



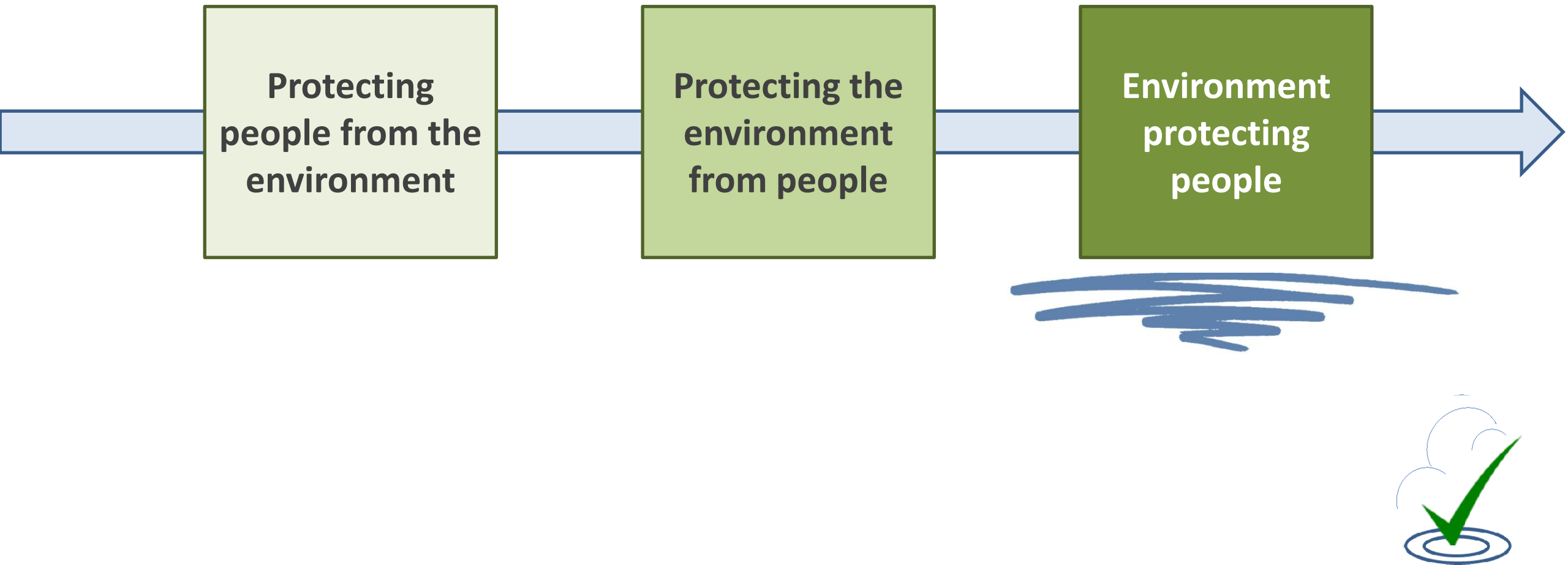
Invest in the Future: **from electricity to ecosystems**

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Human perception of environment has changed



A better model for a better world

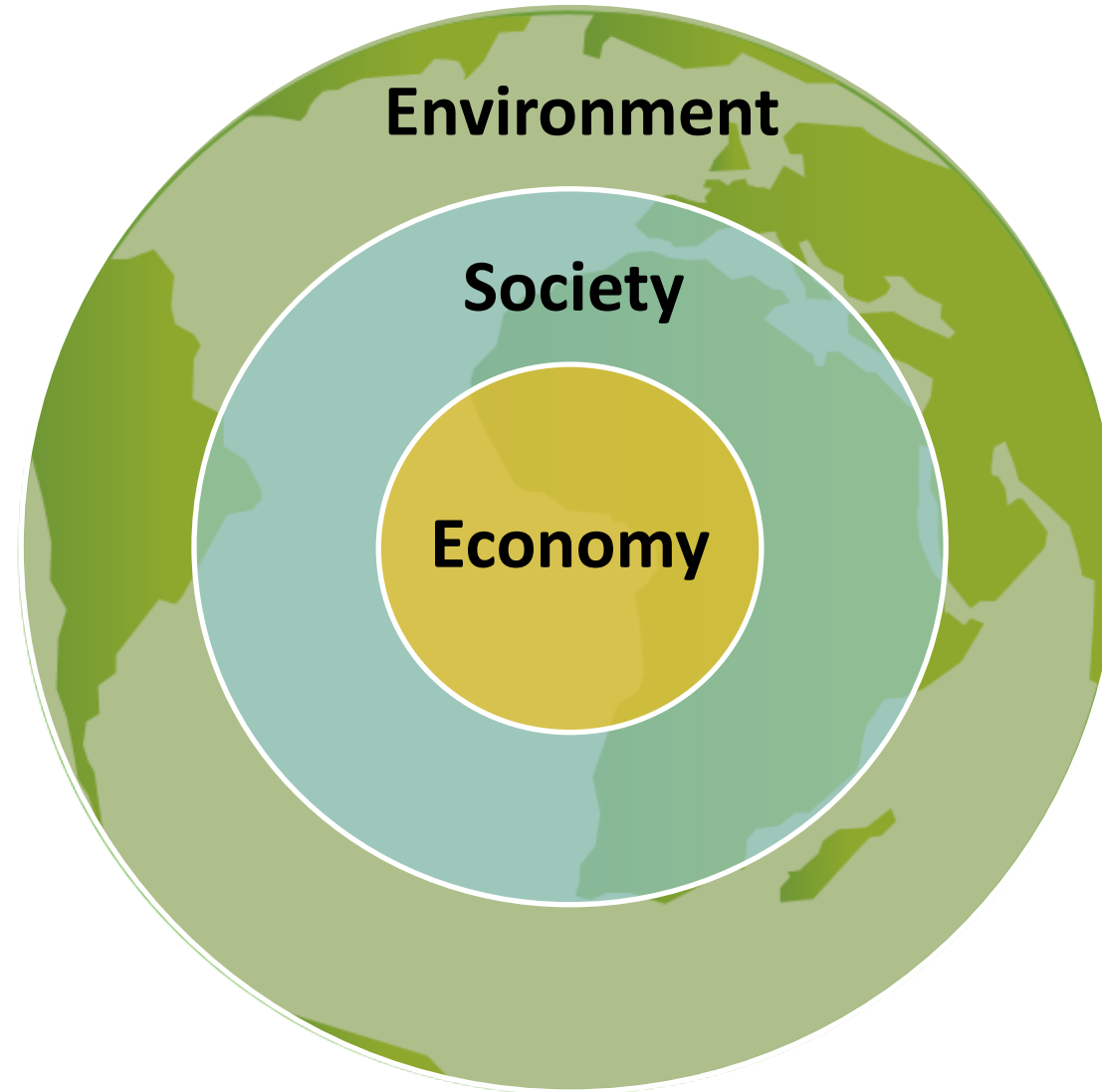
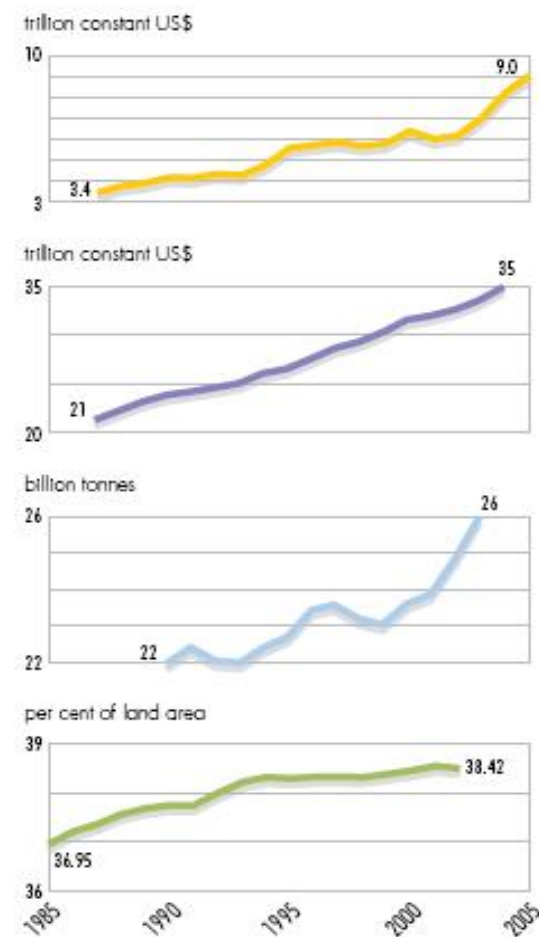
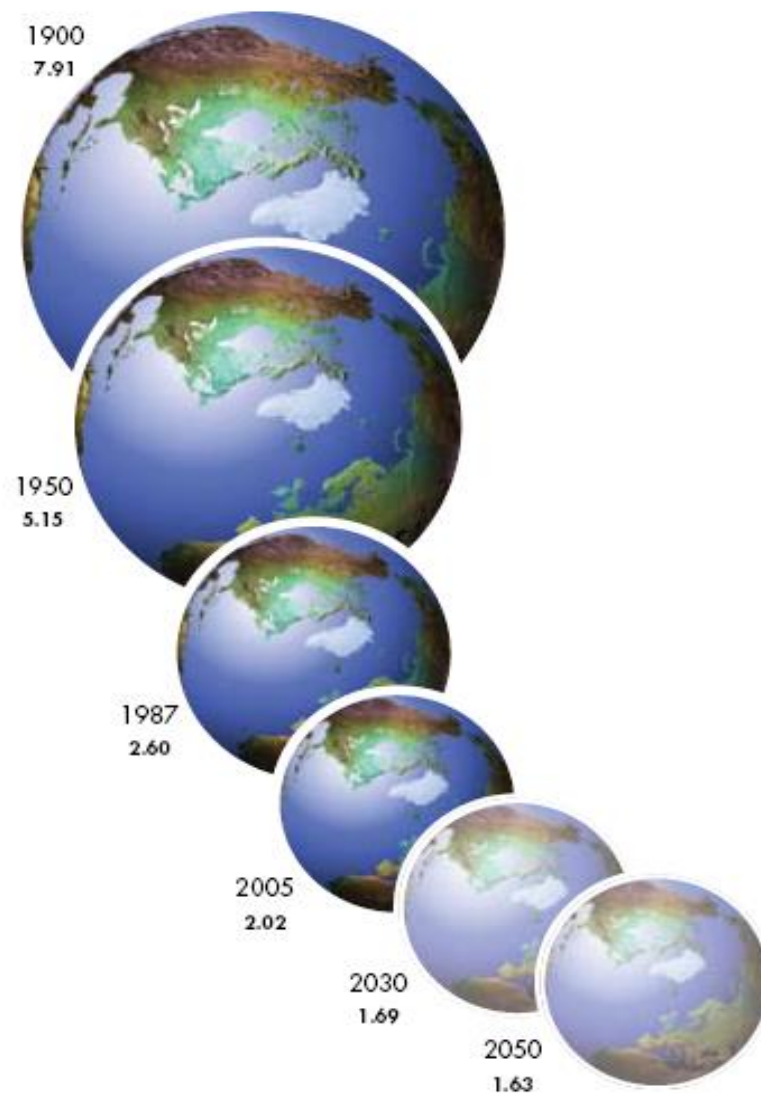


Figure 1: Our "shrinking" Earth



Notes: Numbers next to Images of Earth reflect hectares of land per capita.

Graphs show changes in trade volume (1987–2005), GDP (1987–2004), CO₂ emissions (1990–2003) and agricultural land area (1987–2002).

Ecosystem Services

These are what Nature offers to us free. However, we couldn't possibly survive without them, or hope to maintain our standards of living.

Some examples, under the 4 categories usually identified:

PROVISIONING

Food
Water to drink
Air to breathe
Timber

REGULATING

Pollination of crops
Sequestering carbon
Natural purification of
pollution

CULTURAL

Amenity
Recreation
Mental Health

SUPPORTING

Soil formation
Composting
Nutrient recycling

It is possible to put a monetary value on these. Globally reckoned at \$350 Tn per year, or 4.5x global GDP.



UK National Ecosystem Assessment

PROVISIONING

CULTURAL

REGULATING

Service Group	Final Ecosystem Service	Mountains, Moorlands & Heaths	Semi-natural Grasslands	Enclosed Farmland	Woodlands	Freshwaters – Openwaters, Wetlands & Floodplains	Urban	Coastal Margins	Marine
Provisioning	Crops		↔	↑				↓	
	Livestock/Aquaculture	↓	↔	↔	↔			↓	
	Fish			↔		↓		↓	↓
	Trees, standing vegetation, peat	↓	↔	↗	↗		↔	↔	
	Water supply	↔	↓	↓	↔	↓	↓	↔	
	Wild species diversity	↔	↔	↓	↗	↓	↓	↓	↓
Cultural	Environmental Settings: Local places	↔	↔	↔	↗	↗	↔	↔	↔
	Environmental Settings: Landscapes/Seascapes	↗	↔	↗	↗	↔	↔	↗	↓
Regulating	Climate	↔	↓	↓	↗	↔	↓	↔	↓
	Hazard	↓	↓	↓	↗	↓	↓	↓	↓
	Disease and pests	↓	↓	↓	↔	↓	↓	↔	↓
	Noise	↔	↓	↔	↗	↔	↓	↔	↔
	Water quality	↔	↗	↔	↔	↗	↓	↓	↔
	Soil quality	↓	↓	↓	↓	↓	↓	↔	
	Air quality	↔	↓	↗	↗	↔	↔	↔	↔

Trends in ecosystem service flows from broad habitat types in Scotland over 20 years



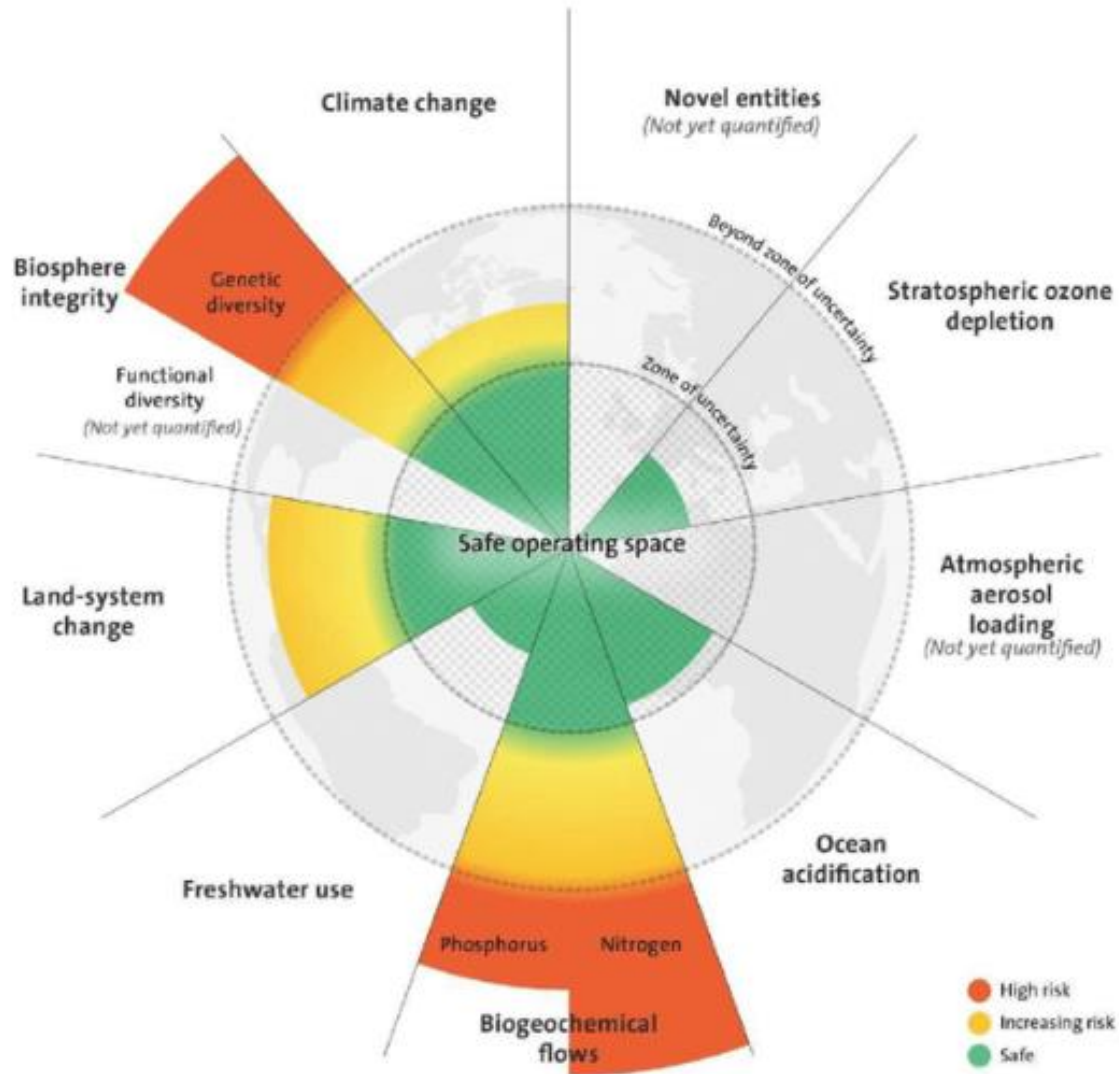
some deterioration



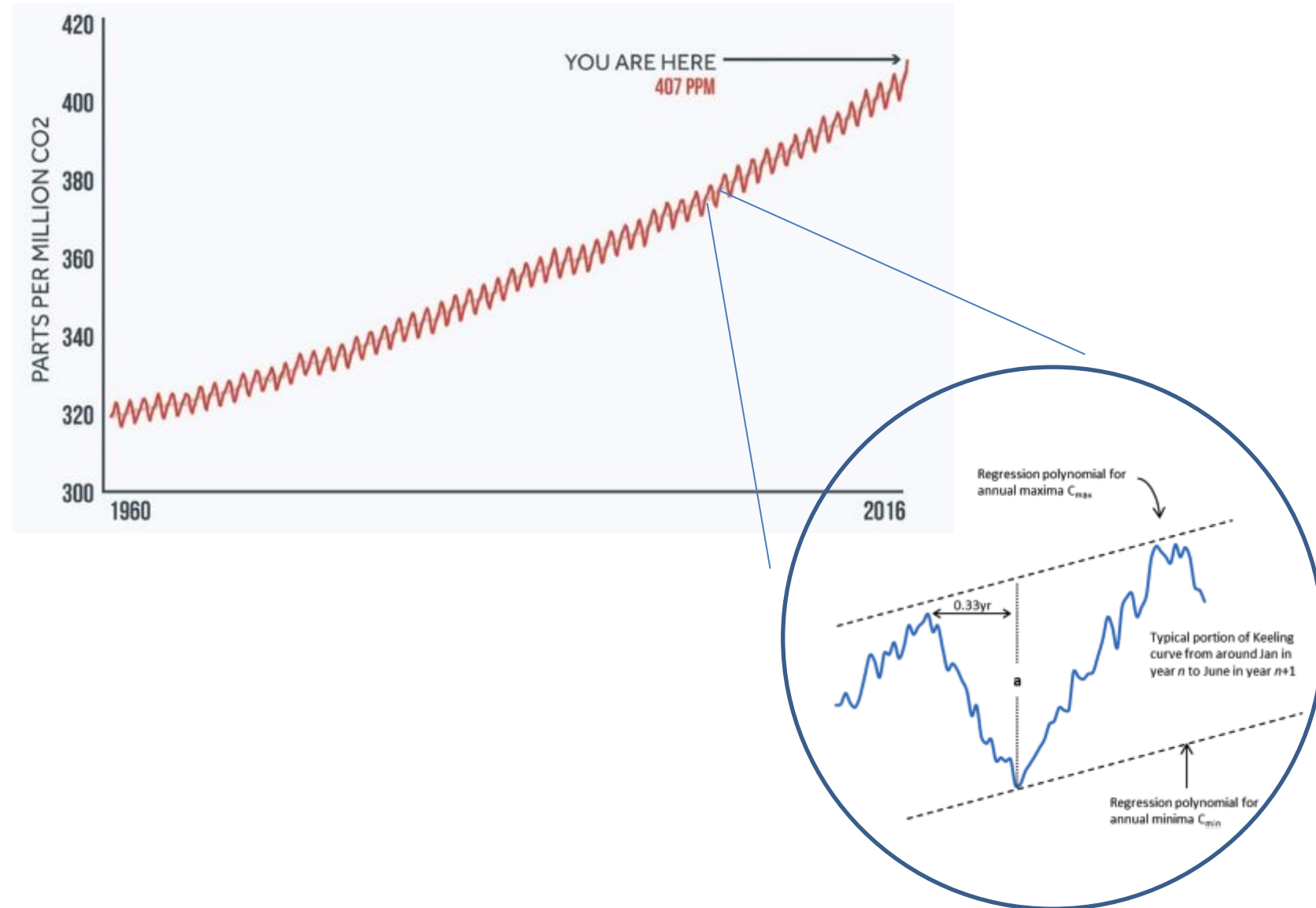
large deterioration

applicable to a particular Broad Habitat.

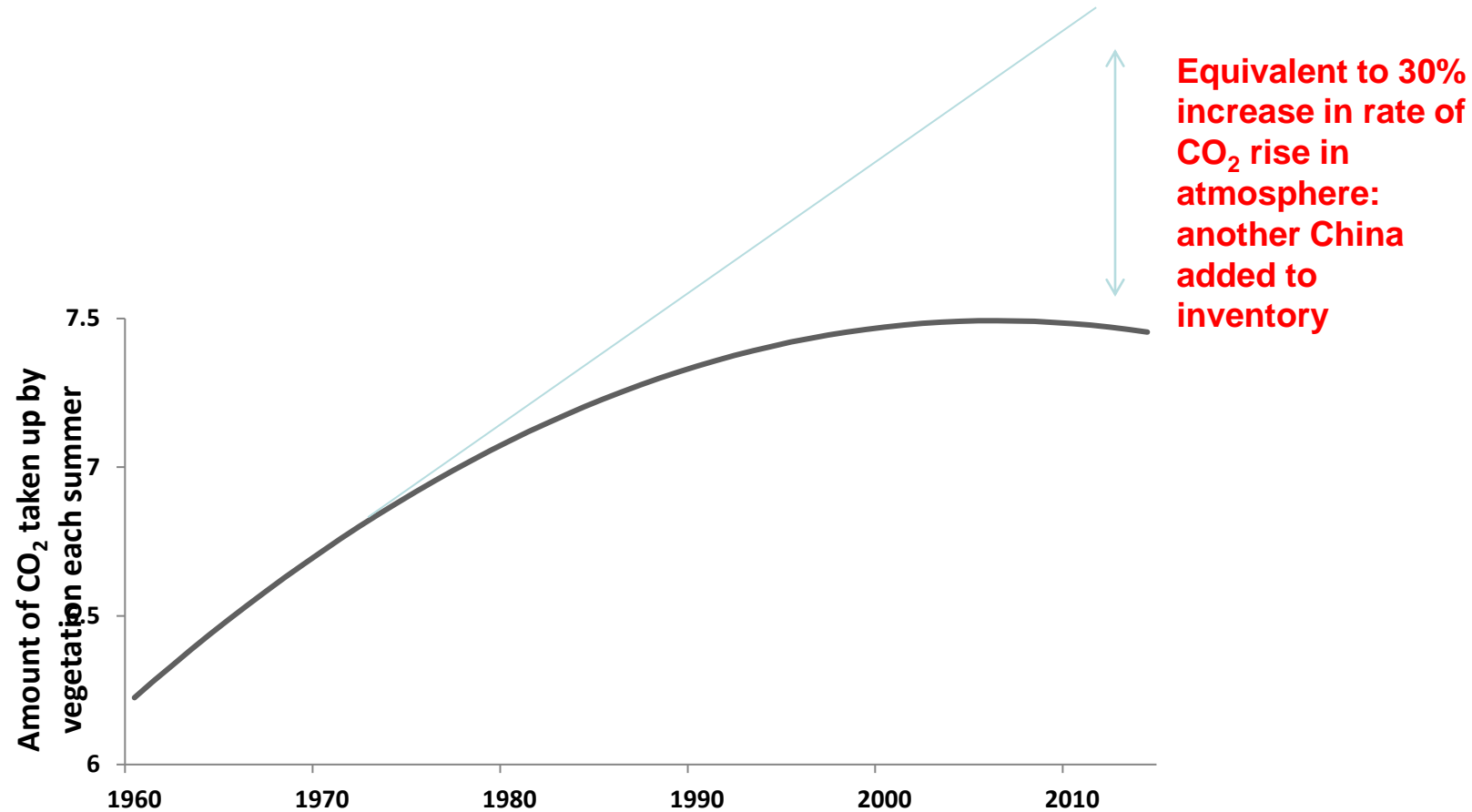
Environmental management must evolve in an increasingly complex world



Analysis of Keeling Curve: weekly CO₂ concentrations from Hawaii

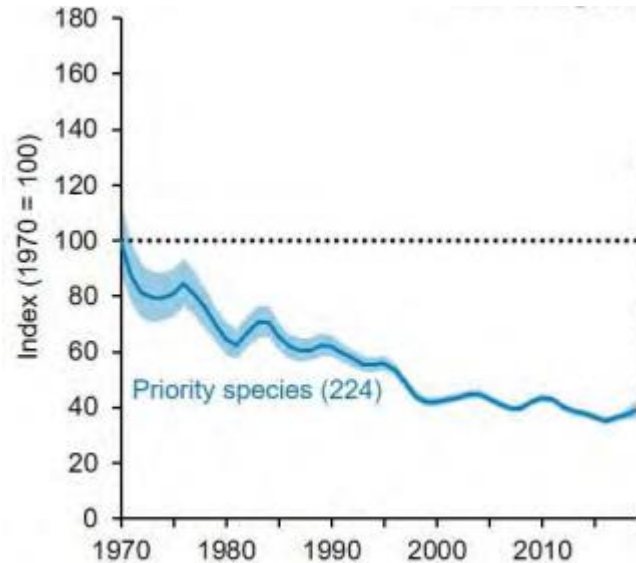


N. Hemisphere ecosystems are losing ability to absorb CO₂ from atmosphere



Biodiversity is in trouble ...

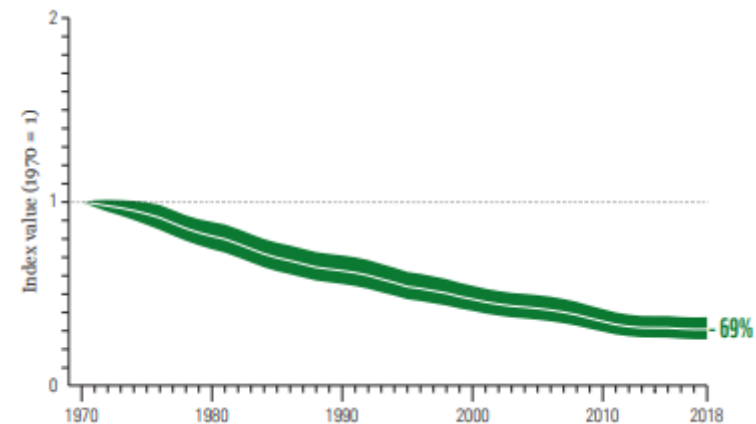
UK Biodiversity Indicators Report 2021



UNEP: 90% of biodiversity loss is due to extraction/processing of raw materials

25% global species threatened with extinction. Rate 1000x faster than pre-human impact

WWF Living Planet Report 2022



So....we must do a lot lot more

The World Economic Forum's top 3 global risks are all climate related

WEF suggests there is \$10 Tn business opportunity:

eg Food production an additional \$3.6 Tn and 190 M new jobs

Energy & extractive industries potential of an additional \$3.5 Tn and 90 M jobs

\$12 Bn currently seeking projects - but only \$1.5 Bn invested

- There is \$200 Trillion available in the global private sector investment market – far greater than all public funds available
- Can it be shifted to do good rather than harm?
- It is estimated the voluntary carbon-market is about \$0.3 Bn in 2020 but will rise to \$18 Bn by 2030.
- C offsetting will become big business
- Need to mainstream broader “Nature-Based Solutions” (eg natural flood management, water/sewage purification: SuDS, reedbeds)

CoP 26 *Code Red for Humanity*

- Mark Carney's GFANZ: 450 investor institutions with \$130Tn of assets.
- Discussion of carbon border adjustments (ie taxes)
- Double funding on adaptation to \$40Bnpa by 2025. Need \$500Bnpa by 2050
- Audited reports from every country every 2 years
- Glasgow Breakthroughs: 40 countries signed up to 5 issues:
power, vehicles, steel, hydrogen, agriculture

No economy if not a green economy?



CoP15 *Defining Challenge of the Decade*

- WTO says 55% of global GDP depends on healthy ecosystems
- 30% of Earth to be protected
- Reduce nutrient loss 50%, pesticides 66%, no plastic waste
- All businesses to report on use/impact on biodiversity. Reduce –ve impacts by 50%
- Eliminate harmful incentives/subsidies
- Biodiversity to be fully integrated into policy, regulation and accounts across all sectors
- Apply ecosystem approach and strengthen legislative protections
- Monitor/report nationally



Scotland needs £20Bn over 10 years to restore biodiversity. Govt committed £0.5Bn over 5 years. Need 20x more. Has to be private funding

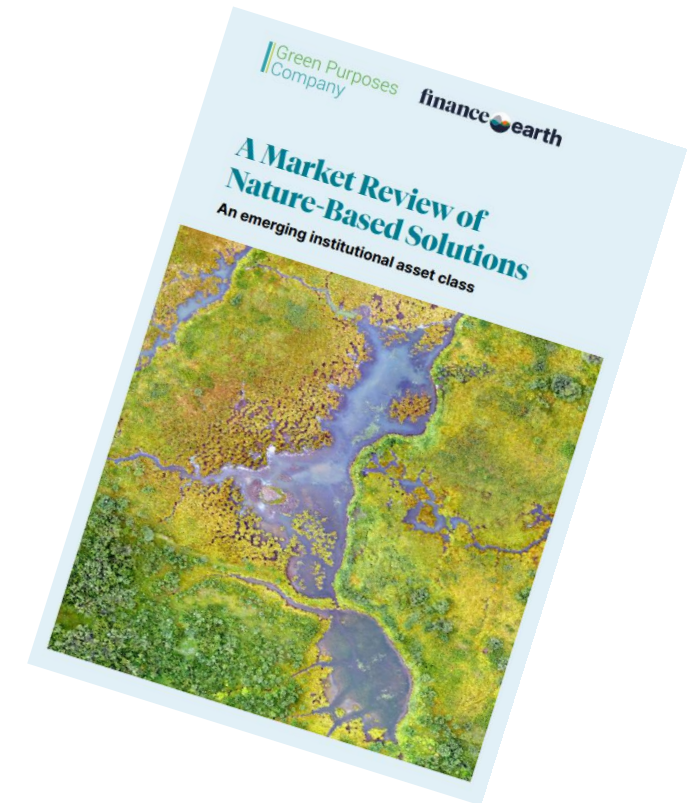
GPC Report: NbSs an emerging institutional asset class

- Reviewed \$1.5Bn of global transactions with RoI of 2% to 12%
- Aggregate small projects, needs a trusted intermediary
- Stacked income (commodities: eg timber, crops, carbon, and/or monetisation of cost/benefit: eg flood reduction, water suppl
- Funding gap can only be met by private finance
- Govt & eNGOs can help to de-risk: blended finance and expertise



WEF: nature-based solutions are the “forgotten solution” to the climate crisis

Natural regeneration of native woodland in Scottish uplands could sequester 17% of emissions





Café Selva Norte

Investment terms

Investment size	\$14.5m
Investor type(s)	Institutional investors
Investment date	2019
Investment horizon	15 years
Expected returns	12% (net expected internal rate of return)

Project description

Urapi Sustainable Land Use is transforming 20,000 hectares of deforested and degraded land in Northern Peru into productive agroforestry systems through the sustainable development of the coffee value chain, reinforcing and empowering cooperatives and their producers.

Mirova's Land Degradation Neutrality Fund invested into a Urapi Sustainable Land Use special purpose vehicle (SPV) in 2019.

The SPV provided investment to the producer cooperatives in the form of:

- Secured term loans for delivering micro-credit loans to smallholder farmers; and
- Equity for the construction of a coffee processing plant.

Project sponsors



Business model

A number of producer cooperatives receive funding to provide loans to their membership of smallholder coffee producers in exchange for the producers transitioning their activities to best-practice climate-smart agroforestry – including the acquisition of a processing plant.

Smallholder coffee farmers repay the cooperative loans through revenues generated by the sale of coffee and other agroforestry products.

Carbon credits are generated through protection of forest and restoration of degraded agricultural land to provide additional income for the cooperative members.

Target impact

8,000 hectares of degraded land restored.

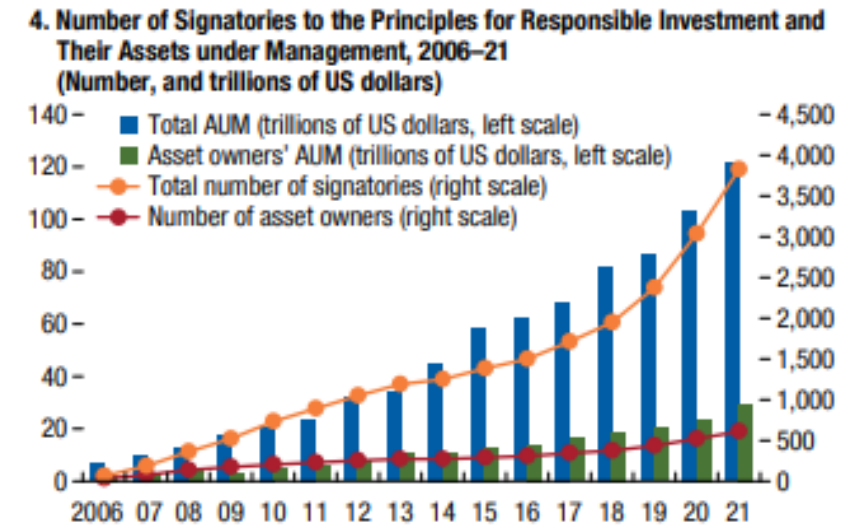
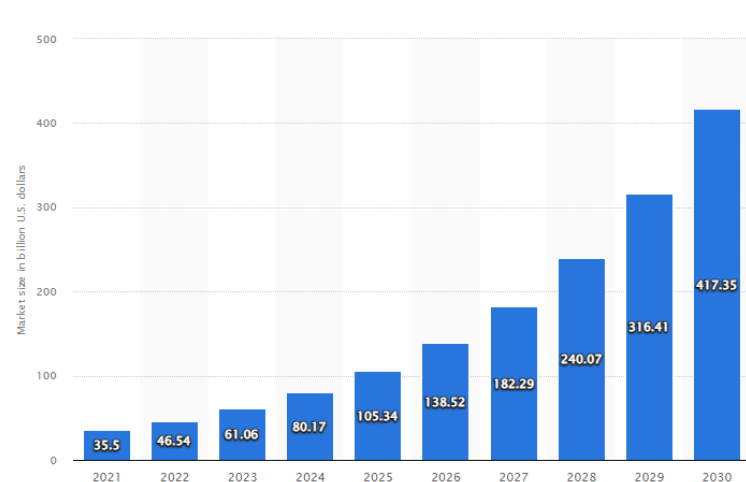
12,000 hectares of forest protected.

2,000 producers supported.

1.29 MtCO₂e emissions reductions.

Invest Now

- Morgan Stanley: current climate damage \$650Bn for 2016-18
- In 2019 world's largest banks invested \$2.6 Tn in sectors which are primary drivers of biodiversity destruction (Portfolio Earth)
- Swiss Re reckons global GDP smaller by 11% to 14% under 2 to 2.6 degC future. Europe decline of 8%.
- UKCCC now estimates positive financial return on climate investment around +2% GDP by 2050
- EIB declared a €1 Tn climate bank through to 2030, addressing climate and biodiversity
- EU Council (2020) wants significant portion of climate budget invested in biodiversity and NbSs
- Global green finance market is still only 4% of total, but growing very fast. Stands at 6% of stock market value, worth well over \$4 Tn.
- In UK, green economy is worth 4x the manufacturing sector
- G20 invests \$130 Bn pa on nature based solutions;
- \$550 BN pa needed by 2050
- US Inflation Reduction Act will deliver 40% cut in emissions



Circular Economy

- This goes way beyond recycling ...
- It must be powered by zero-carbon energy
- It requires products to be designed to:
 - Maximise re-used or recycled materials
 - Allow for repairs and upgrading (new EU rules: Right to Repair)
 - Allow for disassembly
 - Ensure all parts can be re-used or recycled
 - Needs cluster building



Benefits:

- Very little waste
- Far less freight transport
- Much more local production/repair
- High job content
- Enhanced resilience from commodities supply and price fluctuation
- Circular economy input costs around 20% lower across 8 manufacturing sectors
- Higher local GDP
- Reduced carbon
- Recovering biodiversity



Example: the circular economy in the IoM agri-food system

Higher productivity / higher profitability / less dependency / more resilience / more jobs / higher quality / more assured customer base / improved export prospects / less food miles / less food waste / less environmental impact / reduced climate emissions / enhanced tourism prospects / increased land value / flood reduction

What might it entail:

Co-operatives

Direct marketing

Sharing equipment

Agro forestry

Agri voltaics

Companion planting

Zero till

Agro ecology

Composting

Biofuels/biogas

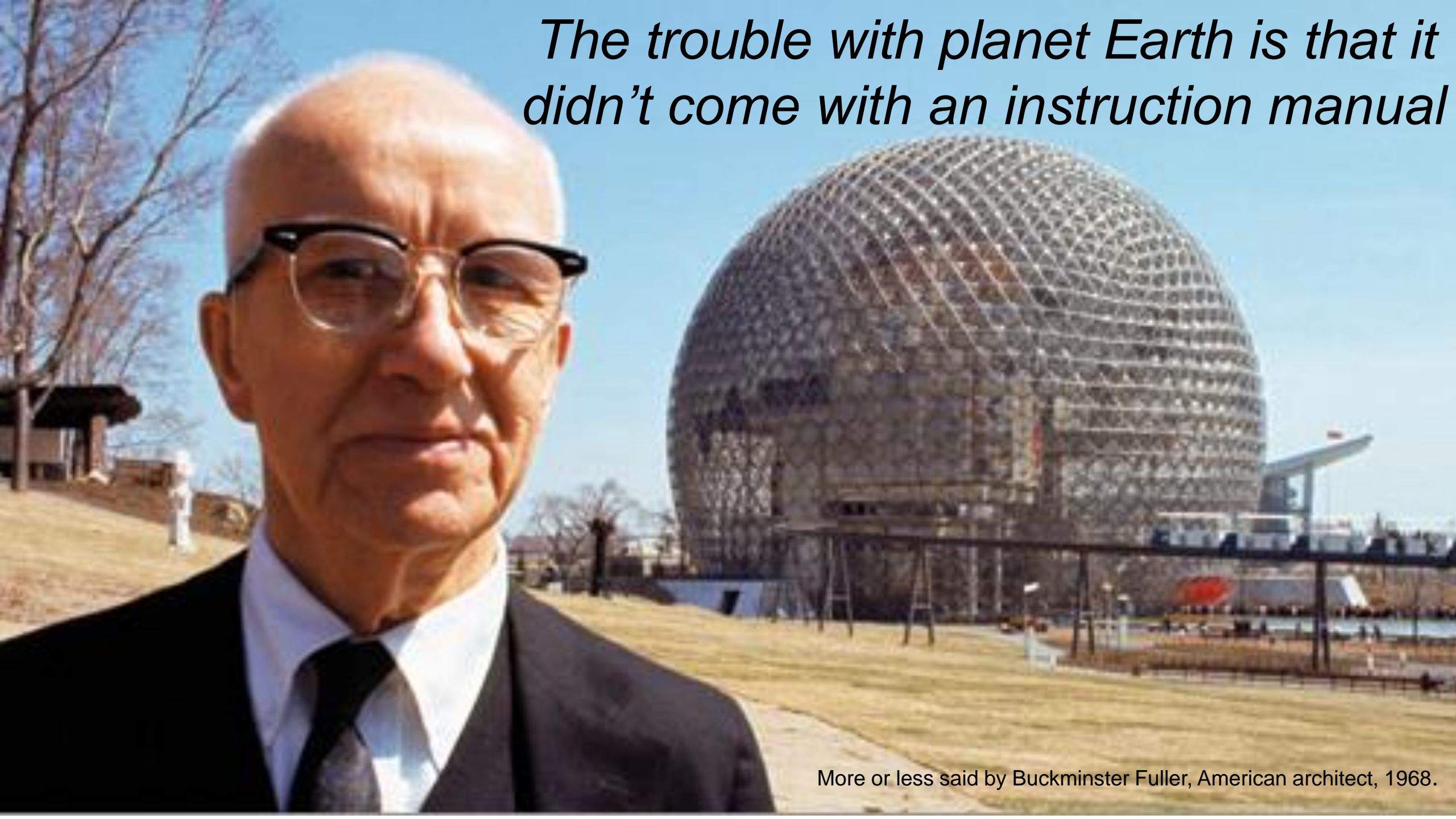
Carbon credits

Vertical farming



Circular Economy:

Production & Consumption
involving sharing, renting,
repairing, reusing,
renovating, recycling
products, for as long as
possible

A composite image featuring Buckminster Fuller in the foreground and the Spaceship Earth geodesic dome in the background. Fuller, an older man with glasses, a white shirt, and a dark tie, is looking directly at the camera. The background shows the large, silver, geodesic dome of Spaceship Earth at Epcot, with a grassy field and some trees in the distance under a clear blue sky.

*The trouble with planet Earth is that it
didn't come with an instruction manual*

More or less said by Buckminster Fuller, American architect, 1968.