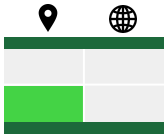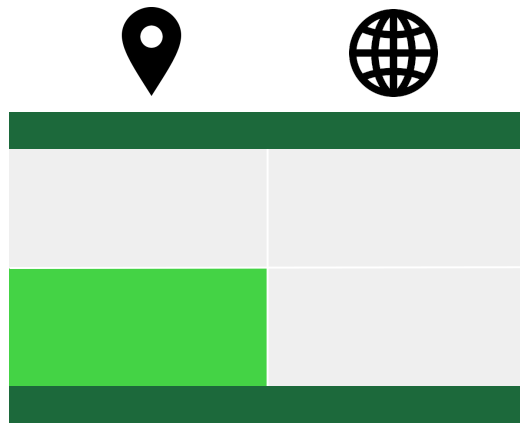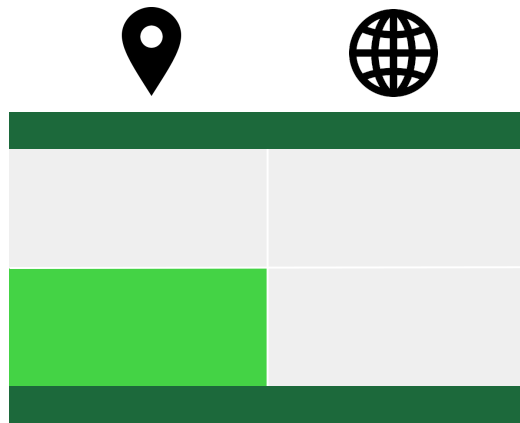# Food

Local social

Food

Local social

Safe, sufficient, nutritious food for all. Food is a daily essential for a healthy life, which is why all people need to have secure access to sufficient, affordable, safe and nutritious food.
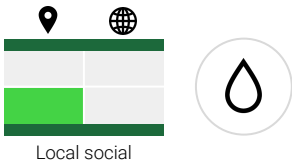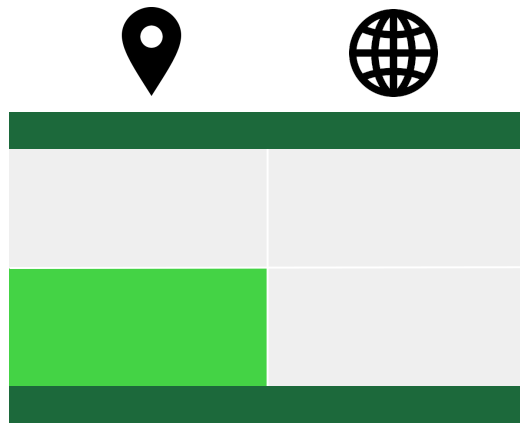
Water

Local social

Water

Local social

Access to clean water and decent sanitation. Water is a household essential for drinking, bathing, cooking, and washing clothes, and is also essential for agriculture and industry. The quality of water supply and sanitation systems are both fundamental for ensuring human health and hygiene.
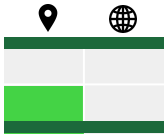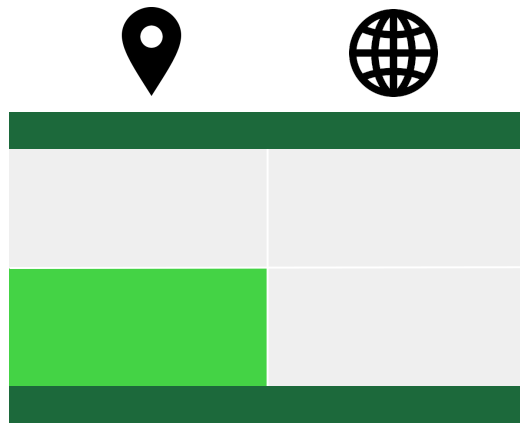
Health

Local social

Health

Local social

Access to affordable, quality healthcare for all. Health services provide people with essential care and treatment for illness and injury, from birth to death as well as significantly reducing the prevalence of disease.

Education
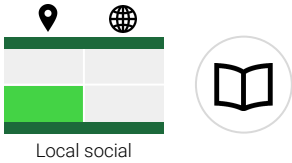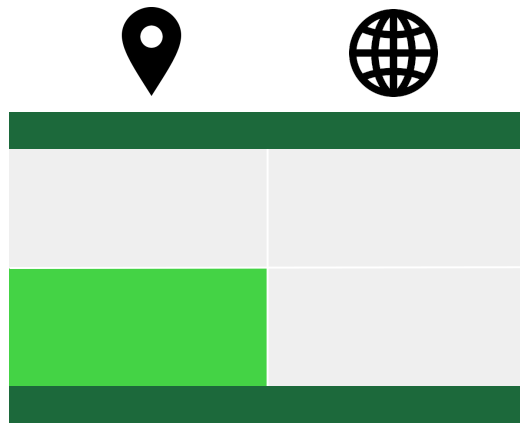

Local social

Education

Local social

Access to life-long learning for all. Education is foundational to every person's ability to participate in society and to take up opportunities throughout their life.
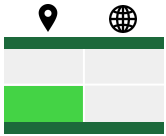
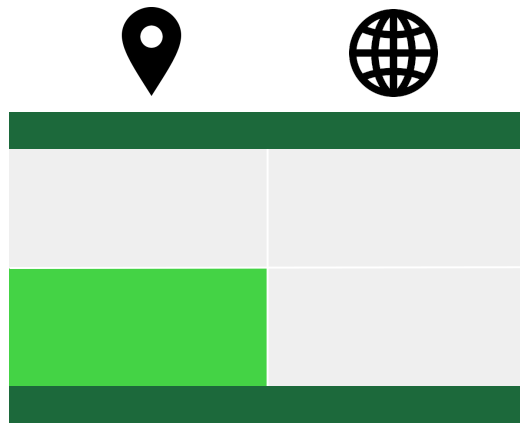# Housing

Local social

Housing

Local social

Decent, affordable, safe housing for all. Sustainable and resilient homes and settlements are foundational for creating thriving communities, and for reducing the risks that people face from natural disasters and climate change.

Energy

Local social
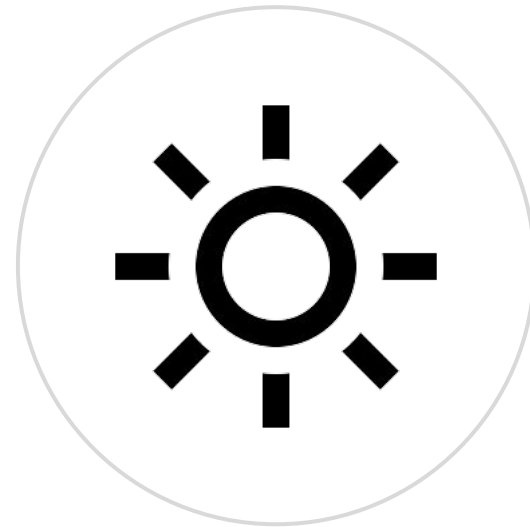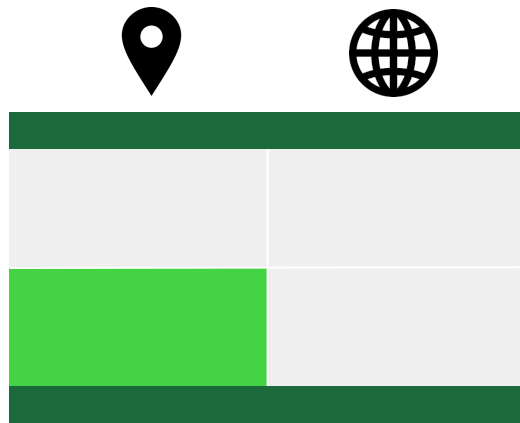
Energy

Local social

Access to clean, affordable energy services for all. Gaining access to electricity can be transformative - for children's education, household life, community healthcare and the local economy.

Connectivity

Local social

Connectivity

Local social
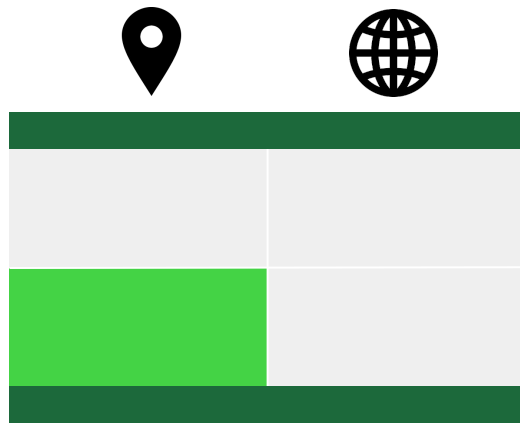
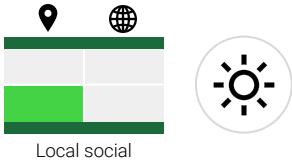**Affordable access to the Internet and communications networks.** Information and communications technologies - such as mobile phones and the Internet - can provide people with critical access to information and knowledge, such as for education and public services, online banking, employment opportunities and new forms of organising.

© Carsten ten Brink

Mobility

Local social

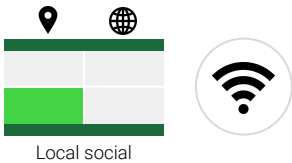# Mobility

Local social

Access to affordable, reliable mobility networks. Transport opens up opportunities in life, connecting people to essential services, employment and community. Infrastructure that - when possible - prioritizes walking, cycling and public transport additionally promotes health.

Community

Local social

Community
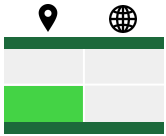

Local social

Having a sense of belonging within community. Social connection and the support it brings is fundamental to most people's sense of wellbeing. It helps build the social cohesion needed to create inclusive and mutually respectful societies, and ensures that people feel they have others to turn to in times of difficulty.

Culture
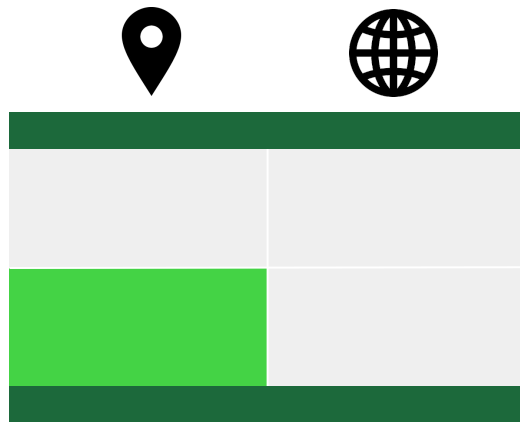
Local social

Culture

Local social

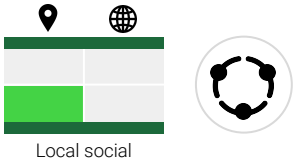**Enabling communities to express and celebrate their values and heritage.** Cultural practices and events bring music, art and dance to everyday life, giving people pride in their community. Culture helps to build a sense of connection to others, and to the rest of the living world, through rituals, festivals and traditions, old and new.

Income and work
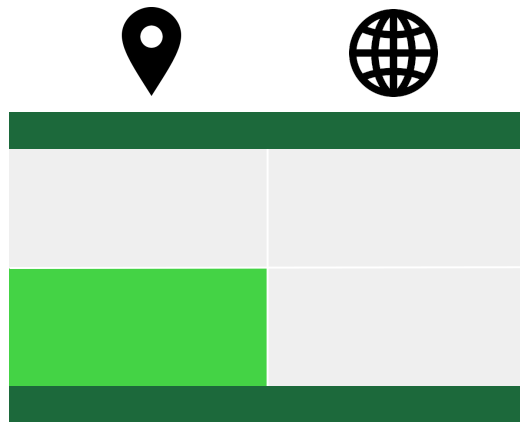
Local social

Income and work

Local social

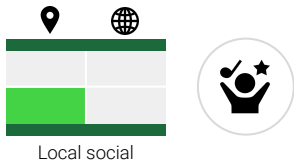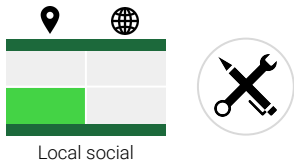**Decent work and adequate income for all.** Work that is safe and meaningful, with fair pay and decent working conditions, provides essential income that enables households to meet many of their needs and wants. Other sources of income – such as welfare payments, cash transfers and remittances – are likewise critical for many.

Social equity

Local social

Social equity
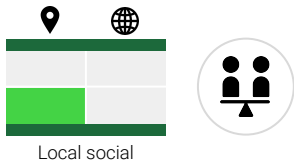
Local social

Reducing inequalities of income and wealth. People living in more equal societies tend to be healthier, safer, and more trusting compared to those in less equal societies.

Equality in diversity

Local social

Equality in diversity
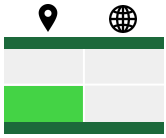
Local social

Ensuring that every individual has an equal opportunity to make the most of their life. This is regardless of differences of identity – such as gender, ethnicity, sexuality and ability – while recognising that historically groups of people have experienced significant discrimination on the basis of these characteristics.

Political voice
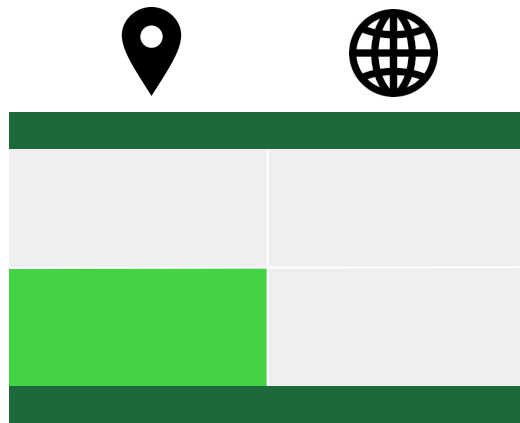
Local social

Political voice

Local social
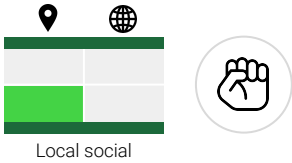
Ensuring all people have voice in, and influence over, decisions that affect their lives. Democratic institutions, freedom of expression, freedom of association, and a free media all tend to support more inclusive, participatory and representative decision-making in public life.

Peace and justice
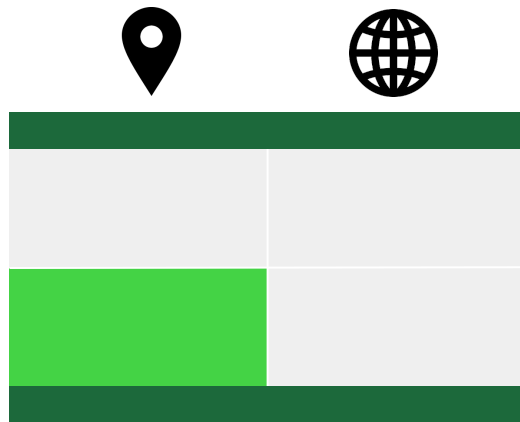
Local social

Peace and justice
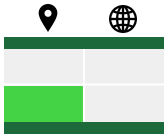
Local social

Personal security, government accountability, and access to justice for all. Peaceful and just societies enable people to live in community, free from fear and exploitation. They likewise address corruption in business and politics by building effective and accountable institutions at all levels.

Cleansing the air

Local ecological

Cleansing the air

Local ecological
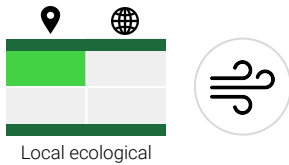
Nature's generosity:

Plants and their microorganisms immobilize, convert or remove airborne contaminants, improving air quality.

How cities and places could aim to match it:

Protecting and planting native tree and plant species to remove and reduce local air contaminants.

Stopping industrial airborne pollution or at least capturing it at source.

Using green wall biofilters to increase air quality within buildings.

In regions at risk of catastrophic wildfires, using forest management techniques to manage and reduce the risk of their occurence.

Housing biodiversity

Local ecological

Housing biodiversity

Local ecological
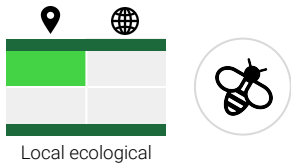
Nature's generosity:

Healthy natural landscapes - whether forest, grassland or wetland - provide rich habitats for a multitude of plant, animal and insect species, and in doing so, continually create conditions conducive to life.

How cities and places could aim to match it:
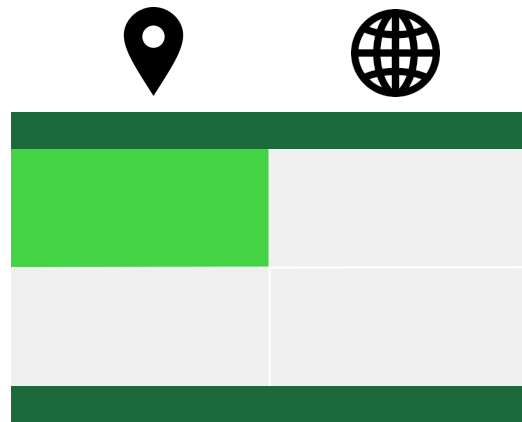
Protecting, restoring and rewilding public land, nature reserves, and public parks.

Connecting up urban habitat spaces, eg. with pollinator corridors, green bridges, wildlife corridors, pocket parks, green roofs, and riverside trails.

Planting native species that require little to no irrigation and support local wildlife and pollinators.

Increasing biodiversity and rewilding on privately held land.
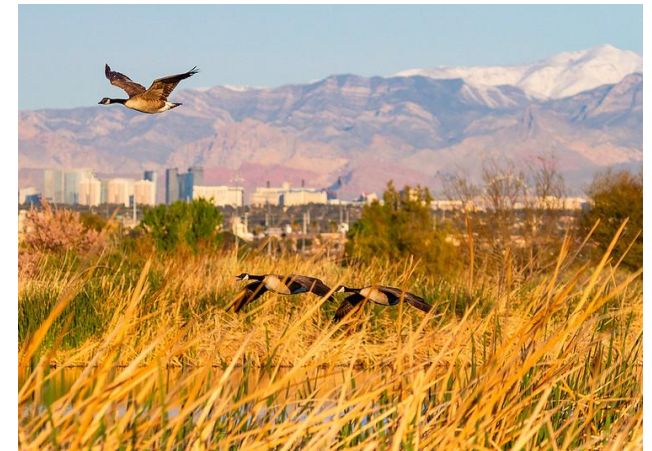
Storing carbon

Local ecological

Storing carbon
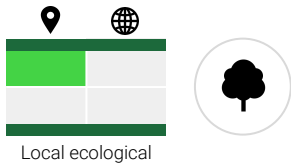
Nature's generosity:

Plants absorb CO_2 from the air as they grow, and use it as a building block for creating biomass.

In doing so, nature continually draws down carbon from the atmosphere and sequesters it in plant mass and in soils.

How cities and places could aim to match it:

Protecting and preserving existing trees and woodland.

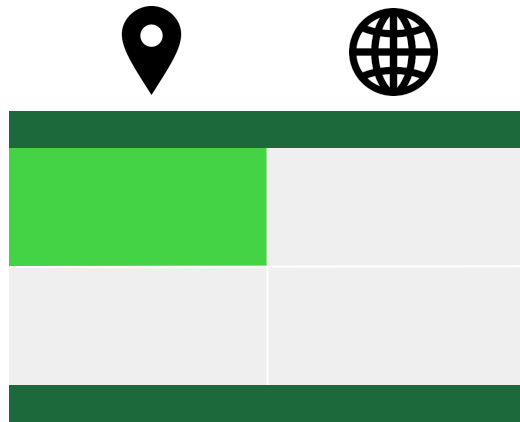Planting trees, shrubs and groundcover in urban spaces.

Prioritizing the use of building materials that capture and store atmospheric CO_2, such as timber, bamboo and other CO_2-sequestering construction materials.

Rapidly reducing, capturing and sequestering industrial CO_2 emissions at source, eg by phasing out industrial emissions, fossil-fuel vehicles, and gas heating.

Cycling water

Local ecological

Cycling water

Local ecological

Nature's generosity:
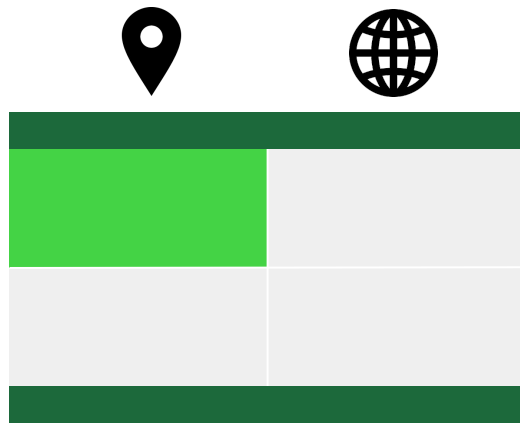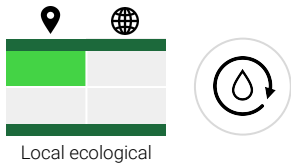
In healthy ecosystems water filters down through the soil, interacting with plants and organisms, and is cleaned in the process.

Wetlands and riversides are important for managing surface runoff, stormwater and overflow from streams and rivers.

How cities and places could aim to match it:

Protecting and restoring wetlands and floodplains to manage water for the urban area.

Reducing and preventing pollutants from entering the water system.

Using green roofs & green landscaping that can absorb, hold & slowly release water after a storm

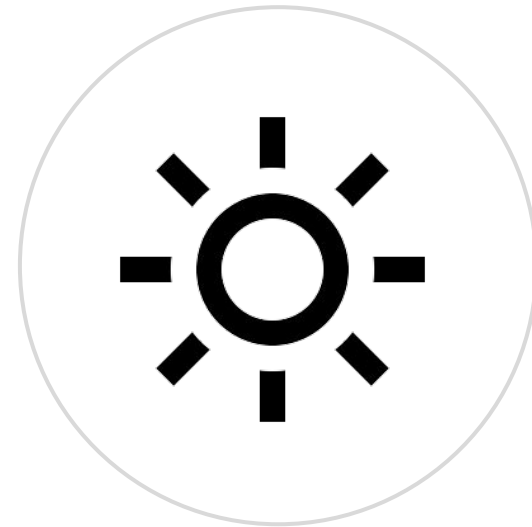Increasing natural and permeable surface areas where stormwater can be absorbed by the soil.

Using native plants & microorganisms to create green roofs that can clean rainfall and runoff.

Harvesting energy
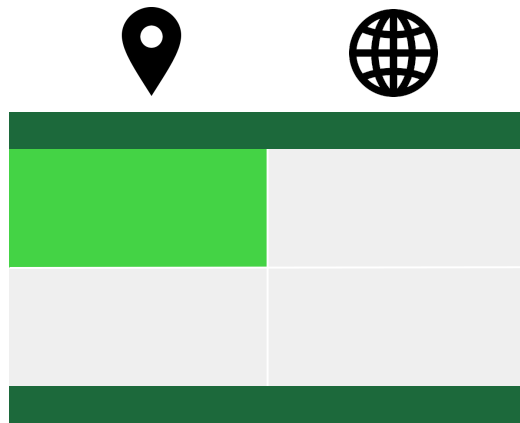
Local ecological

Harvesting energy

Local ecological
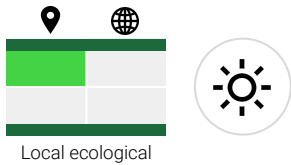
Nature's generosity:

Plants convert sunlight into energy through photosynthesis, providing food for themselves and for other all other lifeforms.

How cities and places could aim to match it:

Harvesting the sun's energy to grow food on empty street plots and on roof tops.

Harvesting the sun's energy to generate electricity and hot water with solar panels, tiles and glass.

Converting the energy of flowing water into electricity with micro-hydro power plants in locks and rivers.

Converting wind energy into electricity with small-scale wind turbines, as appropriate to the location.

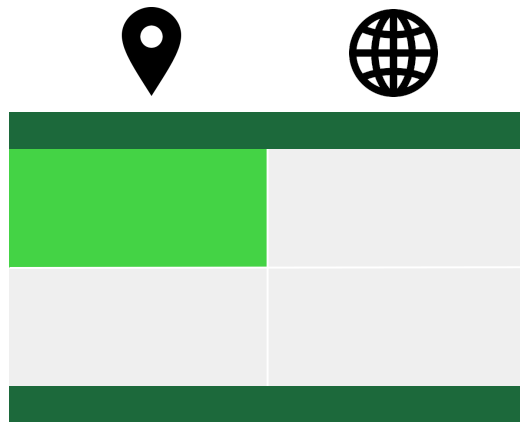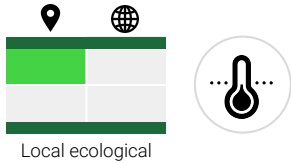# Regulating the temperature

Local ecological

Regulating the temperature

Local ecological

Nature's generosity:

Plants in native forests and landscapes intercept sunlight, keeping radiant heat from directly hitting the ground, and thy release moisture, thus cooling the air, from the tree tops to the forest floor, by up to 5ºC (9ºF).

How cities and places could aim to match it:

Reduce the urban heat island effect by:
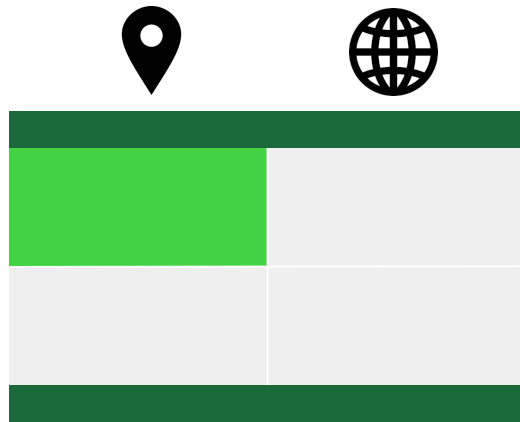
Protecting and planting trees.

Introducing building features (such as canopies) to create urban shade that mimics the nearby forest.

Introducing green roofs, walls and streetscapes instead of the extensive use of concrete, brick and glass.

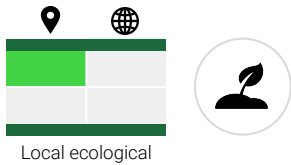Using adapted road and walkway paving materials to reduce street surface temperatures.

Building and protecting soil

Local ecological

Building and protecting soil

Local ecological

Nature's generosity:

Healthy soil stores nutrients and carbon, allowing life to regenerate. It permits organisms, water and nutrients to move within it, and its biodiversity helps to prevent soil erosion.

How cities and places could aim to match it:

Adding organic matter and nutrients to help restore depleted soils, and planting native species that will help to store soil carbon.
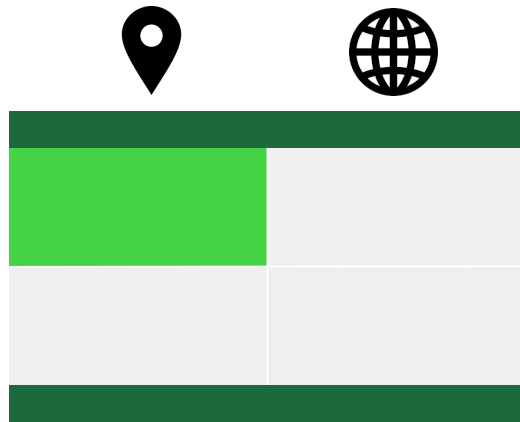
Reducing soil erosion with native groundcover and built features such as walls and reinforced riverbanks.

Reducing paved areas and using permeable surfaces to allow drainage and nutrient cycling.

Minimizing pollutants going into the soil in order to support organisms.

Enhancing wellbeing

Local ecological

Enhancing wellbeing

Local ecological

Nature's generosity:

Spending time in nature has multiple medically proven benefits for human mental and physical health. For many people such experiences evoke a strong sense of biophilia, relaxation and connection with the rest of the living world.

How cities and places could aim to match it:

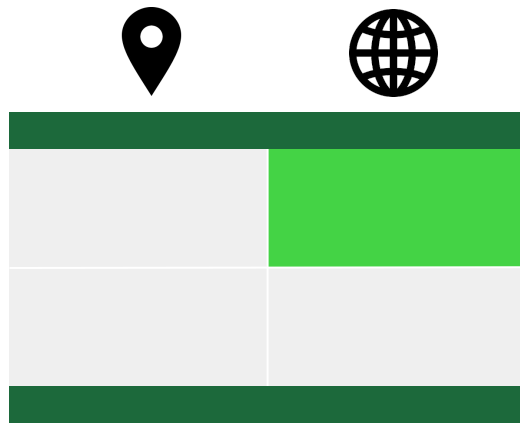Creating parks, green spaces, and urban farms throughout towns and cities.

Planting native trees and shrubs to attract diverse local wildlife.

Providing public access to trails along rivers and lakes and other water bodies, and ensuring they are safe for swimming.

Encouraging households to use front gardens for planting rather than paving or parking.
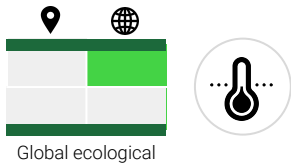
Climate change

Global ecological

Climate change

Global ecological

When greenhouse gases such as carbon dioxide, methane and nitrous oxide are released into the air, they enter the atmosphere and amplify Earth's natural greenhouse effect, trapping more heat within the atmosphere. This results in global heating, which results in rising temperatures, more frequent droughts, floods and storms, and sea-level rise.

# Ocean acidification
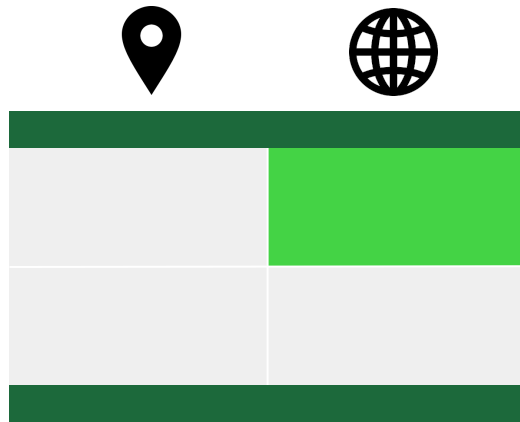
Global ecological

Ocean acidification

Around one quarter of the carbon dioxide emitted by human activity is eventually dissolved in the oceans, where it forms carbonic acid and decreases the pH of the surface water. This acidity reduces the availability of carbonate ions that are an essential building block used by many marine species for shell and skeleton formation. This missing ingredient makes it hard for organisms such as corals, shellfish and plankton to grow and survive, thus endangering the ocean ecosystem and its food chain.
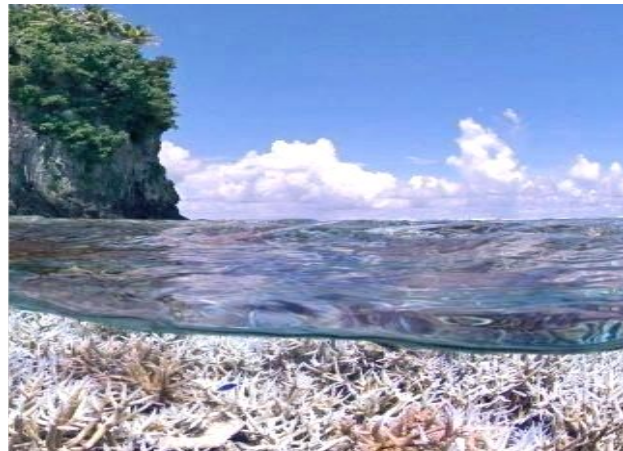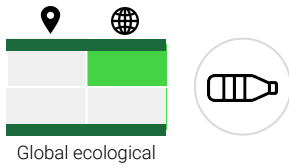
# Chemical pollution
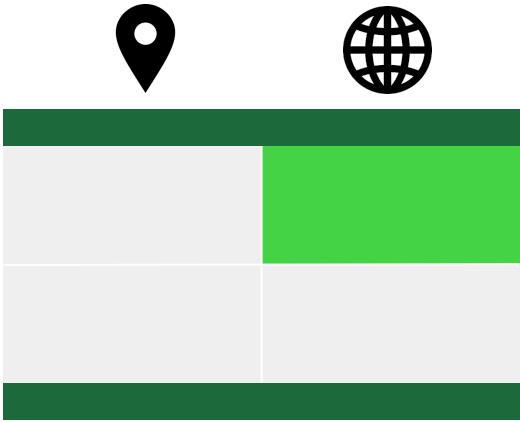
Global ecological

Chemical pollution

Global ecological
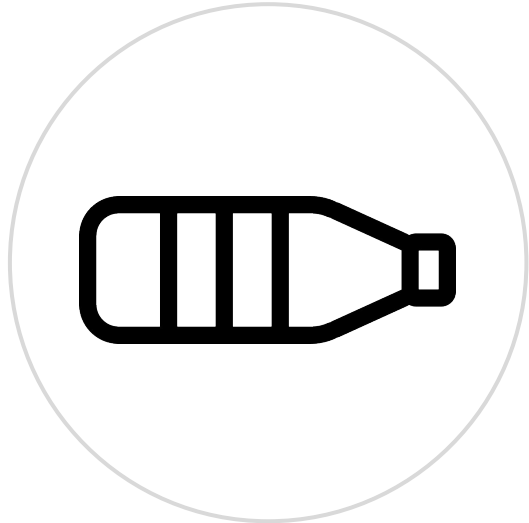
When plastics and toxic compounds - such as synthetic organic pollutants and heavy metals - are released into the biosphere they can persist for a very long time, with effects that may be irreversible. Accumulating in the bodies of birds and mammals, they reduce fertility and endanger ecosystems on land and in the oceans.
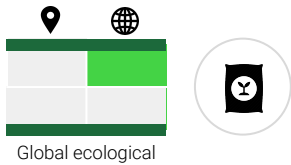
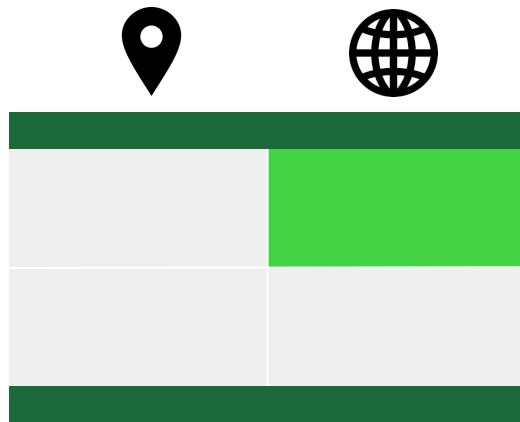# Excessive fertilizer use
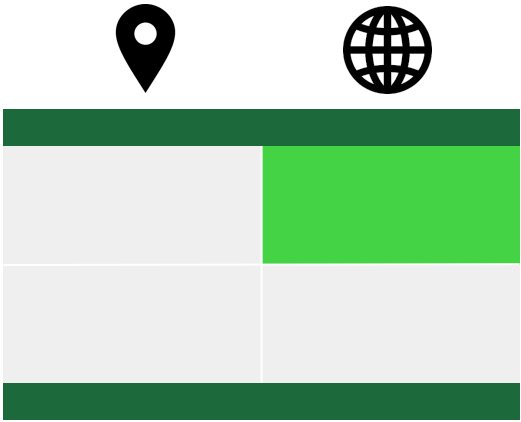
Global ecological

Excessive fertilizer use

Global ecological

Reactive nitrogen and phosphorus are widely used in agricultural fertilizers but only a small proportion of what is applied is actually taken up by crops. Most of the excess runs off into rivers, lakes and oceans, where it causes algae blooms that turn the water green, brown or even red. These blooms can be toxic and they kill off other aquatic life by starving the water of oxygen.
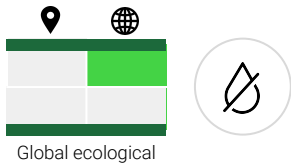
Water withdrawals

Global ecological

Water withdrawals

Global ecological
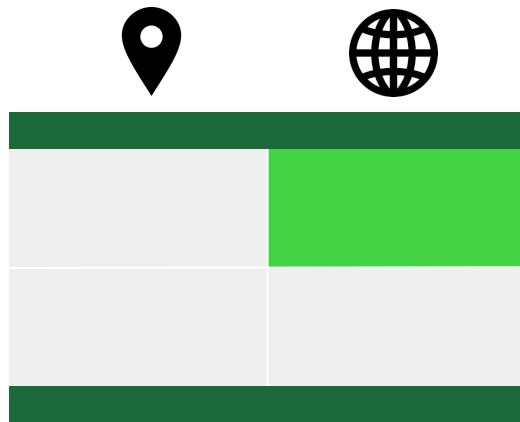
Water is essential for life and is widely used by agriculture, industry and households. However excessive withdrawals of water - for agricultural, industrial or household use - can impair or even dry up lakes, rivers and aquifers, damaging ecosystems and altering the hydrological cycle and climate.
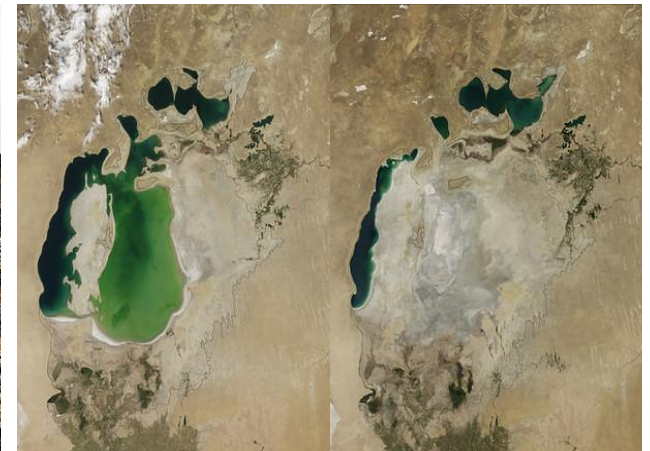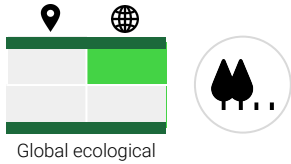
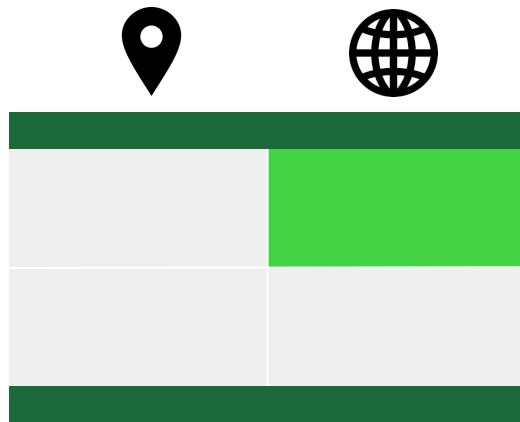# Land conversion

Global ecological

Land conversion

Global ecological

Converting land for human use – such as turning forests and wetlands into cities, farmland and highways – depletes Earth's carbon sinks, destroys rich wildlife habitats, and undermines the land's role in continually cycling water, nitrogen and phosphorus.
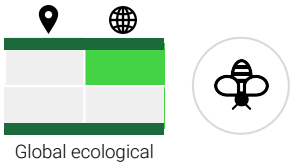
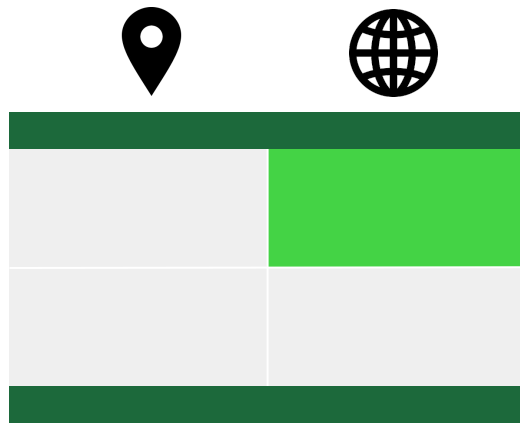# Biodiversity loss

Global ecological

Biodiversity loss

Global ecological

Deforestation and other forms of habitat destruction cause a decline in the number, variety and interconnectedness of species, damaging the health and integrity of ecosystems. This increases the risk of abrupt and irreversible changes in ecosystems, weakening their resilience and undermining their capacity to provide food, fuel and fibre, and to sustain life for all living beings.

Air pollution

Global ecological

Air pollution

Global ecological

Micro-particles, or aerosols, emitted into the air – such as smoke, dust and gases – can damage living organisms. They also interact with water vapour in the air and so affect cloud formation. When emitted in large volumes these aerosols can significantly alter regional rainfall patterns, including shifting the timing and location of monsoon rains in tropical regions.
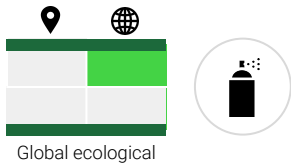
# Ozone layer depletion
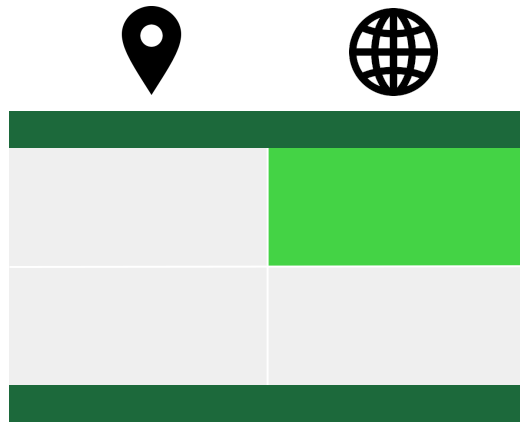
Global ecological

Ozone layer depletion

Global ecological

Earth's stratospheric ozone layer filters out ultraviolet (UV) radiation from the sun. Some human-made chemical substances, such as chlorofluorocarbons (CFCs) will, if released, enter the stratosphere and deplete the ozone layer, exposing Earth and her inhabitants to the sun's harmful UV rays.
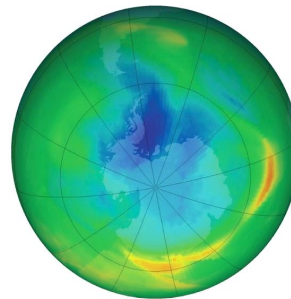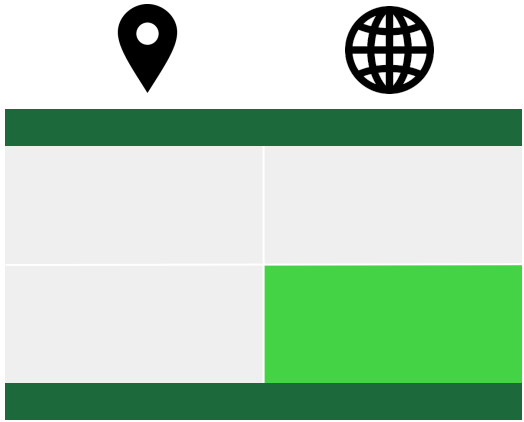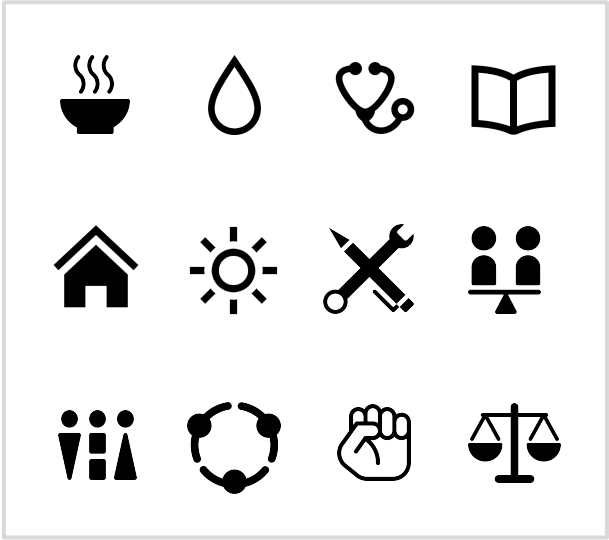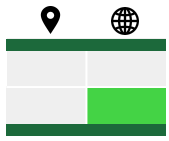

September 1979
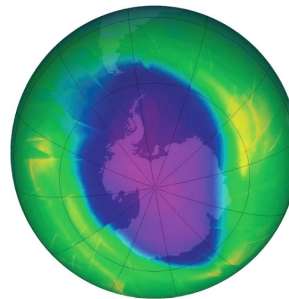
September 2009

Visible

Ultraviolet

Sunscreen — Without Sunscreen — Sunscreen — Without Sunscreen

Global supply chains

Global social

Global supply chains

Global social

Global supply chains connect buyers in every place to people working worldwide. The jobs created can be a valued source of income, but can also be exploitative for those facing low-paid, insecure and dangerous conditions, and who are denied the right to organise.

Brands, retailers, shoppers, procurement officers and governments can all take action to help ensure that sourcing practices far better respect workers rights.

Lifestyle patterns
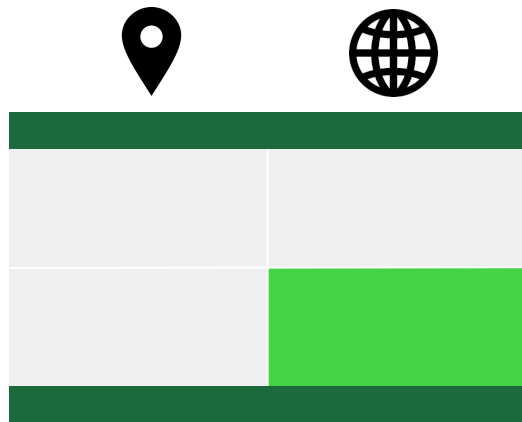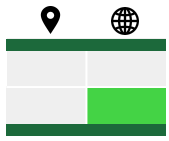
Global social

Lifestyle patterns

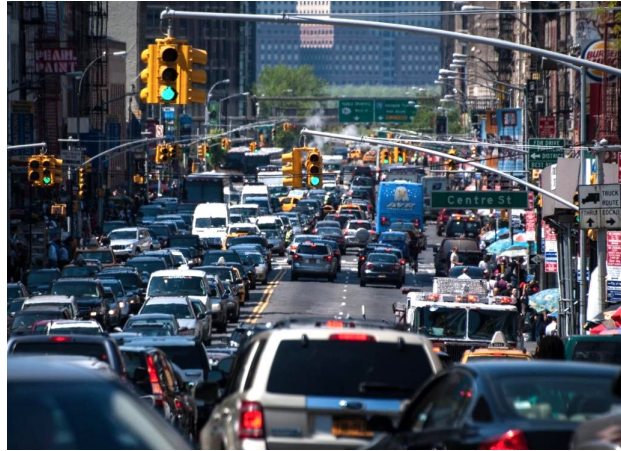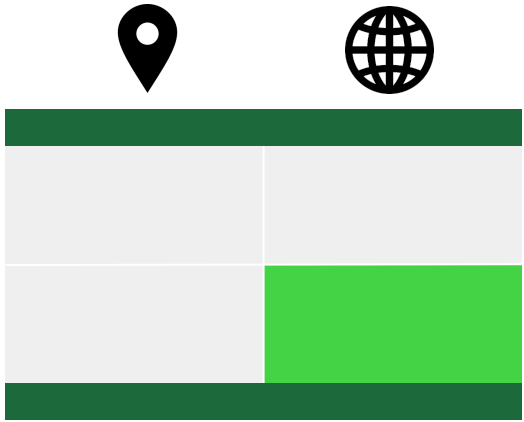Global social

Infrastructure and cultural norms can lead to resource-intensive lifestyles with damaging consumption footprints. The resulting carbon emissions - and extractive use of land, minerals and water - exacerbate climate and ecological breakdown, devastating lives and livelihoods, displacing communities, and creating climate refugees worldwide.

Cultural connections

Global social

Cultural connections

Global social

Cultural connections help create international solidarity.
Inter-city networks - between mayors and communities - promote cross-cultural learning and support. International scholarships, science networks sporting events and arts festivals create opportunity and understanding, and a sense of belonging to a bigger community. Sending financial assistance to others in times of crisis can be a cornerstone of such solidarity.
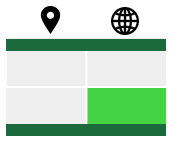
Welcome to migrants
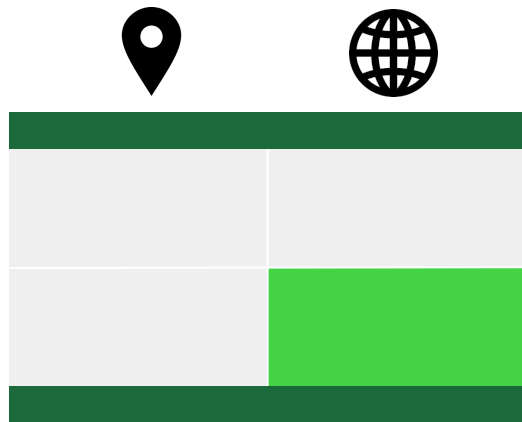
Global social

Welcome to migrants

Global social

Towns and cities play a key role in fostering the wellbeing of migrants and refugees. Official policies of welcome can give assurance and protection to highly vulnerable people, while empathy within the local community can transform the experience of arrival.

Many migrants provide invaluable support to their families back home by sending remittances, which are now essential sources of income in many lower-income countries.
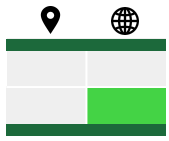
Policy regimes
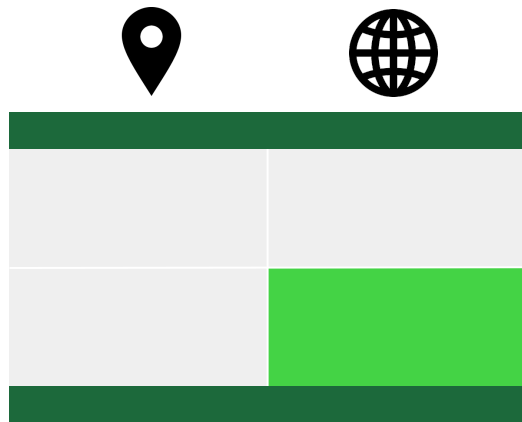
Global social

Policy regimes

Global social

National and international policies and institutions profoundly shape global inequalities of wealth and power. National policy making space is significantly affected by international rules and practices, such as on trade and finance, intellectual property rights, foreign direct investment, debt and corporate taxation. The imbalance of power between nations in international institutions exacerbates inequalities in negotiating power.
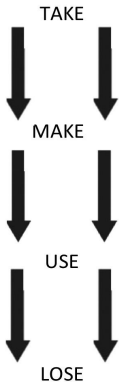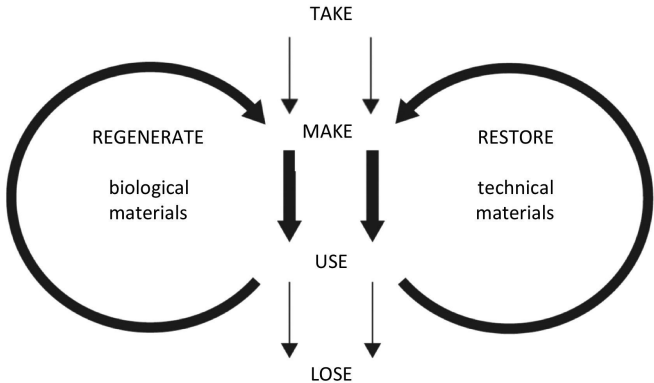
Regenerative design

TAKE

REGENERATE

biological
materials

MAKE

RESTORE

technical
materials

USE

LOSE
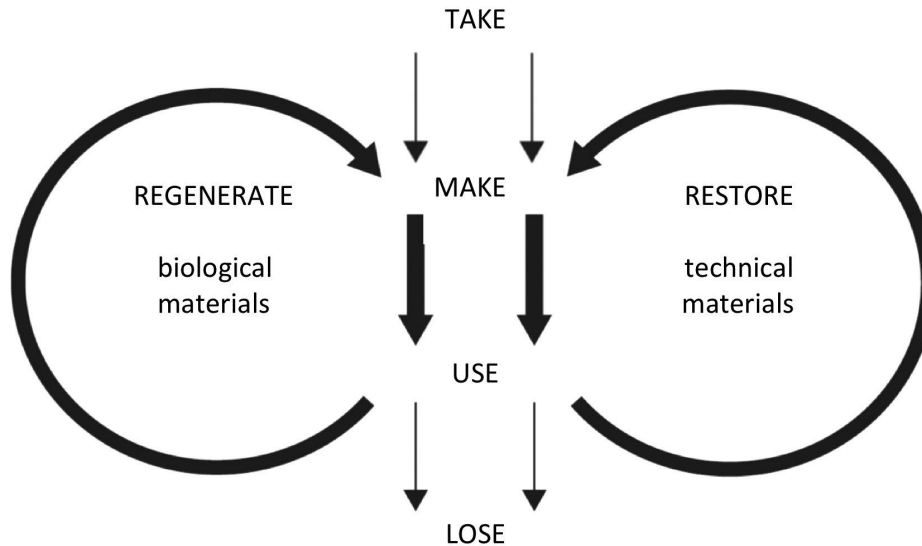
From degenerative to regenerative design

From

TAKE

MAKE

USE

LOSE

Degenerative

running down Earth's
life-supporting systems

To

TAKE

REGENERATE

biological
materials

MAKE

USE

LOSE

RESTORE

technical
materials

Regenerative

working with and within
the cycles of the living world

Questions

How can we repair, restore and
rewild nature's ecosystems?

And how can we learn from
nature's design, to repair,
refurbish, restore, reuse and
remake the technical materials
we create - the synthetics,
plastics, ceramics and metals -
that can't be returned to the
natural world?

Distributive design
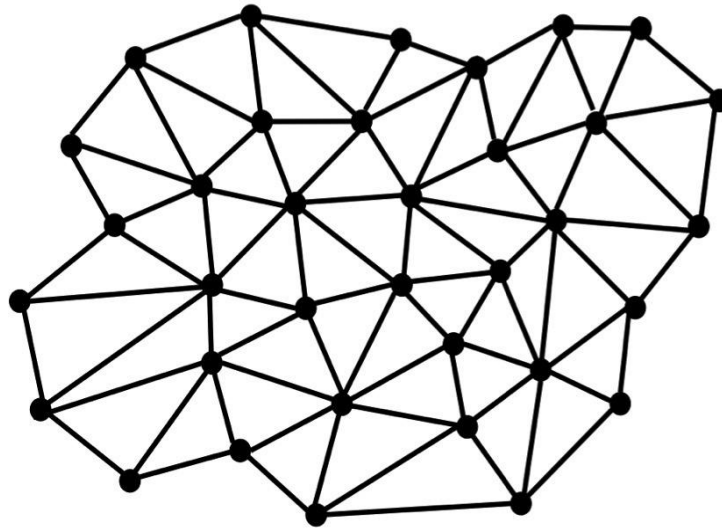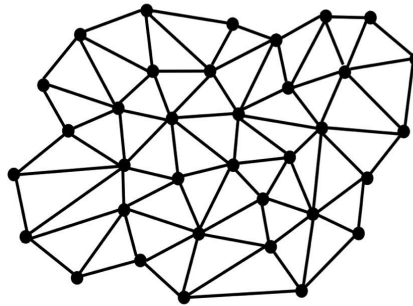
From divisive to distributive design

From

To
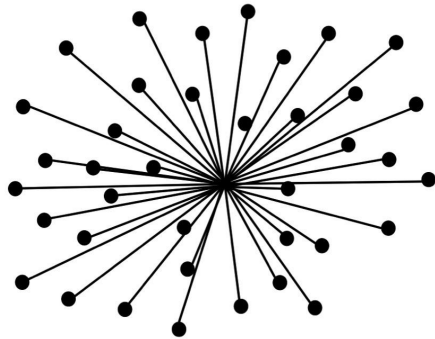
Questions

Divisive

capturing opportunity and
value in the hands of a few

Distributive

sharing opportunity and value
with all who co-create it

Who owns the sources of wealth
creation? e.g...

Who owns the land? Who determines
how it is used? And who shares in the
value created from the land?

Who owns the housing? Who
determines who has access? And
who shares in the value created from
housing?

Who owns the businesses? Where
does the value created come from
and who does it go to?

What are the laws & regulations,
infrastructure, privilege & inheritance
that underpin these and other things?:

The Embedded Economy
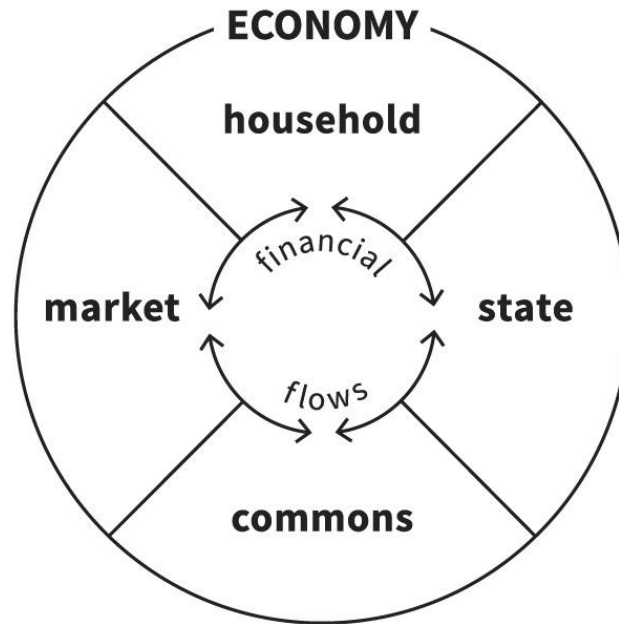
The Embedded Economy

The Embedded Economy shows how the economy is embedded within society, which is embedded within the living world. Within the economy it shows the four spheres of provisioning for our wants and needs - the market, state, household and commons - and it invites us to think about how these can work together in balance.
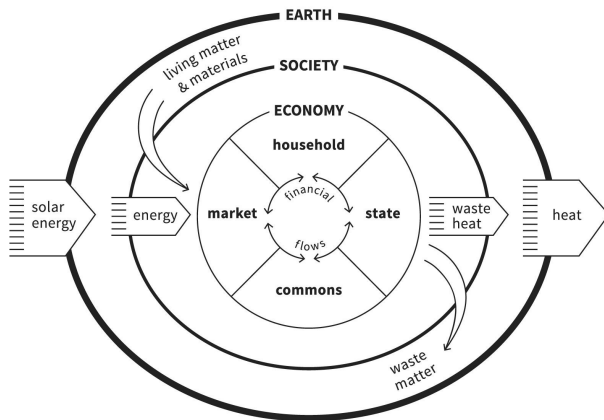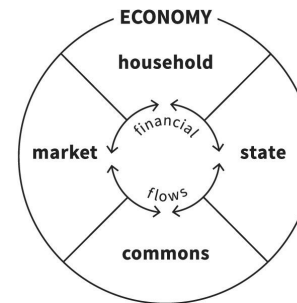

The household

The unpaid activity within the household that sustains the essentials of family and social life with the universal human resources of time, knowledge, skill, care, empathy, learning and reciprocity.

The market

The mechanism by which goods and services can be bought and sold according to an agreed exchange value.

The state

The local, regional and national governments that provision public goods and services to meet the needs of the populace, and create the legislative framework for all other spheres of economic activity.

The commons

The process of stewarding a shared resource by a self- organising and self-governing community, for the shared benefit of many, outside the direct governance of the market or state.