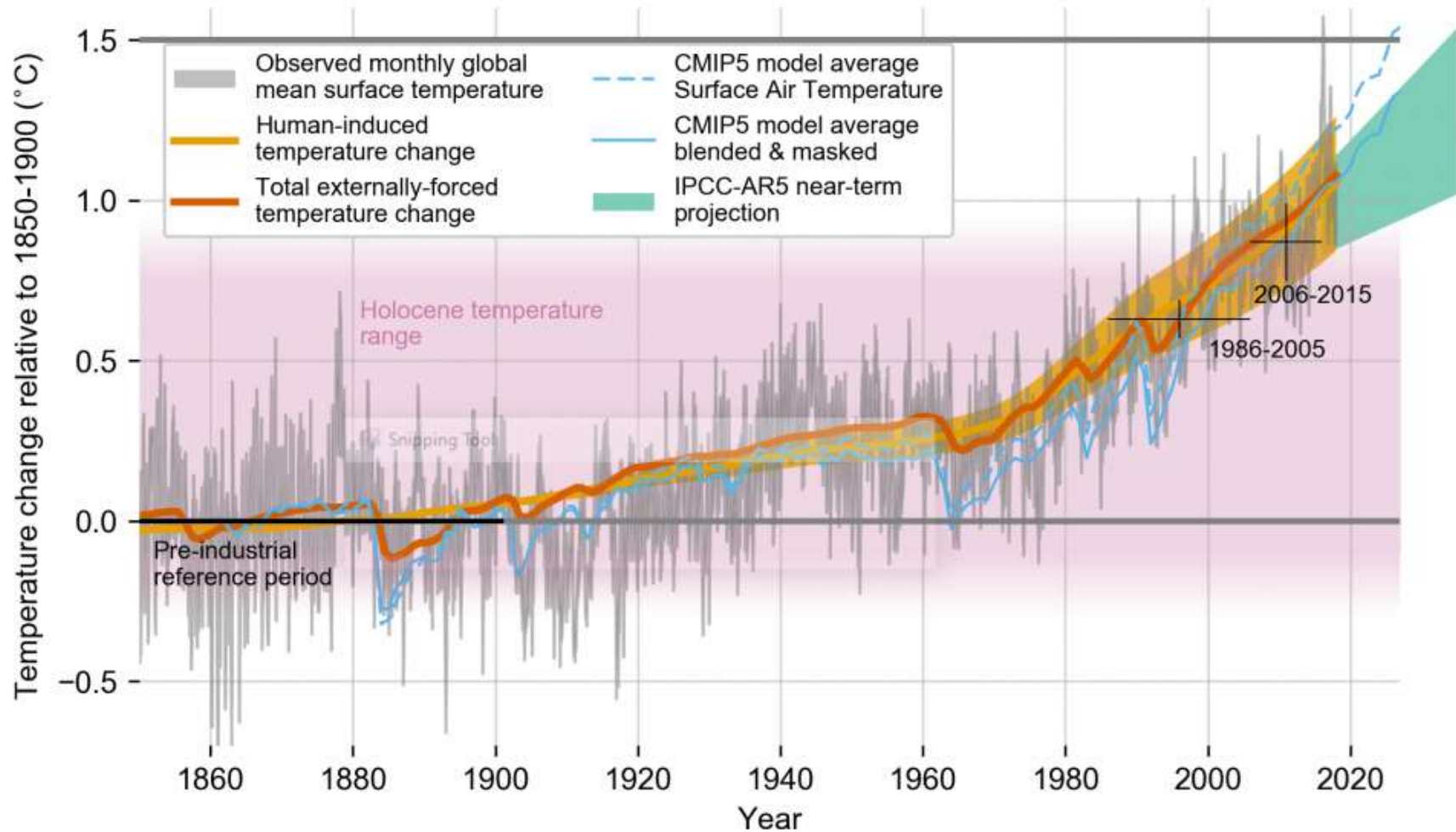
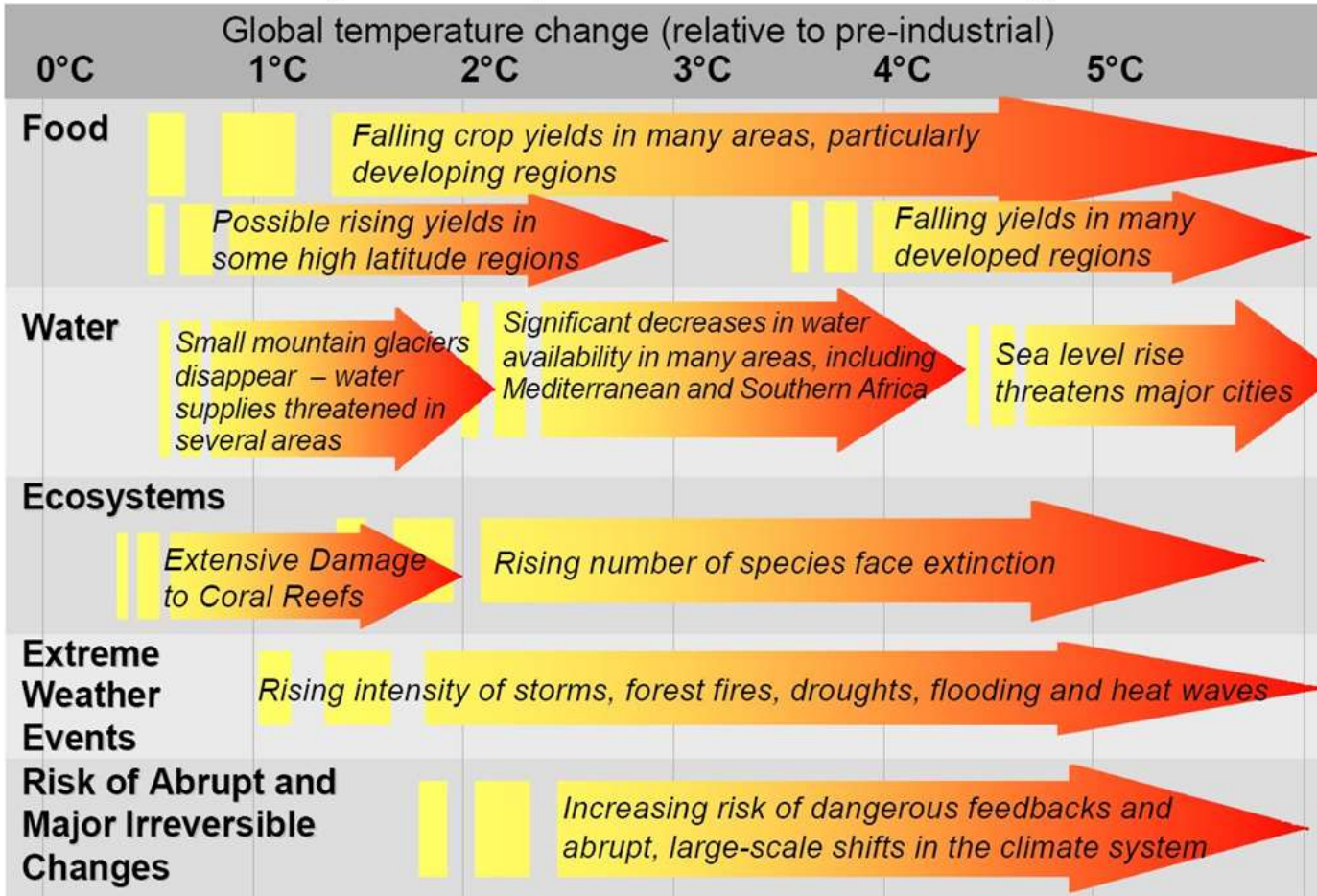


Climate Change

Why the Climate **Needs Us** to Lead Transformation



Projected Impacts of Climate Change



IMPACTS ON FOOD AT...



1.5°C

Wheat, rice, maize and soybean production suffers

2.0°C

Agricultural yields fall rapidly

3.0°C

Fish species go extinct locally

4.0°C

High levels of food insecurity, development path reversed

Wheat /
Flour

Cocoa
Products

IMPACTS ON FLORA & FAUNA AT...



1.5°C

9 out of 10 coral reefs at risk from severe degradation

2.0°C

All coral reefs disappear

3.0°C

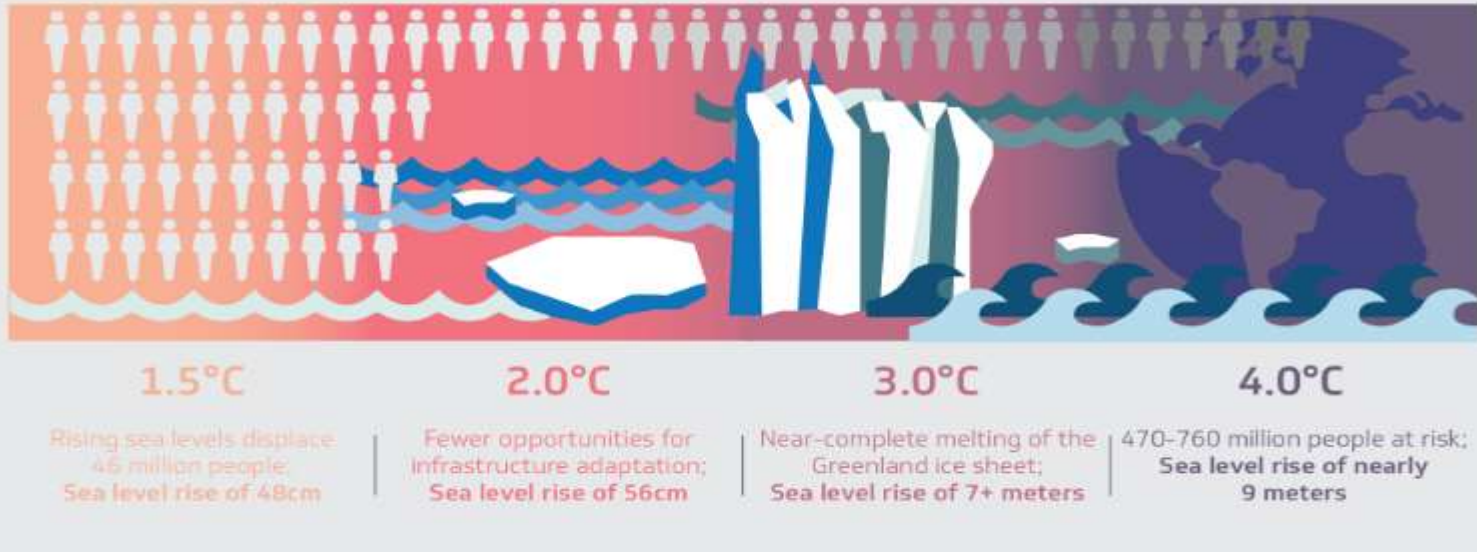
Marine ecosystems may collapse

4.0°C

Half of all plant and animal species face local extinction

Olive
Oil

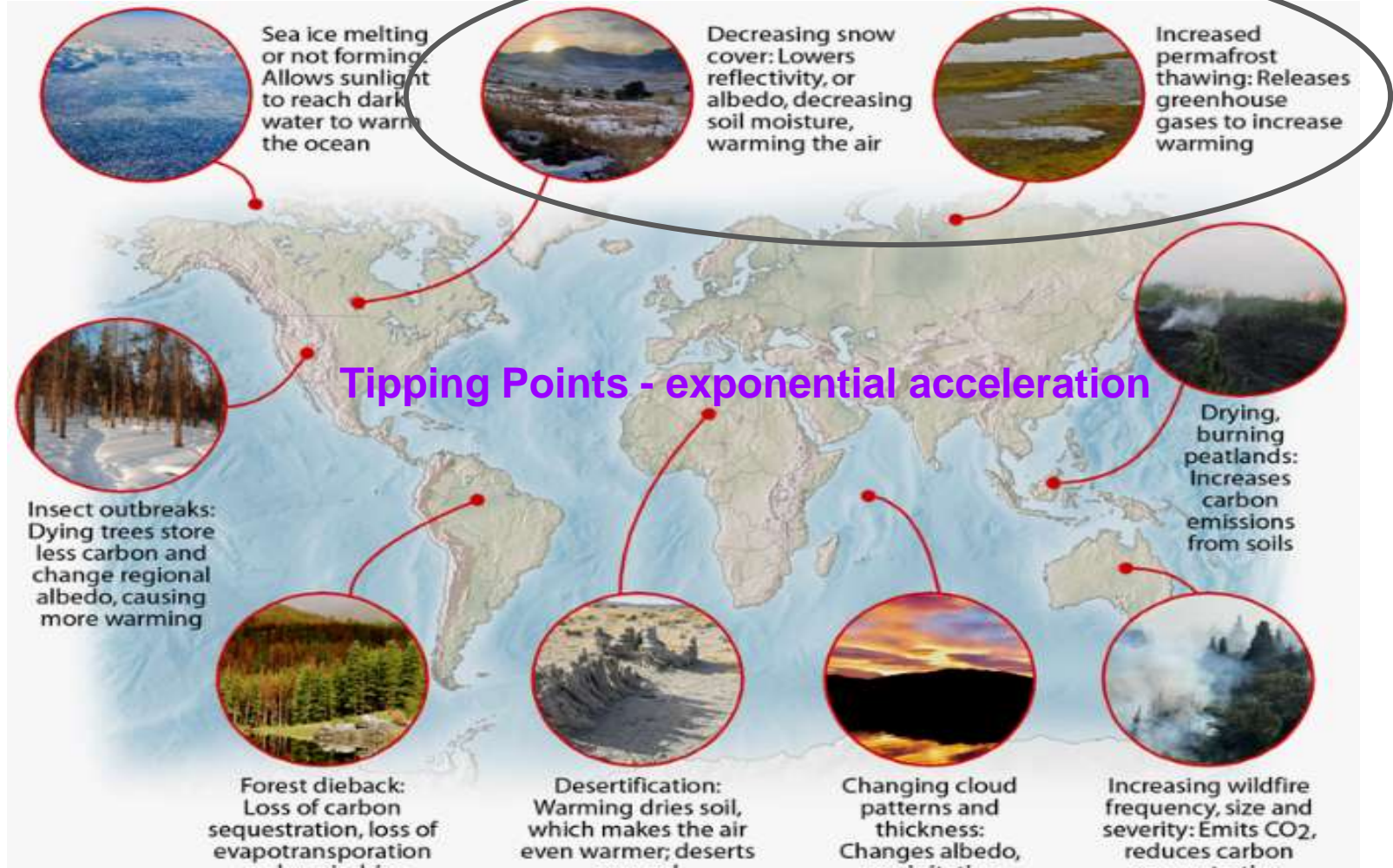
IMPACTS ON SEA LEVEL RISE...



Multiple impacts already, global and local.....

.....Cyclone Gabrielle, South Dunedin

Climate Change Accelerators (positive-feedback loops)



Climate change is a health issue



Climate Change is an **Equity** issue

The vulnerable

- Geographic
 - Island nations
 - **Coastal**, near major waterways
 - Impoverished urban neighbourhoods (heat)
 - Isolated **rural** communities
- Demographic
 - **Elderly**, debilitated
 - Women (where disempowered)
 - Infants and children
- Socioeconomic deprivation
 - **Māori and Pacific** peoples
 - Poor and marginalised





Children

+

climate
change

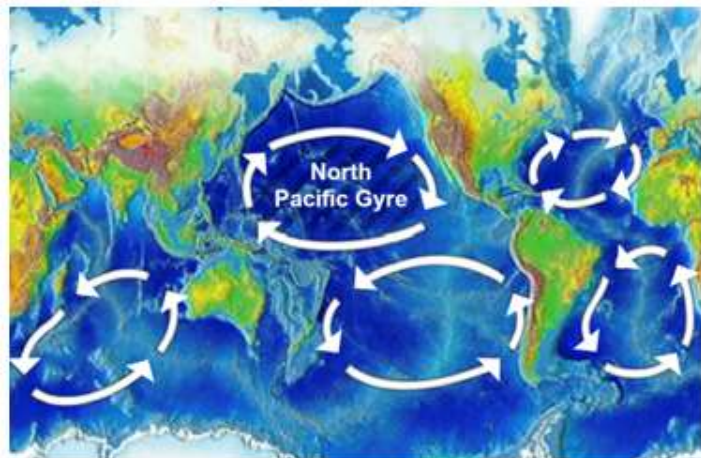
Inter-generational Equity

- Infection
- Heat stress
- Dehydration
- Longer exposure
- Unearned legacy



WHO 2009

Garbage Patches



Great Pacific Garbage Patch

Microplastics and Health

- Ubiquitous
- Inflammation, oxidative stress, toxicity
- Increased rates of cancers, endocrine and respiratory problems, CV disease



Science of The Total Environment

Volume 702, 1 February 2020, 134455



Review

Environmental exposure to microplastics: An overview on possible human health effects

[Joana Correia Prata](#)^a  , [João P. da Costa](#)^a , [Isabel Lopes](#)^b , [Armando C. Duarte](#)^a ,
[Teresa Rocha-Santos](#)^a 

Water Pollution

- Metformin, carbamazepine, paracetamol
- Antibiotic resistance
- Effects on ecosystems

RESEARCH ARTICLE | ENVIRONMENTAL SCIENCES | 



Pharmaceutical pollution of the world's rivers

[John L. Wilkinson](#)  , [Alistair B. A. Boxall](#) , [Dana W. Kolpin](#) ,  [123](#), and [Charles Teta](#)  [Authors Info & Affiliations](#)

Edited by Andrea Rinaldo, School of Architecture, Civil and Environmental Engineering, Laboratory of Ecohydrology, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland; received August 11, 2021; accepted December 10, 2021

February 14, 2022 | 119 (8) e2113947119 | <https://doi.org/10.1073/pnas.2113947119>

Air Pollution

- 4.2 Million premature deaths worldwide in 2019
- 2016: >3,300 premature deaths of adult Kiwis
- Stroke, heart and lung dz, cancers

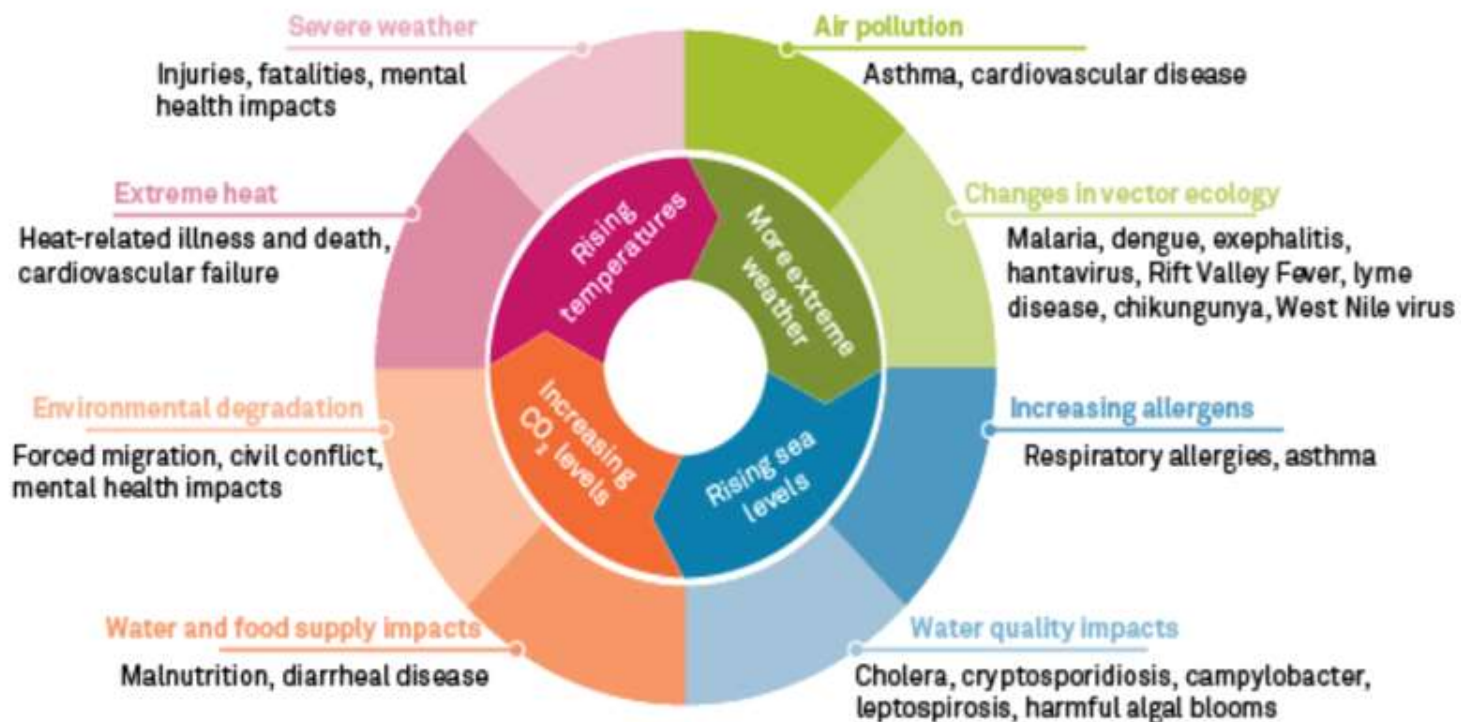


Antimicrobial Resistance

- Bacteria around for 4 trillion years, humans 250K years
- Golden Age of Antibiotics 1940 – 2000
- 1.2 million deaths/year from AMR
- 10 million deaths/year from AMR by 2050



Impact of climate change on human health



Health and climate: co-benefits

Example interventions

These interventions have benefits both for health and for reducing climate change (also known as mitigation)

Produce more renewable energy

Improve insulation in homes

Encourage use of lower emission vehicles

Promote active transport

Reduce solid fuels used for cooking

Less food from animal sources

Reduced climate change

Indirect benefits

Reducing climate change also leads to further benefits downstream:

- > Fewer deaths and injuries from extreme weather events
- > Less skin cancer from UV radiation
- > Reduced spread of vector-borne diseases to new areas



Health benefits



Better mental health



Fewer deaths from extreme heat



Less cardiovascular disease



Less respiratory disease



Lower rates of cancer



Lower rates of obesity

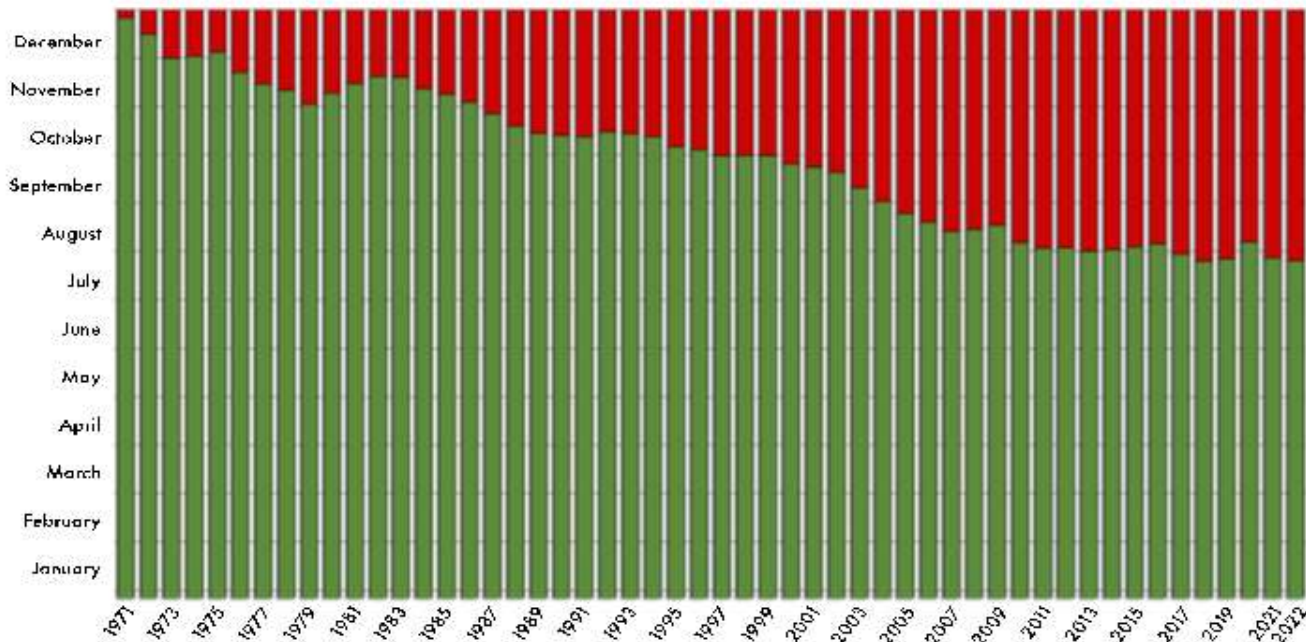


1 Earth

Earth Overshoot Day 1971 - 2022



1.75 Earths



Why Climate Action is in our Wheelhouse

Responsibility

Our industry is part of the problem
Ethical and Professional duty

“The Healthcare Sector contributes about 5.2% to the global greenhouse gas emissions.” (Lancet)

Expertise with complicated problems

Ability to assimilate complex information
Trained to evaluate current behaviour
vs future health consequences

The Healthcare Sector makes up about 10% of the NZ GDP.

Ability to Influence

Socially
Financially



If You're Worried About the Climate, Move Your Money

How you consume matters to the planet. How you invest does too.

If not
us,
then
who?



These Guys?

“Politicians Discussing Global Warming”

Political inaction globally and locally

Corporate Capture of Cabinet



Vested Interests → shortsighted decisions

...not going to change...

We can't 'tech' our way out of this.....



- failing targets
- energy intensive
- expensive

... a bit of a hot mess...

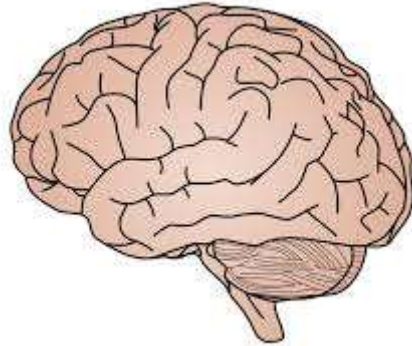
Factory settings:

short-sighted

reactive

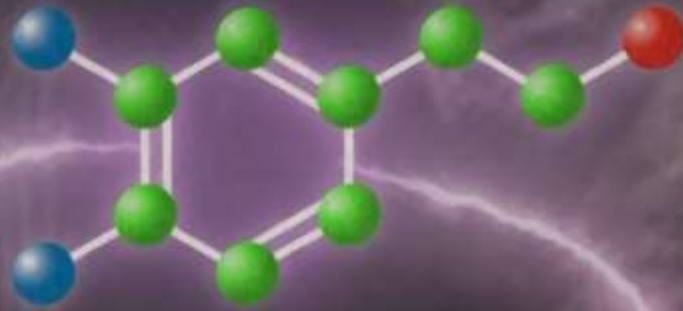
selfish

competitive



defensive

'loss'
aversive



**We need to talk about
Dopamine**





Dopamine Pinball

Brought to you by Consumerism Inc™

Habituated to the action of consumption

“Our industrial economic system is turning
billions of barrels of oil

—> into **microlitres of dopamine.**”

(Nate Hagens)

Material wealth \approx status

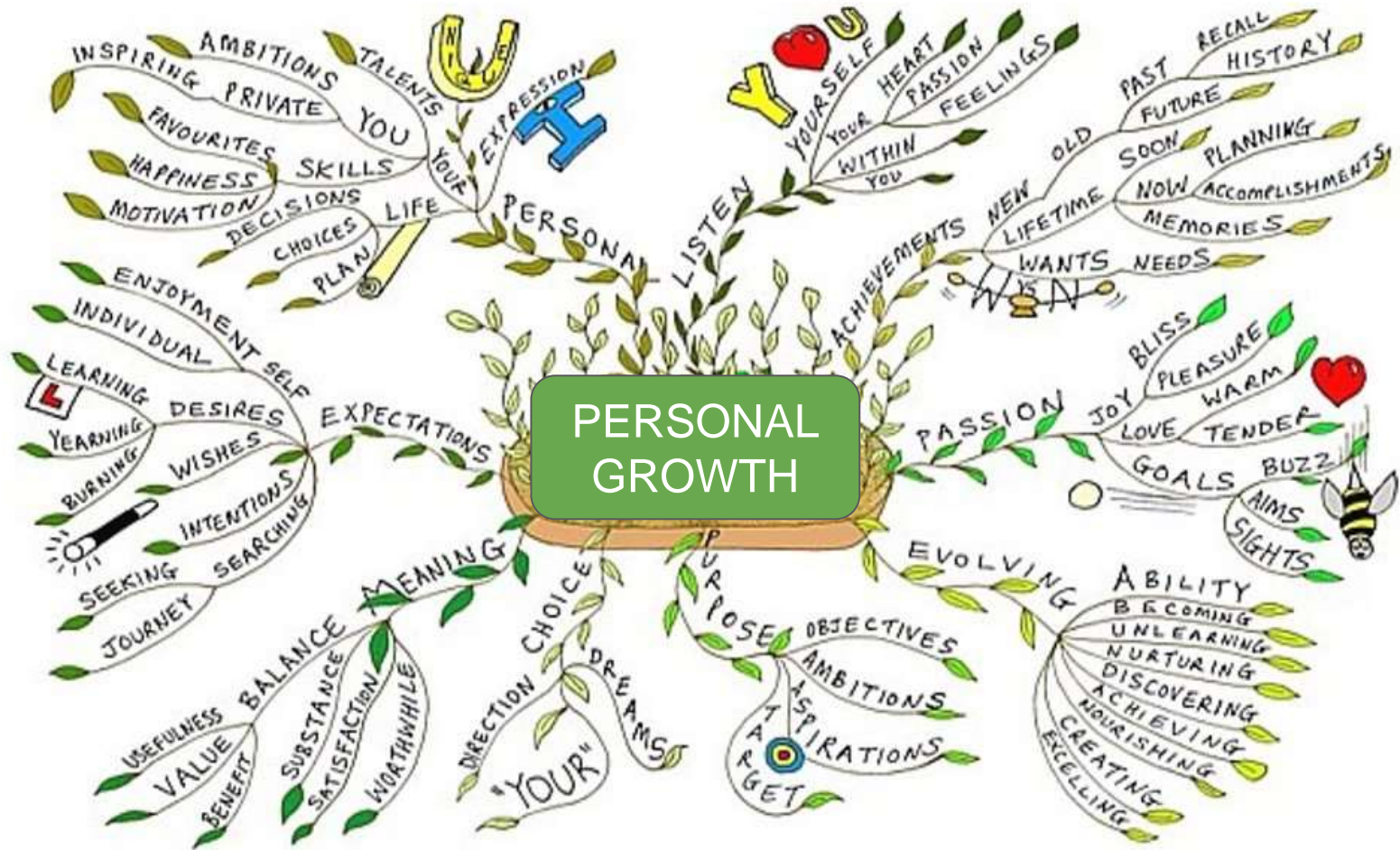




No lasting happiness



Artist: Jane Galloway
Aotearoa NZ



“OG” DOPAMINE
The Reward Chemical
Eating Food
Achieving a Goal
Complete a Task
Self-Care Activities

OXYTOCIN
The Love Hormone
Socialising
Physical Touch
Petting Animals
Helping Others

ENDORPHINS
The Painkiller
Exercising
Listen to Music
Watch a Movie
Laughter

SEROTONIN
The Mood Stabilizers
Sun Exposure
Be with Nature
Mindfulness
Meditation



Cognitive Dissonance



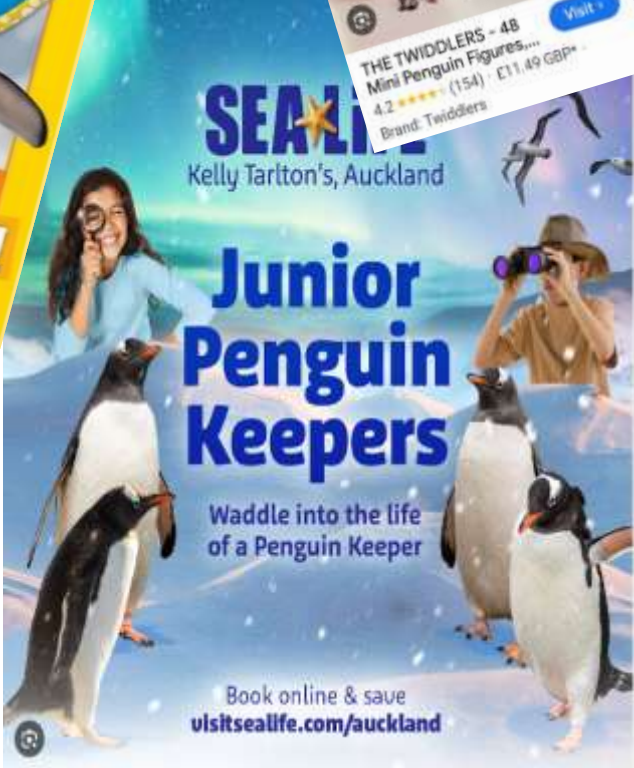
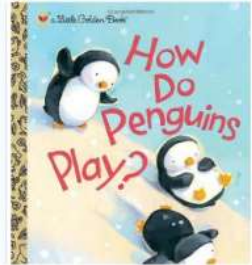
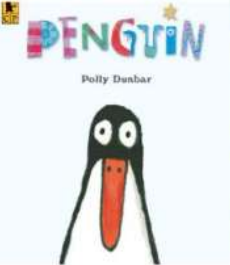
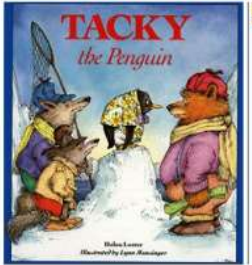
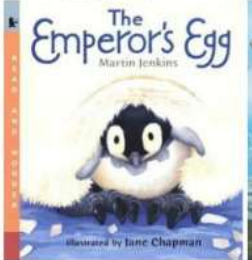
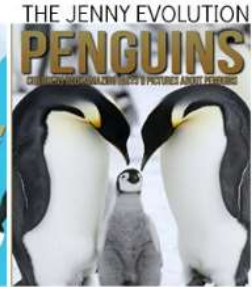
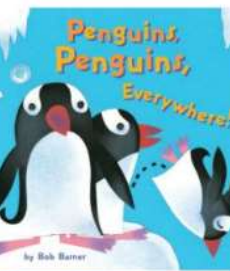
The discomfort a person feels when their behaviour does not align with their values or beliefs

or

when they hold two contradictory beliefs at the same time

Penguins Books

+ FREE Study Unit Resources





A Unique
Natural Sanctuary—
unspoilt by Human presence
on this planet.....



Wear your
bragging rights
with your very own
G Expedition
parka!
Yours included with
every booking



On our Arctic cruises, we offer a **Finnish sauna** with floor-to-ceiling windows and an outdoor area; plus, a steam sauna, hydrotherapy shower and ice fountain!

Thousands of penguin chicks killed by early sea ice breakup, study says

Last year saw record low levels of sea ice — and this year looks set to be even worse, scientists say



By [Victoria Bisset](#)

August 25, 2023 at 11:05 a.m. EDT



“Catastrophic Breeding Failure” due to record sea-ice losses



End the Age...
Sponsored · pet...

[Visit site](#)

Emperor Penguin Colonies Hit By Mass Breeding Failures In 2023
1,138 views 19h ago #penguin ...more



...things don't have to be dissonant...

There's so much we can do.....

We do it for the health of **our patients**, the **children of our planet**, and the **generations to come**.

And it will likely also **strengthen and enrich our own wellbeing**.

Practice medicine
sustainably - many
actions are readily
instituted

Live our lives mindfully,
making conscious
consumer choices

Be role-models
to our patients
and to children

Advocate for
societal action on
climate and
environment

Reorientation:

- To **planetary limits**
- To **each other**
- To **nature and the eco-system**

We can work as a **collective** of individuals making choices that **allow the environment to regenerate not degenerate.**

Ecological Footprint Calculator

Your total footprint is **5.7 tons**. We can work with that!



1.1 ton
Housing



2.2 ton
Travel



2.4 ton
Consumption

[Send my result](#)

Your **climate promises** reduce your footprint by 1.8 tons:

| | |
|---------------|------|
| > Housing | -0.1 |
| > Travel | -0.4 |
| > Consumption | -1.3 |

Your carbon footprint after climate pledges

3.9

Reduced

The next step is to take full accountability for your climate impact by offsetting the emissions that are hard to eliminate. Offsetting your 3.9 ton

RESULTS

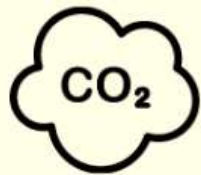
Your personal Earth Overshoot Day is:

25. Mar 

If everyone lived like you, we would need

4.3 Earths 





LOW CARBON LIFESTYLE

**PUBLIC
TRANSPORT**

**WALK &
BIKE**



**UNPLUG
DEVICES**

**SLOW
FASHION**

**DON'T
WASTE
FOOD**

CARPOOL



**FLY
LESS**



**REUSABLE
BAG**



MINIMALISM

**PLANT-
BASED DIET**

COMPOST



**INSULATE
YOUR HOME**

**GROW
YOUR OWN
FOOD**

**DON'T BUY
PACKAGED
FOOD**

**DON'T
SPEED**

LED BULBS



**BUY
LOCALLY**

**TURN LIGHTS
& TAP OFF**

Lighting

Gloves

Healthier
homes for
patients

Mindful Prescribing

Accurate waste
disposal



Recycling

Paper

Computers

Reuse / resterilise

Appraise full lifecycle costs
when purchasing
equipment

UN Sustainable Development Goals



Sustainable Development means that any development on Earth must **not use up or destroy resources** that **future generations need to have a good life.**

To achieve this, we have to **consider all aspects of the way we live our lives**: the houses we build, the work we do, the cars we drive, the food we eat, the technology we develop, and so on.

In **2015**, the United Nations General Assembly set **17 goals to secure the future.**

The goals have been called a **blueprint** to achieve a **better and more sustainable future for all.**

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, JUSTICE AND STRONG INSTITUTIONS

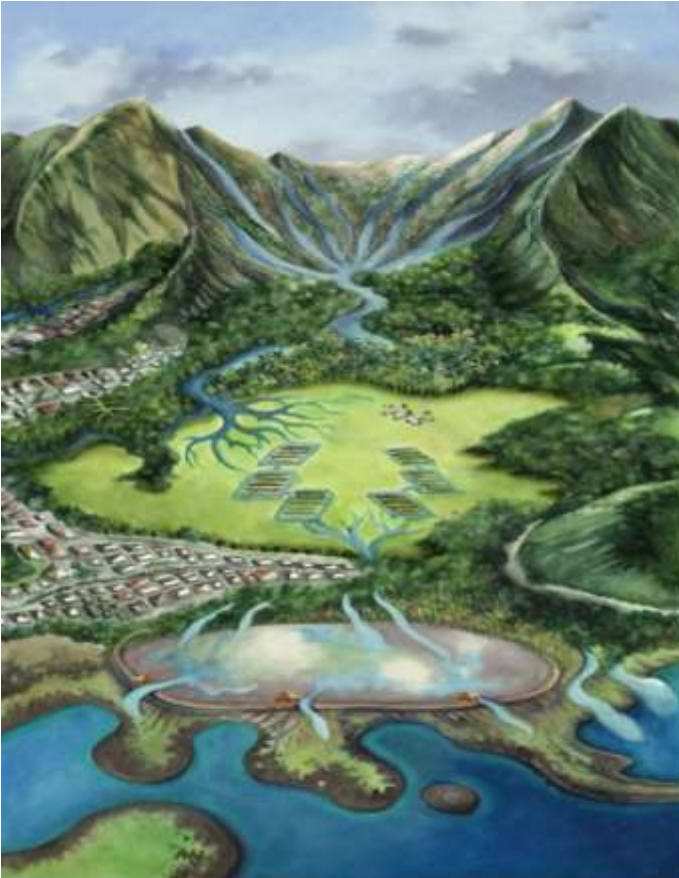


17 PARTNERSHIPS FOR THE GOALS



UN SUSTAINABLE DEVELOPMENT GOALS

Indigenous wisdom





Now is the time

We are the people

Be conscious of our decisions, don't fall for instant gratification

Come tomorrow for some practical solutions / tips

Sustainabledoctor.co



Sustainable Doctor

Karen Danenhauer karenrpcv@hotmail.com

Rebecca Randerson rebecca@vital.kiwi.nz

END

END

“a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community”

Prof. Sir Muir Gray

Director of the UK National Knowledge Service & NHS

- “.... doctors are effectively silent on the health threat that will come to define our age
-they cannot just leave the issue to their leaders
-they should be active in their local communities where they are known and respected”

Café Regenerata

Menu

Serotonin

- Contemplate the sunrise
- Morning yoga
- Bush walks
- Kneading bread dough
- Weighted blanket

Endorphins

- Gardening
- Listen to music
- Watch a movie
- Laughter



Oxytocin

- Sense of belonging
- Somatosensory stimulation (skin)
- Positive warm human-human connections
- Volunteer in your community
- Loving human-pet interactions
- Warm bath

Ethical Dopamine/Nature-centred Dopamine

- Laughter
- Exercise
- Handcrafts
- Supporting others



| BUSINESS AS USUAL | CONVENTIONAL SUSTAINABILITY | REGENERATIVE SUSTAINABILITY |
|------------------------------|------------------------------------|------------------------------------|
| Net Negative | Net Zero | Net Positive |
| Short Term | Mid Term | Long Term |
| Deplete, Deforest, Degrade | Reduce, Reuse, Recycle | Rethink, Restore, Replenish |
| Business as usual, Green | Less Harm | Restorative, Regenerative |
| Parts, Silos | Collaborative | Interdependent |
| Bare Minimum | Do More With Less | Do Better With Less |
| Little Environmental Concern | Carbon Emissions Focus | Whole Systems Integration |

The human brain - its biases and flaws

Neuroscientist and Environmentalist Prof George Paxinos, University of NSW

The delusions we have about the brain, thinking it is the greatest thing in the Universe – never since Narcissus has there been such an adoration, with such little justification.

If we really understood the nature of our brains, then we would not trust ourselves

...And a Huge Potential

Economic Clout:

10% NZ GDP

10.9% GWP

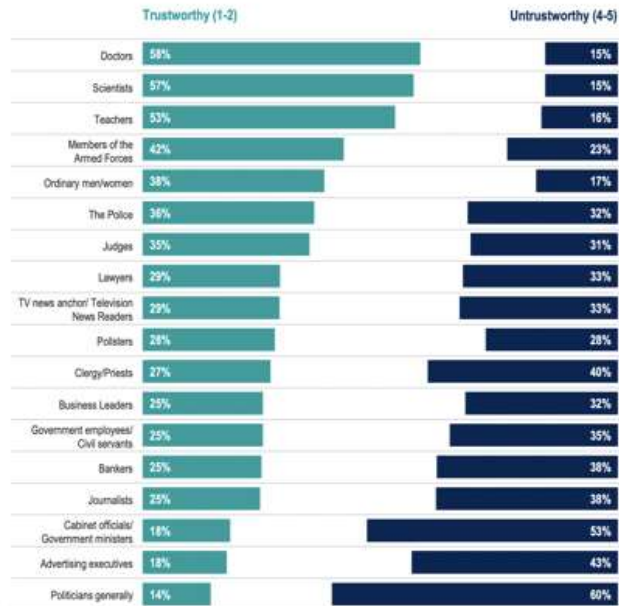
18% USA GDP

Social Clout:

Global Trustworthiness Ranking 2023

Please look at this list of different types of people. In general, do you think each is trustworthy or untrustworthy in your country?

Please use a scale of 1 to 5, where 1 is very trustworthy and 5 is very untrustworthy



Base: Ipsos Global Trustworthiness Index 2023 - 22,816 participants across 31 countries, interviewed online 26 May - 9 June 2023
Online samples in Brazil, Chile, Colombia, Indonesia, Ireland, Malaysia, Mexico, Peru, Romania, Singapore, South Africa, Thailand, and Turkey tend to be more urban, educated, and/or affluent than the general population
This "Global Country Average" reflects the average result for all the countries where the survey was conducted. It has not been adjusted to the population size of each country or market and is not intended to suggest a total result.

Café Regenerata



Menu

Oxytocin

- Community
- Somatosensory stimulation (skin)
- Positive warm human-human connections
- Loving human-pet interactions
- Heat (ie warm bath)

Serotonin

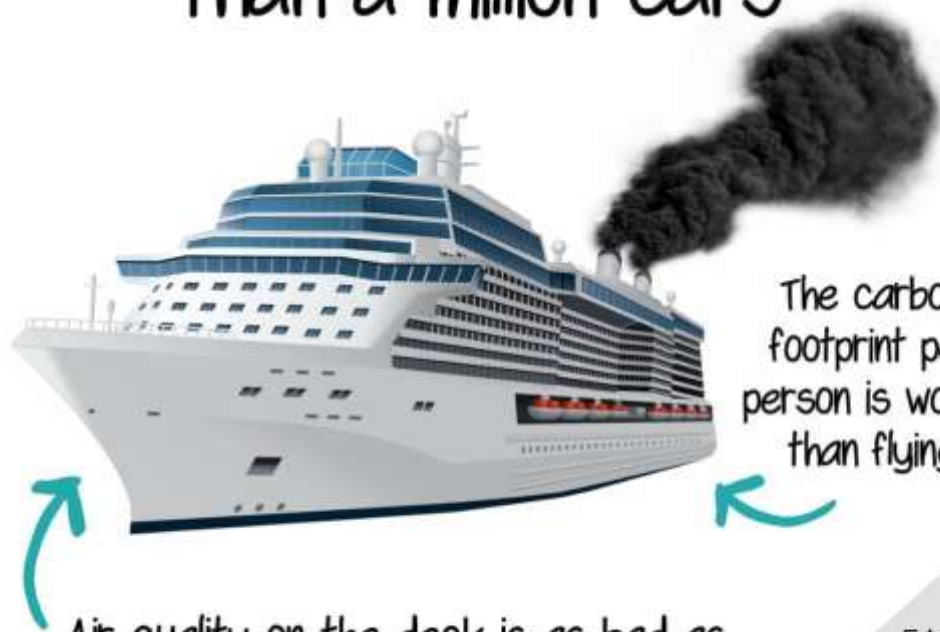
- Bush walks

Ethical Dopamine/Natural-centre Dopamine

- Laughter
- Exercise
- Supporting others

DID YOU KNOW?

Cruise ships pollute more
than a million cars



The carbon
footprint per
person is worse
than flying

Air quality on the deck is as bad as
the world's most polluted cities



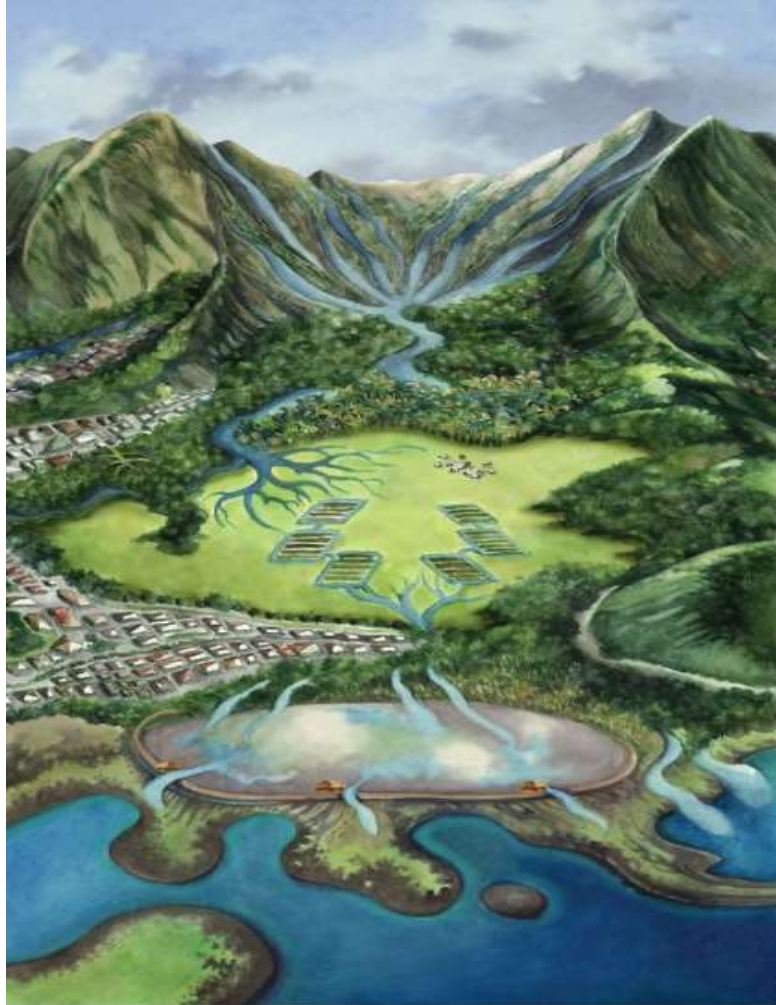
Short-termism

- Cognitive biases help explain and strengthen short-termism. People are prone to displaying loss aversion and, consequently, place more weight on losses than gains.
- Because many long-term problems are 'creeping problems', our attention deficit amplifies the presentist bias.

Ahupua'a system of indigenous land connection and stewardship

- Whole System Approach;
- Traditional ahupua'a management based on the understanding that **all parts of a system are connected and influence each other.**
- restores vital connections between **regenerated habitat** supporting **wildlife** and **healthy people**

From 2023 Lecture by
Assoc Prof Mehana Vaughan,
University of Hawai'i.



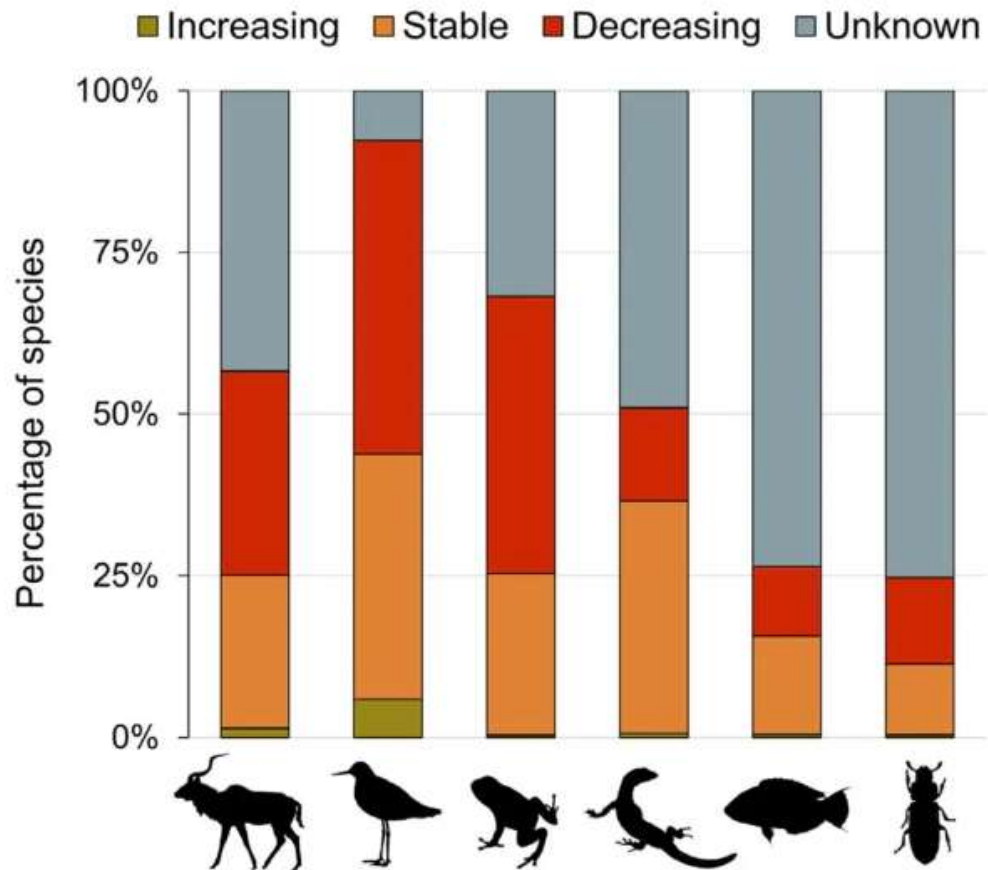


FIGURE 1 | Percentage of species per taxonomic group which have decreasing, stable, increasing or unknown/unassessed (NA) population trends. Each group is represented by a silhouette from left to right; mammals (N = 5969), birds (N=11,162), amphibians (N=7316), reptiles (N=10,150), fishes (N = 24,356) and insects (N = 12,161). Data were sourced from the IUCN Red List. (doi:10.1111/brv.12974) [-] DOI:10.1111/BRV.12974

Thus the **knowledge** of the strengths and **limitations** of our neuro-psychology could be the **break-through** in confronting the challenges of climate change.....

We are curious, **lifelong learners** with huge capacity for iterative personal development and **cumulative wisdom**.

we've got this extraordinary legacy from evolution, we have a big brain capable of abstract thought and future planning.

“But I'm a pessimist in the sense that our societies and governments are showing no good capacity to understand how urgent the issue is and to find less selfish ways of responding.

Anthony McMichael, director of the National Centre of Epidemiology and Population Health at the Australian National University, Canberra, said that doctors had a particular responsibility because they had influence and because the health sector would have to deal with some of the worst effects of climate change.

Smart but not wise

- “It may seem impossible to imagine that a technologically advanced society could choose, in essence, to destroy itself, but that is what we are now in the process of doing.”

Kolbert E. Field Notes from a Catastrophe, 2006

- Are we smart enough to survive how smart we are? Jeanette Winterson

Homo sapiens - the species smart enough to monitor itself into extinction

Archbishop Desmond Tutu “Divest from Fossil Fuels and Invest in a Clean Energy Future,
thus benefiting the world’s majority.
“Move your money out of the problem, and into solutions.”

Campaign started with universities and has moved into pension funds, faithbased institutions, bank, insurance companies and corporations

In an [article for the Guardian](#), the archbishop writes: "We live in a world dominated by greed. We have allowed the interests of capital to outweigh the interests of human beings and our Earth. It is clear [the companies] are not simply going to give up; they stand to make too much money."

Tutu, one of the most revered figures of South Africa's anti-apartheid struggle and a key backer of the economic and moral campaigns that helped end the system, says: "People of conscience need to break their ties with corporations financing the injustice of climate change. We can, for instance, boycott events, sports teams and media programming sponsored by fossil-fuel energy companies."

The Nobel peace prize winner also called for investors to dump their fossil fuel stocks: "It makes no sense to invest in companies that undermine our future."

90 Companies responsible for two thirds of emissions



If we are looking 100 years in the future we need to value our resources differently

For our survival, we need to be part of the drive for a rebalancing of humanity's relationship with nature.

If we are looking 100 years in the future we need to value our resources differently

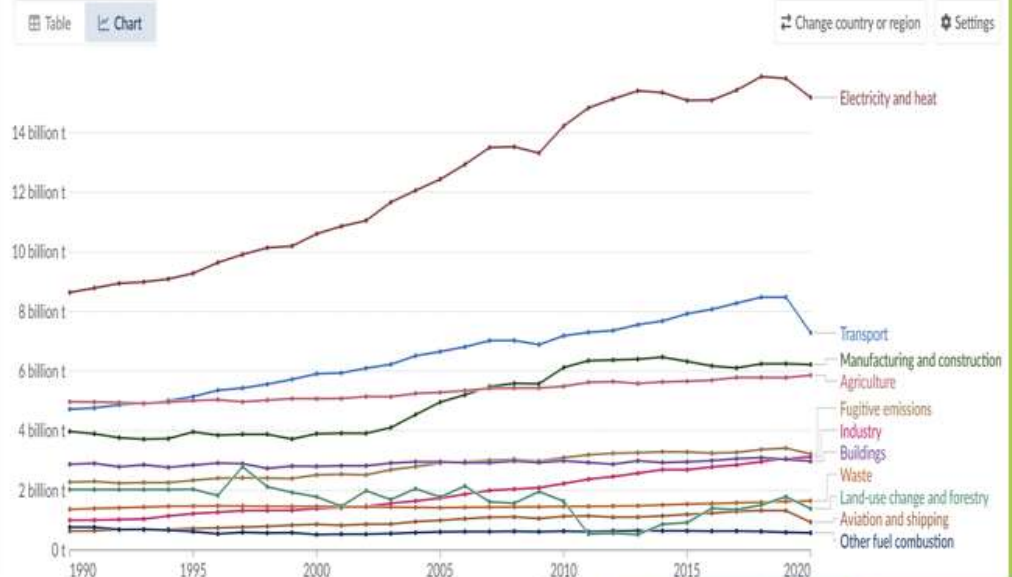
For our survival, we need to be part of the drive for a rebalancing of humanity's relationship with nature.

And we are the People...with Responsibility

- ▶ Healthcare sector 4.4% global emissions
 - ▶ > 2 billion tons of CO₂/year
 - ▶ More than shipping and aviation
- ▶ First Do No Harm
- ▶ Our patients
- ▶ Essential

Greenhouse gas emissions by sector, World

Greenhouse gas emissions are measured in tonnes of carbon dioxide-equivalents over a 100-year timescale.



Divest:Invest Campaign

Needs Updated slide - is more than double this now

OVERVIEW

Totals

\$6.09 TRILLION

APPROX. VALUE OF INSTITUTIONS
DIVESTING

[How is this number calculated?](#)

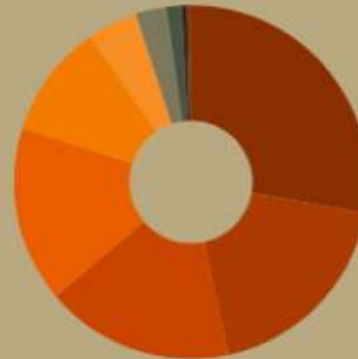
852

INSTITUTIONS DIVESTING

58,000+

INDIVIDUALS DIVESTING ABOUT \$5.2

What kinds of institutions are divesting?



- Faith-based Organization — 28%
- Philanthropic Foundation — 19%
- Government — 17%
- Educational Institution — 16%
- Pension fund — 10%
- NGO — 5%
- For Profit Corporation — 3%
- Healthcare Institution — 1%
- Cultural Institution — 0%
- Other — 0%

DOPAMINE DOMINATES THE MODERN WORLD. BUT WE NEED BALANCE TO BE HEALTHY + HAPPY

SEROTONIN

The Molecule of Gratitude

More of the Same is Great

I have Enough

The Destination is the Goal

Happiness

Liking

VS



DOPAMINE

The Molecule of More

The New is always Better

I can never have Enough

The Thrill of the Chase rules

Pleasure

Wanting

OVERVIEW

Totals

\$6.09 TRILLION

APPROX. VALUE OF INSTITUTIONS
DIVESTING

[How is this number calculated?](#)

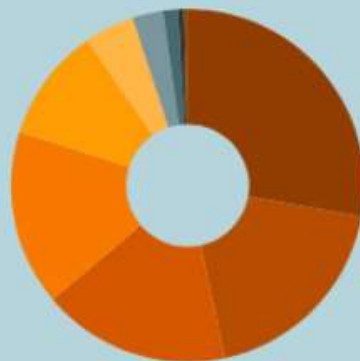
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INSTITUTIONS DIVESTING

58,000+

INDIVIDUALS DIVESTING ABOUT \$5.2
BILLION

What kinds of institutions are divesting?



- Faith-based Organization — 28%
- Philanthropic Foundation — 19%
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- Pension fund — 10%
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- Healthcare Institution — 1%
- Cultural Institution — 0%
- Other — 0%

DIVEST FROM FOSSIL FUELS!

INVEST IN A GREEN ECONOMY TO PROTECT OUR FUTURE



De-legitimise the FF industry. And other GHG-releasing industries.

The alternative approach, however, is simply to deny the validity of the question, rejecting the idea that monetary profitability should hold any moral weight, and pointing out that an investment framework that has the ability to view planetary-level disruption as justifiable is simply unacceptable.

Even if fossil fuels are profitable, and even if sustainable investment is less profitable, financial returns are not invalid if the broader stability of human society is undermined in the process of obtaining them.

Indeed, investors often fetishise monetary returns without thinking about the world in which those returns will have to be spent. This is partially due to misunderstanding the nature of money, which is often thought of not as an independent “thing”, but rather as a claim upon society. What is the point of a monetary claim if the society in which I can use them in has become a lot less liveable?

They erode the social license of the financial sector to engage in unsustainable investments, while simultaneously offering it a new role in creatively investing in a better world.







The Bemidji Statement on Seventh Generation Guardianship

[Indigenous Environmental Network / sehn.org](http://IndigenousEnvironmentalNetwork.org)

Call to action



- **The matter is urgent**
- **The health of the world's population is at risk**
- **The time for action is now**

Durban Declaration on Climate and
Health Dec 2011

Geneva Sustainability Centre

Core offerings

What we are working on

The Geneva Sustainability Centre supports hospital and health system managers to become leaders for sustainability in their communities. Our team delivers the information, tools, and skills to drive transformation at leadership, management, and institutional levels.

Workshops and training

Developed specifically for hospital CEOs, our workshops and training build awareness and action for sustainable health systems.

[Workshops and training](#)

Toolbox

Enabling healthcare leaders to chart their sustainability journey, our kits include the Sustainability Accelerator Tool, case studies, a glossary, and our 'Getting Started' guides.

[Sustainability toolbox](#)

External resources

We've gathered useful links and resources in one handy list so you can find helpful articles, reports and guidance on sustainable healthcare.

[Sustainability resources](#)

Main Points We Want to Get Across

Action NOW!

We should be amongst the leaders - collective power!

Mindset change - neurotransmitters, overconsumption

Our core environmental challenges stem from a mismatch of hunter-gatherer minds inhabiting a competitive consumer growth culture. Together, these human universals have Many of our choices are constrained by the economic system we were born into.

Having and spending more money doesn't create resources, it just uses/depletes them faster.

something about the hunt and score scratches an innate itch and keeps dopamine flowing

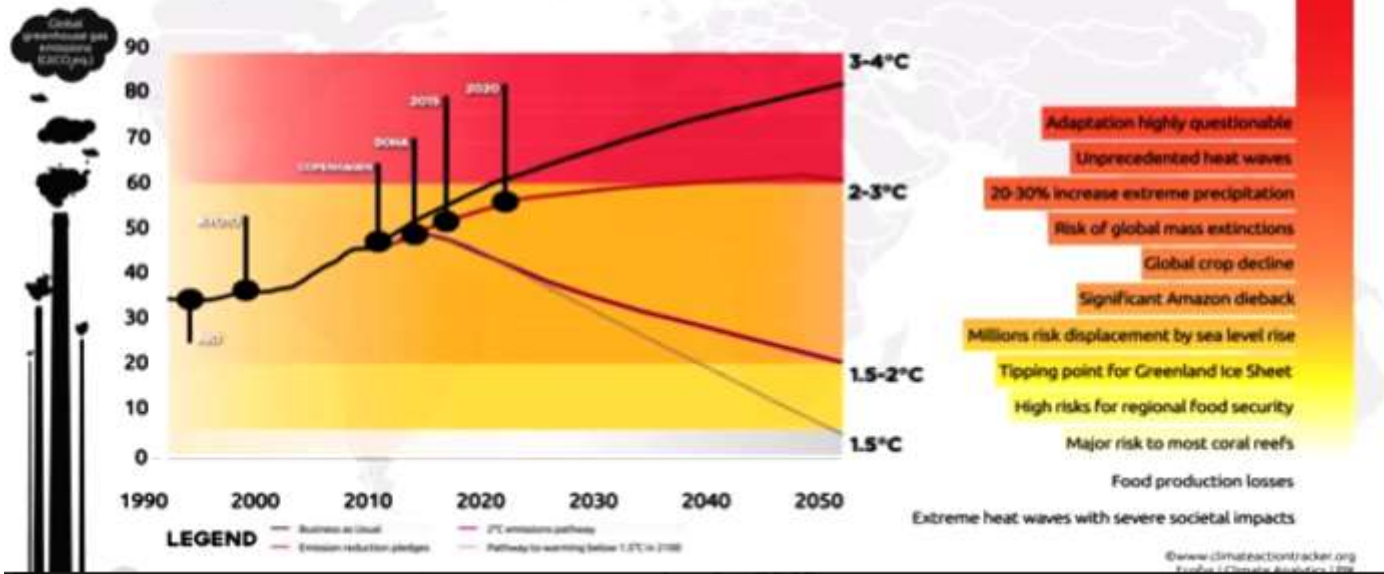
Rather than giving us pleasure itself, as is commonly thought, dopamine motivates us to do things we think will bring pleasure. As the brain's major reward and pleasure neurotransmitter, it's what drives us to seek pizza when we're hungry and sex when we're aroused. Scientists use dopamine to measure "the addictive potential of any experience," writes Lembke. The higher the dopamine release, the more addictive the thing.

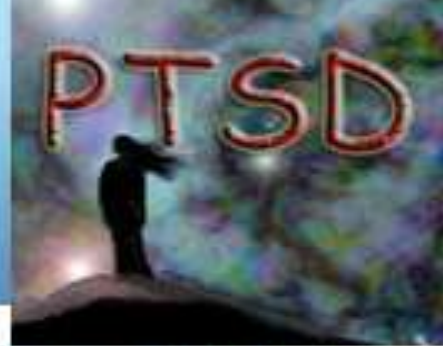
We experience a hike in dopamine in anticipation of doing something as well as when we do the thing itself, which makes us want to continue doing it. As soon as it's finished, we experience a comedown or dopamine dip. That's because the brain operates via a self-regulating process called homeostasis, meaning that "for every high, there is a low," says Lembke. In this comedown state, "we really want that second piece of chocolate or to watch another episode," she says, but if we're not severely addicted, the craving soon passes.

<https://www.theguardian.com/global/2021/aug/22/how-digital-media-turned-us-all-into-dopamine-addicts-and-what-we-can-do-to-break-the-cycle>

STAYING BELOW 2°C: THE CHOICES WE FACE

With current pledges on the table to cut emissions, we are heading to a 3.3°C warming future. No further action before 2020 will limit society's choices. As temperatures rise, so do the impacts.





Heat stress, pollution

Extreme weather events

Food and water security

Physical and psychological diseases

Population displacement

Economic collapse

Conflict





What can individuals do to divest-invest?



Divest



Invest



1

Bank accounts

- You can switch your bank account to a provider which doesn't invest in fossil fuels. Most countries have institutions that don't invest in fossil fuels and offer current accounts, savings and loans accounts. Look out for 'ethical banks', 'building societies', or 'credit unions'.

2

Pensions and retirement savings

- The structure of retirement savings can vary, so there is no single process to follow.
- If you're employer or private pension provider manages it, work with them to go through the steps for organisations wanting to DivestInvest.
- A key step is to ask them to offer a fund which meets your investment criteria.

3

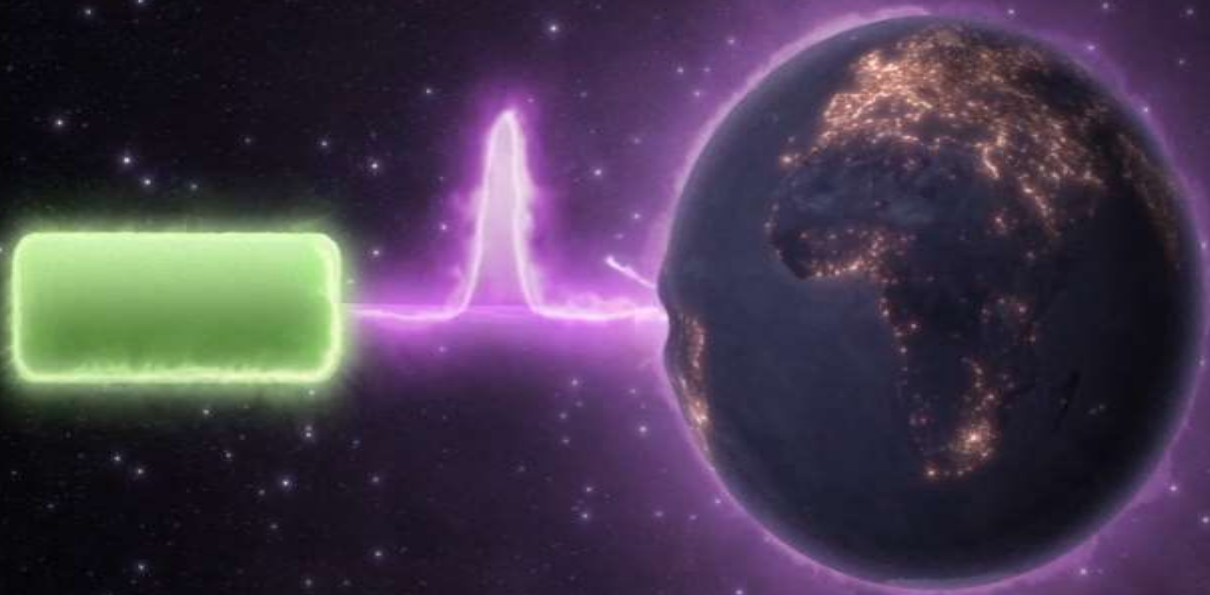
Personal Investments

- If you manage your own investments:
 - Decide your criteria for excluding or including companies.
 - Assess where your investments are currently. There are several tools available to check this such as fossilfreefunds.org.
 - Sell any shares that fail to meet your criteria, and switch to ones that do.
- If you have a fund manager:
 - Ask the fund manager to select funds or securities that meet your exclusion and inclusion criteria.
 - Ask them how they incorporate climate risk into their investment process.
 - If they are unable or unwilling to respond adequately, consider switching managers.

Powerful Vested Interests *influence* Politicians Worldwide



The Carbon Pulse



- “It may seem impossible to imagine that a technologically advanced society could choose, in essence, to destroy itself, but that is what we are now in the process of doing.”

Kolbert E. Field Notes from a Catastrophe, 2006

Powerful vested interests are using their resources and influence to prevent the necessary global response to climate change



Let's calculate your ecological impact



Ecological Footprint Calculator

by [ClimateHero](#)

The test takes approximately 5 minutes

The questions are divided in three sections:

Housing, Travel and Consumption

English



New Zealand



Start the test

Ecological Footprint Calculator

Your total footprint is **5.7 tons**. We can work with that!



[Send my result](#)

Your **climate promises** reduce your footprint by 1.8 tons:

| | |
|---------------|------|
| > Housing | -0.1 |
| > Travel | -0.4 |
| > Consumption | -1.3 |

Your carbon footprint after climate pledges

3.9
Reduced

The next step is to take full accountability for your climate impact by offsetting the emissions that are hard to eliminate. Offsetting your 3.9 ton

Humanity is paying the consequences for technical and technological progress. Thus, can technology still save us from climate change?

The neurochemistry of our brains de-prioritises our future.

But there is hope.... but first let's talk about dopamine...

- Humans generally have a 'positive time preference'—they tend to be impatient and place a higher value on their current rather than future wellbeing or utility.
- Future interests are 'discounted'. Policies that produce short-term benefits and defer costs to the future are likely to be viewed more favourably.

Hidden **beneath our stated motivations,**

we are **seeking the same brain rewards** as our **hunter-gatherer ancestors.**



FOOTPRINT CALC

You're living as if we had **2.16 planets** to support us but we only



Your footprint is
2.16 planets



We've also calculated your **carbon footprint**, which is **8.95 tonnes per annum**

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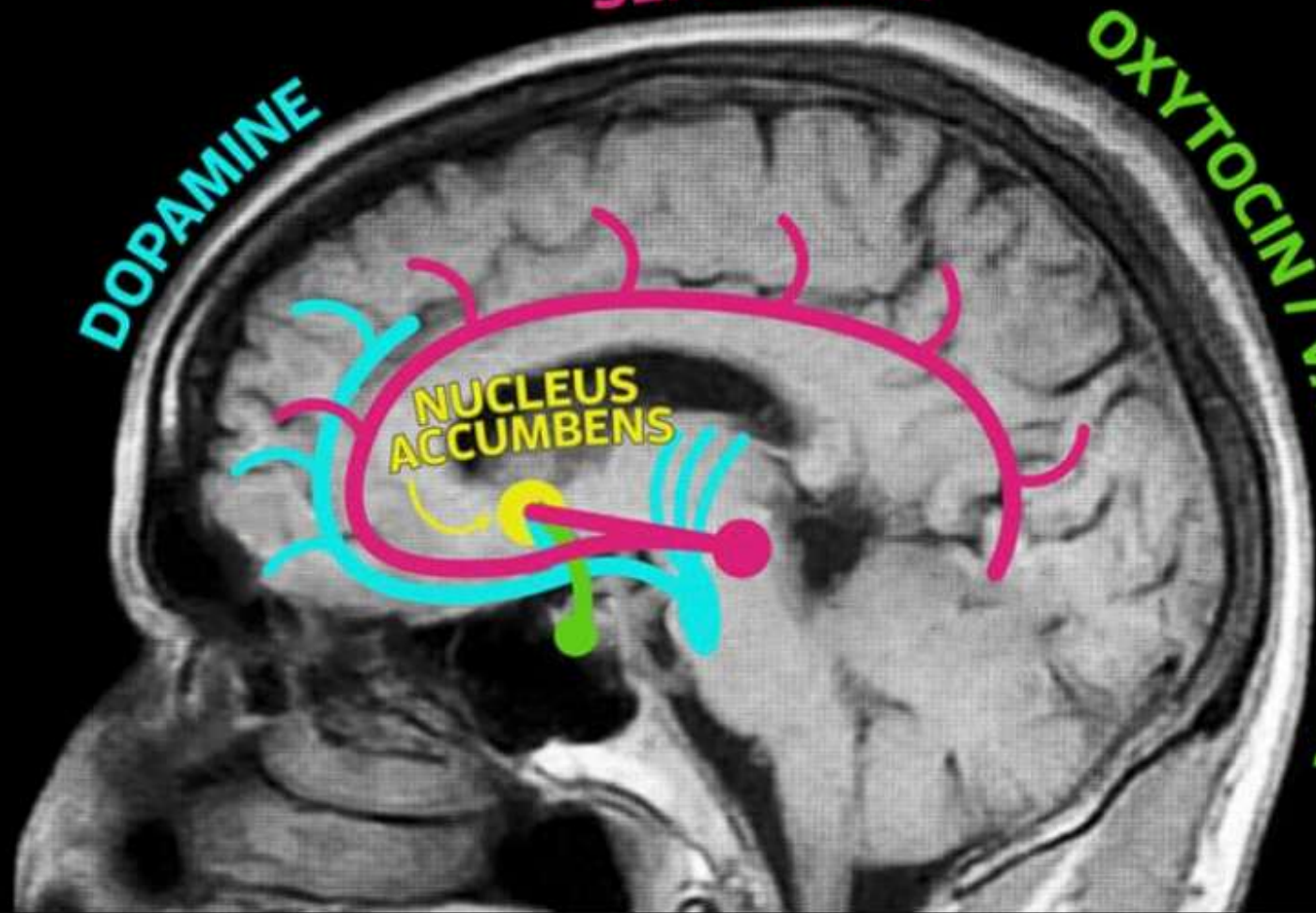


DOPAMINE

SEROTONIN

OXYTOCIN / VASOPRESSIN

NUCLEUS ACCUMBENS



More on Dopamine

Seeking gives more dopamine than the having

Addictive nature of dopamine

Dopamine is the “feel good” neurotransmitter released in the brain when a person expects a reward. Any pleasurable activity – whether it’s shopping, eating delicious food, or receiving praise – can cause a rush of dopamine.

Dopamine often acts in a cycle that starts with motivation, then moves on to satisfaction, and finally ends with reinforcement (or wanting to experience the pleasurable experience again).

Rather than giving us pleasure itself, as is commonly thought, dopamine motivates us to do things we think will bring pleasure.

We experience a hike in dopamine in anticipation of doing something as well as when we do the thing itself, which makes us want to continue doing it.

Meet Your Happy Brain Chemicals

Feelings evolved to motivate survival behavior, not to make you happy all the time

Good feelings
motivate steps that meet survival needs

Dopamine

energizes you when you find a new way to meet a need

Dopamine is the brain's signal that a reward is at hand. The great feeling motivates the body to invest effort in pursuit. Neurons connect when dopamine flows, which wires you to turn on the good feeling again in similar settings. Steps that meet needs feel good because of dopamine.

Serotonin

turns us when you gain an advantage

Serotonin makes you feel good when you assert yourself socially. In the state of nature, you had to assert but avoid conflict to survive. That built a brain that constantly compares itself to others and rewards you with a nice proud feeling when you come out on top.

Oxytocin

is the safety of social trust

Oxytocin is stimulated by trust and touch. It motivates a mammal to seek safety in numbers. Neurons connect when oxytocin flows, which guides your future trust. Our brain makes careful decisions about when to release this good feeling because trusting always is not good for survival.

Endorphin

masks pain with euphoria

Endorphin is triggered by pain. It masks pain for a few minutes so an injured creature can seek safety. Then it stops, because pain is valuable information. Endorphin evolved for emergencies, not for you to inflict pain on yourself. Fortunately, laughing and exercise trigger a little bit of it.

Cortisol

alerts you to survival threats

Cortisol commands your attention when you perceive an external or internal threat. The bad feeling motivates a body to act fast to make it stop. Each cortisol spark connects neurons that turn on the bad feeling later in similar future circumstances. Disappointment triggers cortisol. When your expectations are not met, cortisol warns you to stop investing energy in an unrewarding pursuit.



Bad feelings
motivate retreat
from survival threats

Myelin

builds neural superhighways

Some of your neural pathways conduct electricity at super speeds because they got coated with myelin. That's why some thoughts and actions feel easy & natural. Myelin peaks before age 8 & in puberty, also, so we tend to see the world through a lens built in those time periods.

The mammal brain defines survival in a quirky way:

1. It cares about the survival of your genes
2. It relies on neural pathways built by early experience

Inner Mammal Institute

building power over your mammalian brain chemistry

The Inner Mammal Institute helps you manage your neurochemical ups and downs naturally. Free videos, podcasts, blogs, infographics, slide shows and a training program show you how to create your brain for more happy chemicals. A step-by-step 45-day program is detailed in the book: *Habits of a Happy Brain: Retrain your brain to boost your serotonin, dopamine, oxytocin, & endorphins. Then read The Science of Positivity. It's not easy being mammalian, but you have power over your brain!*



Founder
Loretta Bruning, PhD

InnerMammalInstitute.org