



WASTELANDS

Sustainability
Education Centre,
Cheltenham



Marine Sanctuary,
Beaumaris



State Forest,
Toolangi



Your School,
Greater Melbourne



Welcome to Toolangi State Forest
Shared Wurndjeri and Taungurung
Country

Teacher Professional Development
May 2, 2024
Proudly supported by



SUSTAINABILITY • SCIENCE • GEOGRAPHY • STEM
ECONOMICS & BUSINESS
Excursions & Incursions
Making learning fun and engaging since 1909



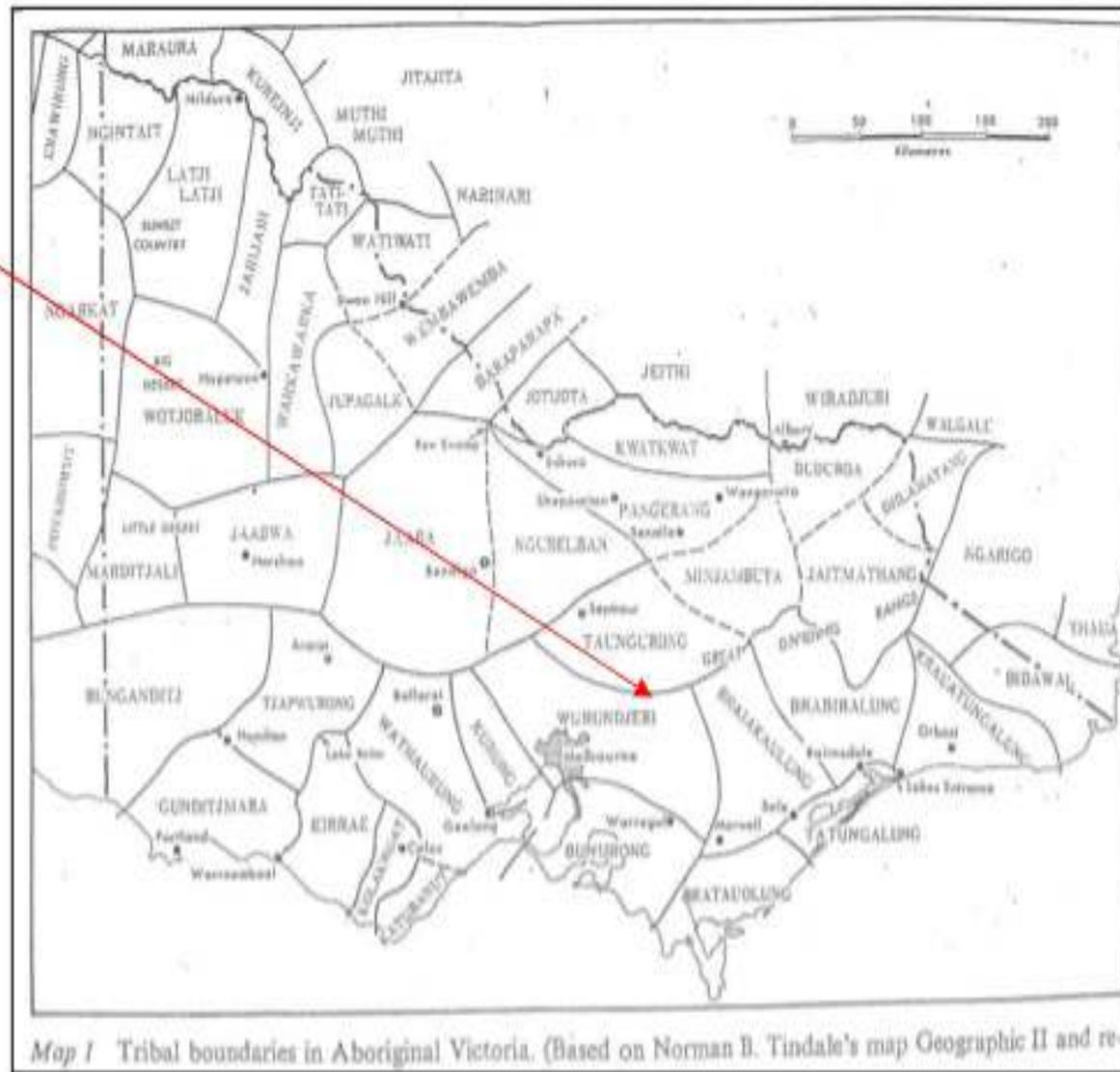
This presentation was delivered by Gould League General Manager Anne-Maree McInerney at a Teacher PD held Thursday May 2nd.

It is shared in the interest of helping to build capacity within the Education System. We ask that you do not use it for commercial purposes or share it with others without our written permission.

Should you require further information or wish for this to be delivered in your school as a PD for Teachers or built on it as a program for Students, please contact Gould League via gould@gould.org.au or Ph 9585 7860/0429 193 134.

©Anne-Maree McInerney and Gould League May, 2024.

Toolangi



Dhulangi is the Taungurung word for the Stringybark/messmate. It was vitally important to the Taungurung because it had multiple uses. Dhulangi (Stringy Bark) was used to construct Yilam (shelters) and to weave binak (baskets) and to make string.

Celebrating 114 year of Environmental Education thanks to Victoria School Teacher Jessie McMichael



TEACHER 2023 MEMBERSHIP CERTIFICATE

TEGAN RUSSELL

is a Teacher Member of the Gould League and Guardian of the Natural World committed to conservation and environmental education and protection.

2023 is the UN International Year of Millets, and to celebrate this amazing plant, we are featuring one of the many species that enjoy its seeds - the Eastern Ground Parrot (*Pezoporus wallicus*). Millets are invasive plants that not only withstand hot and dry climates but also suppress weeds and encourage healthy soil bacteria and microbes.

The Eastern Ground Parrot inhabits south-eastern Australia from south-east Queensland through NSW to western Victoria. It also previously lived in South Australia, but has not been recorded since 1946. In NSW populations have declined due to land clearing and predation by foxes and cats. It's now restricted to islands of coastal or sub-coastal heathland and shrubby habitats.

The Eastern Ground Parrot is one of only five ground-dwelling parrots in the world. The others are the western ground parrot, the southern rufous parrot, the Artibeos parrot, and the highly endangered Kakapo from New Zealand.

Thank you for your ongoing commitment to protect environments, education and support of Gould League so we can continue to advocate for ALL native flora and fauna species, so future generations can also enjoy them!

Blair Odom
BLAIR ODOM
GOULD LEAGUE CHAIR



2023 celebrates the UN Year of Millets and the Eastern Ground Parrot



The Gould League was one of the first environmental organisations and was established in Australia in 1909. Originally called the "Gould League of Bird Lovers", it aimed to protect birds and their eggs. It was named after the famous naturalist and artist, John Gould who, together with his wife Elizabeth, an artist in her own right, illustrated the birds and mammals of Australia, a heritage treasured all over the world.

The Gould League now aims to encourage the protection and care of ALL native wildlife, including plants, where ever they are found. It does this through its wide range of environmental education programs, books and publications. These contain fascinating information about the natural world and also provide a huge range of exciting, hands on activities for schools and community groups.

One of the most important commitments individuals, families, businesses, schools and communities can make for current and future generations, is to commit to environmental conservation and protection by following the Gould League Conservation Code. It will help to protect the plants and animals where ever you work, live and play.

GOULD LEAGUE CONSERVATION CODE

Nature has many health benefits, so we encourage you to walk and play outdoors and visit your local parks, beaches and forests. And when you do, here are some guidelines that will help keep you and native wildlife safe.

1. Tread carefully and watch the ground beneath your feet.

This is for both your safety as well as for the plants and animals well-being. Many can be crushed under your heavy feet, whilst some animals may be dangerous if disturbed suddenly (especially snakes).

2. Do not pollute the environment. Use bio-degradable products and avoid plastics especially plastic straws and bags.

Do not put toxic materials on the land or into our waterways - they kill wildlife. Bottles, tins, plastic bags, straws, fishing line and other rubbish should be put in the nearest litter or recycling bin. Fishing lines can tangle around the legs and wings of many seabirds and marine life causing a painful death. Plastic bags and straws can also cause the death of native wildlife. By 2050, it is forecast more plastic in the ocean than fish - let's stop this prediction from becoming a reality!

3. Avoid touching living things with your hands.

Some may be poisonous. Others may suffer from shock if handled. Touching a bird's nest can result in the parent bird abandoning it altogether. The best way to remember is: if you are not sure what will happen if you pick it up, leave it alone.

4. If an animal is found outside its natural environment, return it quickly.

Most animals cannot survive outside of their special habitat for very long. Many like lizard have special territories and should be put back as close as possible to where they were found in the first place.

5. If you have to look under rocks or logs, put them back.

These are special hiding, feeding and sheltering places for lots of small animals and plants which won't survive if exposed to sunlight for a long time. It's a bit like someone taking the roof off your house!

6. Explore in small numbers.

Not only will you see much more, but your impact on the environment will be much less. Large groups of people will usually be noisier and will scare away all but the bravest animals.

7. Check the legs and wings of any dead animals for bands and identification tags.

Scientists are trying to study the movement of many animals to work out how to best protect them. Send the tag to the return address indicated and you could be helping ensure the survival of a species.

8. Control your pets to take care of wildlife.

If you have a pet dog or cat not only should you be kind to it and look after it well, you should also take responsibility for its behaviour. Dogs and cats cause serious problems for wildlife if allowed to run loose. Many ground-dwelling animals have no protection and their nests, homes or the animals themselves can be quickly harmed, damaged or destroyed.

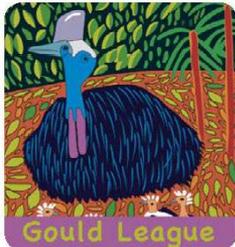
When out walking dogs, keep them on a lead unless they are in a specially designed off lead park. Cats should wear a bell and be kept inside during dawn and dusk. If you own a rabbit, ensure they cannot escape their enclosure as they can breed very quickly with wild rabbits and create significant damage to native ecosystems.

9. Help others to understand by your example.

Showing and telling other people that you care for and respect the environment will help them to understand its importance.

10. Tread lightly.

Take nothing but photographs and leave nothing but footprints (and even try to not leave these!)





2023 GOULD LEAGUE EXCURSION CERTIFICATE

SCHOOL NAME CLASS

Visited Ricketts Point Marine Sanctuary

17th April, 2022

WE LEARNT ABOUT

The impacts of humans on our marine animals and plants and the importance of protecting our natural world.

WE PROMISE TO

Care for and protect our wildlife, beaches and oceans and show family and friends how to do these things

SIGNED



2023 is the UN International Year of Millets, and to celebrate this amazing plant, we are featuring Parrots who enjoy and are sustained by Millet seeds - in particular the Eastern Ground Parrot (*Pezoporus wallicus*). The Eastern Ground Parrot inhabits south-eastern Australia from southern Queensland through NSW to western Victoria. **The Eastern Ground Parrot is one of only 5 ground parrots in the world!** Thank you for your interest in the environment and for visiting us in 2023. We thank you for supporting ALL native flora and fauna so future generations can also enjoy them!



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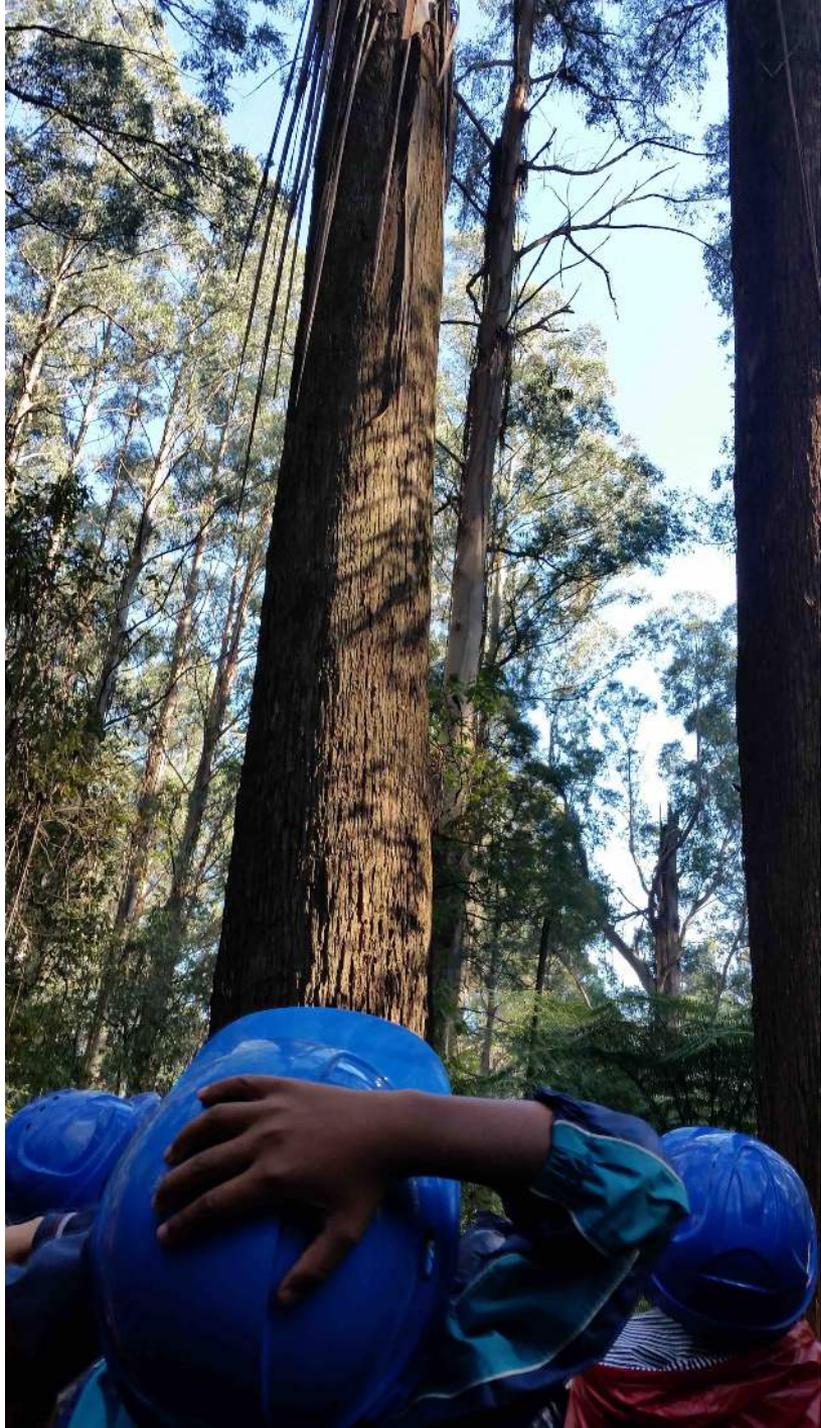
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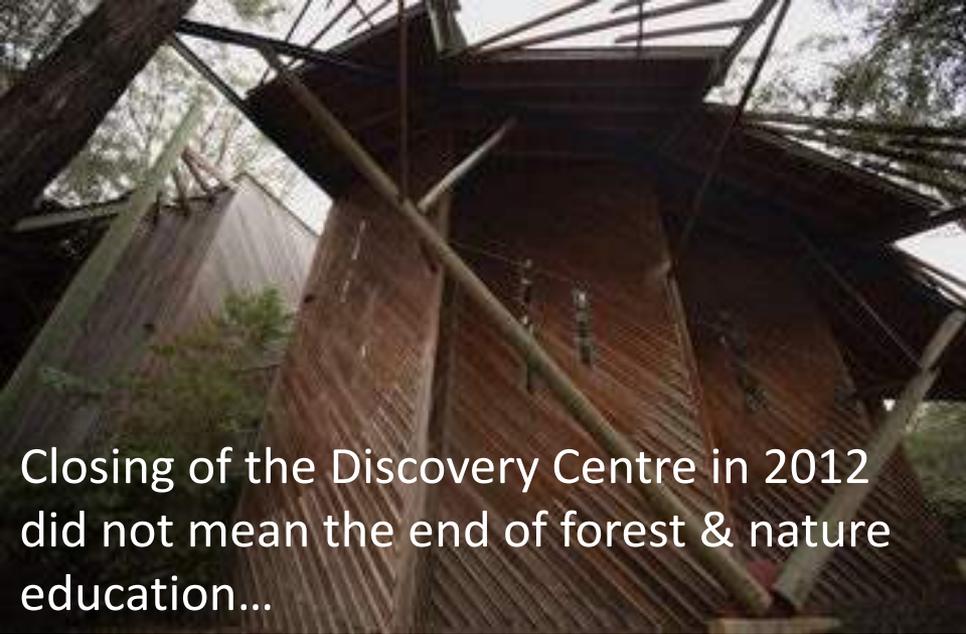
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Take nothing but photographs and leave nothing but footprints (and even try to not leave these)!

We deliver 35+ programs
that are engaging,
hands on, explorative &
year round,
connecting students with
the natural world.





Closing of the Discovery Centre in 2012 did not mean the end of forest & nature education...



As one door closed – another opened. Gould League began program deliver early 2013 at the Discovery Tree.

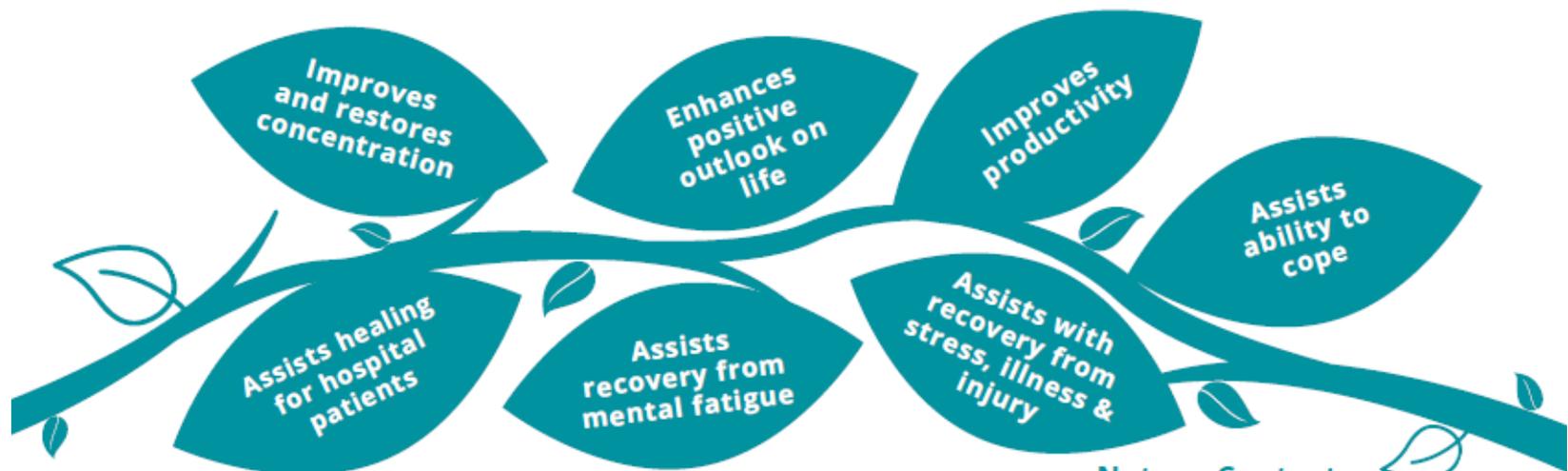


Toolangi is a unique and very special location...





The more society are connected with the natural world, the more they want to fight to protect it.



Being in nature
and
understanding
nature can
help to reduce
Eco Anxiety

Over half of young people

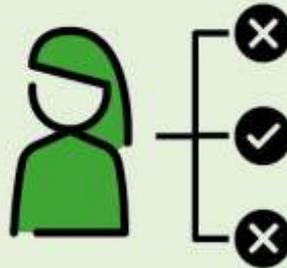


feel fearful of the future due to
climate change (53%)

1 in 5



say climate change is
affecting their daily lives
(22%)



Many are worried they won't have
access to the same opportunities
their parents had due to climate
change (42%)

One
third

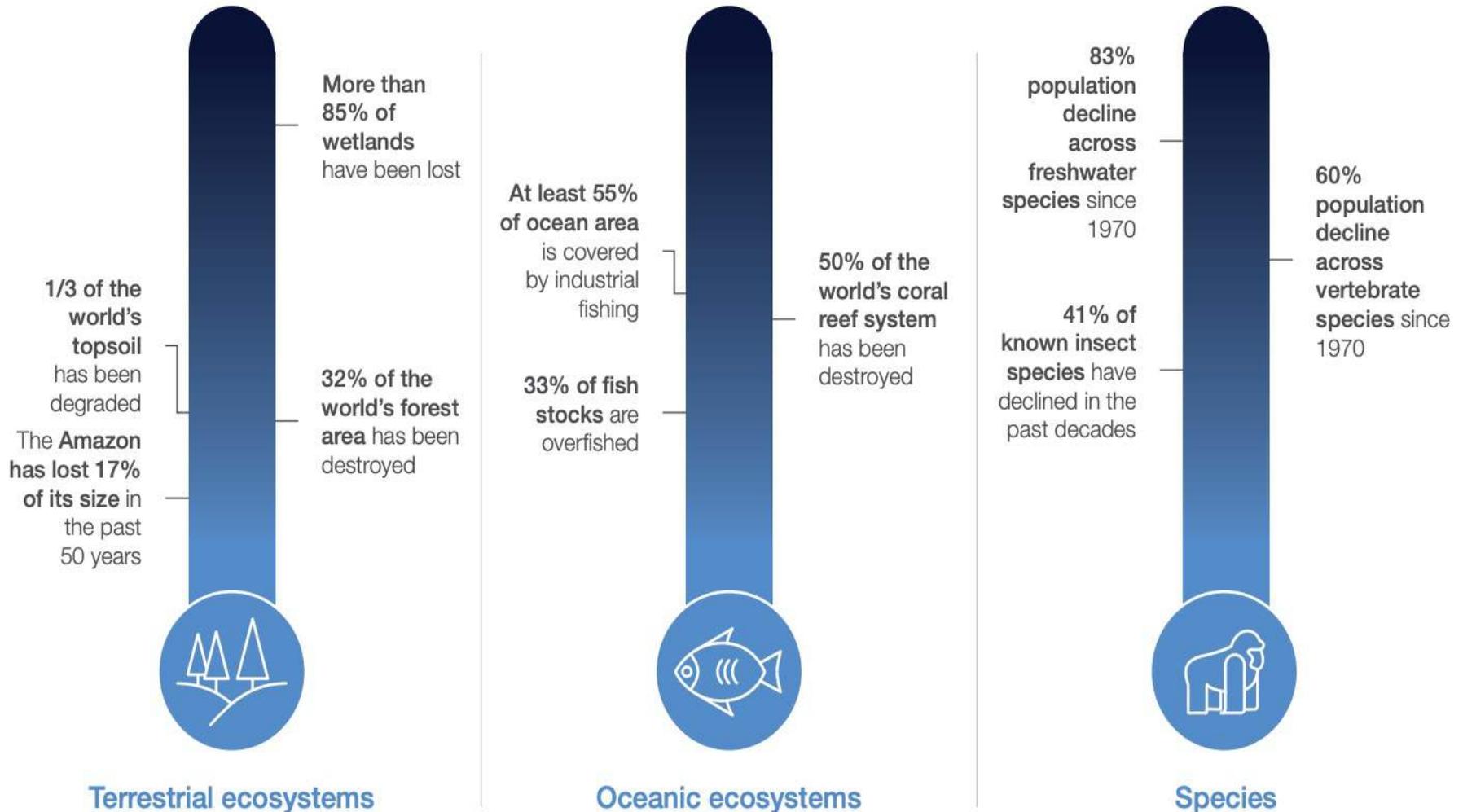


say climate change is the
reason they are hesitant to
have children (34%)



Almost half are worried whether they're personally
doing enough to have an impact on climate change
(46%) - while many feel their actions won't be enough to
make a difference anyway (50%)

Human activity is eroding the world's ecological foundations



Source: IPBES, 2019, "Global assessment report on biodiversity and ecosystem services"; Maria-Helena Semedo of the Food and Agriculture Organization (FAO) at World Soil Day 2014; The Economist, 2019, "On the brink – The Amazon is approaching an irreversible tipping point"; WWF, 2018, "Living planet report – 2018: Aiming higher"; F. Sánchez-Bayo and K.A.G. Wyckhuys, 2019, "Worldwide decline of the entomofauna: A review of its drivers", Biological Conservation.

Linear siloed thinking has created isolation and crisis



Food Crisis



Water Crisis



Energy Crisis



Waste Crisis



Resource Crisis



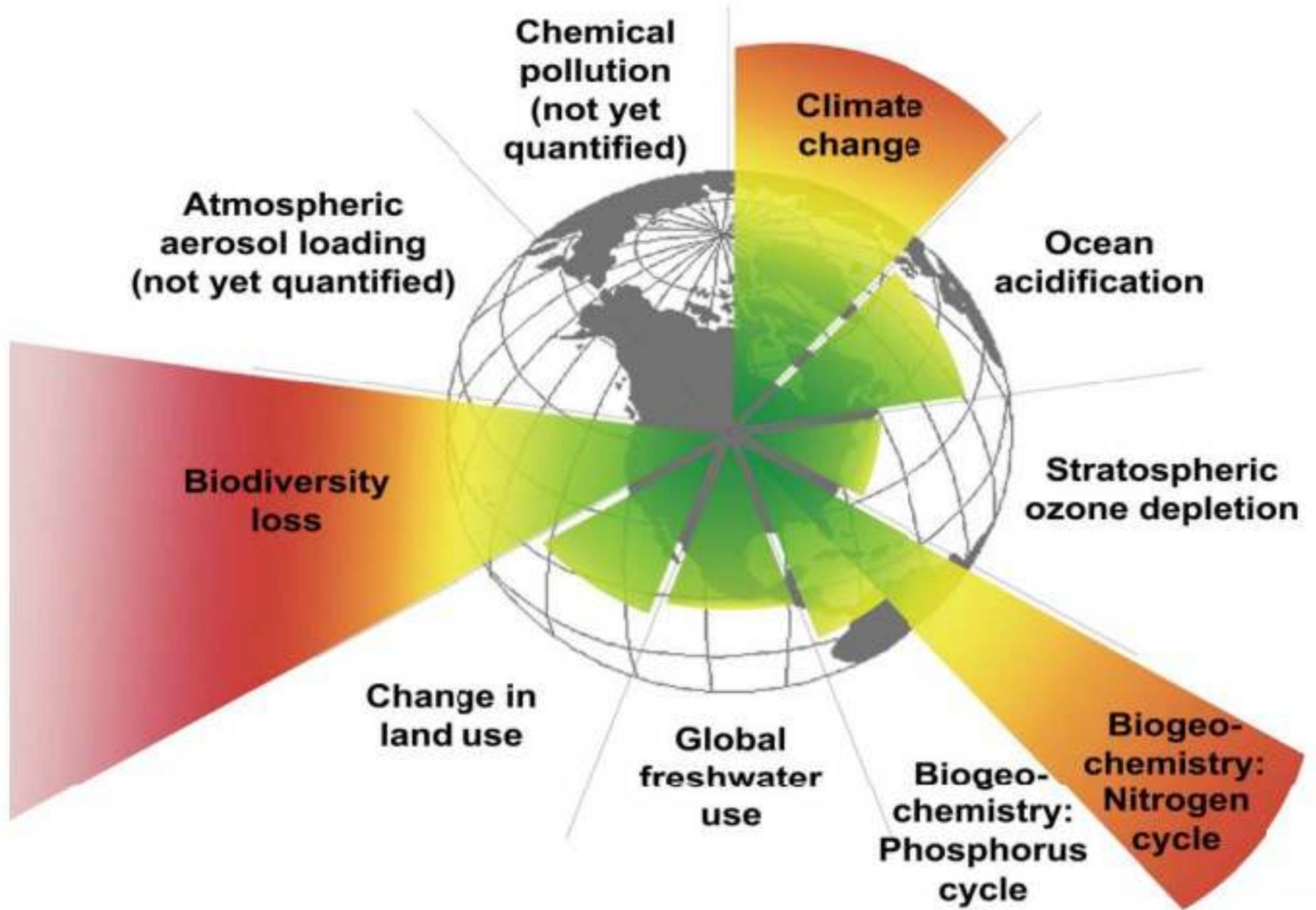
Housing Crisis



Climate Crisis



Economy Crisis

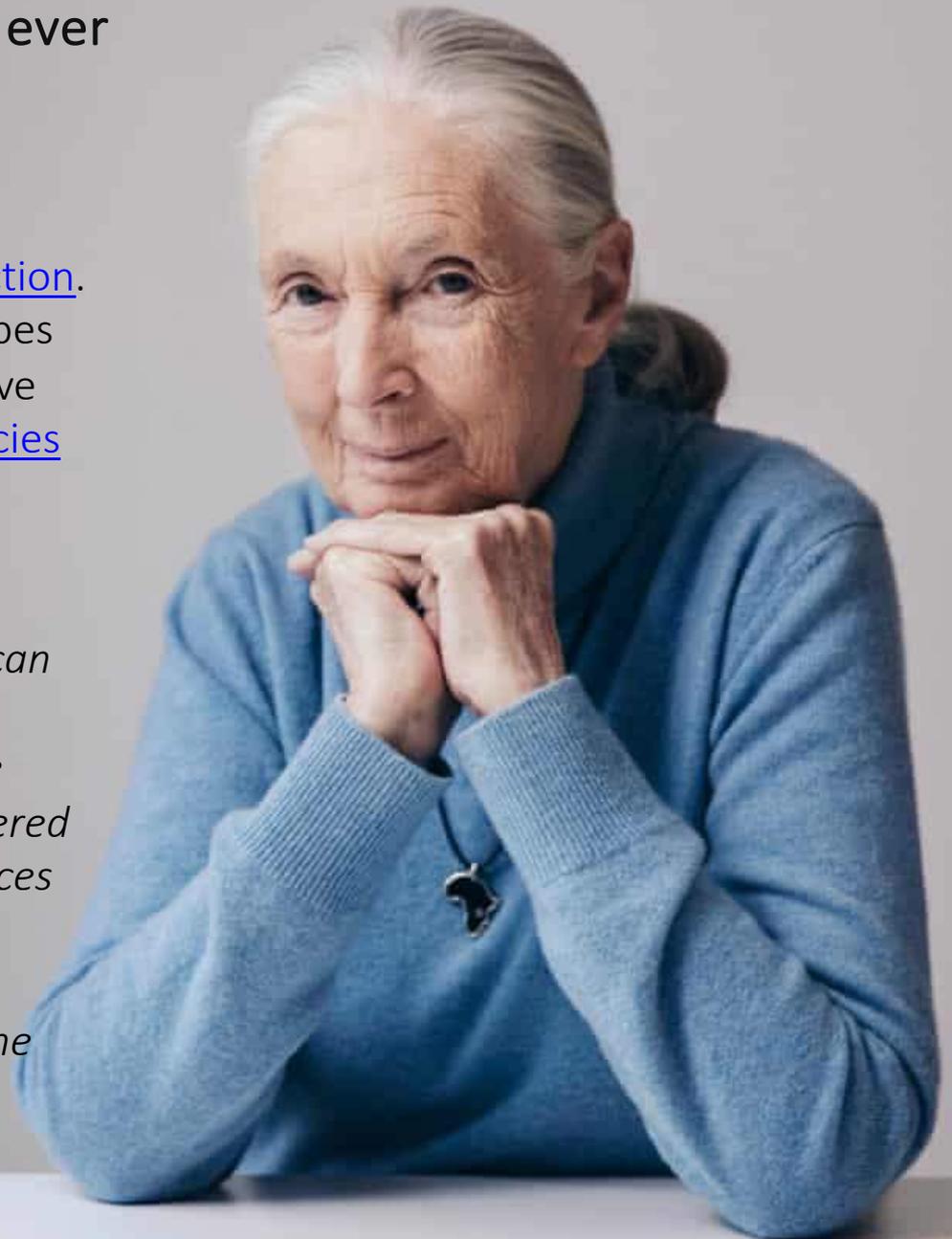


The most intellectual creature to ever walk earth is destroying its only home.

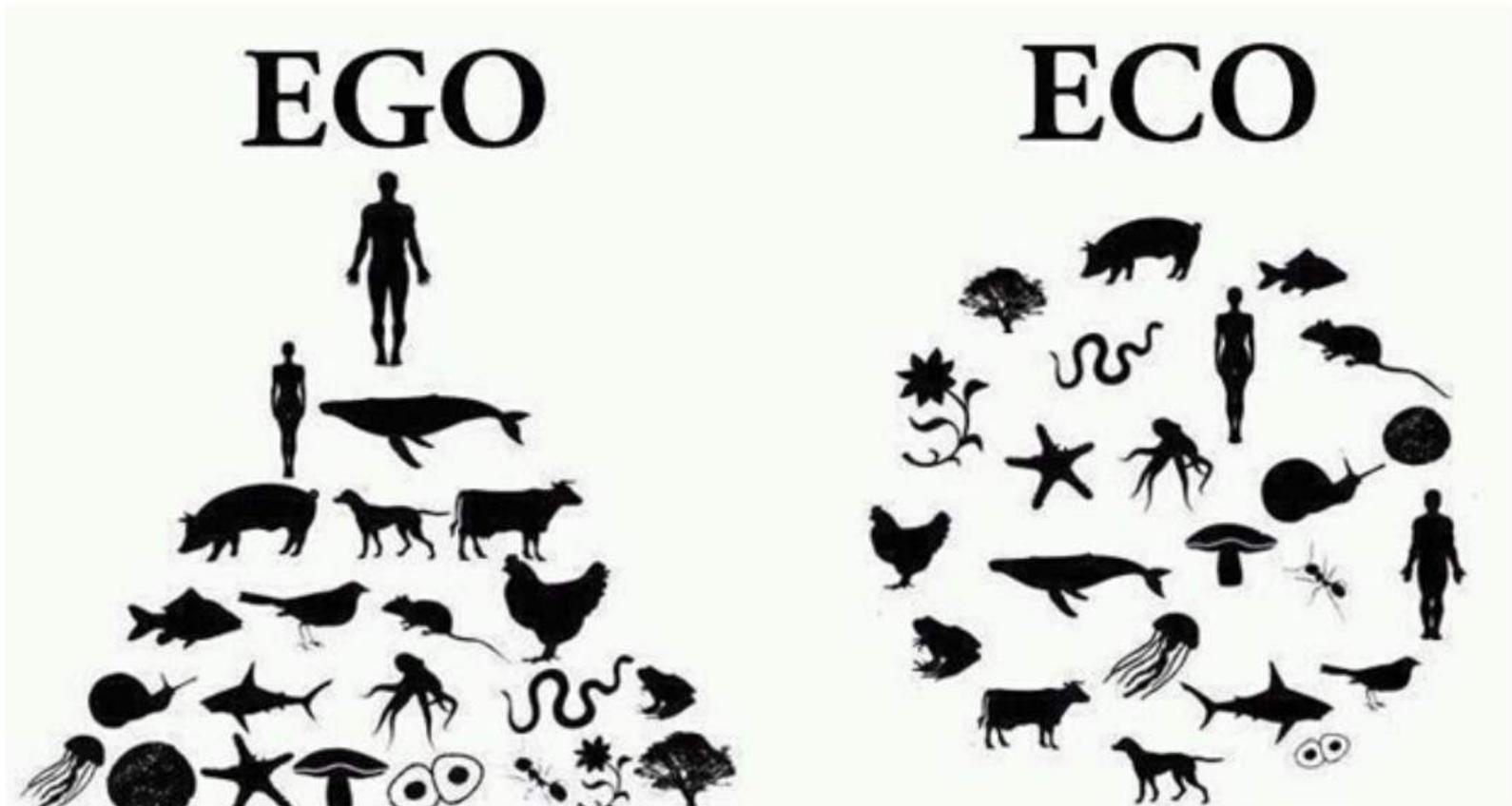
We are [experiencing the sixth great extinction](#). The most recent report from WWF describes the situation as **critical**. Since 1970 we have lost some [69% of all animal and plant species on Earth](#).

"I believe we have a small window of opportunity when, if we get together, we can start to heal some of the harm we have inflicted. Everywhere, where young people understand the problems and are empowered to take action – we must listen to their voices and help them take action.

Nature is amazingly resilient. Species on the brink of extinction can be given a second chance."



Teachers can play a vital role giving nature a fighting chance. One way to do this is moving the needle from Ego to Eco





Ecosystem services delivered by biodiversity, such as crop pollination, water purification, flood protection and carbon sequestration, are vital to human well-being.

Globally, these services are worth an estimated USD 125-140 trillion (US dollars) per year, i.e. more than **1.5 times the size of global GDP.**

More than half of the world's GDP (\$44 trillion) is highly or moderately dependent on nature.



DID YOU KNOW?

Forests support sustainable livelihoods

1 NO POVERTY



40% of the extreme poor in rural areas, live in **forest** and savannah areas.

252 million people living in forests and savannahs earn less than **US\$ 1.25** per day.



The livelihoods of **1.2 billion** people practicing agroforestry depends on forests and trees



Globally, **76 million** tonnes of food comes from forests, **95%** of which is plant-based.

2 ZERO HUNGER



Healthy forests mean healthy people

3 GOOD HEALTH AND WELL-BEING



75% of emerging **infectious diseases** are zoonotic, and usually occur when natural landscapes like forests are cleared.

Forests provide essential health products – from masks to cleaning supplies and ethanol for sanitizers.



Plant based medicines account for **25%** of medicinal drugs in developed countries and up to **80%** of medicinal drugs in developing countries.



Being in a forest or near trees can boost immune systems, lower blood pressure reduce stress, improve mood and relaxation.

15 LIFE ON LAND



Sustainably managed forests are resilient and renewable ecosystems

All trees count

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



54% of the world's forests are managed through long-term plans.



15 LIFE ON LAND



Forests cover **31%** of the Earth's land, an area of over **4 billion** hectares.



About **1.15 billion ha** of the world's forests are managed primarily for the production of wood and non-wood forest products.



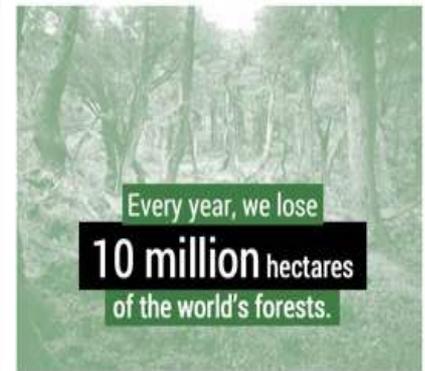
1/3 of the world's population, about **2.4 billion** people, use wood fuel for cooking, boiling water and heating.



93% of world's forests are natural, and **7%** are planted.



Every year, we lose **10 million** hectares of the world's forests.



40% of the world's renewable energy comes from forests - as much as solar, hydroelectric and wind power combined.



7 AFFORDABLE AND CLEAN ENERGY



Forest ecosystems are the largest terrestrial **carbon sink**, absorbing roughly **2 billion** tonnes of CO₂ each year.

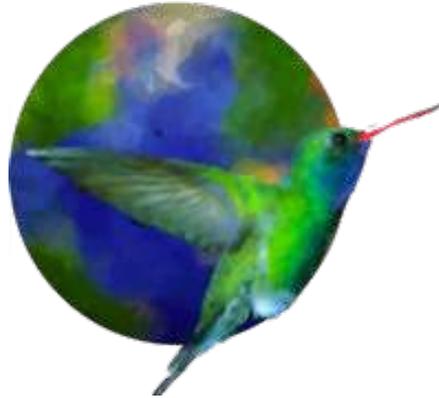


13 CLIMATE ACTION



Every dollar spent on nature restoration leads to at least \$9 of economic benefits.

Changing agricultural and food production methods could unlock \$4.5 trillion per year in new business opportunities by 2030, while also preventing trillions of dollars' worth of social and environmental harm.



The Blue Economy is a physics and systems based approach to sustainable development inspired by nature.

It has a zero waste approach to economic development that unleashes creativity and entrepreneurship.

100+ innovations set to generate 100m new jobs in 10 years.

3,500 scientists world wide make up the Think tank – We are the Do Tank.

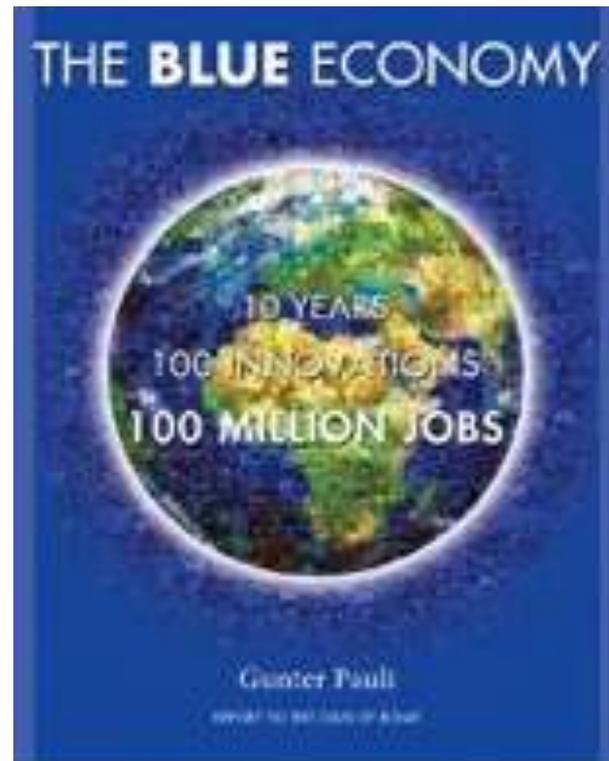
The Blue Planet

where everyone and everything is connected

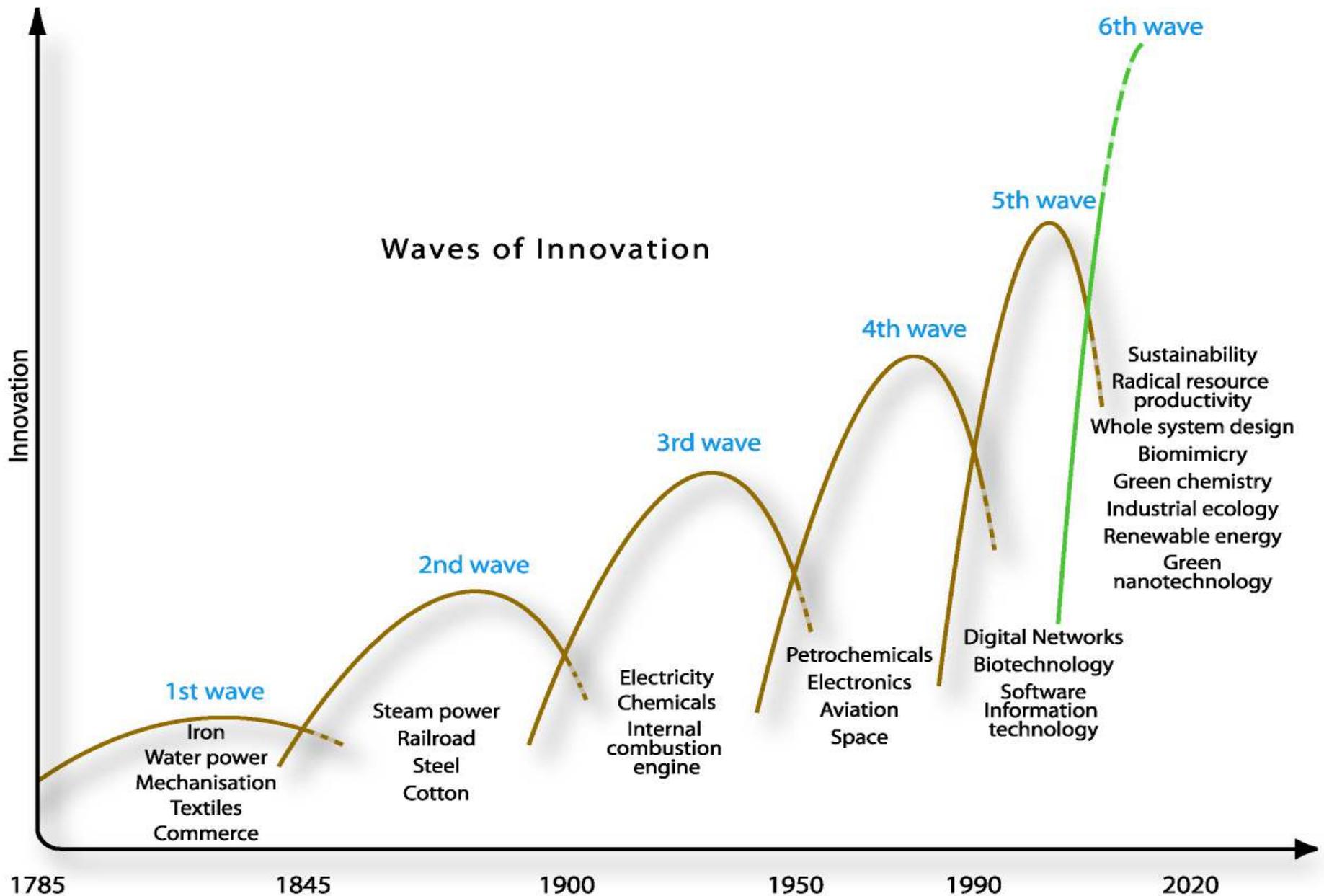


Photo - Earth Rising, Source: NASA

20 years - 3,500 Scientists
21 Principles
100 Innovations
100m new jobs
10 years



Restorative and regenerative by design – which aims to keep products, components and materials at their highest utility at all times.



The Blue Economy contains all the elements of the 6th wave of innovation (as defined by the Natural Edge) + new economic models.



- ✓ Belief **we have a design problem** rather than a waste or pollution problem.
- ✓ Focus on re-use, recycling, up-cycling, closed loop systems – innovation inspired by nature.
- ✓ Incorporates purpose economy that focuses on values and purpose in business – and share economy in that we don't need to own all our assets.
- ✓ Shifting to new economy where the world moves from heavy industry to innovative new designs & biomimicry.

Green

Linear

Expensive

Can create waste and unintended consequences

Subsidised

Taxes

Cut Costs

Elitist

Scarcity mentality

Sacrifice so others may learn and grow

Blue

Physics and Systems led with multiple benefits

Innovative

Zero waste

Competitive

Jobs

Adds more value

More equitable

Abundance mentality

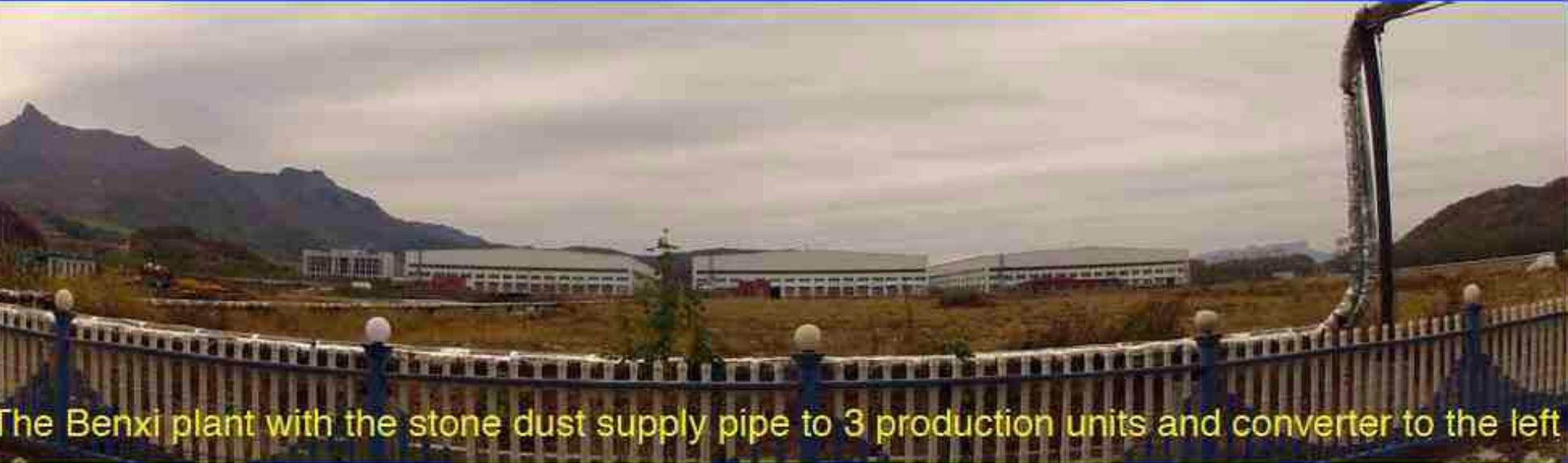
Sharing to create community and win:win:win scenarios





Stone Paper - Paper made without trees that is recycled for ever...



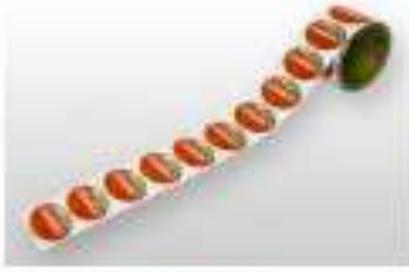


Approx 40% less to build than
a traditional paper plant for
equivalent volume.

One million ton production pa = one thousand jobs.

rockstock™

Stone paper that rocks!





ANTI-MOTH



TEAR RESISTANT



PHOTO-DEGRADABLE



RECYCLABLE



SAFE



SOFT



WATER RESISTANT



ECONOMICAL

Biomimetics or biomimicry is the emulation of the models, systems, and elements of nature for the purpose of solving complex human problems.



In Europe, Japan, and the USA, biomimetics is recognized as *the technology of the future*.



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Living Filter Systems

- ✓ Biomimicry – Rainforest ecology (home of biodiversity and oxygen) moves beyond physics to understand biology and micro-algae.
- ✓ Cleans air, provides oxygen enriched and alkaline air in buildings to reduce energy consumption and improve health and wellbeing.



As air circulates, **pollutants are trapped**
on the surface of the leaves.

A vertical garden system with various green plants growing in a wooden frame. The plants include broad-leafed varieties like basil and some spiky, grass-like plants. The background is a dark, textured wall.

The plants are watered regularly,
washing the pollutants into the
soil to be broken down.

This **minimises** dust, allergens
and **airborne infections**.



A man in a light blue shirt and khaki pants stands with his hands on his hips, looking out at a large, modern airport terminal. The terminal has a glass facade and indoor plants. The text is overlaid on the top part of the image.

In Sundsvall Airport plants are used to clean and **oxygenate recycled air**, reducing the need for air conditioning.

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Energy Consumption reduced by 70%
Improved health and wellbeing

Business case for Living Filters

Buildings account for 40% of energy use in developed countries
Buildings consume one-fifth of the world's available water
People globally spend approx 70% of their time in buildings
Indoor pollution is estimated to cause 11% of all human deaths each year

Source: Sustainia

BIOPHELIA



Some common biophilic design elements include skylights, which provide natural light; green walls, or living walls, covered with living greenery; and the presence of water, such as fountains or ponds.



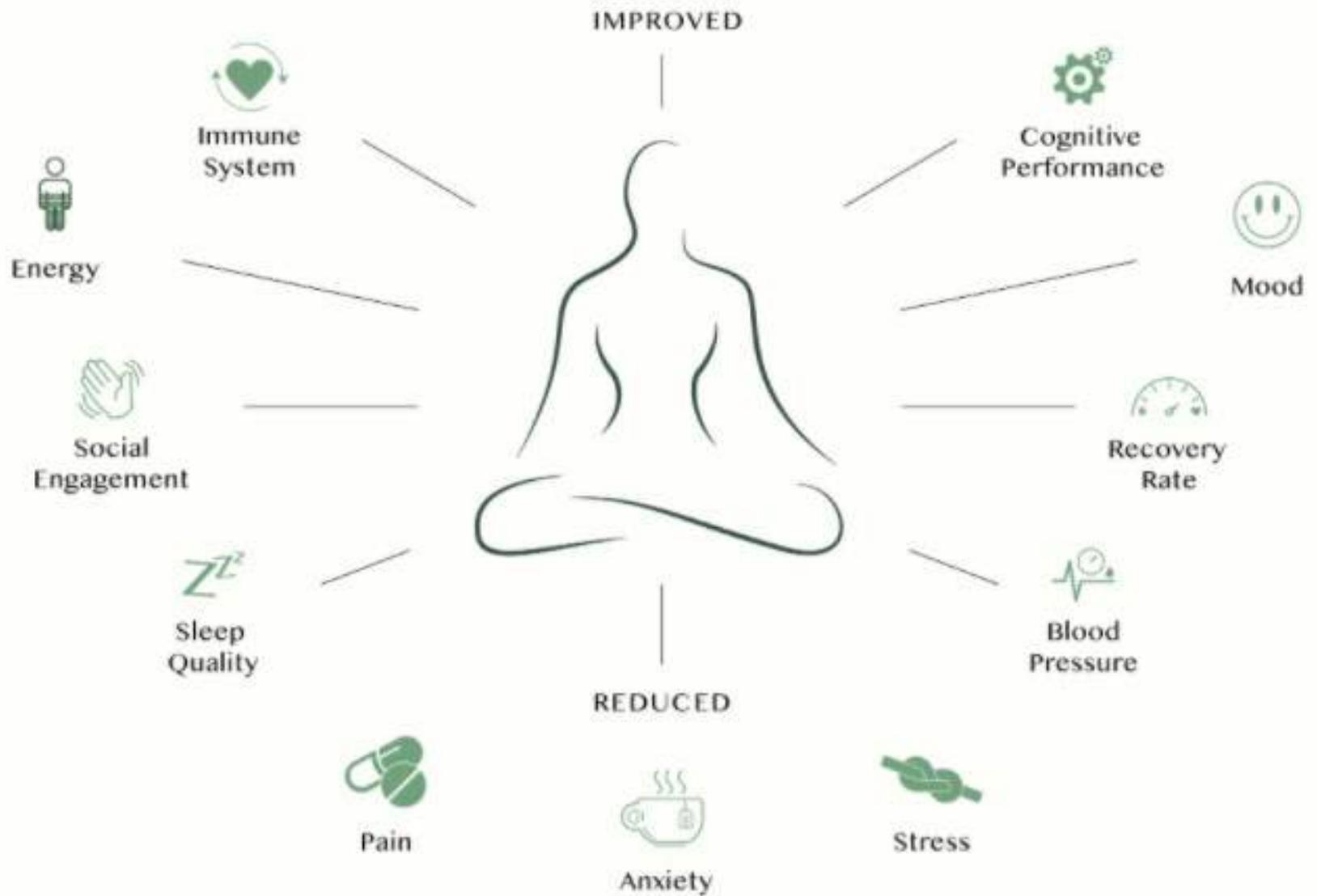


The biophilia hypothesis suggests that humans possess an innate tendency to seek connections with nature and other forms of life.

Vision is the most dominant of our five senses. It is responsible for two-thirds of the entire electrical activity in the brain. That's a full 2 billion out of the 3 billion firings per second.

A successful illusion of nature includes context to trigger depth perception. © 2016 Sky Factory

BENEFITS OF BIOPHILIA





Soil is a living material: if you hold a handful of healthy soil, there will be more micro-organisms in there than the number of people who have ever lived on the planet. These microbes recycle organic material, which **underpins the cycle of life on earth,** and engineer the soil to make it more resilient and better at holding onto water.

Regenerative agriculture explained...

Regenerative farmers use growing practices that improve the health of their land. Methods include:



Cover crops

That are grown in the soil after the commercial harvest and can be grazed or harvested themselves



Integrating livestock

To combine animals and plants in a circular ecosystem



Increasing biodiversity

To boost nutrients, natural decomposition and attract insect predators of pests.



No-till systems

That improve soil health and prevent erosion thanks to minimal soil disturbance



Rotating crops

To naturally balance what is being taken out and put into the soil



Minimising chemical inputs

That destroy biodiversity and pollute waterways due to runoff

www.eitfood.eu/regenerativeagriculture



EIT Food is supported by the EU4Resilience programme

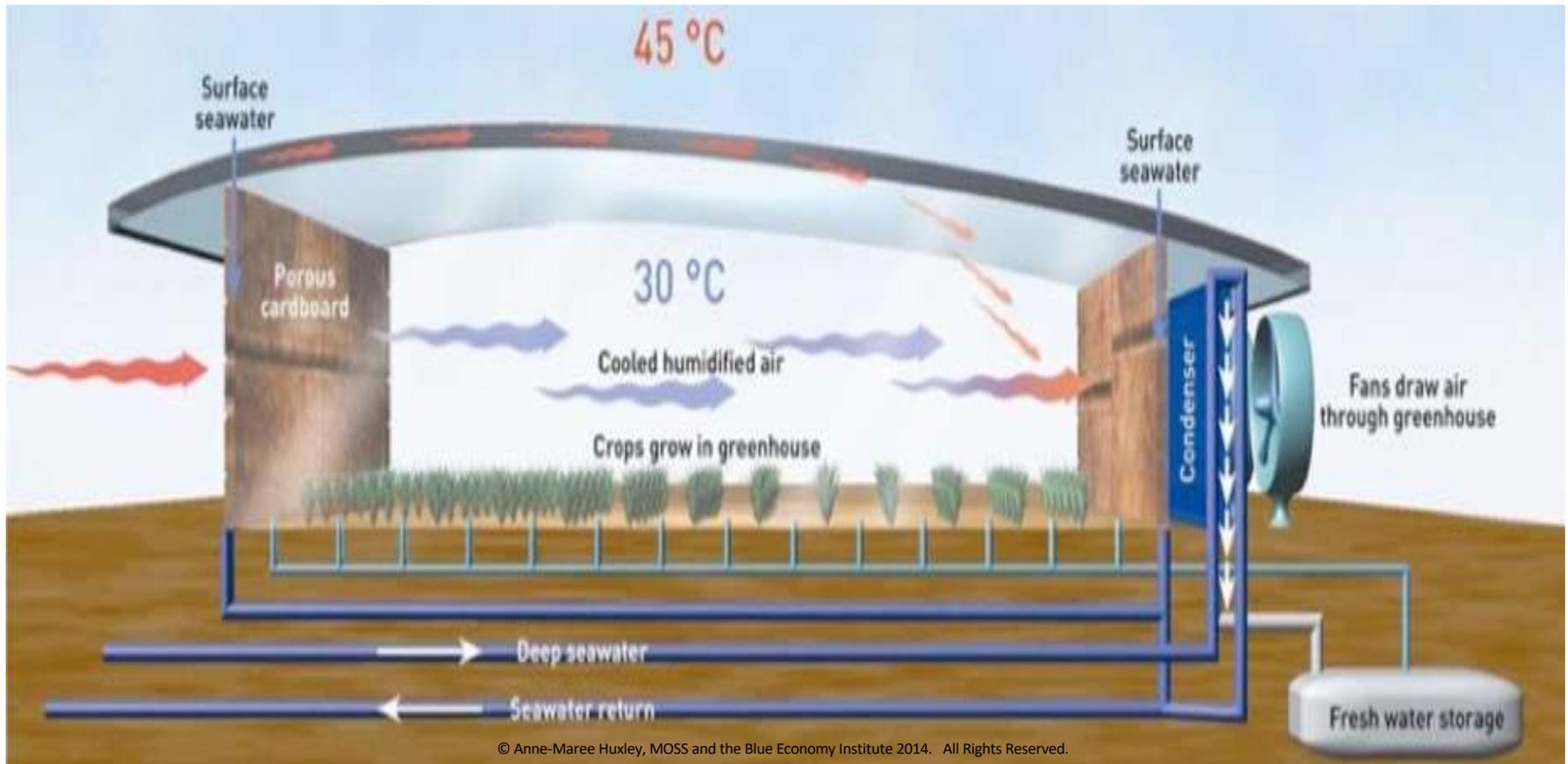




Growing crops in deserts and on arid land



2,000 m² in Port Augusta, Australia



Sundrop Farms use the sun to desalinate seawater for irrigation and to heat and cool greenhouses as required, and thence cheaply grow high-quality, pesticide-free vegetables year-round in commercial quantities.



Sundrop and our planet

A Sundrop greenhouse turns seawater and sunlight into energy and water. We then use sustainably sourced carbon dioxide and nutrients to maximise the growth of our crops.



Because we don't need soil, we're able to grow our produce on degraded land in arid areas previously considered too barren for agriculture.

Sundrop have **transformed agriculture**



We are showing the world that you can grow delicious, mouthwatering produce without needing fossil fuels, vast amounts of fresh water and thousands of acres of cultivated farmland.

In other words, we are breaking farming's dependence on finite resources.

30 by 30

A black and white portrait of Edward O. Wilson, an elderly man with glasses, wearing a suit and tie. He is resting his chin on his hand, looking thoughtfully to the side. The background is dark and out of focus.

Edward O. Wilson
(1929–2021)

HALF-EARTH (half the planet is in some sort of natural or regenerating state—with humans not shut out, but a part of the efforts to manage this Half-Nature) is a concept by leading conservation biologist O.E. Wilson.

With inquiry as a process of knowledge creation, we aim to plant seeds, to grow problem solvers who wish to protect our forests and create HALF EARTH.



Morning Tea