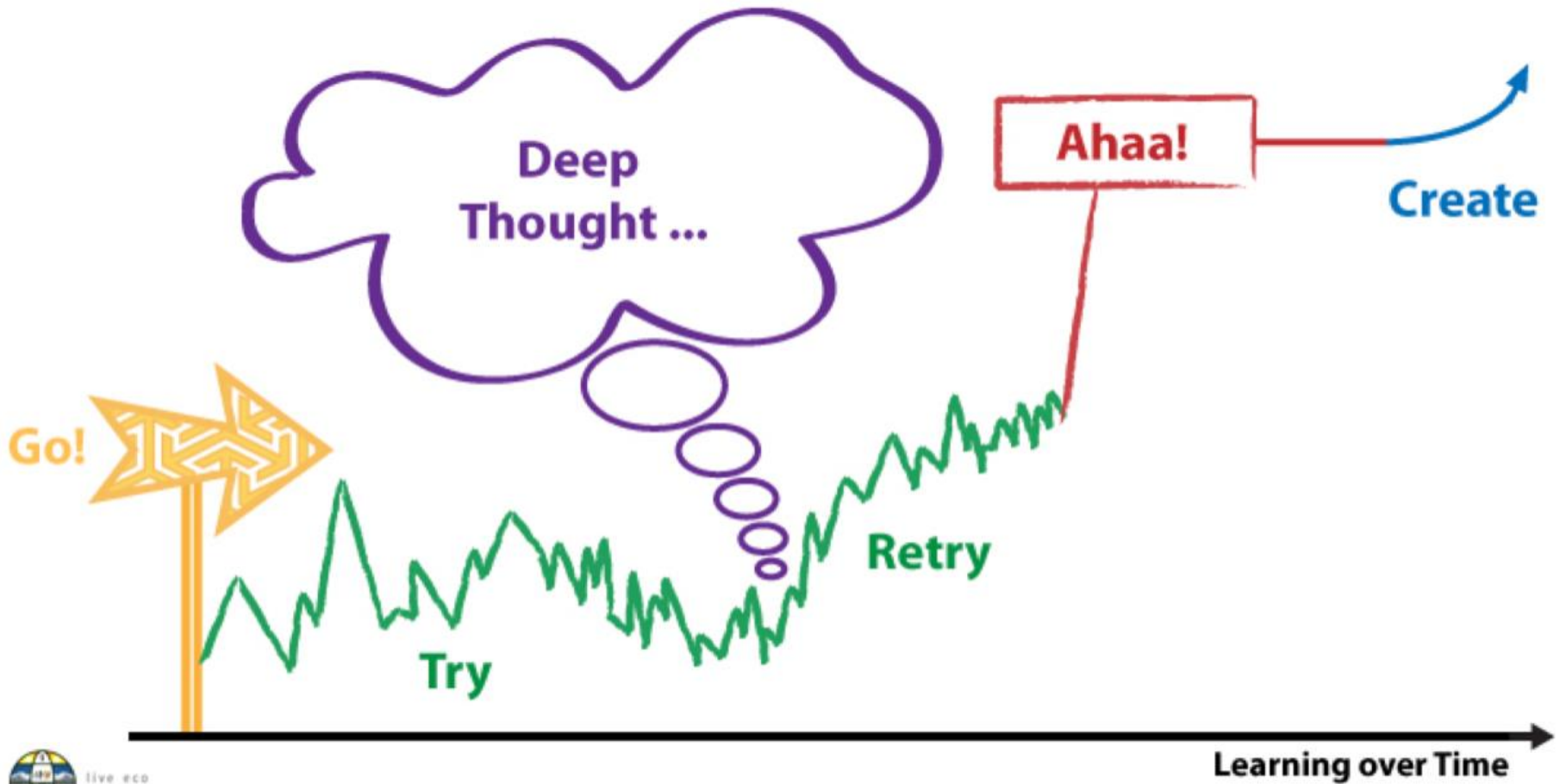
~~Force~~

~~Facts~~

Relate

Reframe

Repeat



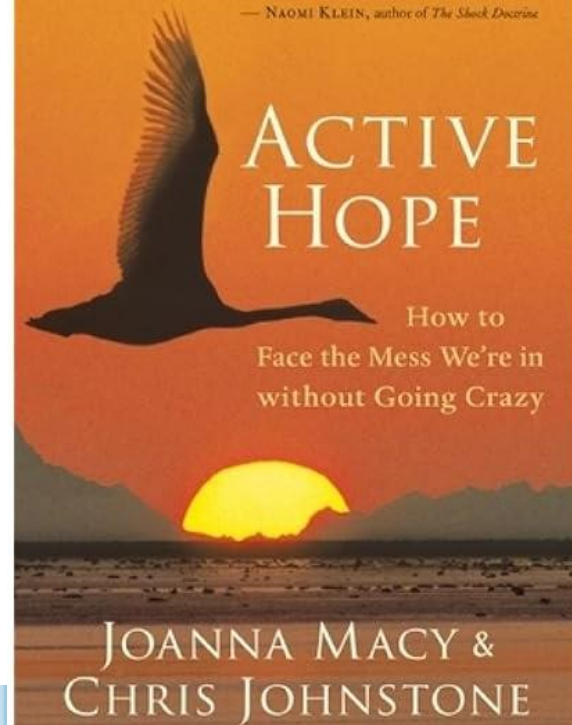
***"If the world is to be healed through human efforts, I am convinced it will be by ordinary people, people whose love for this life is even greater than their fear."***

**- Joanna Macy**



"Books about social and ecological change too often leave out a vital component: how do we change ourselves so that we are strong enough to fully contribute to this great shift? *Active Hope* fills this gap beautifully, guiding readers on a journey of gratitude, grief, interconnection, and, ultimately, transformation."

— NAOMI KLEIN, author of *The Shock Doctrine*





*“If its not fun,  
its not sustainable.”*

*- Francis Ryan, Vox Bandicoot*



# Climate Challenge



## 1. What can we do together?

For Ian -

Together we can save the world

Jane Goodall.

# In the Shadow of Man

---

*Jane van Lawick-Goodall*



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## What?



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Support homes and businesses to get off gas, become energy efficient and install solar power.



### **Transport revolution**

Prioritise active travel, buses and the train and accelerate the transition to electric vehicles.



### **Protect and enhance nature**

Deliver Council's Biodiversity Strategy.



### **Sustainable food**

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### **Circular economy**

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# Zero Emissions Roadmap:



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# Health Benefits:

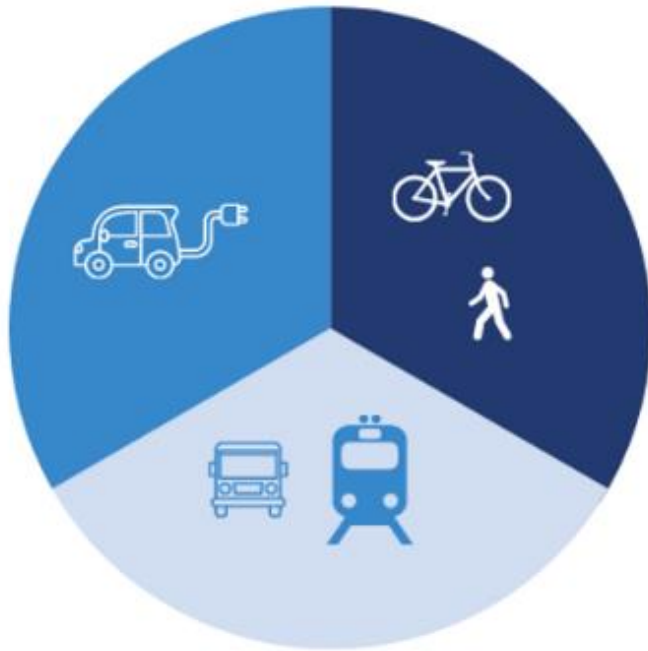
(excluding climate and employment)

- Gas cooking = 12% of childhood asthma
- Heat stress = mortality, morbidity, adverse pregnancy outcomes, mental health, domestic violence, alcoholism, anxiety
- Reduce physical work capacity, motor-cognitive performances
- life expectancy, physical fitness, energy, mental health, cognitive functioning, social connectedness and independence.
- Less likely to become overweight or obese, to develop cardiovascular disease, type 2 diabetes, colon cancer, breast cancer, osteoporosis and depression. Lower rates of absenteeism, increased job satisfaction.
- Air and noise pollution = 11,000 fewer deaths.
- Urban cooling, Biophilia
- Less disease spread
- Mental/physical health
- One in five deaths globally attributed to suboptimal diet
- 1.5 times the climate impact of the above four categories.
- Zero Landfill

# Zero emissions transport



## The Strategy: Revolution! Choice.





**Brent Toderian**

@BrentToderian



The Dutch invest €595 million annually on urban biking, resulting in €19 BILLION saved in public health care costs alone. That's how smart govts do the math on investing in better mobility. Let's be clear — it wastes public money to NOT do it. [#CityMakingMath](#) HT [@modacitylife](#)



# Map My Town



## EasyCycle guide



## EasyWalk guide



## EasyBus guide

10 Minutes to city centre bus zone



Base Map data © www.openstreetmap.org

## Walking and Cycling is Easy

There are many reasons to start cycling – to relax, for exercise, to get somewhere, to socialise, because it's cheap (free!) or just to get out of the house.

Walking and cycling in Bendigo are great ways to travel





Active 30 mins/day

eg: active transport

We save \$1.5b





## 20-year Cycling Commute:

**Save \$100,000**

**Live 7 years longer**

**Cut 94 tonnes CO2**





Abonnement

Abonnement



37

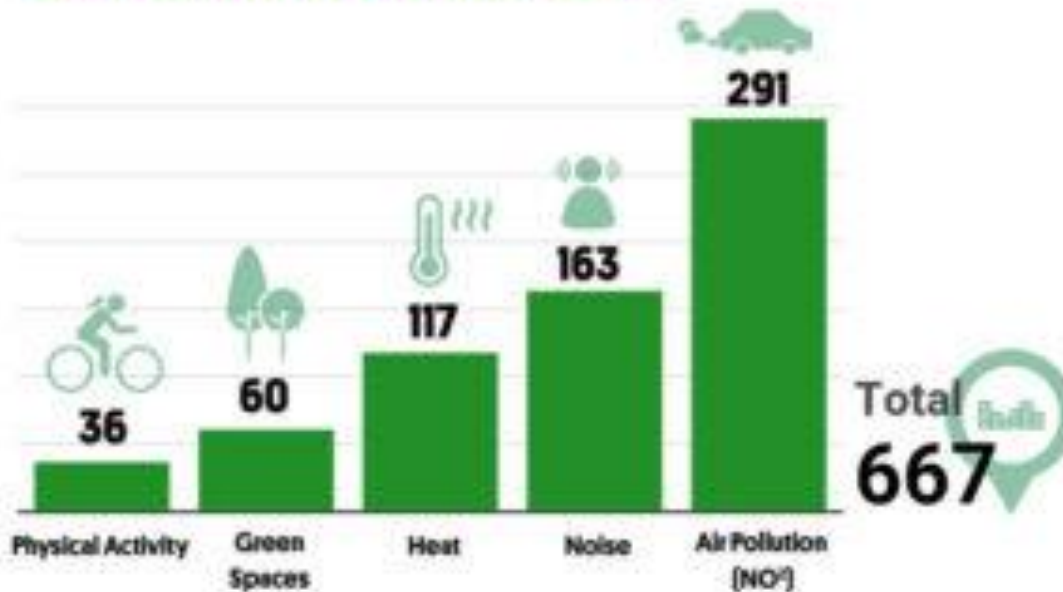




Public space in a Superblock.

Image source: Ajuntament de Barcelona

## Annual Premature Deaths that the "Superblocks" Model Could Avoid in Barcelona



Source: Mueller et al. Changing the urban design of cities for health: the Superblock model. *Environment International*. 2019

**ISGlobal**

**BEAT THE  
POWER BILLS**  
BUSINESS PROGRAM



## Become a Member of the GBCC

Receive support throughout 2024 to create a Zero Emissions Roadmap:

- take control of your energy costs and reduce electricity, gas and fuel bills now
- plan for zero emissions by 2030.
- Join a network of like-minded businesses



**BEAT THE  
POWER BILLS**  
BUSINESS PROGRAM



**Become a Member of the GBCC**

**Reduce Costs**

**Improve Products/Services**

**Increase Productivity**

**Grow your Marketplace**

**BEAT THE  
POWER BILLS**  
BUSINESS PROGRAM



# A four-part Zero Emissions Roadmap:

1

*Celebrate*  
Completed  
Actions

2

*Kick Start*  
2024  
Actions

3

*Embed Change*  
2026  
Actions

4

*Transform*  
2030  
Actions

Experiences    Ages    All Areas    Skills    Key People

Is Diverse

A Great Green Team

Is Supported

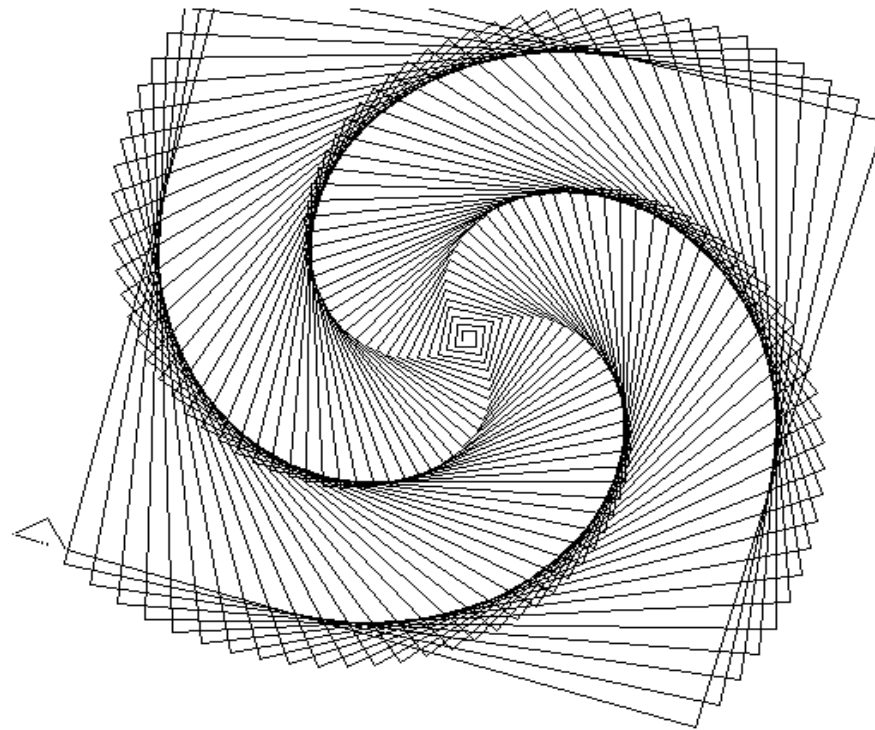
Time    Budget    Accountable    Executive Support

Learn

Plan

Dream

Do





# Low Wealth Homes Project

**50,000** Homes in Bendigo

**13,000** Low wealth homes

**\$3000/pa** 2030 solar/electric home savings

# Climate Challenge



## 3. What can we advocate for together?



# Climate Challenge



## 3. What can we advocate for together?

- **Councillors**
- **State Members/Ministers**
- **Federal Member/Ministers**

# Climate Challenge



## 3. What can we advocate for together?

- **Letters, events, meetings**
- **Storytelling, education, socials**
- **Collective positions**



# Climate Challenge



## 3. What can we advocate for together?

**Fixing the climate crisis will massively reduce the health budget. We need preventative health funding!**



## Why does #climatehealth matter?

Health and wellbeing are fundamentally dependent on the health of the natural world.

Climate change poses serious, increasing threats to our health, and the natural systems upon which our health depends.

On the other hand, climate action is our greatest opportunity for better health and wellbeing.

[Learn more](#)









Apartments?

Preventative  
Health  
Centre?

Kinder?



“

**“AT FIRST PEOPLE REFUSE TO BELIEVE THAT A STRANGE NEW THING CAN BE DONE, THEN THEY BEGIN TO HOPE IT CAN BE DONE, THEN THEY SEE IT CAN BE DONE — THEN IT IS DONE AND ALL THE WORLD WONDERS WHY IT WAS NOT DONE CENTURIES AGO.”**

— Frances Hodgson Burnet