

Sustainability – history og theory

Farming in harmony with nature or High tech?

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Content

Sustainability – history og theory

Data

Two utopic possibilities

<https://molgard.com/sustainability/>

Scope: 47 slides

Sustainability – history og theory

Three hundred years : 1700 – 2022

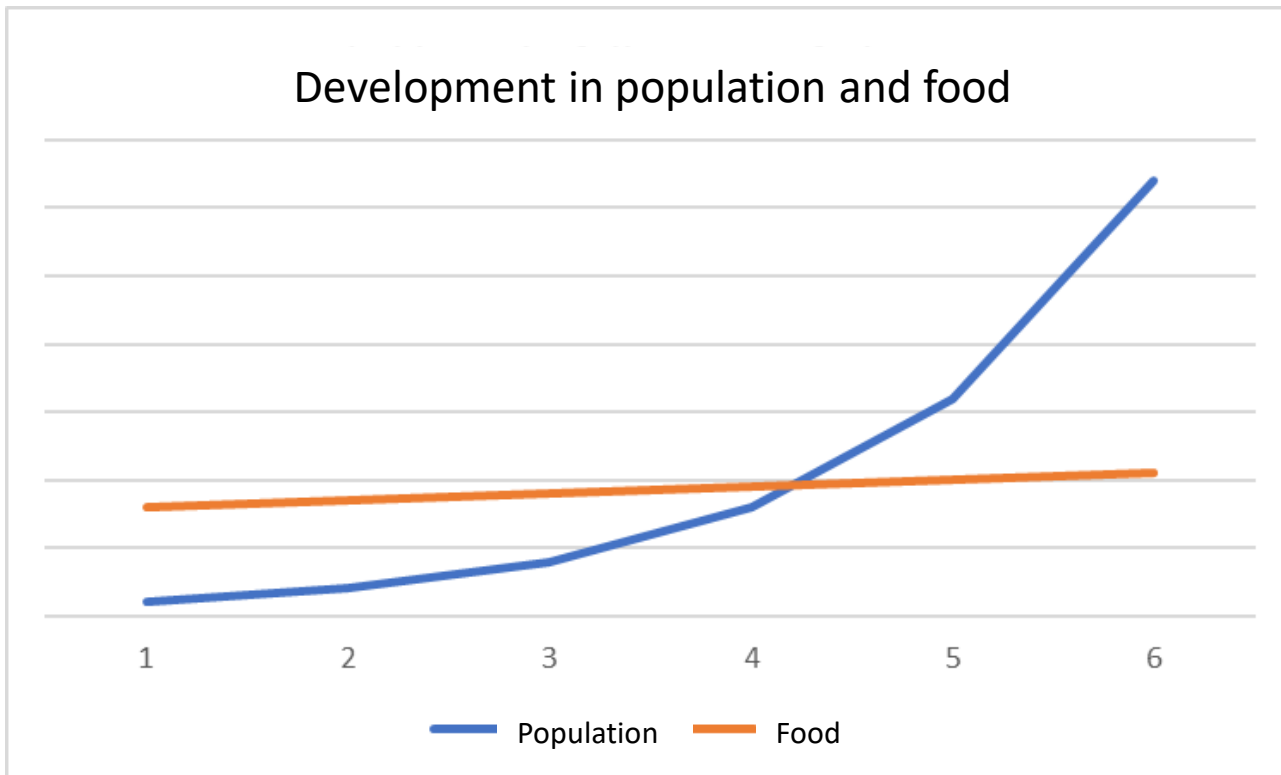
From philosophy to business

Philosophy – research – institutionalize - business

1798 - Economists- Population growth

Thomas Malthus and David Ricardo

An Essay on the Principle of Population, 1798



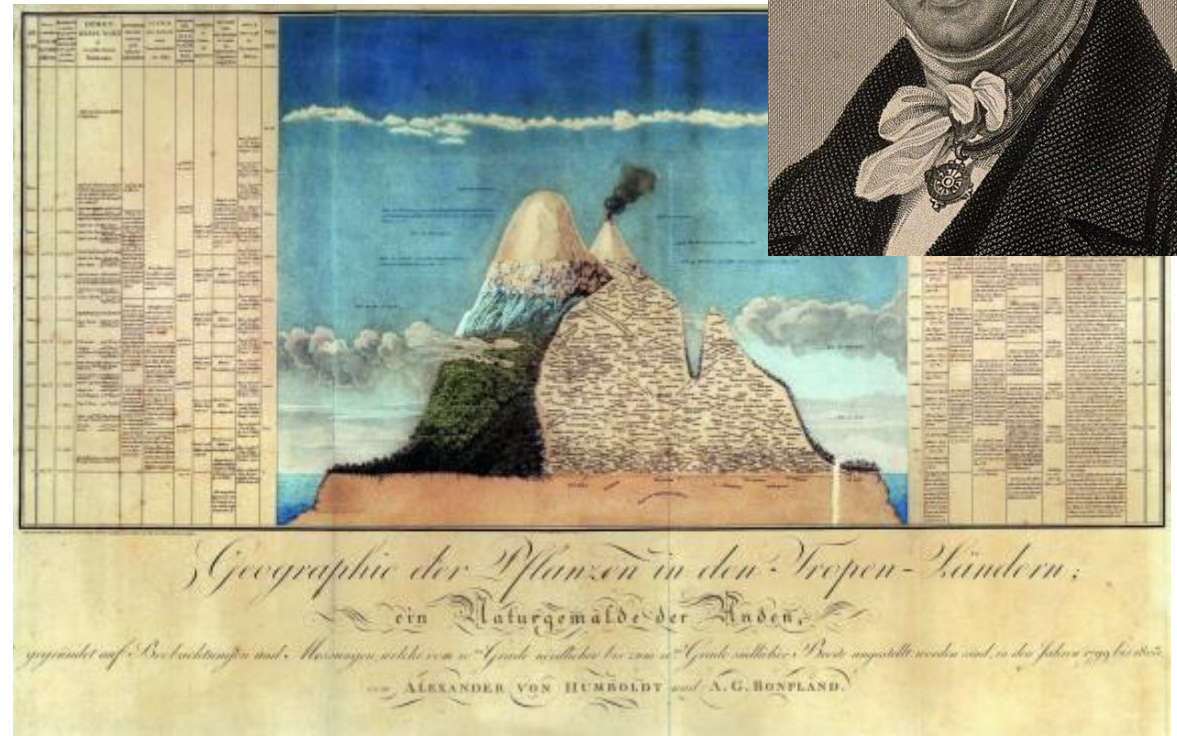
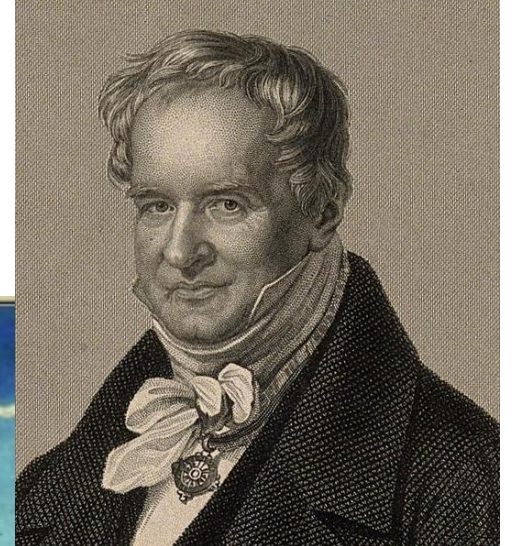
1802 – A German “invent” the nature

Alexander von Humboldt, who by some is considered to be "inventor" of the nature, was a German scientist, explorer and, not least, a romantic.

Humboldt describes nature as a net where everything is connected, including humans.

He was supposed to have predicted climate change in the 19th century.

Views of Nature, 1808

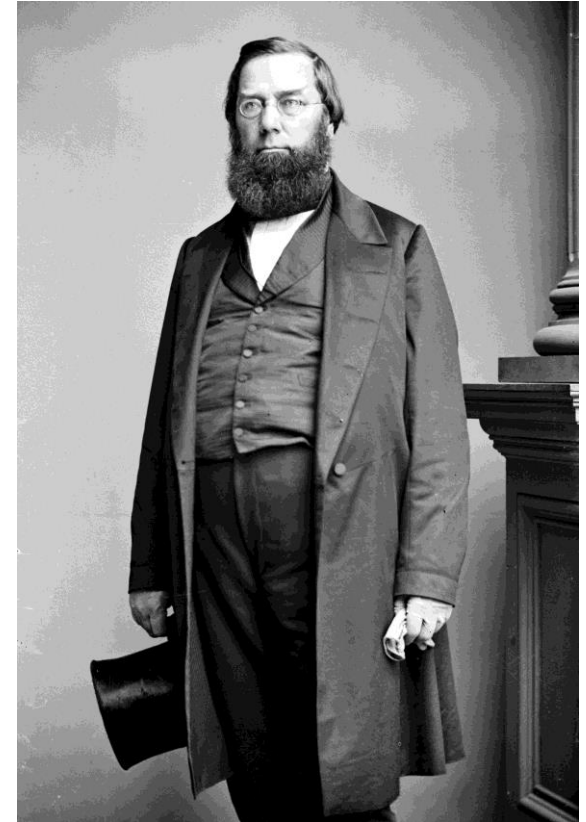


1864 – American environmentalist

The philology George Perkins Marsh, who some consider to be America's first environmentalist.

Marsh believed that man created the earth (not as a god) - the first thoughts about the Anthropocene age.

Man and Nature, 1864

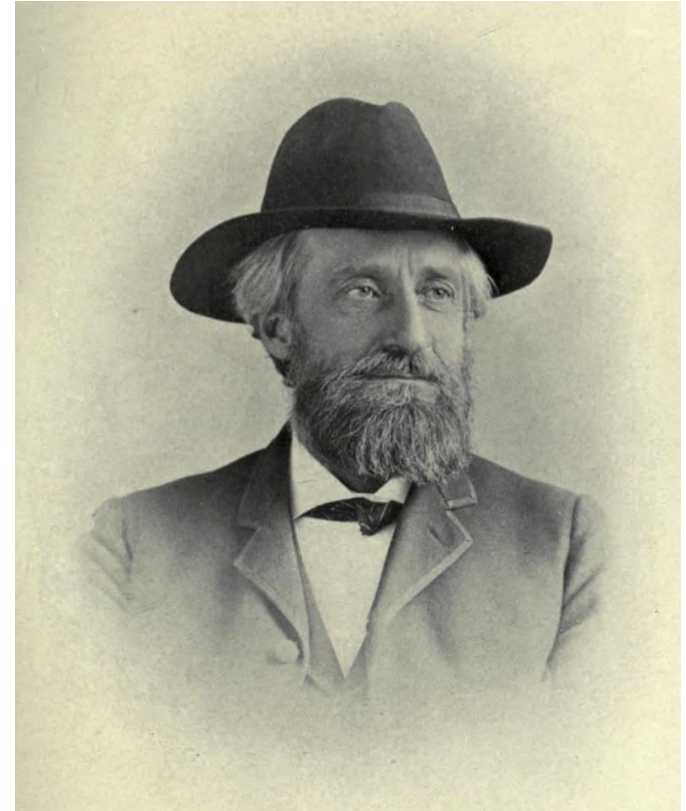


1891 – American environmentalist

The paleontologist and geologist Nathaniel Southgate Shaler

Flooded areas in the eastern part of United States and dry areas in the western part of United States led to thoughts about human influence on the earth.

Nature and Man in America, 1891.

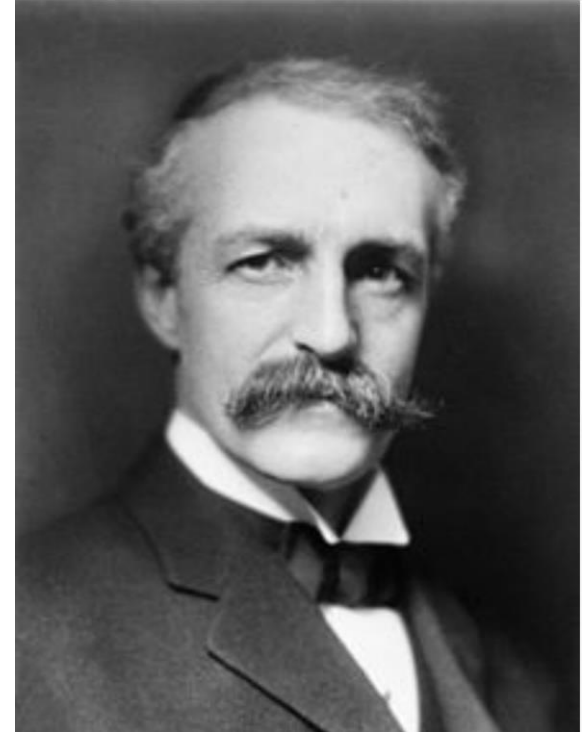


1910 – Sustainability defined for the first time

Gifford Pinchot – American Forester

The central thing for which Conservation stands is to make this country the best possible place to live in, both for us and for our descendants.

The Fight for Conservation, 1910.



1948 – Population growth

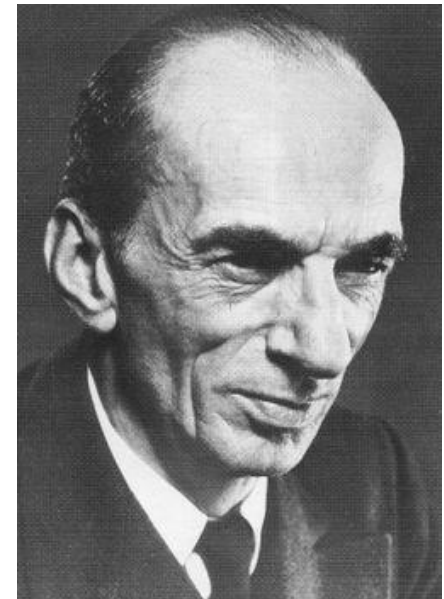
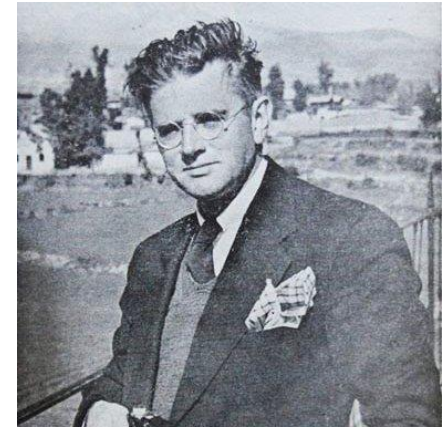
The ecologist and zoologist William Vogt, who was director of the Planned Parenthood association

Road to Survival, 1948

The conservationist Henry Fairfield Osborn Jr.

Our Plundered Planet, 1948

Both Vogt and Osborn believed that the size of the population should stay within a sustainable size and that the problems could not be solved with technological solutions.



1968 – Population growth

Anne and Paul Ehrlich, Stanford professor

The Population Bomb, 1968



1971 – The IPAT model

Paul Ehrlich, John Holdren og Barry Commoner agree on the IPAT formula:

$$I = P \cdot A \cdot T$$

I: Environmental impact

P: Size of population

A: Affluence

T: Technology



1972 – Club of Rome

D.H. Meadows, D.L. Meadows, J. Randers, og W. W. Behrens III from MIT model **World3** (dynamic system analysis)



The Limits to Growth, 1972

$$I = P \cdot A \cdot T$$

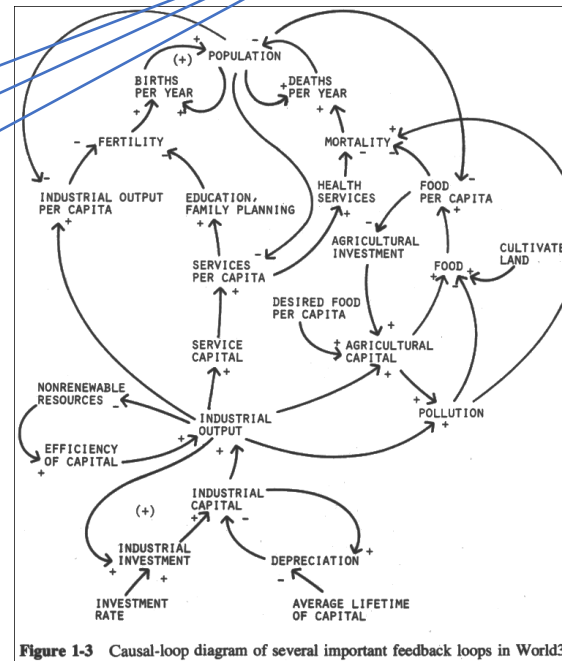
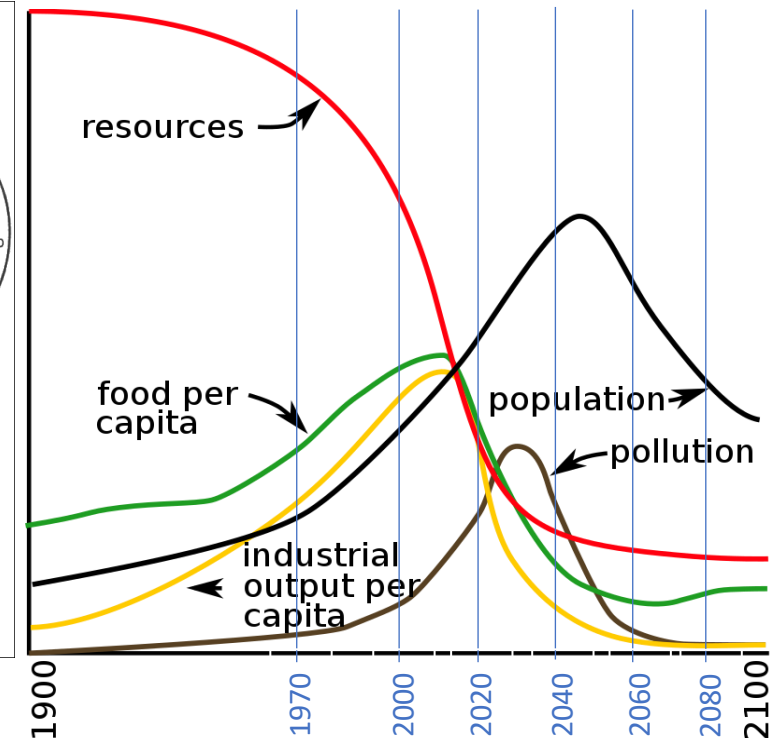


Figure 1-3 Causal-loop diagram of several important feedback loops in World3



1972 - UN Stockholm Conference

Aren't poverty and need the most important pollutions? How can we talk to villagers and slum-dwellers of the need to protect the air, the ocean and rivers when their own life is contaminated?

The environment cannot be improved in conditions of poverty.

Indira Gandhi

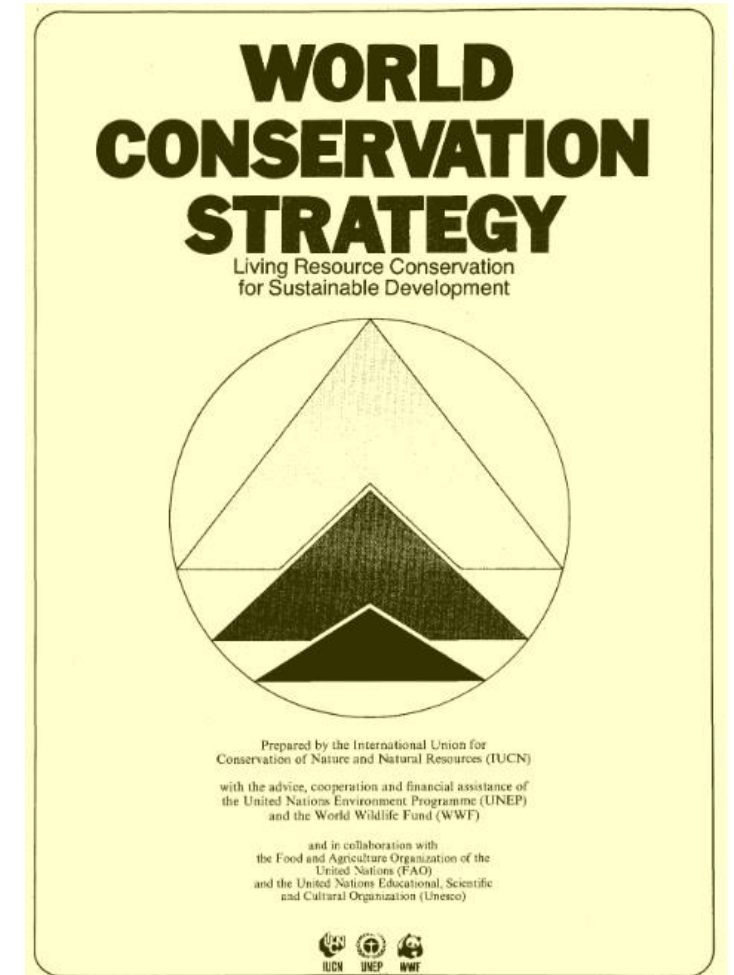


1980 World Conservation Strategy

World Conservation Union, FN og WWF

For the first time in a written report, we come across sustainable development, the purpose of which is to promote social and economic welfare.

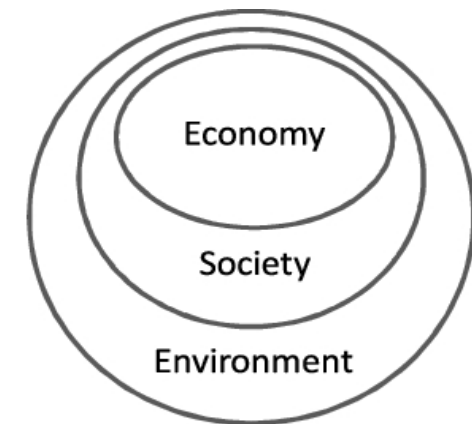
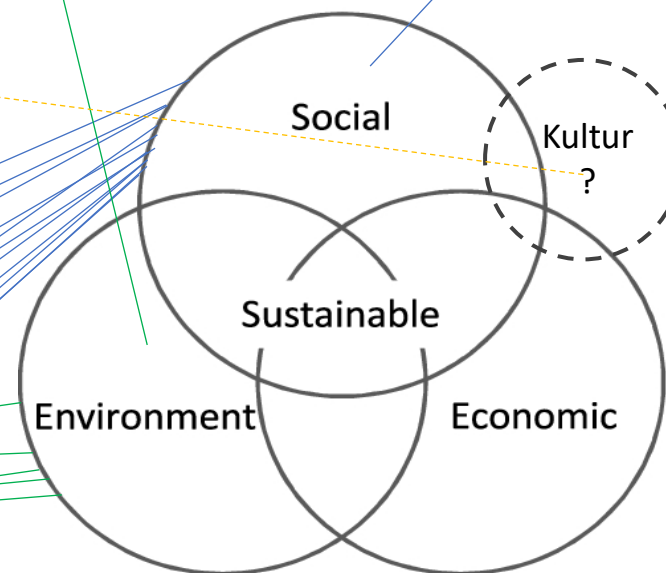
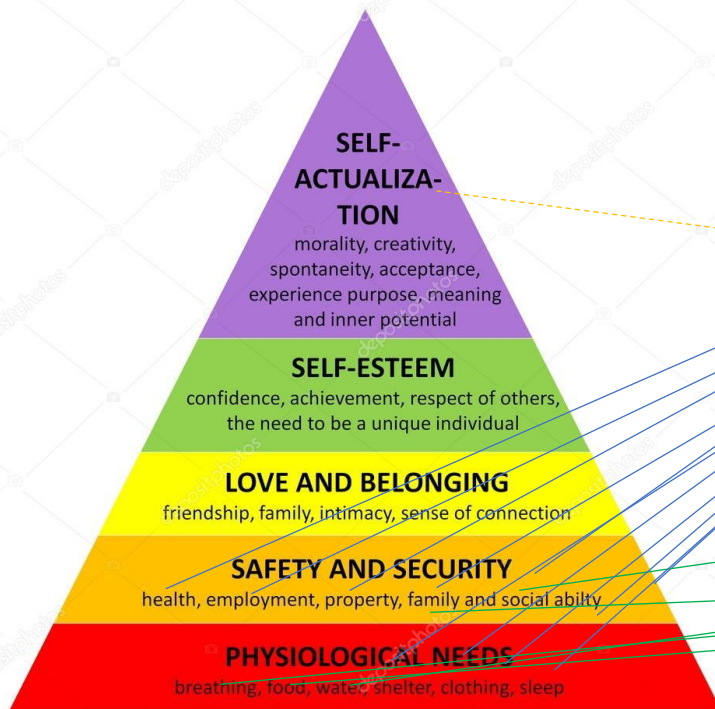
Human beings, in their quest for economic development and enjoyment of the riches of nature, must come to terms with the reality of resource limitation· and the carrying capacities of ecosystems, and must take account of the needs of future generations.



1987 – Brundtland Report and the 3 pillars

“ Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”


Our Common Future, 1987



1992 - Rio Conference - Agenda 21

Agenda 21 is a report of 300 pages in which it is described how sustainable development can be obtained in the det 21st century.

The report is very technical and did not appeal to ordinary people.

	
United Nations Conference on Environment & Development Rio de Janeiro, Brazil, 3 to 14 June 1992	
AGENDA 21	
CONTENTS	
Chapter	Paragraphs
1. Preamble	1.1 - 1.6
SECTION I. SOCIAL AND ECONOMIC DIMENSIONS	
2. International cooperation to accelerate sustainable development in developing countries and related domestic policies	2.1 - 2.43
3. Combating poverty	3.1 - 3.12
4. Changing consumption patterns	4.1 - 4.27
5. Demographic dynamics and sustainability	5.1 - 5.66
6. Protecting and promoting human health conditions	6.1 - 6.46
7. Promoting sustainable human settlement development	7.1 - 7.80
8. Integrating environment and development in decision-making	8.1 - 8.54
SECTION II. CONSERVATION AND MANAGEMENT OF RESOURCES FOR DEVELOPMENT	
9. Protection of the atmosphere	9.1 - 9.35
10. Integrated approach to the planning and management of land resources	10.1 - 10.18
11. Combating deforestation	11.1 - 11.40
12. Managing fragile ecosystems: combating desertification and drought	12.1 - 12.63
13. Managing fragile ecosystems: sustainable mountain development	13.1 - 13.24
14. Promoting sustainable agriculture and rural development	14.1 - 14.104
15. Conservation of biological diversity	15.1 - 15.11
16. Environmentally sound management of biotechnology	16.1 - 16.46
17. Protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources	17.1 - 17.136
18. Protection of the quality and supply of freshwater resources: application of integrated approaches to the development, management and use of water resources	18.1 - 18.90
19. Environmentally sound management of toxic chemicals, including prevention of illegal international traffic in toxic and dangerous products	19.1 - 19.76
20. Environmentally sound management of hazardous wastes, in hazardous wastes	20.1 - 20.46
21. Environmentally sound management of solid wastes and sewage-related issues	21.1 - 21.49
22. Safe and environmentally sound management of radioactive wastes	22.1 - 22.9
SECTION III. STRENGTHENING THE ROLE OF MAJOR GROUPS	
23. Preamble	23.1 - 23.4
24. Global action for women towards sustainable and equitable development	24.1 - 24.12
25. Children and youth in sustainable development	25.1 - 25.17
26. Recognizing and strengthening the role of indigenous people and their communities	26.1 - 26.9
27. Strengthening the role of non-governmental organizations: partners for sustainable development	27.1 - 27.13
28. Local authorities' initiatives in support of Agenda 21	28.1 - 28.7
29. Strengthening the role of workers and their trade unions	29.1 - 29.14
30. Strengthening the role of business and industry	30.1 - 30.30
31. Scientific and technological community	31.1 - 31.12

1996 – ISO 14001

Standard for environmental management system

No environmental requirements, only regulatory requirements.

Requirements for documentation



DS Dansk standard **DS/EN ISO 14001:2015**
3. udgave
2015-09-15

Miljøledelsessystemer – Krav og vejledning
Environmental management systems – Requirements with guidance for use (ISO 14001:2015)

DS/EN ISO 14001:2015
København
DS projekt: M272700
ICS: 13.020.10

Første del af denne publikations betegnelse DS/EN ISO, hvilket betyder, at det er en international standard.

Denne publikations overensstemmelse er:
IDT med: ISO 14001:2015.
IDT med: EN ISO 14001:2015.

DS-publikationen er på dansk og engelsk. I tilfælde af uoverensstemmelse mellem de to versioner, gælder den engelske version.

Denne publikation erstatter: DS/EN ISO 14001:2005.

Der er tilføjet danske fodnoter markeret med standarden.

DS-publikationstyper
Dansk Standard udgiver forskellige publikationstyper. Typen på denne publikation fremgår af forsiden.

Der kan være tale om:

- Dansk standard**
 - standard, der er udarbejdet på nationalt niveau
 - standard, der er udarbejdet på internationalt niveau
- DS-information**
 - publikation, der er udarbejdet på nationalt niveau
 - publikation, der er udarbejdet på internationalt niveau
 - teknisk rapport, eller
 - europæisk præstandard
- DS-håndbog**
 - samling af standarder, eventuelle tekniske rapporter, eller
- DS-hæfte**
 - publikation med informativt materiale

Til disse publikationstyper kan endvidere udgives:

- tilæg og rettelserblade

DS-publikationsform
Publikationstyperne udgives i forskellig form som henholdsvis:

- fuldstændig publikation
- godkendelsesblad
- elektronisk

DS-betegnelse
Alle DS-publikationers betegnelse begynder med DS eller EN. Hvis den danske version er angivet et A eller Cor, betyder det, enten at det er en teknisk rapport eller en præstandard.

DS-betegnelser angives på forsiden.

Overensstemmelse med anden publikation:
Overensstemmelse kan enten være IDT, EQV, NEQ eller MOD.

- IDT:** Når publikationen er identisk med en given publikation.
- EQV:** Når publikationen teknisk er i overensstemmelse med en given publikation, men præsentationen er ændret.
- NEQ:** Når publikationen teknisk eller præsentationsmæssigt ikke er i overensstemmelse med en given standard, men udarbejdet på baggrund af denne.
- MOD:** Når publikationen er modificeret i forhold til en given publikation.

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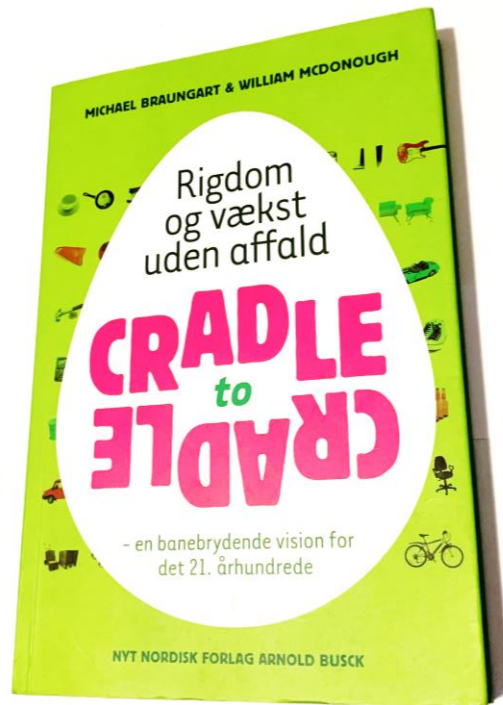
© Dansk Standard - Eftertryk uden tilladelse forbudt

2000 - UN 2015 goals



2002 - Cradle to Cradle

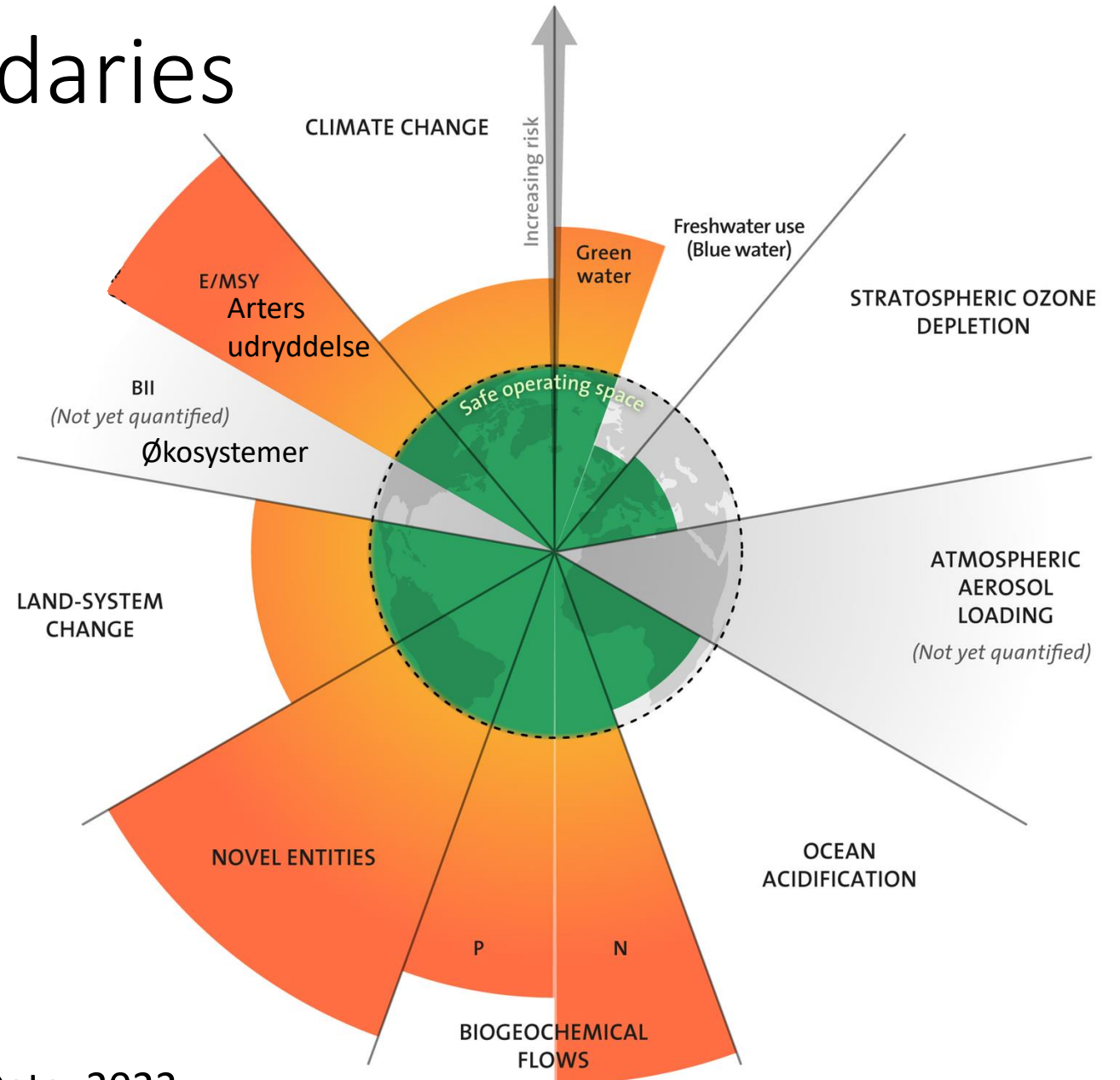
Den German chemist Michael Braungart and the American architect William McDonough establish Cradle to Cradle



2009 Planetary boundaries

Johan Rockström

Stockholm Resilience Centre



Data: 2022

2010 – Cirkular economy

Ellen MacArthur Foundation

ELLEN MACARTHUR FOUNDATION
Rethink the future

2019

1 TOWARDS THE CIRCULAR ECONOMY

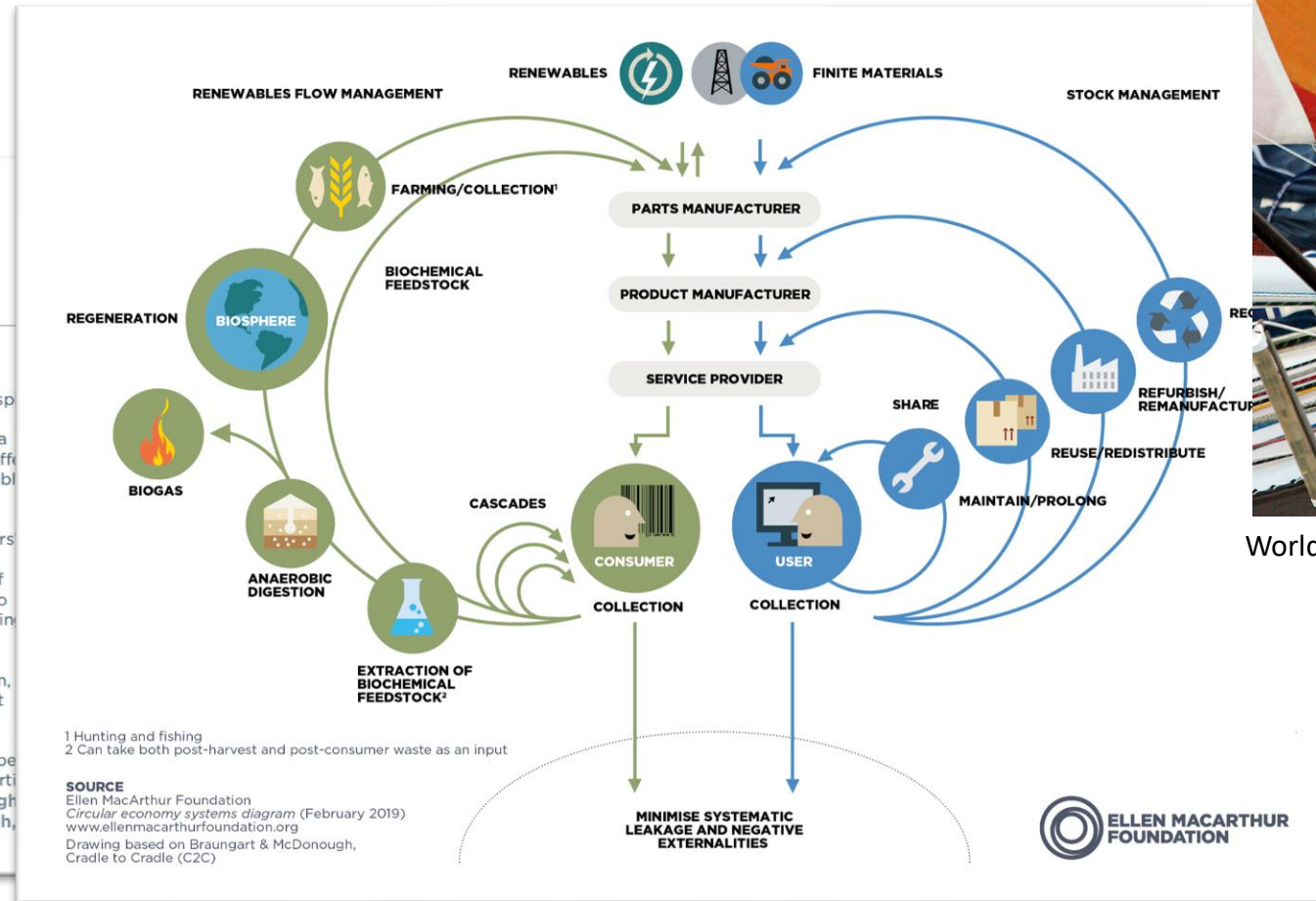
Acknowledgements

The Ellen MacArthur Foundation was formed in 2010 to inspire a generation to rethink, redesign and build a positive future. The Foundation believes that the circular economy provides a coherent framework for systems level redesign and as such offers us an opportunity to harness innovation and creativity to enable a positive, restorative economy.

The Foundation is supported by a group of 'Founding Partners' B&Q, BT, Cisco, National Grid and Renault. Each of these organisations has been instrumental in the initial formation of the Foundation, the instigation of this report and continues to support its activities in education, communications and working as a business catalyst.

McKinsey & Company, a global management consulting firm, provided the overall project management, developed the fact base and delivered the analytics for the report.

In addition to a number of leading academic and industry experts an extended group of organisations provided input and expertise. They included Caterpillar, Cyberpac, Desso, EPEA, Foresight Group, ISE, Marks & Spencer, Product-Life Institute, Ricoh, Turntoo, and Vestas.



World record around the world, 2005

2013 Most expensive ad spot - Sodastream,

3. Feb. Superbowl

30 sec. – around 3,3 millions USD



5. Feb. 2013

No sale for a long time

A screenshot of the The Guardian website. The header includes the logo, search, and navigation links. The main article is titled "SodaStream Super Bowl slot adds fizz to controversy over Israel links". Below the title is a sub-headline: "Inter-faith group joins pro-Palestinian calls for boycott over manufacture of products 'in illegal West Bank settlement'". There is a small image of a man using a SodaStream dispenser in a kitchen. To the right of the article is a promotional box for digital subscribers with a "50% off for three months" offer.



2015 - UN 17 Sustainable Development Goals



2015 - Science Based Targets initiative



COMPANY/FINANCIAL INSTITUTION	TARGETS		
	NEAR TERM	LONG TERM	NET-ZERO
Ørsted ★ Denmark, Europe	1.5°C	1.5°C	2040
Scan Global Logistics A/S ★ Denmark, Europe	COMMITTED	-	COMMITTED
NREP ★ Denmark, Europe	COMMITTED	-	COMMITTED
STARK Group ★ Denmark, Europe	1.5°C	-	COMMITTED
NKT Cables Group A/S ★ Denmark, Europe	COMMITTED	-	COMMITTED
GN Store Nord A/S ★ Denmark, Europe	COMMITTED	-	COMMITTED
Kvadrat A/S ★ Denmark, Europe	COMMITTED	-	COMMITTED
Norican Group ★ Denmark, Europe	COMMITTED	-	COMMITTED
Royal Unibrew ★ Denmark, Europe	COMMITTED	-	COMMITTED
Stryhns AS ★ Denmark, Europe	1.5°C	-	COMMITTED

2015 (2006) – B Corp

A global movement of companies with a common goal to redefine what makes a company successful.

Companies are certified according to environmental and social responsibilities.

September 2022, 5.697 certified

Grading system: minimum score 80 of 100

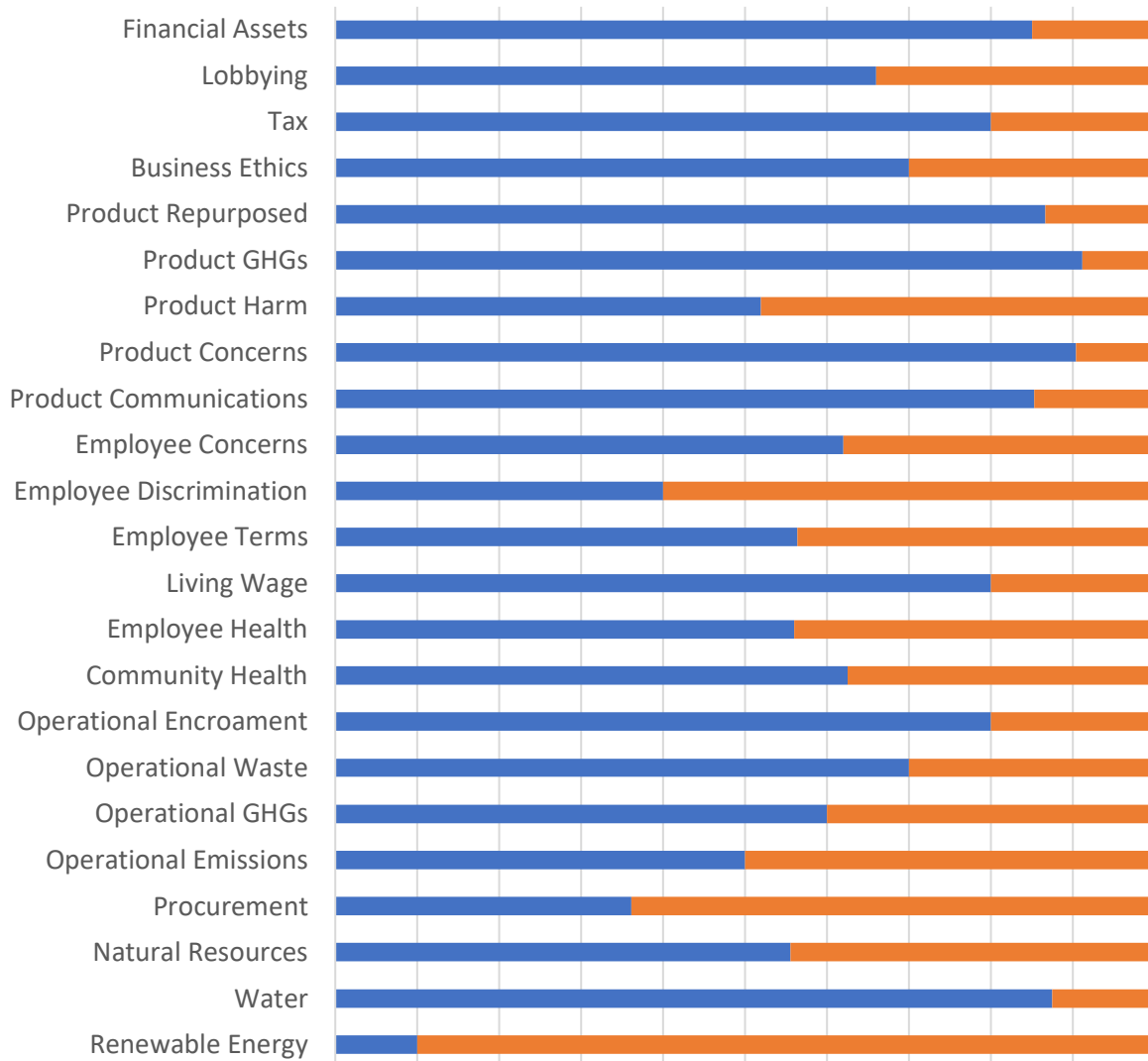
Certified



®

Corporation

2016 (2013) – Future-Fit

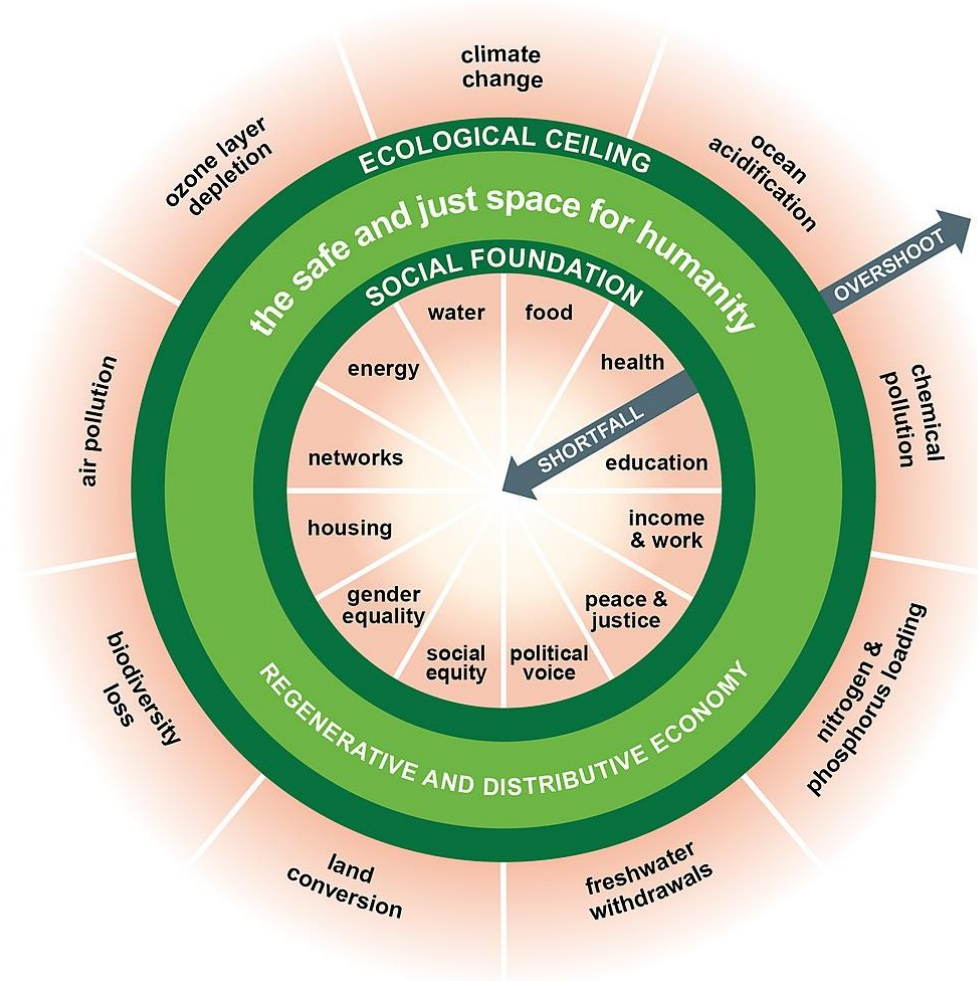
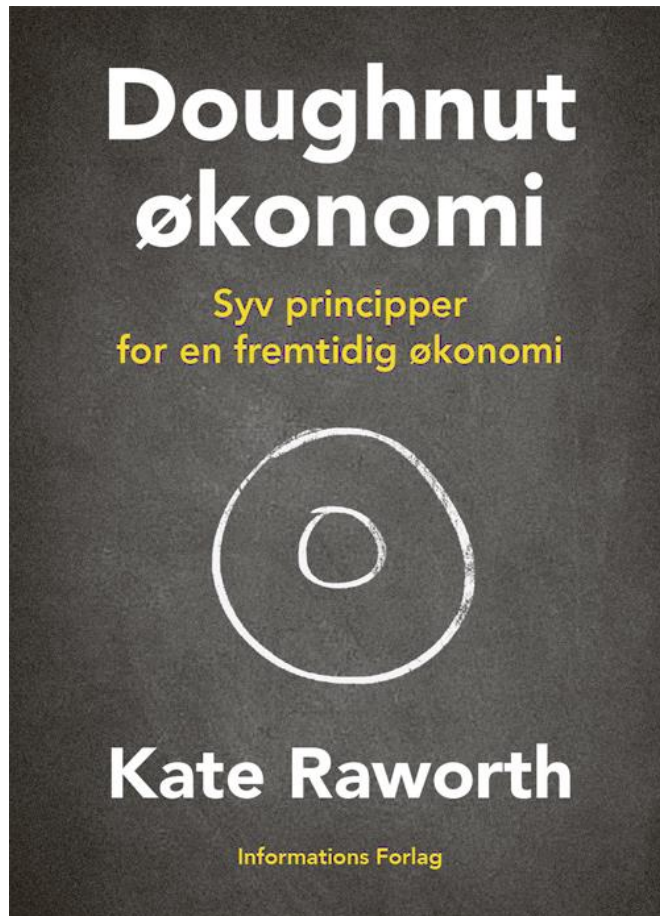


Open-source tool

Strategic tool

A society to be member of

2017 – Doughnut economics



2017 (2004) - ESG

ESG - Environmental, social, and corporate governance.

2004 - “Who Cares Wins“, was a joint initiative of financial institutions at the invitation of UN.

2017 – Nasdaq initially introduce a guide Nasdaq’s Nordic and Baltic markets.

55 A.P. Moller - Maersk Sustainability Report 2021

Performance data

Greenhouse gas (GHG) emissions (1,000 tonnes CO ₂ eq)	
2.3	Direct GHG emissions (scope 1 GHG Protocol)
2.4	Indirect GHG emissions (scope 2 GHG Protocol) - location based
2.5	Indirect GHG emissions (scope 2 GHG Protocol) - market based
2.6	Value chain emissions (scope 3 GHG Protocol)
2.7	Total GHG emissions (scope 1, 2 - location-based - and scope 3)
2.8	Relative CO ₂ reduction (percentage vs 2008 baseline)
Other air emissions	
2.9	SO _x (1,000 tonnes)
2.9	NO _x (1,000 tonnes)
Other resource consumption	
2.10	Waste (1,000 tonnes)
2.11	Water (1,000 m ³)
Spills (hydrocarbon)	
2.12	>10 m ³ (number of spills)
3. Economic performance (USD million)	
3.1	Revenue
3.2	Profit/loss before financial items (EBIT)
3.3	CAPEX
3.4	Tax for the year

*Restated based on the implementation of an improved scope 3 methodology. Read more on p. 25. Numbers of the performance indicators correspond to the numbered section in the Performance data accounting policies

54 A.P. Moller - Maersk Sustainability Report 2021 Performance data

Performance data

		A.P. Moller - Maersk		
		2021	2020	2019
1. Social performance				
Our employees				
1.1	Number of employees (FTEs)	85,375	83,624	86,279
1.2	Gender - female/total (% based on headcount)	31%	28%	28%
1.3	Women in management (JL 4+ - % based on headcount)	33%	31%	31%
1.4	Women in leadership (JL 6+ - % based on headcount)	22%	21%	20%
1.5	Target nationalities/total (% based on headcount)	72%	72%	71%
1.6	Target nationalities in executive leadership (JL 8 & 9 - % based on headcount)	15%	12%	13%
1.7	Fatalities (headcount)	4	1	5
1.8	Lost-time injury frequency (based on exposure hours)	0.93	1.22*	1.16
2. Environmental performance				
Energy consumption				
2.1	Energy consumption (total, TJ)	473,188	452,767	463,815
2.1	Fuel oil (1,000 tonnes)	11,083	10,368	11,173
2.1	Gas fuels (1,000 tonnes)	28	11	10
2.1	Other fuels (1,000 tonnes) - excluding biofuel	307	120	130
2.1	Biofuels (1,000 tonnes)	82	32	8
2.2	Renewable technologies (1,000 MWh)	165	66	-
2.2	Electricity (1,000 MWh)	731	664	656

JL: Job Level

*Restated based on improved reporting processes and the inclusion of exposure hours from contractors in Terminals and Logistics and Services that was not reported in 2020. The numbers of the performance indicators correspond to the numbered sections in the Performance data accounting policies

2018 - Greta Thunberg



What Greta say:

Hey adults, will you be kind and listen to what the scientists tells us.

2020 - EU's taxonomy

A part of "Green deal".

A classification system established to clarify which investments are environmentally sustainable.

The aim of the taxonomy is to prevent greenwashing and to help investors make greener choices.

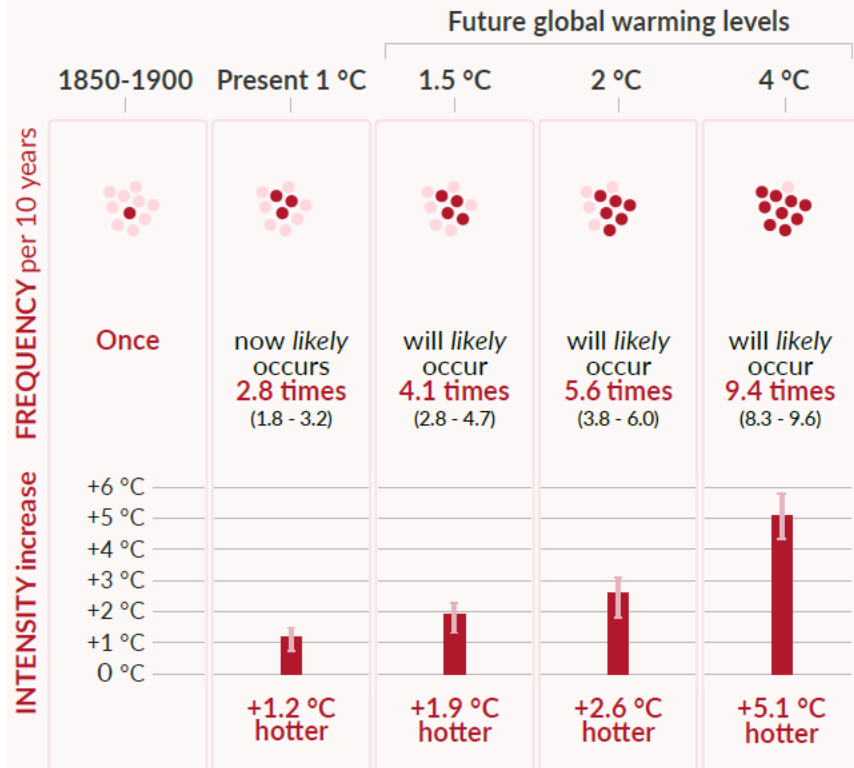


2022 - IPCC – Sixth Assessment Report

Hot temperature extremes over land

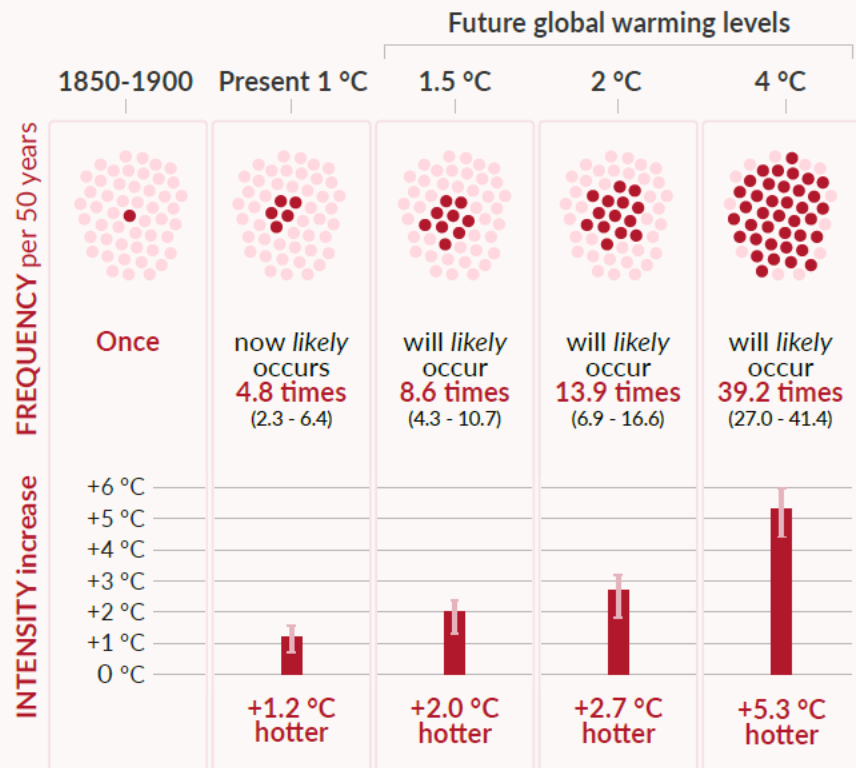
10-year event

Frequency and increase in intensity of extreme temperature event that occurred **once in 10 years** on average in a climate without human influence

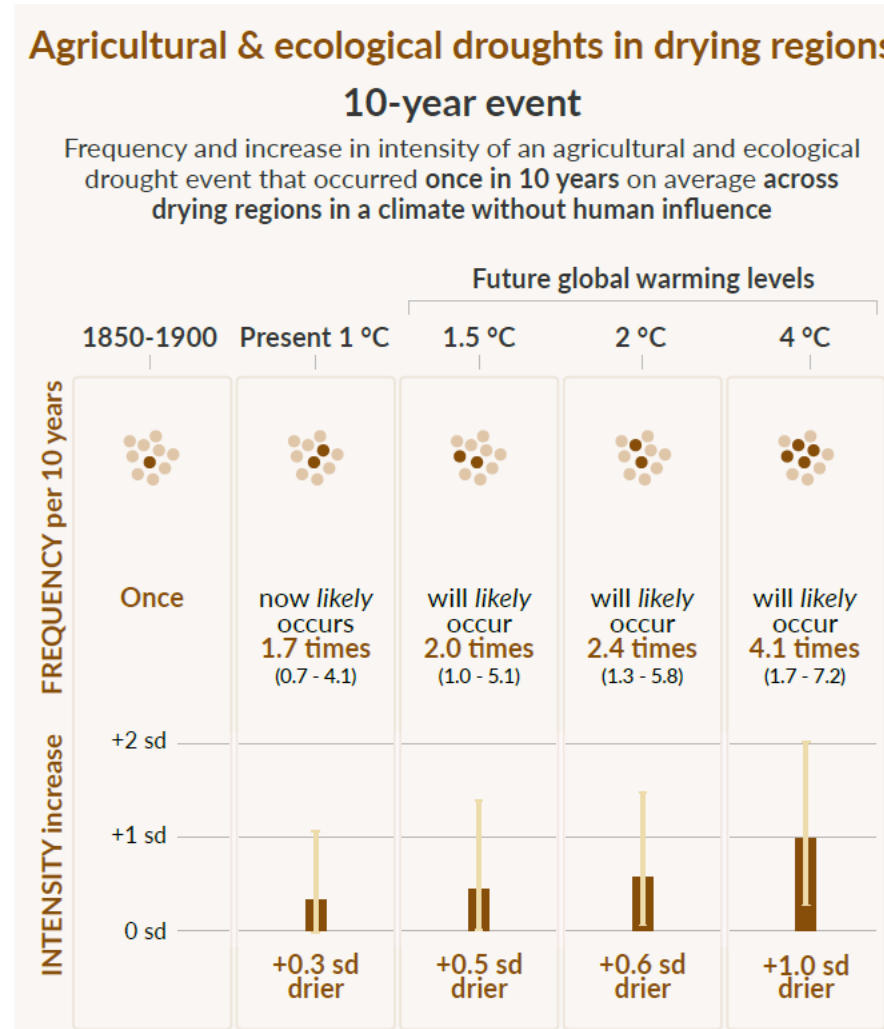
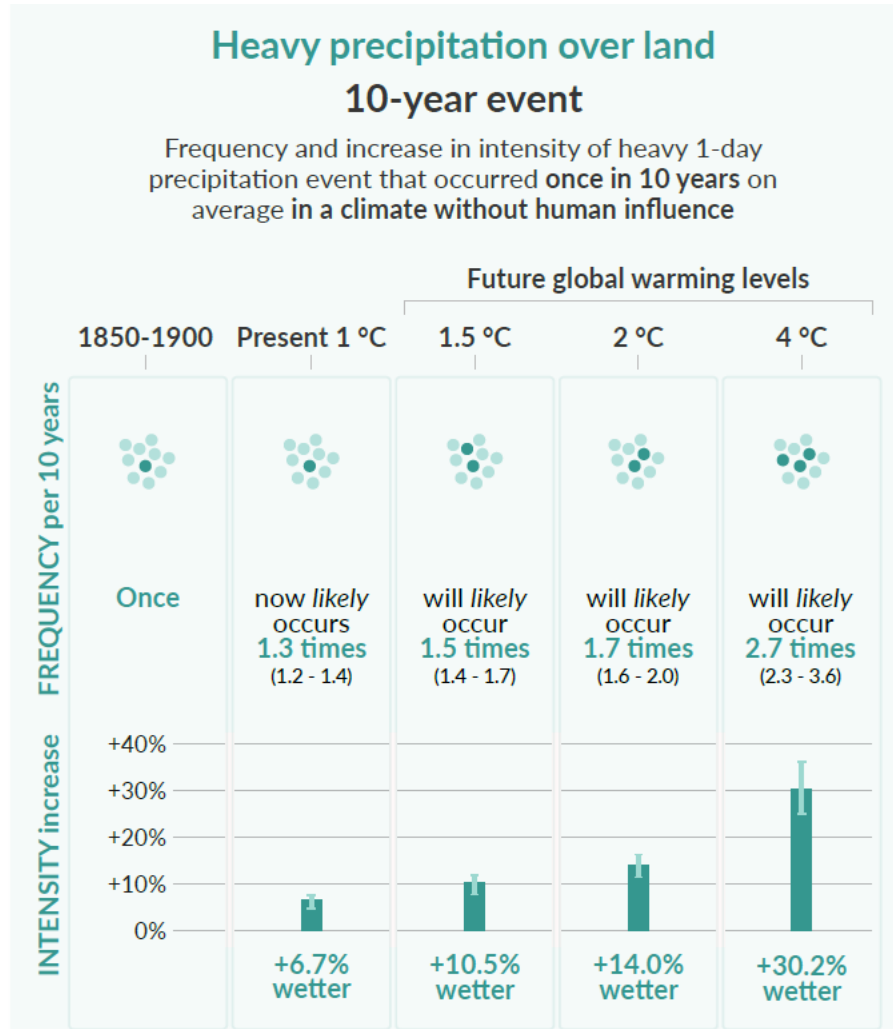


50-year event

Frequency and increase in intensity of extreme temperature event that occurred **once in 50 years** on average in a climate without human influence



2022 – IPCC – Sixth Assessment Report



2022 – Large companies takes responsibility

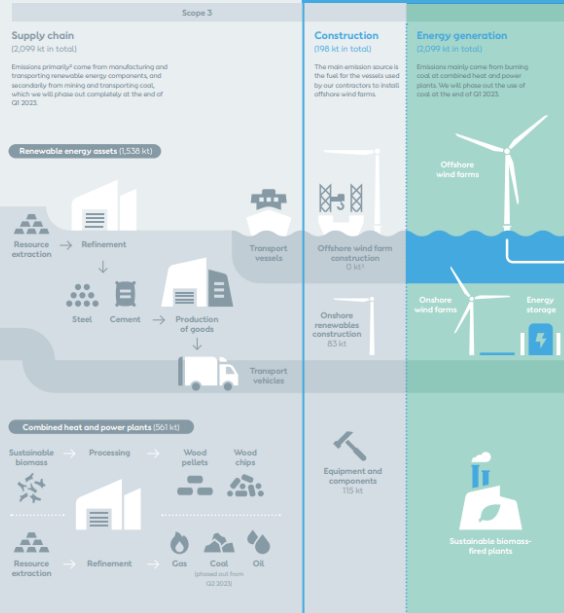
Green energy for the planet and its people



Orsted Sustainability report 2021

Decarbonising our full value chain

2021 data¹ (1 kt = 1,000 tonnes of CO₂ equivalents)



A world that runs entirely on green energy starts with ourselves. We work every day to decarbonise our energy generation and operations (scope 1-2) and to achieve net-zero emissions in our full value chain (scope 1-3) by 2040.

Overview of our programme performance

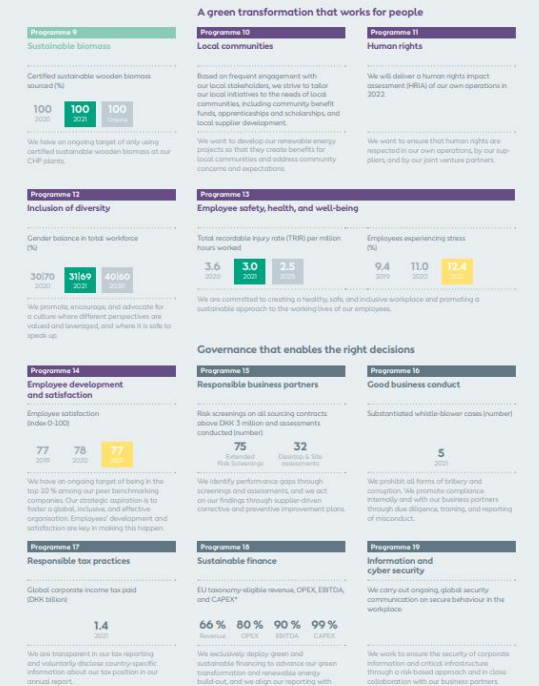
Here, you can see how we progress on our main performance indicators in our 19 programmes across four categories – climate, nature, people, and governance.



Science-aligned climate action



Green energy in balance with nature

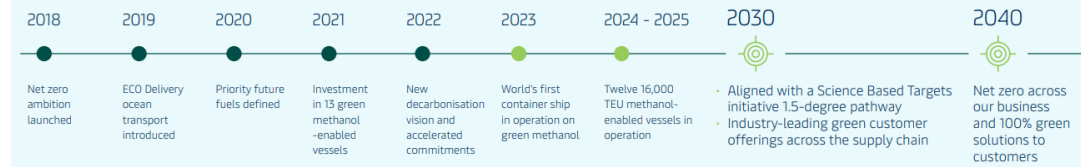


¹ For details, please see our ESG performance report 2021, page 10-11.

2022 - Large companies takes responsibility



Roadmap to deliver net zero by 2040



OUR DECARBONISATION COMMITMENTS

2030: Industry-leading green customer offerings across the supply chain

- Ocean: Min. 25% of cargo transported with green fuels.
- Air: Min. 30% of cargo transported with Sustainable Aviation Fuels.
- Contract logistics and cold chain: Min. 90%

2030: Aligned with a Science Based Targets initiative 1.5-degree pathway

- Ocean -50% reduction in emission intensity (2020 baseline).
- Terminals -70% absolute reduction of scope 1 and 2 emissions (2020 baseline).
- Natural Climate Solutions used above and

2040: Net zero across our business and 100% green solutions to customers

- 100% green solutions to our customers.
- Net zero greenhouse gas emissions across all scopes and businesses.
- Aligned with the Net Zero criteria of the Science Based Targets initiative and a pathway to limit global warming to 1.5 degree.

A.P. Moller - Maersk ESG strategy

	 Environment	 Social	 Governance
Commitments	<p>We will take leadership in the decarbonisation of logistics</p> <p>We will deliver on our customer commitment to decarbonise their supply chains in time and our societal commitment to act and have impact in this decade</p>	<p>We will ensure that our people thrive at work by providing a safe and inspiring workplace</p> <p>We create an engaging environment for all colleagues</p> <p>We facilitate diversity of thought</p> <p>We ensure everyone gets home safe by preventing fatal and life-altering incidents</p>	<p>We operate based on responsible business practices</p> <p>We live our Code of Conduct</p> <p>We procure sustainably</p> <p>We protect and treat data with respect</p>
Strategic targets <i>All targets are for end of year</i>	<p>2040:</p> <ul style="list-style-type: none"> • Net zero across the business • 100% green solutions to customers <p>2030:</p> <ul style="list-style-type: none"> • Aligned with the Science Based Targets initiative 1.5°C pathway • Industry-leading green customer offerings across the supply chain 	<p>2025:</p> <p>Top quartile score on engagement survey</p> <p>2025:</p> <ul style="list-style-type: none"> • >40% women in management • >30% diverse nationality of executives <p>2023:</p> <ul style="list-style-type: none"> • 100% of High Potential Incidents trigger frontline Learning Teams • Global Leadership (Top 900) upskilled in Maersk safety and security principles 	<p>2023:</p> <p>100% of employees trained in the Maersk Code of Conduct</p> <p>2024:</p> <p>100% of suppliers committed to the Supplier Code of Conduct</p> <p>2023:</p> <p>100% of employees trained on data ethics</p>
Overview of all ESG categories	<p>Climate change</p> <p>Environment and ecosystems (incl. ship recycling)</p>	<p>Employee relations and labour rights - Safety & security - Human capital</p> <p>Sustainable and inclusive trade - Diversity, equity and inclusion - Human rights</p>	<p>Business ethics - Governance - Responsible tax</p> <p>Sustainable procurement - Data ethics - Citizenship</p>

...a societal commitment to and drive impact in this decade

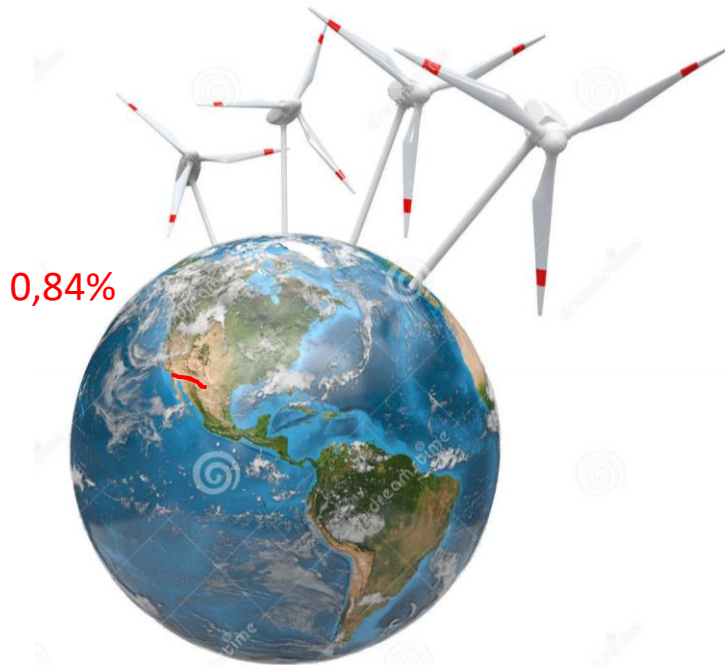


Data

Climate, earth and consumption

Renewable energy - 604 EJ (Exajoule) in 2019

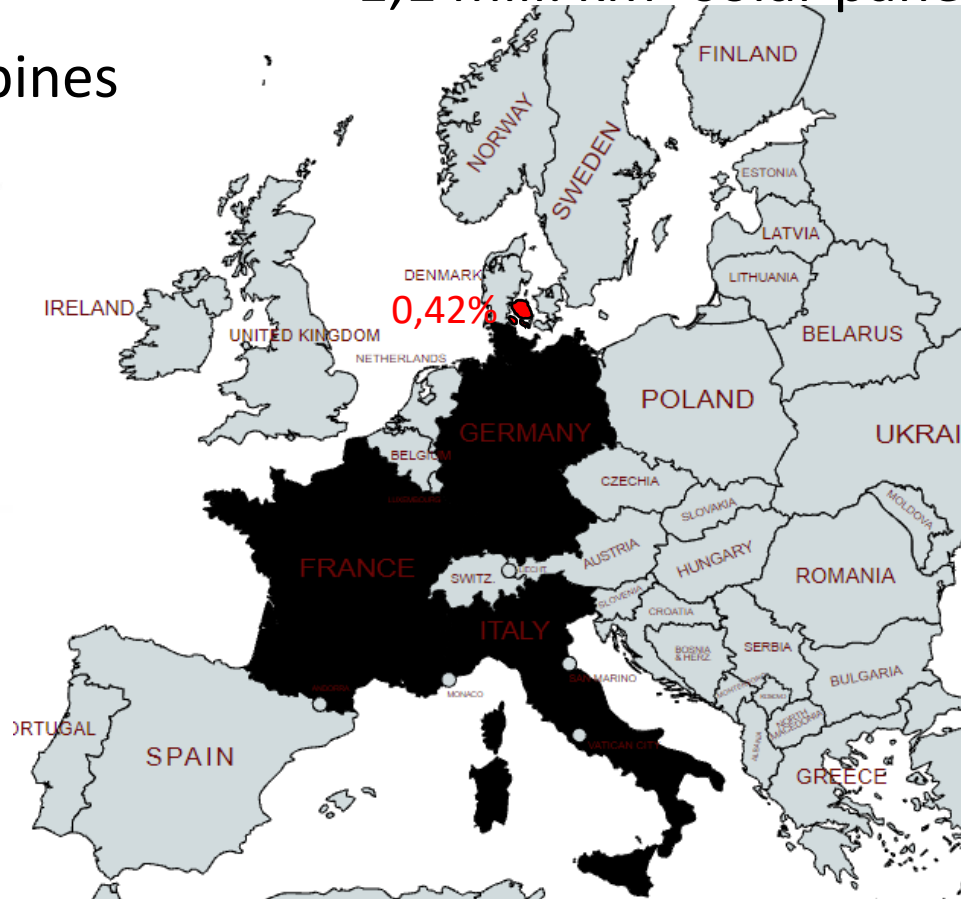
4,6 mill. Offshore wind turbines



0,84%

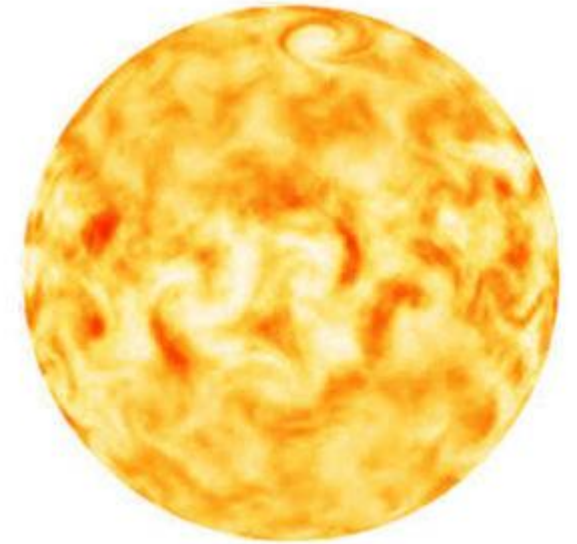
19 x around the world

1,1 mill. km² solar panels



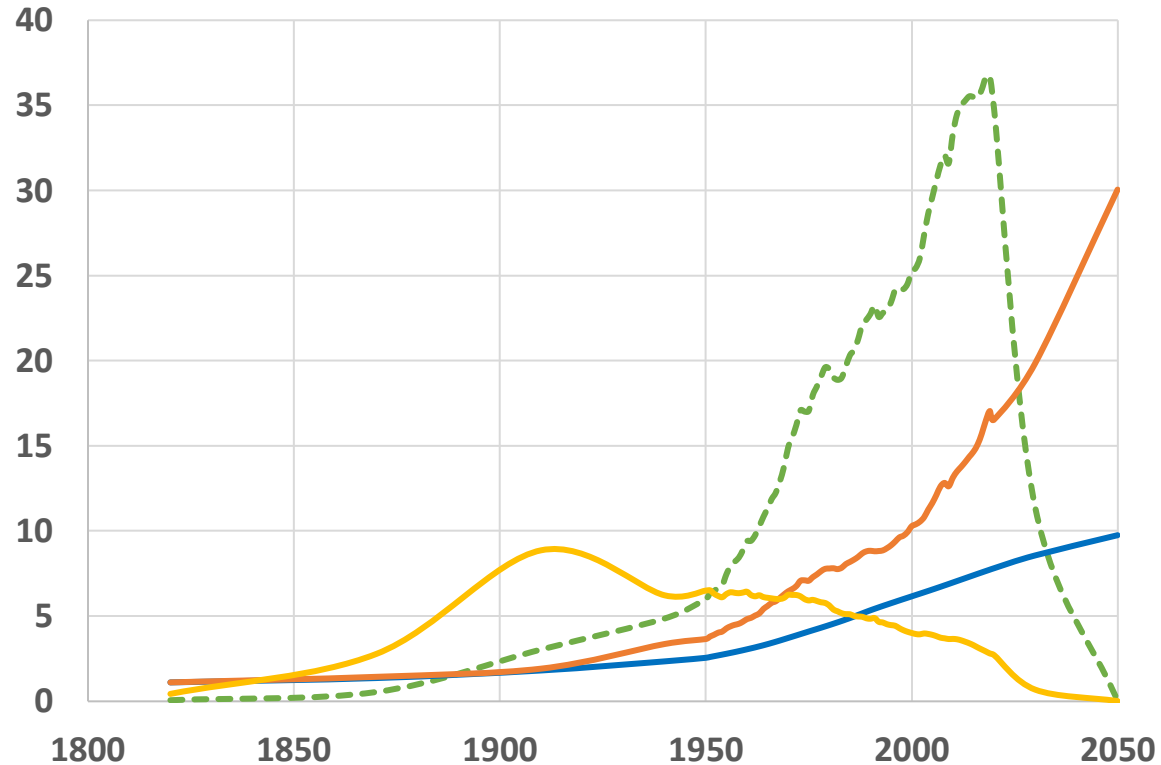
0,87% of the surface of the Earth

Incoming solar energy



5.000 x our consumption

$$\text{CO2} = \text{population} \cdot \text{affluence} \cdot \text{technology}$$



$$I = P \cdot A \cdot T$$

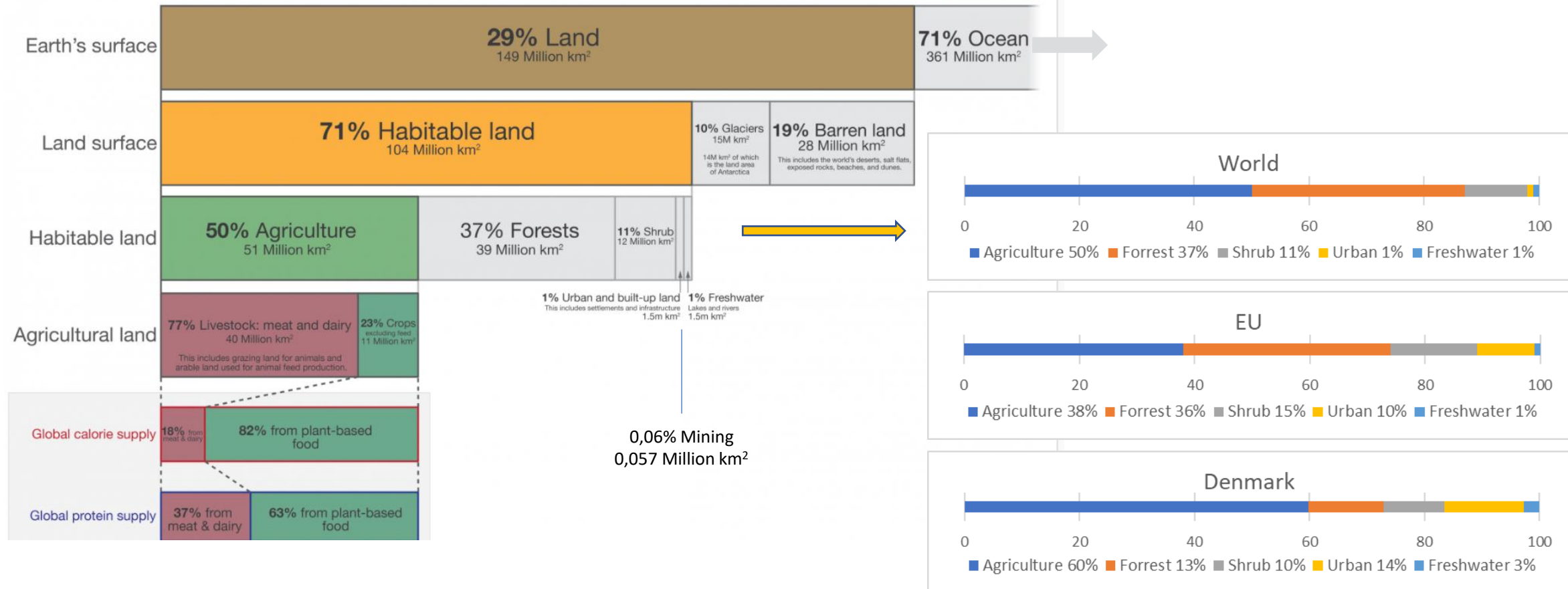
$$\text{CO2} = \text{Population} \cdot \text{BNP pr inhabitant} \cdot \text{Technology}$$

- CO2 (Billion ton CO2)
- Population (Billion inhabitants)
- BNP per inhabitant (Thousand \$ / inhabitants)
- Technology (100g CO2 / \$)

Global land use (2019)

Global land use for food production

Our World in Data



What about the nature?

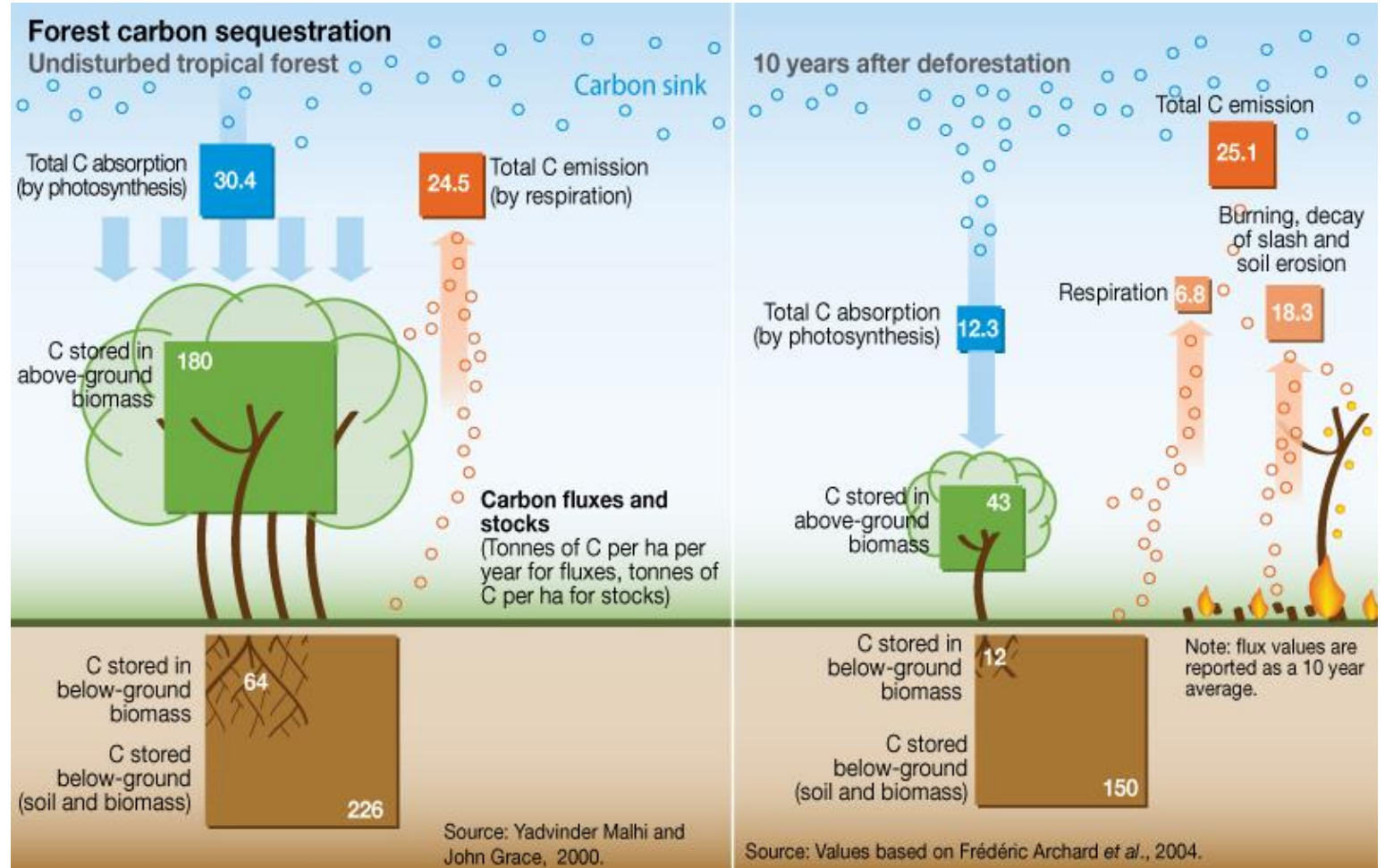
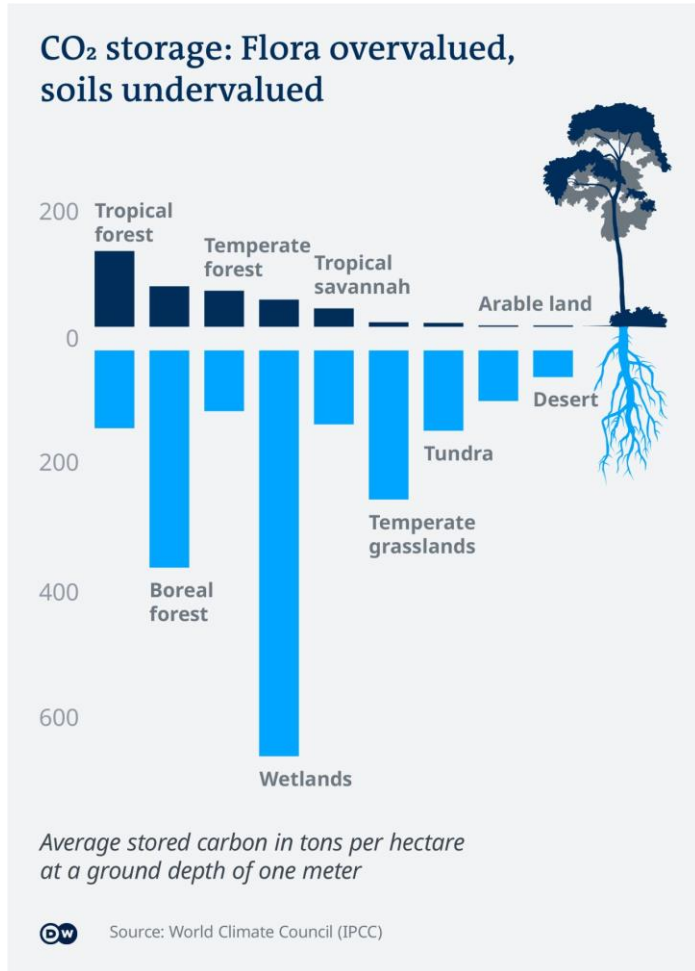


Old growth forest

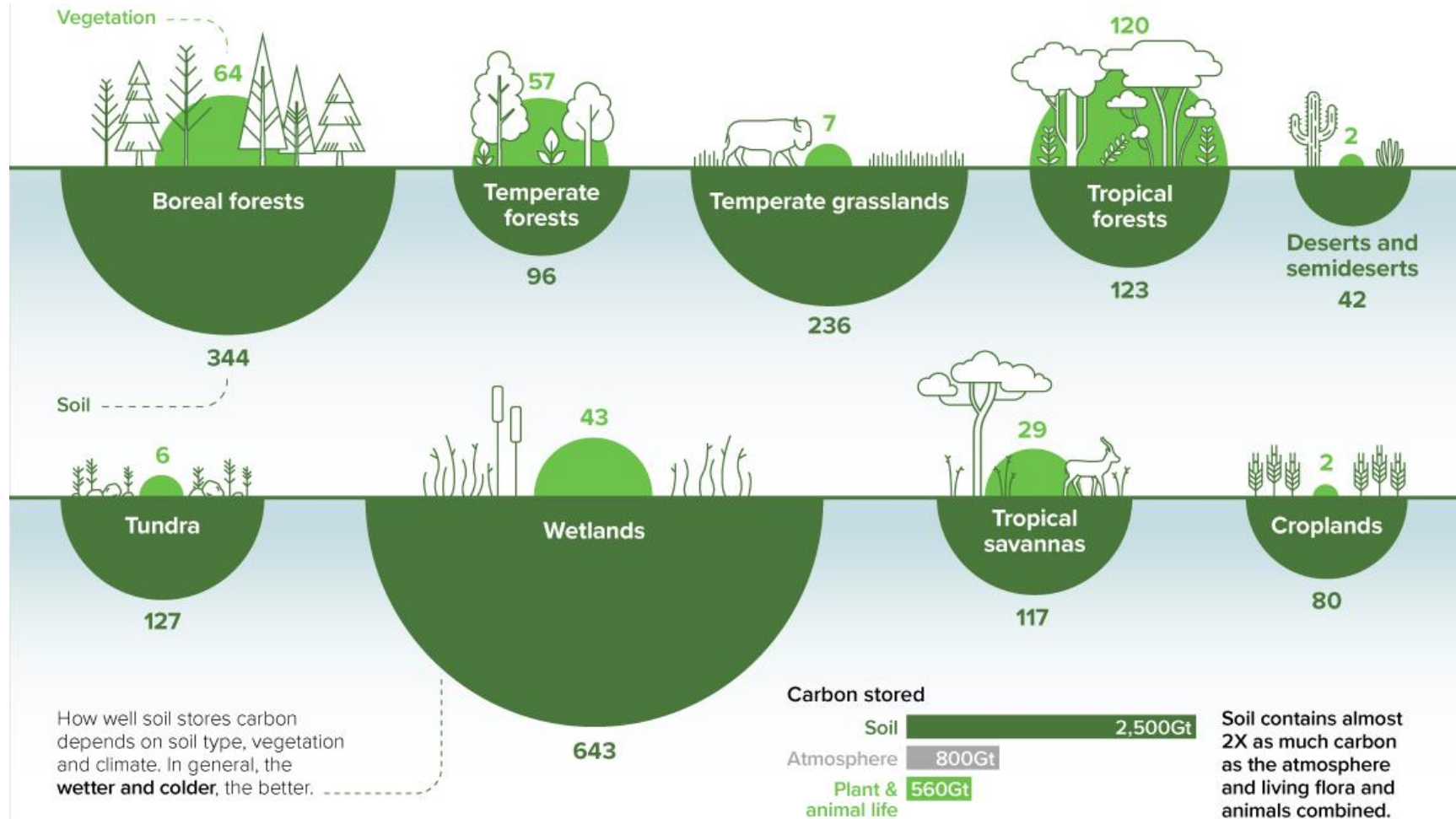


Cultivated forest

Where is the CO² absorbed in nature?



Where is the CO2 absorbed in nature?



Two utopic possibilities

To live in harmony with the nature.

To live beside the nature.

To live in harmony with the nature

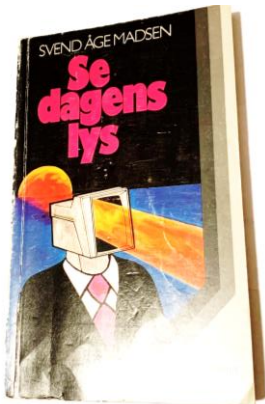
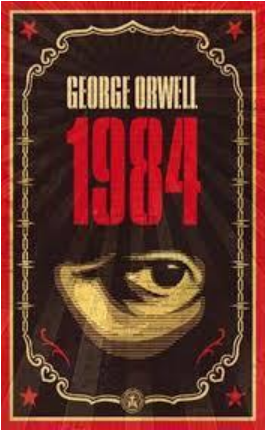


Jægere-samlere samfund

To live in harmony with the nature?

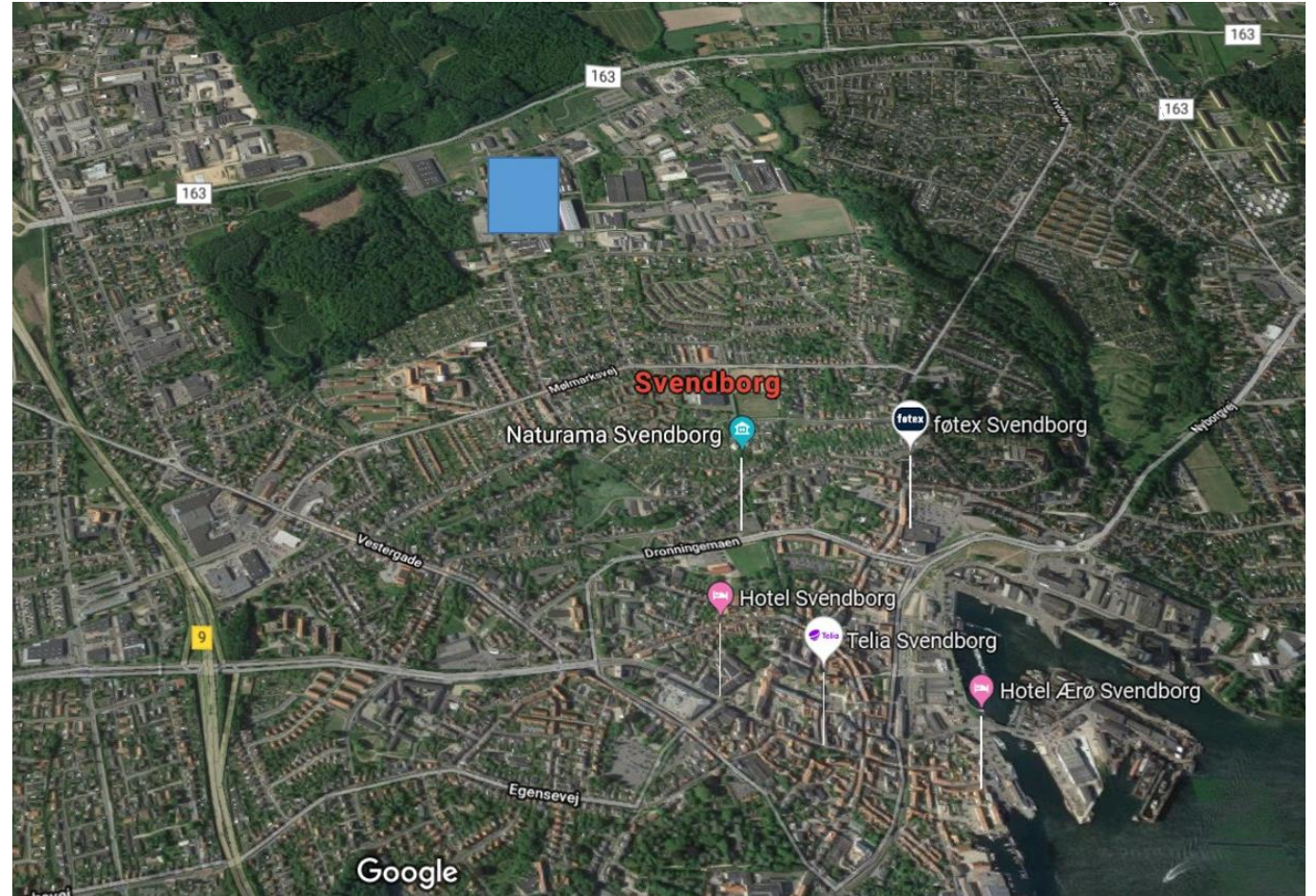


To live beside the nature



What about our food?

An estimate by Professor Dickson Despommier indicates that by vertical farming it is possible to produce food for 50.000 person in one New York block (about 80x274m og 30 floors)



Have we been cheated by peasant romance?



Er du dus med himlens fugle
og skovens grønne træer

Forstår du alle hjerter, der
banker her og der

Kan du smile til en kronhjort
og fløjte til en stær

Så har du fundet ud af
noget, som er meget værd

Is this mere indulgence?

