VESTLANDSFORSKING

KLIMA OG MILJØ

REISELIV

Internasjonal
nasjonal og lokal

Sogndal

Campus Fosshaugane

TEKNOLOGI OG SAMFUNN

85%

oppdragsfinansiert
Organisert som ei stifting

30+

medarbeidarar
Tilsette frå 9 land

Stordata • Digitalisering • Kultur, identitet og teknologi
Regional utvikling • e-Helse • Berekraftig reiseliv • Opplevingsturisme
Klimatilpassing • Industriell økologi • Lokal klima- og miljøpolitikk
Natur- og miljøforvaltning • Energi og transport

Økonomisk vekst, klima og miljø

Den viktigaste klimadiskusjonen som me gløymde, kom på att, gløymde igjen og kom på att no i vår

Føredrag | Kaien | 26.11.2020 | Torbjørn Selseng

VESTLANDSFORSKING

NAMN ETTERNAMN

Plan

VESTLANDSFORSKING

1. Økonomisk vekst
2. Klimaproblemet
3. Miljøproblemet
4. Samanhengen mellom vekst og desse to
5. Korleis prøver me å endre desse samanhengane?
6. Kvifor fungerer ikkje desse løysingane og kva me skal gjere i staden?

Økonomisk vekst

Kva er det?

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- Økonomisk vekst = prosentvis auke i BNP, justert for inflasjon
- Kva er BNP?
- BNP = Den totale verdien av alle varer og tenester produsert i løpet av eit år

Kva skal me med økonomisk vekst?

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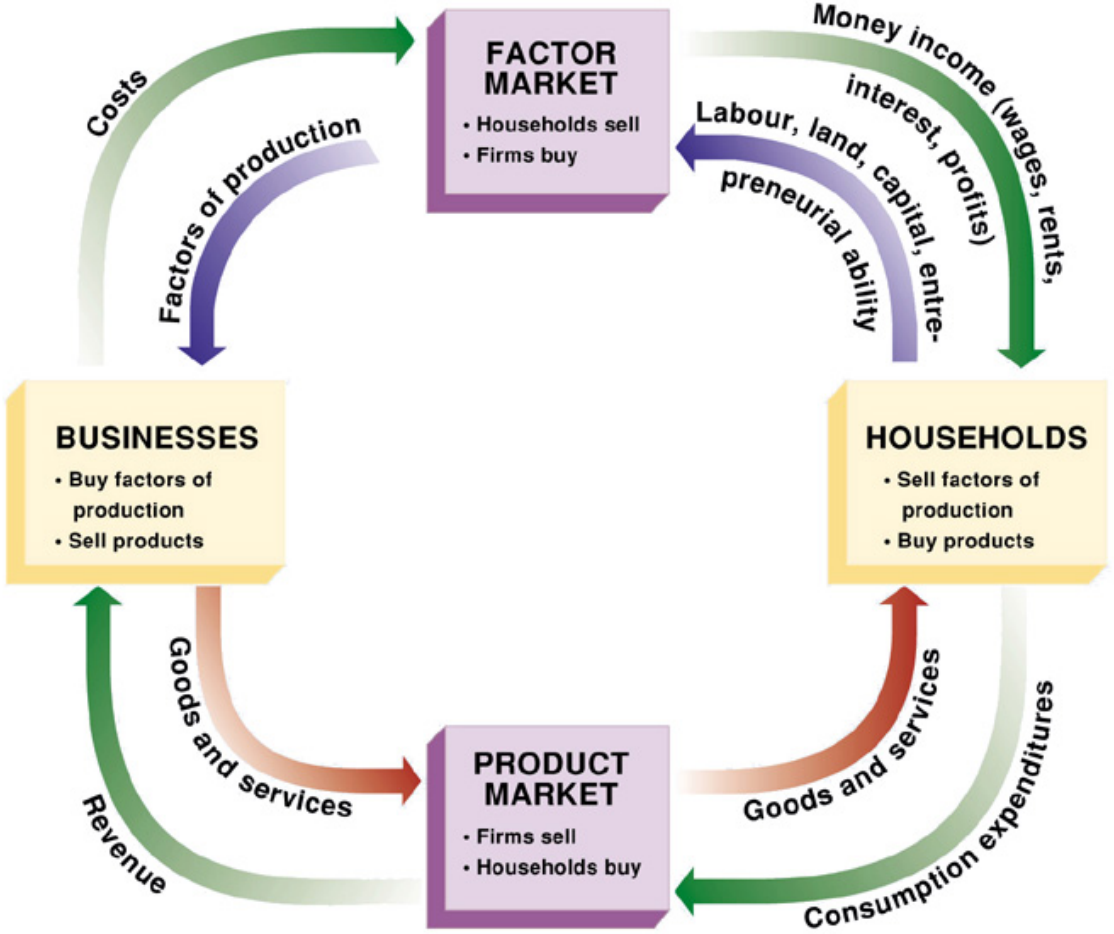
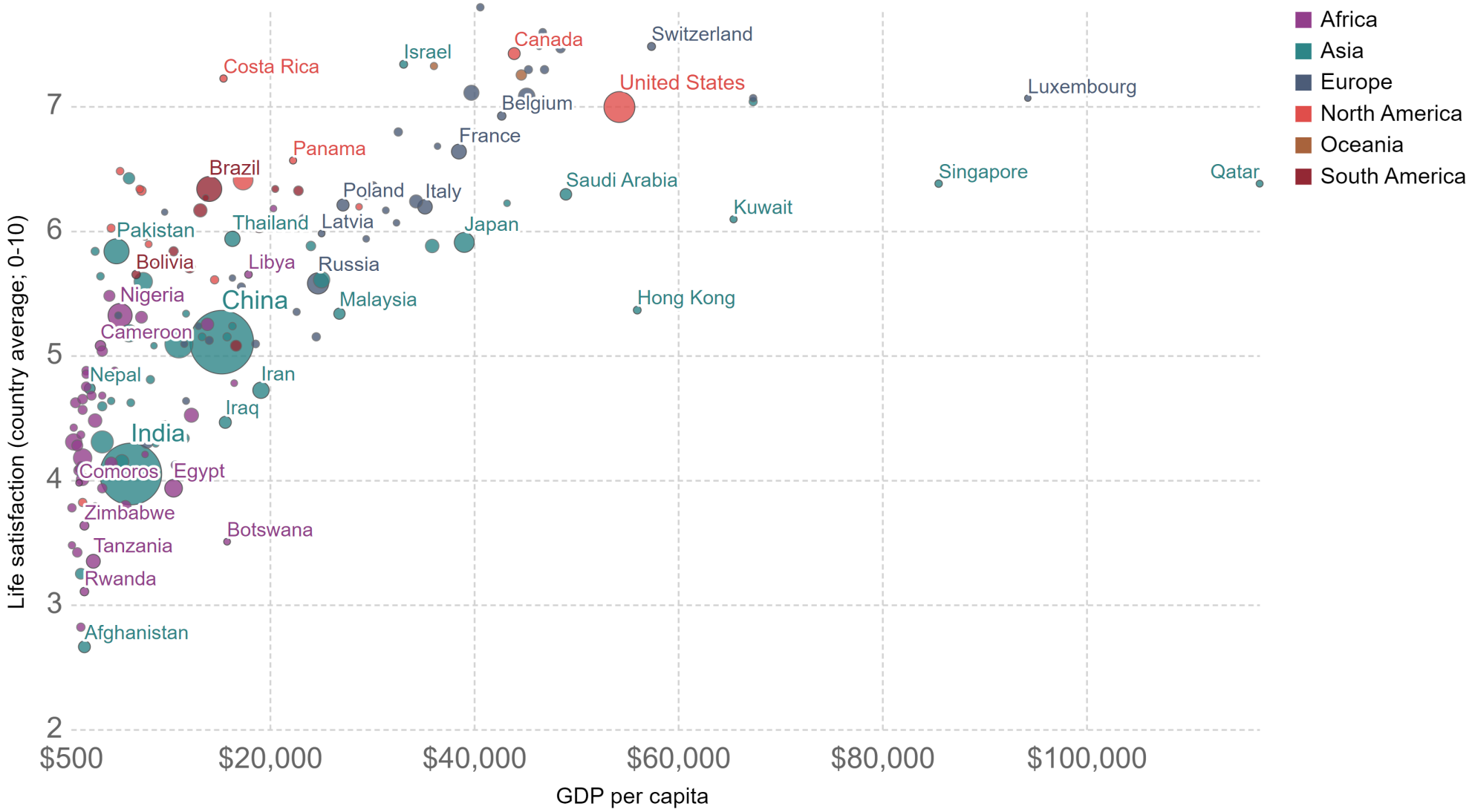


Samuelsen, 1948

Self-reported Life Satisfaction vs GDP per capita, 2017

The vertical axis shows the national average of the self-reported life satisfaction on a scale ranging from 0-10, where 10 is the highest possible life satisfaction.
The horizontal axis shows GDP per capita adjusted for inflation and cross-country price differences.



Source: World Happiness Report (2019), World Bank

OurWorldInData.org/happiness-and-life-satisfaction/ • CC BY

To

RSKING

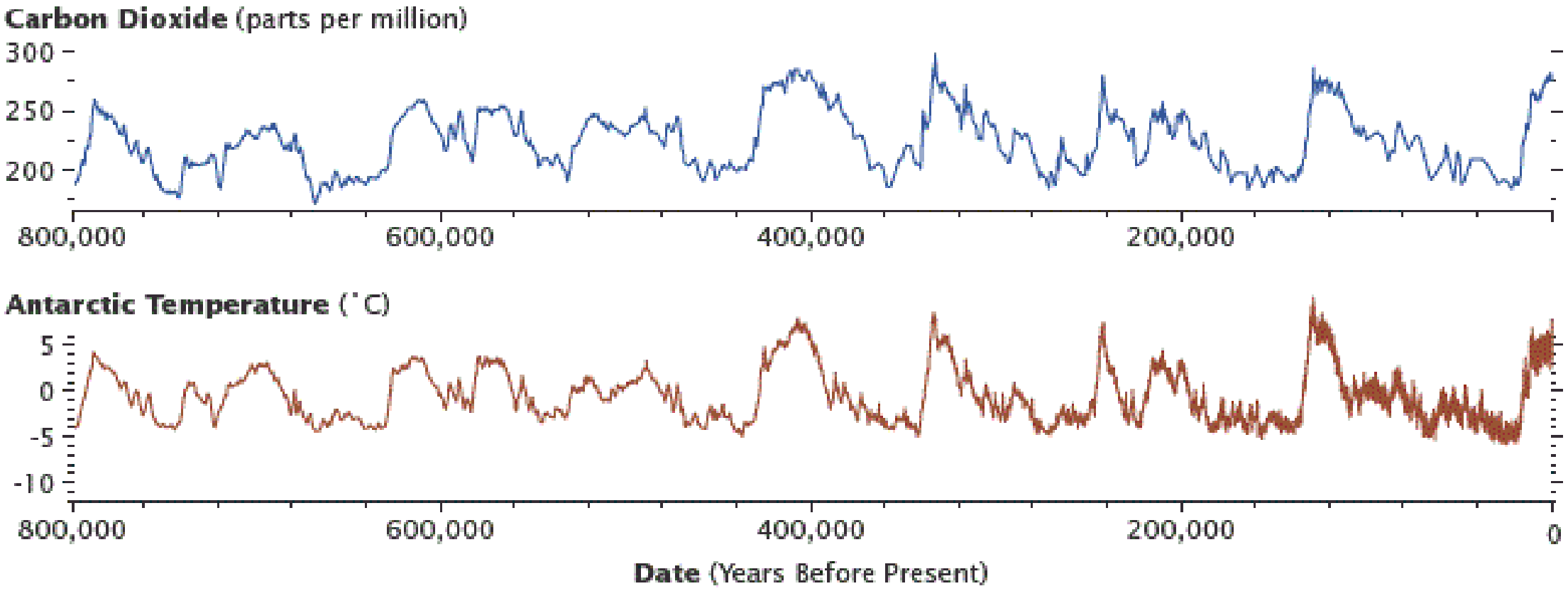
1.
2.

Det manglar noko her

VESTLANDSFORSKING

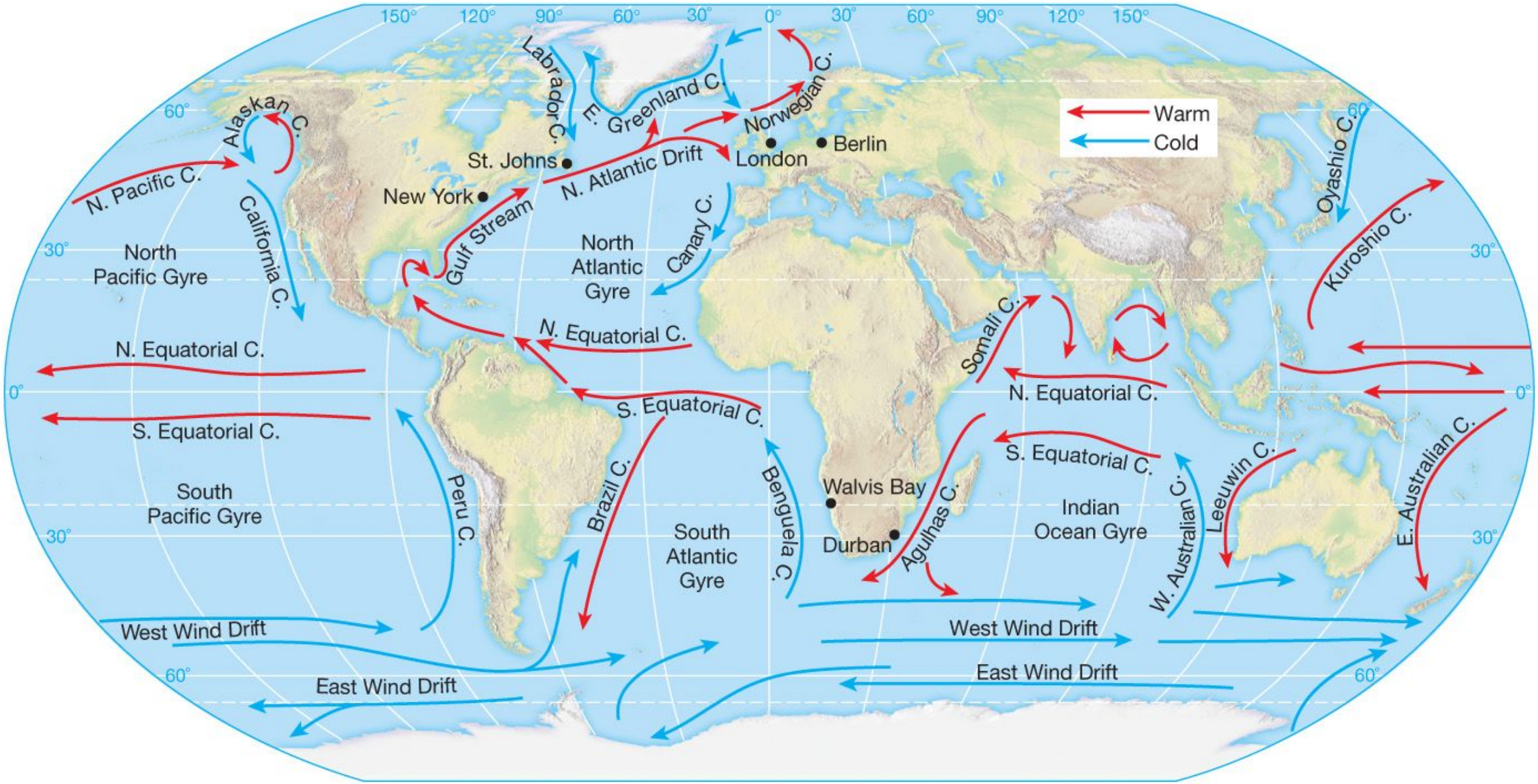
- For å generere **1000 $ BNP** krevst det i snitt **416 kg material** og **111 kg energi** (i olje-ekvivalentar) (OECD, 2017)
- Prisen for desse ressursane er sjølvsagt rekna med.
- Men påverknaden på miljøet og klimaet er det ikkje.

Klimaproblemet



Sources: NOAA, WMO, IPCC, Hadley Center / 2020

Luthi et al, 2008



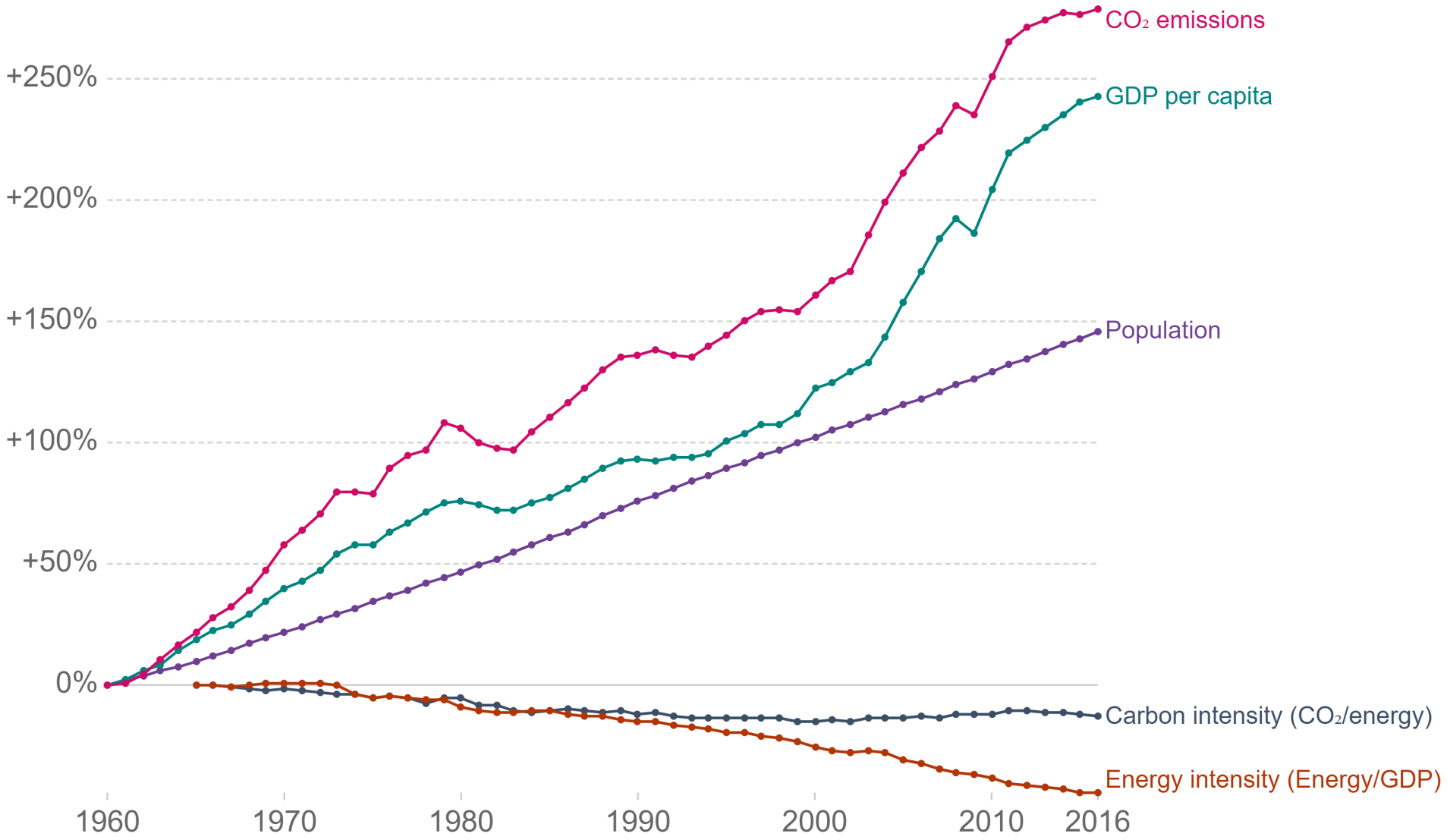
Kva er samanhengen mellom vekst og klima?

Kaya Identity: drivers of CO_2 emissions, World

Percentage change in the four parameters of the Kaya Identity, which determine total CO_2 emissions.

Our World in Data

ING

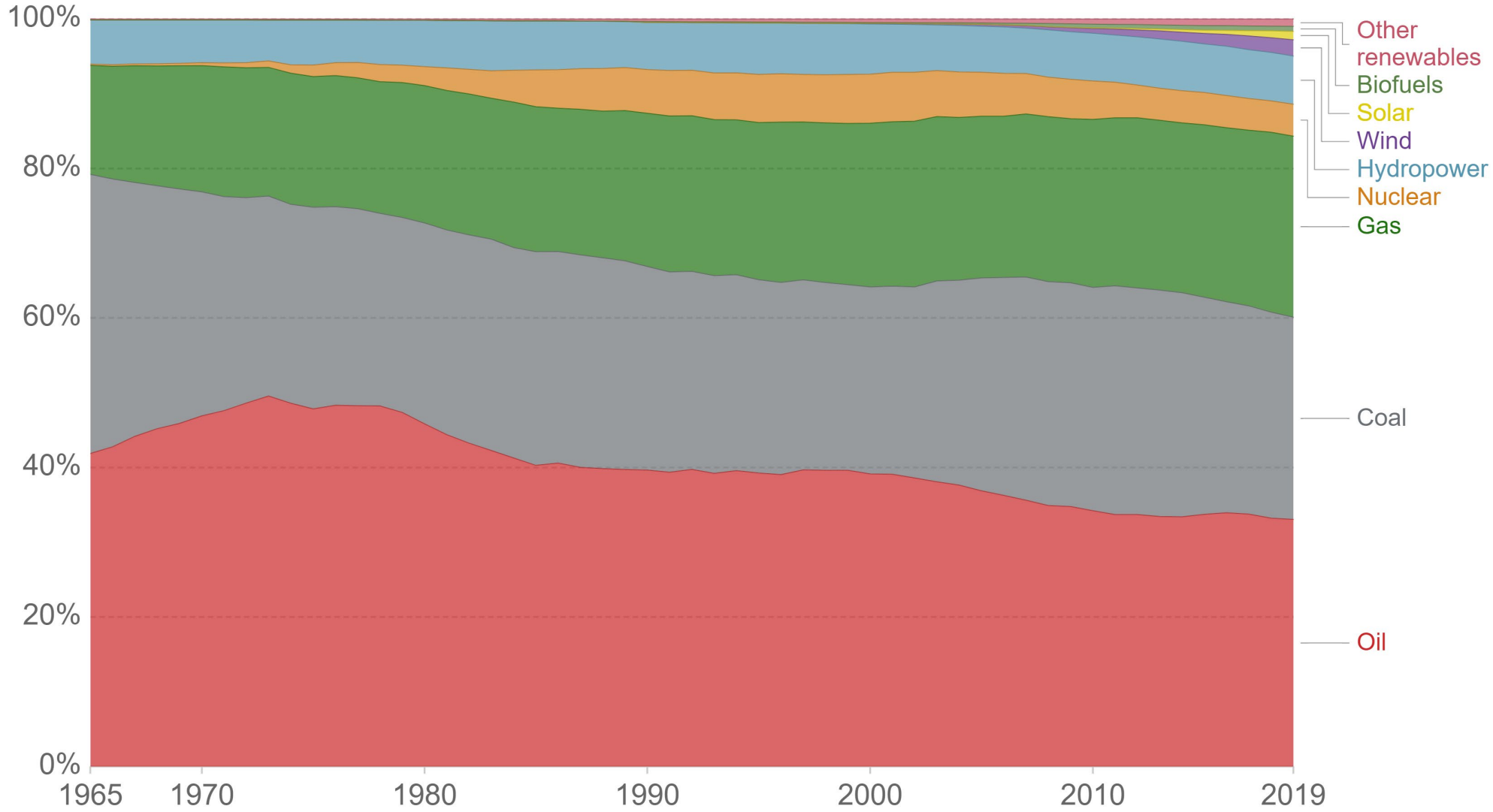


Source: Our World in Data based on Global Carbon Project; UN; BP; World Bank; Maddison Project Database
Note: GDP per capita is measured in 2011 international-$ (PPP). This adjusts for inflation and cross-country price differences.
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

Energy consumption by source, World

Primary energy consumption is measured in terawatt-hours (TWh). Here an inefficiency factor (the 'substitution' method) has been applied for fossil fuels, meaning the shares by each energy source give a better approximation of final energy consumption.

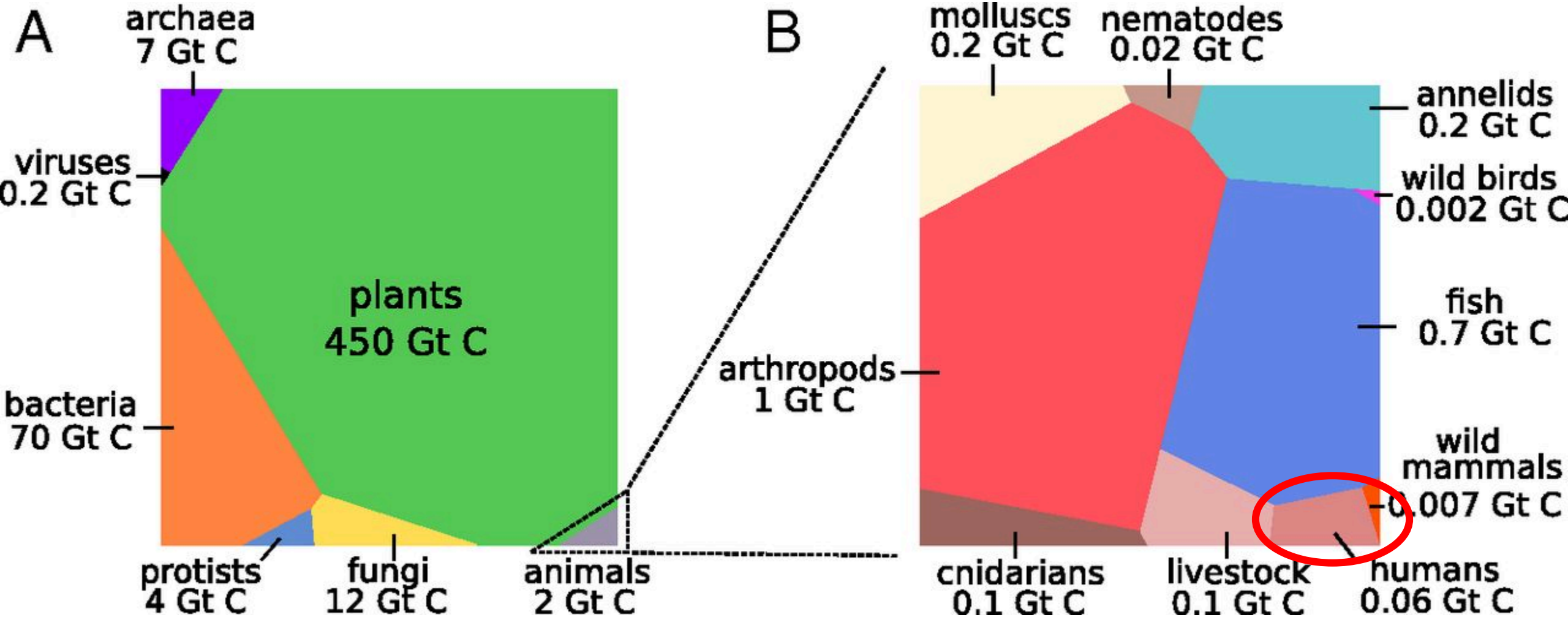
Our World in Data



Source: BP Statistical Review of World Energy

Note: 'Other renewables' includes geothermal, biomass and waste energy.

Miljøproblemet

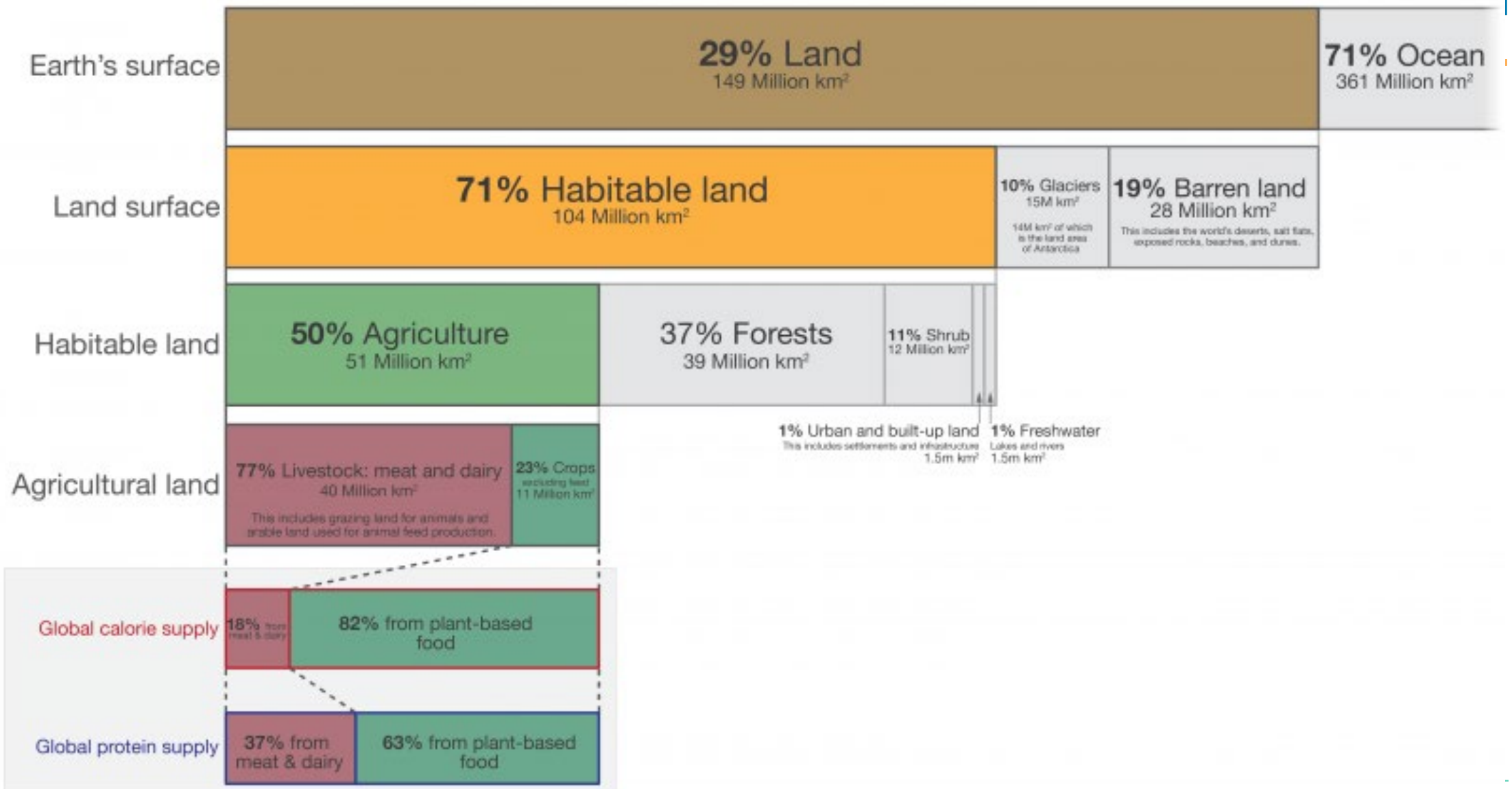


Bar-on et al, 2018

- Me bit frå oss
- 10-12 millionar hektar årleg
- 100 x Sogndal Kommune
- 1/3 Noreg

Global land use for food production

Our World in Data

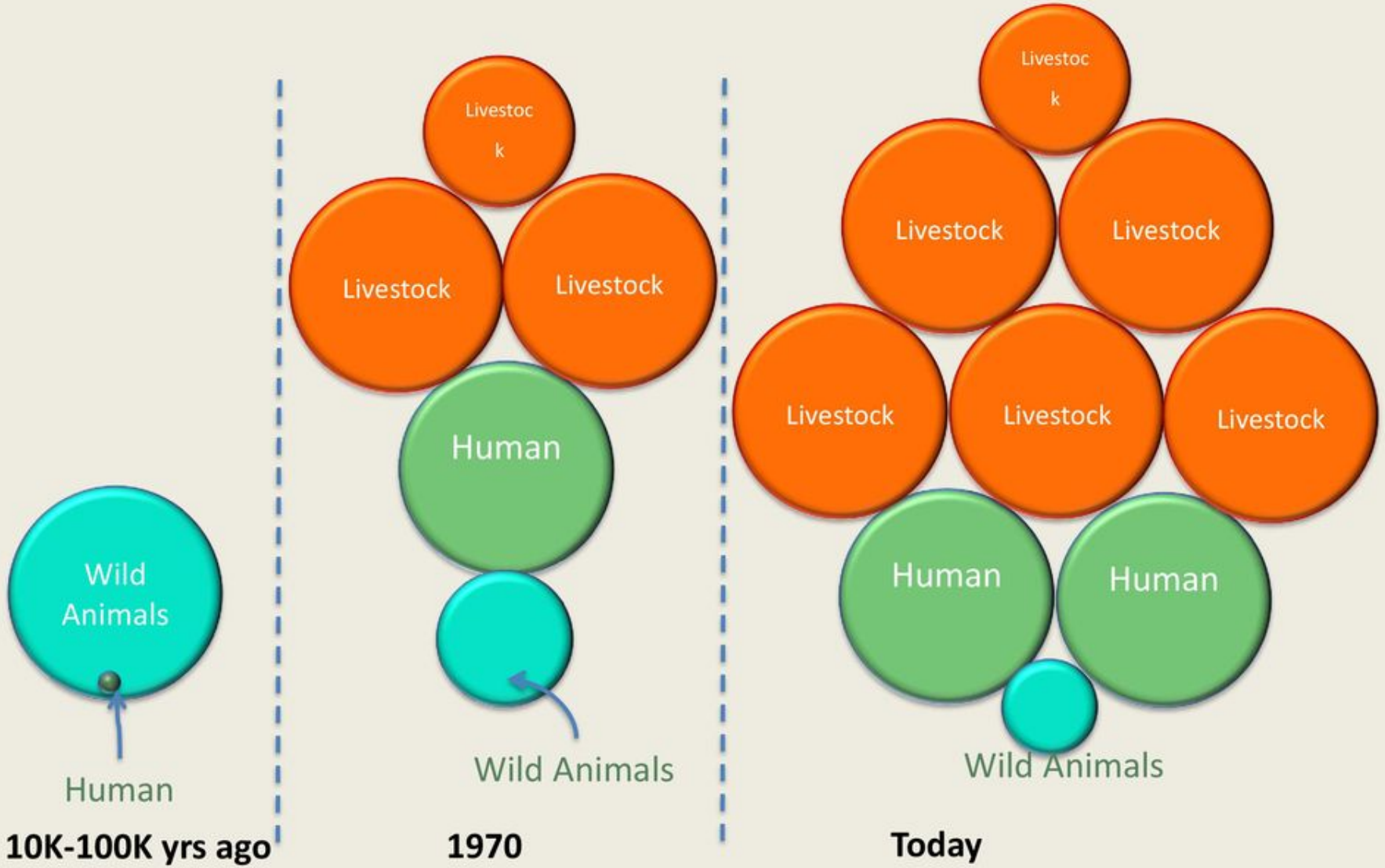


Data source: UN Food and Agriculture Organization (FAO)

OurWorldinData.org – Research and data to make progress against the world's largest problems.

SKING

Biomass Distribution of MegaFauna



Source: Calculated from Anthony Barnosky, Proceedings of the National Academy of Sciences, Aug. 2008 and WWF Living Planet Index, 2015

Kva er samanhengen mellom vekst og miljø?

- For å generere **1000 $ BNP** krevst det i snitt **416 kg material** og **111 kg energi** (i olje-ekvivalentar) (OECD, 2017)
- Uttak og prosessering av **material** og mat star for **90 %** av biodiversitetstapet i verda (Global Resources Outlook, 2019)

Global GDP and material footprint 1990-2013

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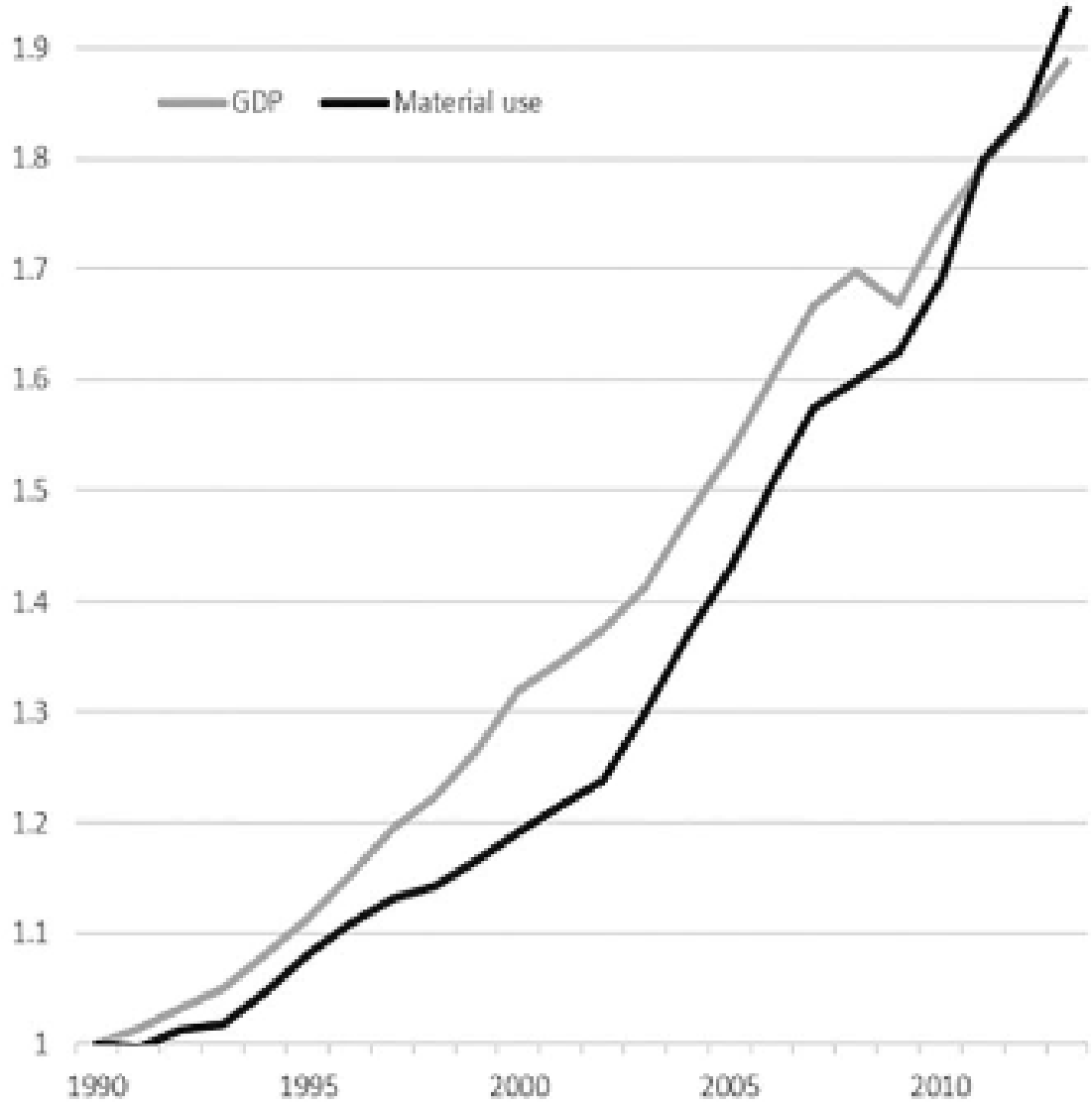

Kva er løysinga på desse problema?

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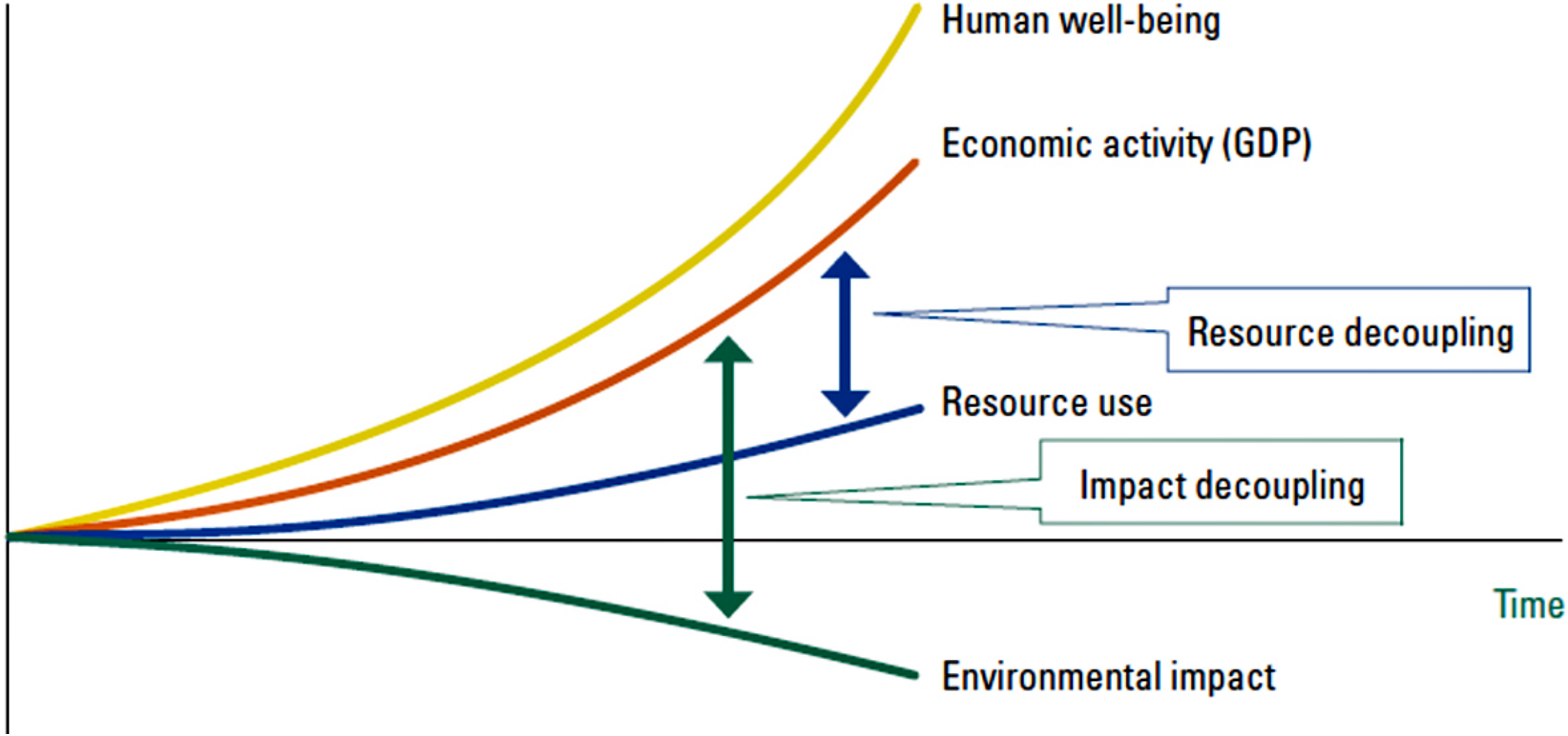
- Grøn vekst
- Grøn vekst = fråkopling

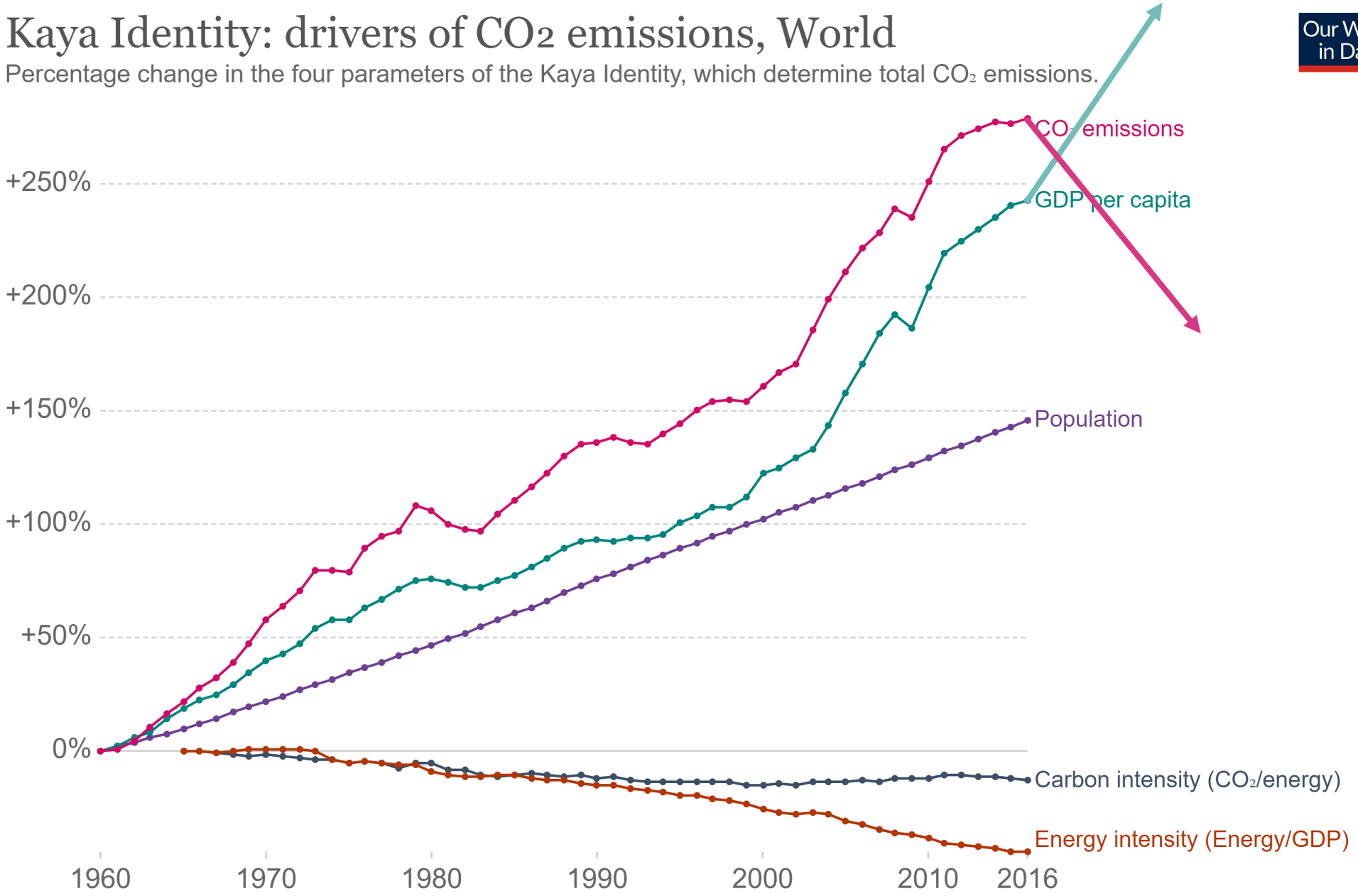

Human well-being
Economic activity (GDP)
Resource decoupling
Resource use
Impact decoupling
Time
Environmental impact

UNEP, 2011

Fråkopling betyr 3 ting

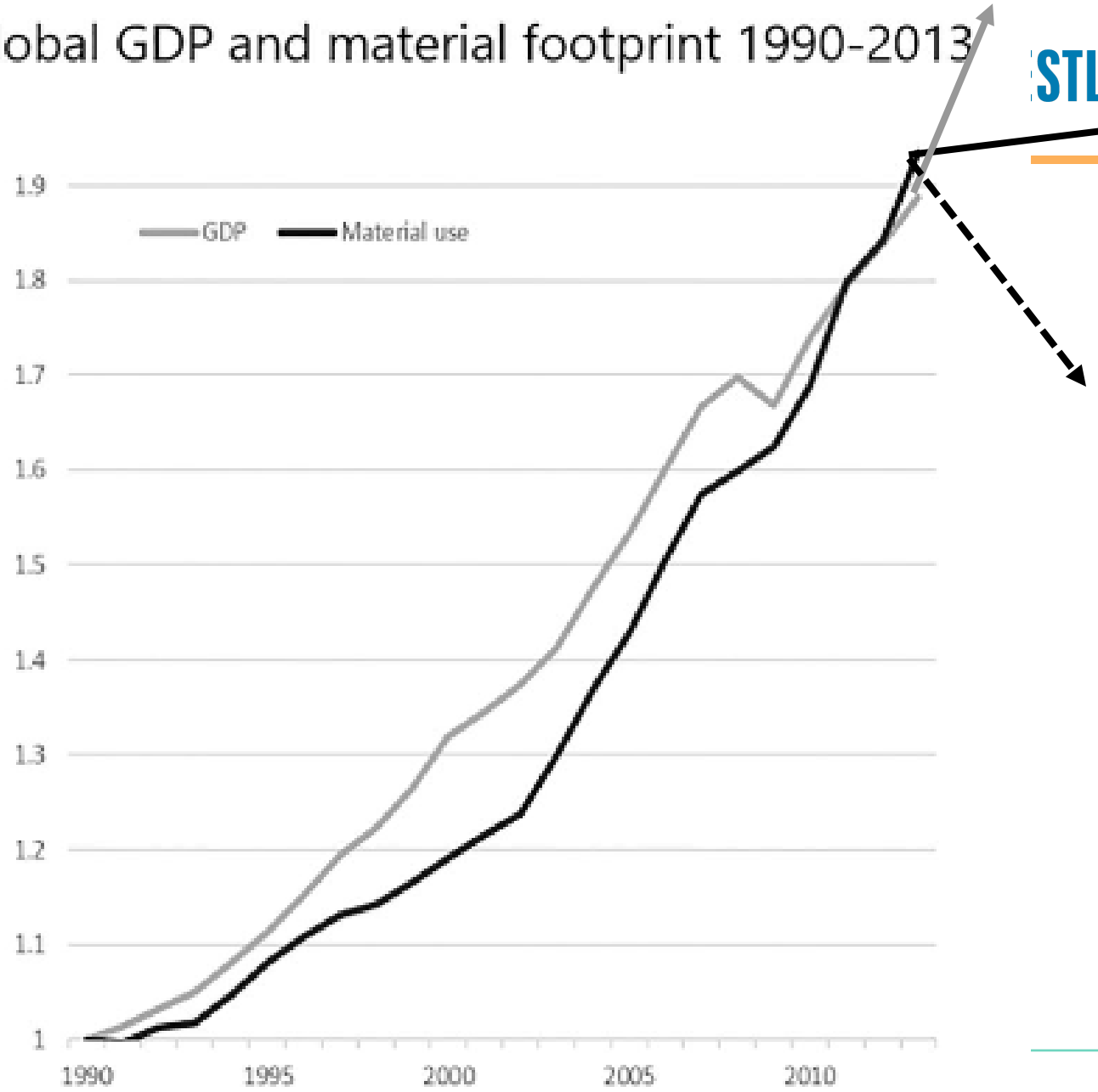
Kaya Identity: drivers of CO_2 emissions, World

Percentage change in the four parameters of the Kaya Identity, which determine total CO_2 emissions.



Source: Our World in Data based on Global Carbon Project; UN; BP; World Bank; Maddison Project Database
Note: GDP per capita is measured in 2011 international-$ (PPP). This adjusts for inflation and cross-country price differences.
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

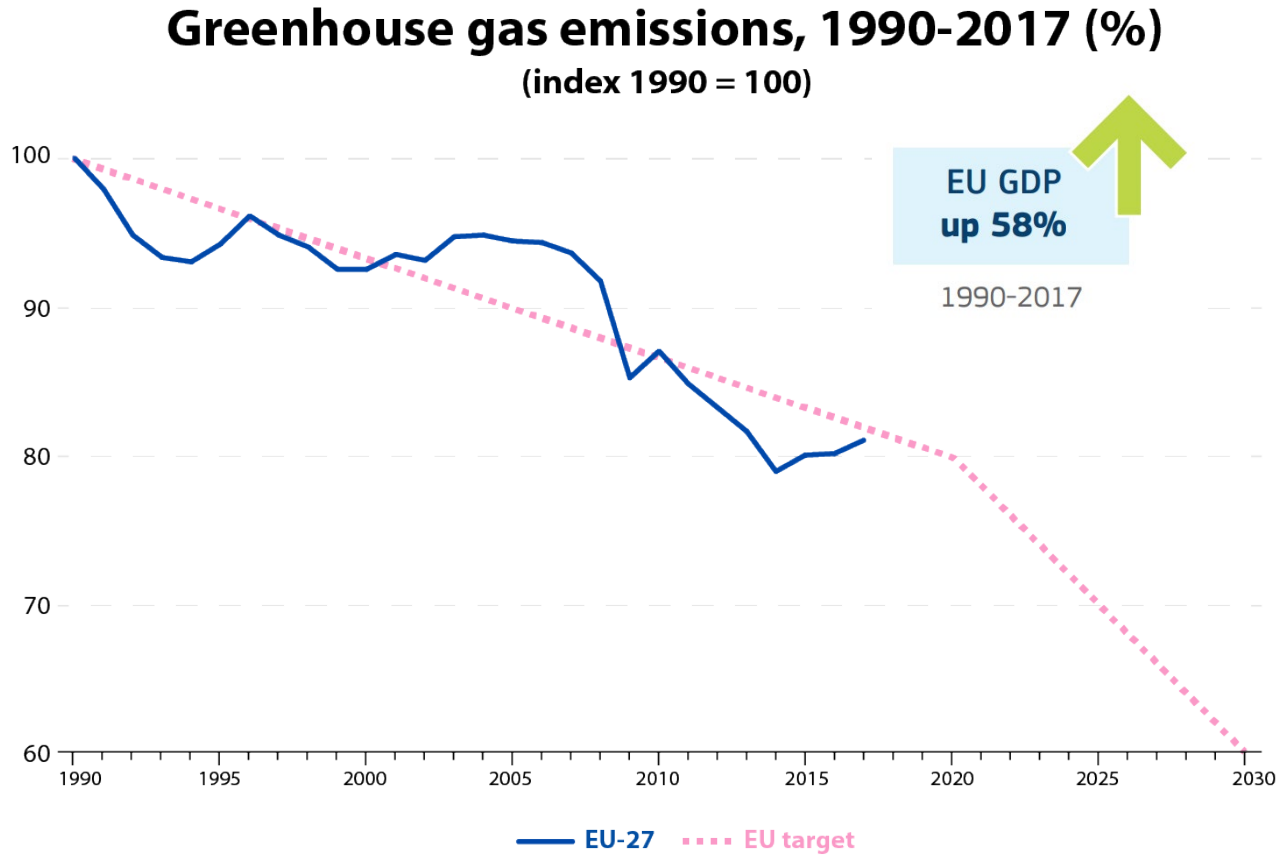
Global GDP and material footprint 1990-2013



- Uttak og prosessering av **material** og mat star for **0%** av biodiversitetstapet i verda

Global Resources Outlook, 2019

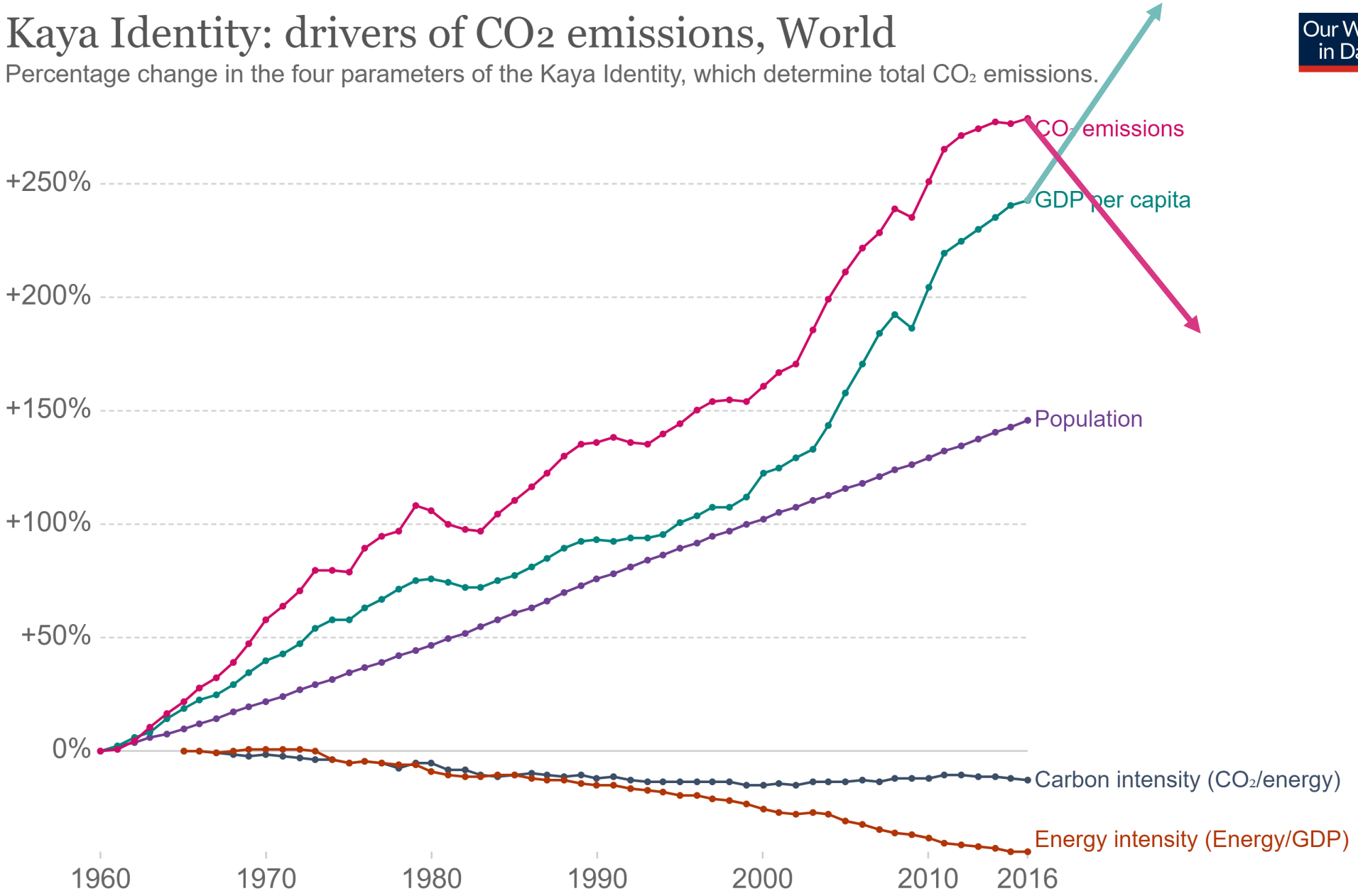
La oss berre sei at me får til fråkopling av klimautslepp og vekst



Source: European Environment Agency
Data including international aviation and indirect CO_2 emissions, excluding land use, land use change and forestry

Kaya Identity: drivers of CO_2 emissions, World

Percentage change in the four parameters of the Kaya Identity, which determine total CO_2 emissions.



Source: Our World in Data based on Global Carbon Project; UN; BP; World Bank; Maddison Project Database
Note: GDP per capita is measured in 2011 international-$ (PPP). This adjusts for inflation and cross-country price differences.
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

Kva med materialbruken?

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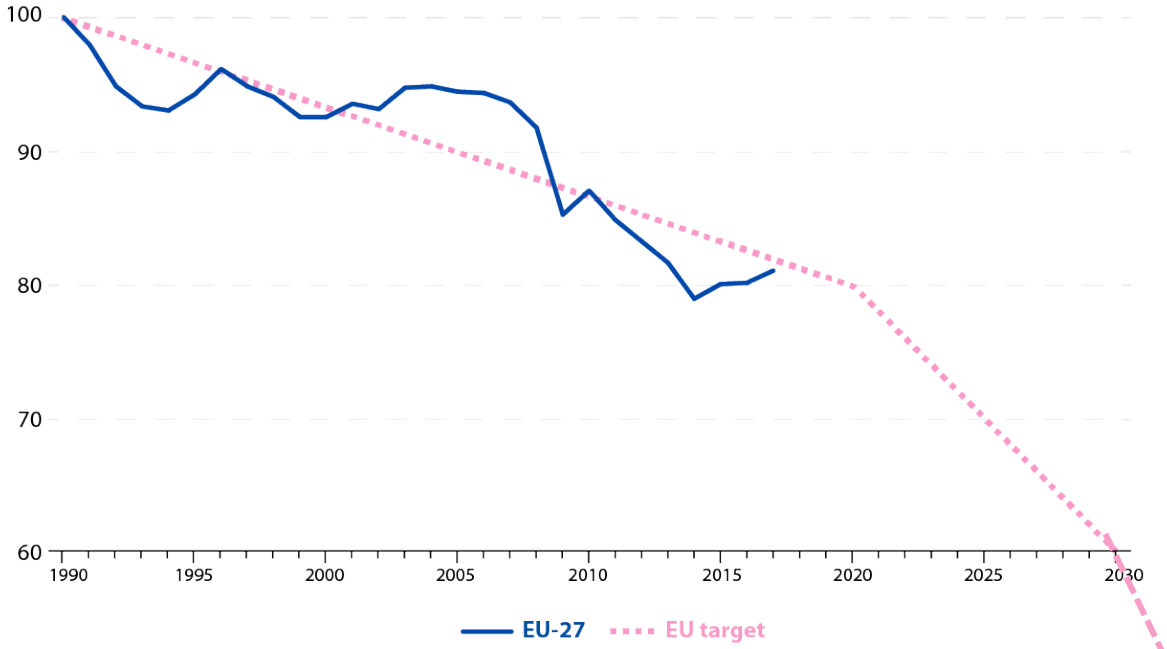
- Målet i 2050 i EU er nullutslepp

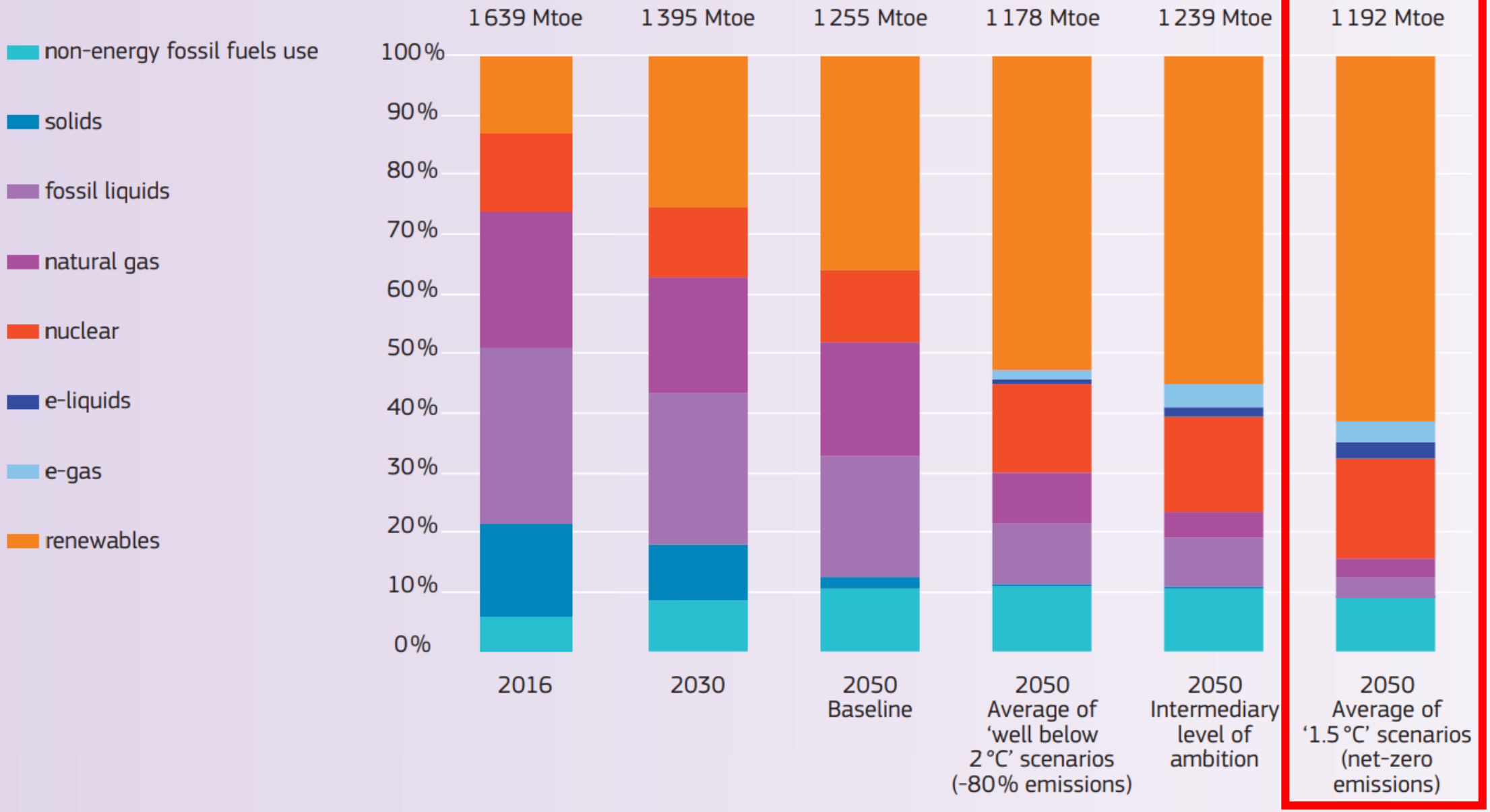
Greenhouse gas emissions, 1990-2017 (%)

(index 1990 = 100)



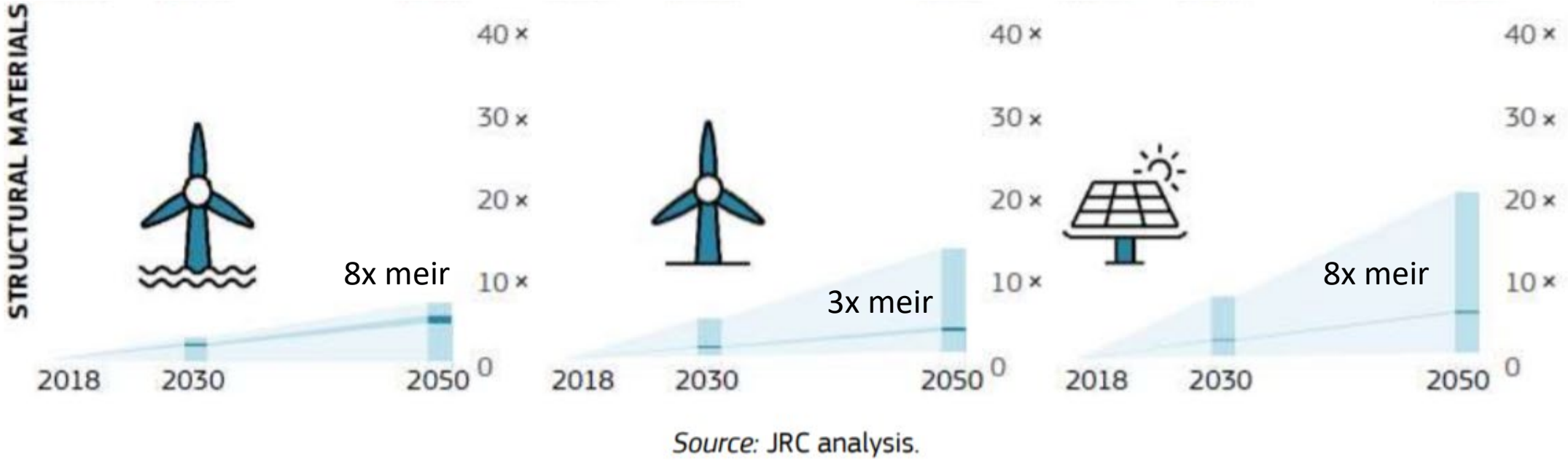
Source: European Environment Agency
Data including international aviation and indirect CO_2 emissions, excluding land use, land use change and forestry

Figure 1. Gross inland consumption of energy



Kva skjer då med materialbruken?

“The EU’s transition to green energy technologies, according to the current decarbonisation scenarios, **could be endangered by weaknesses in future supply security**“



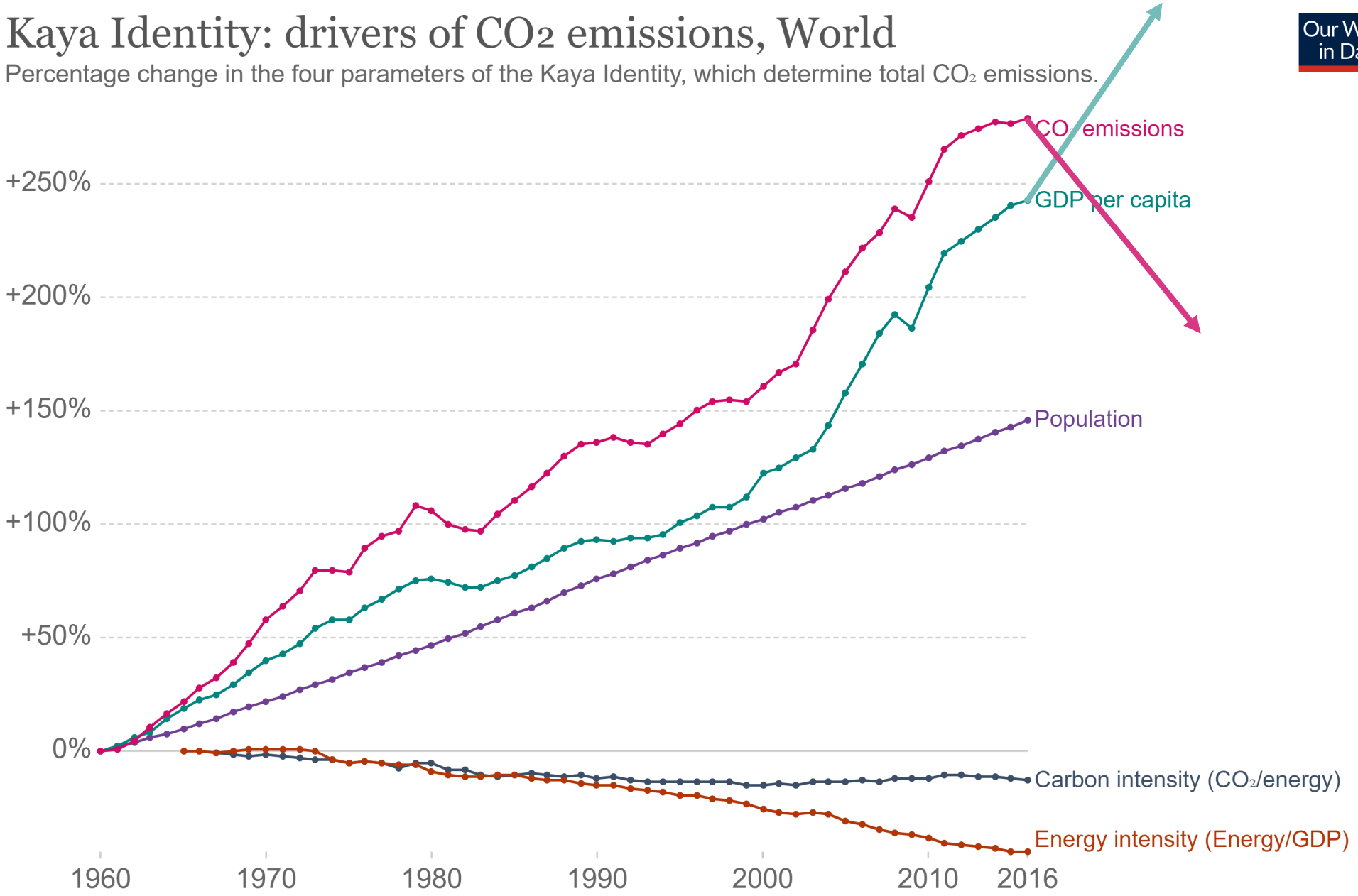
Source: JRC analysis.

Carrara et al, 2020

Så då betyr det at dersom me skal klare dette:

Kaya Identity: drivers of CO_2 emissions, World

Percentage change in the four parameters of the Kaya Identity, which determine total CO_2 emissions.



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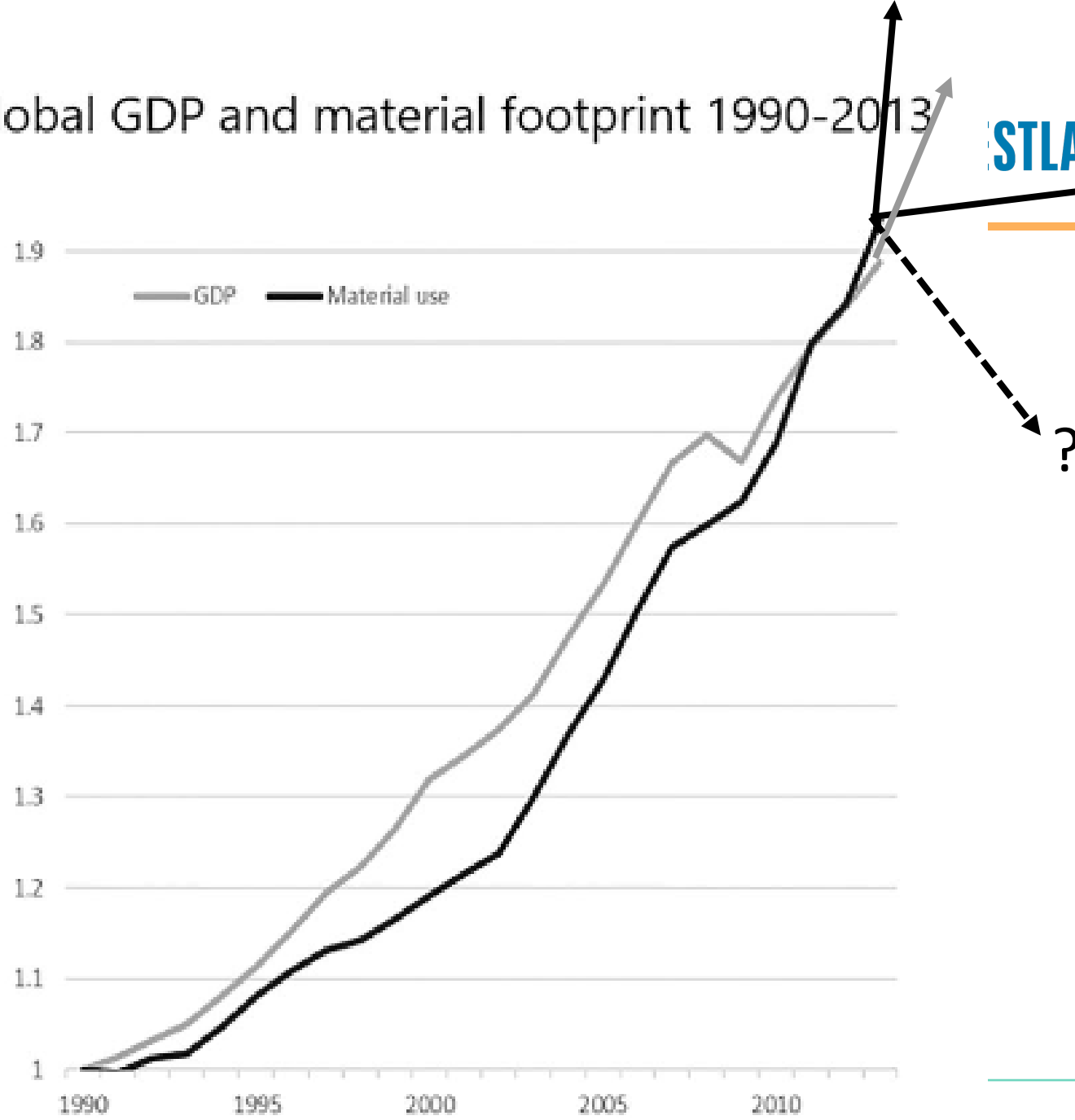
Note: GDP per capita is measured in 2011 international-$ (PPP). This adjusts for inflation and cross-country price differences.
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

Så klarar me ikkje dette:

Global GDP and material footprint 1990-2013



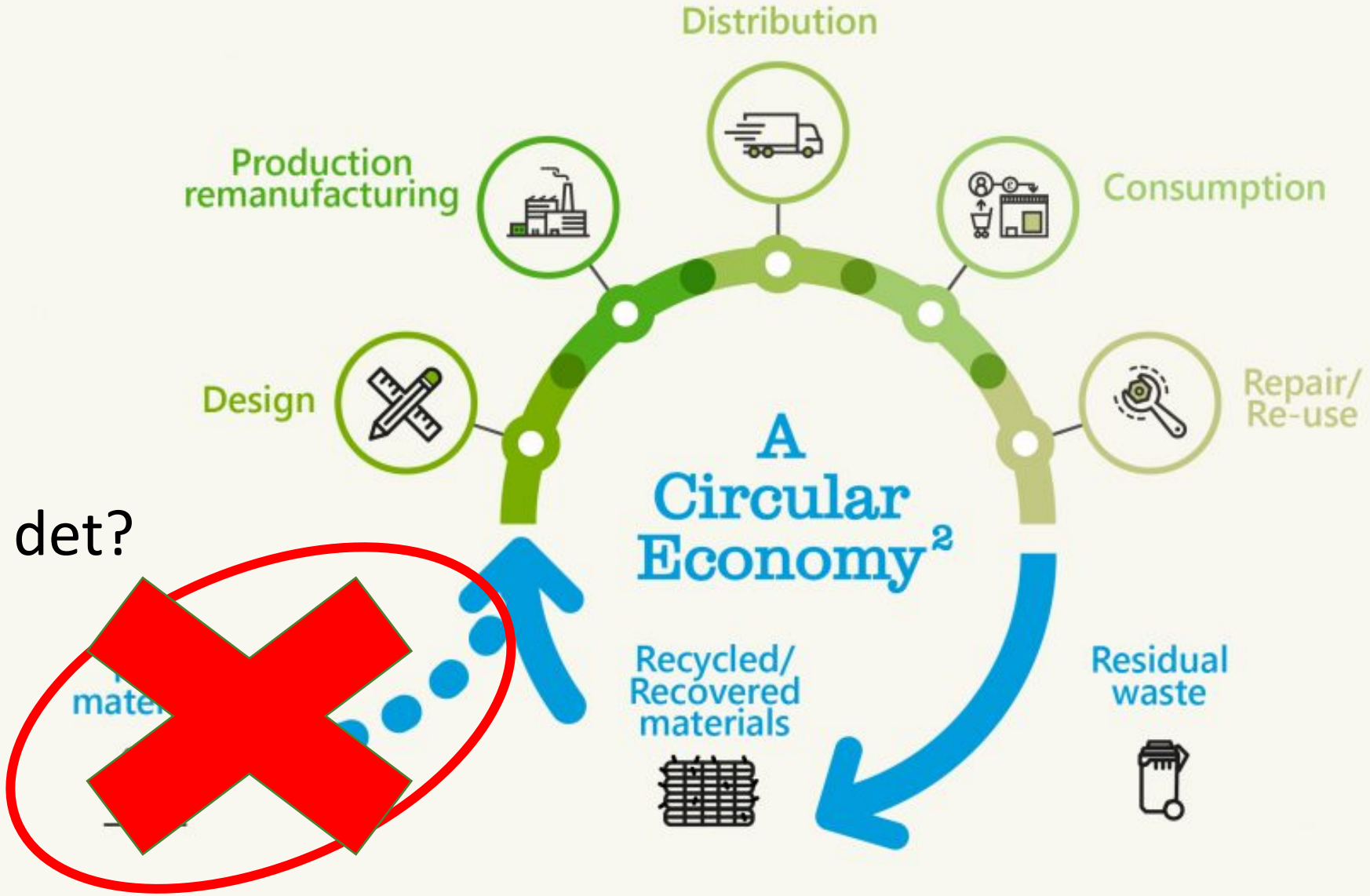
Så då me klare dette:

- Uttak og prosessering av **material** og mat star for **0%** av biodiversitetstapet i verda

Global Resources Outlook, 2019

Sirkulærøkonomi

Funkar det?


Distribution
Production remanufacturing
Consumption
Design
Repair/ Re-use
A Circular Economy²
Recycled/ Recovered materials
Residual waste

ARTICLE

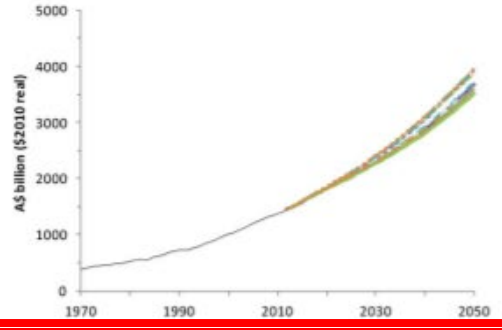
doi:10.1038/nature16065

Australia is 'free to choose' economic growth and falling environmental pressures

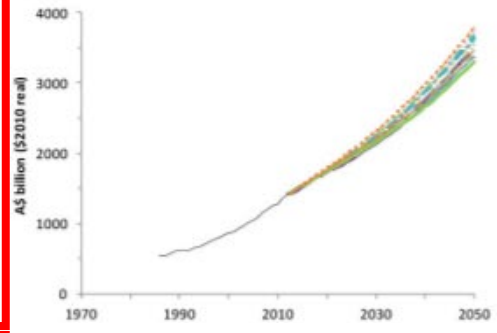
Steve Hatfield-Dodds[1], Heinz Schandl[1], Philip D. Adams[2], Timothy M. Baynes[3], Thomas S. Brinsmead[4], Brett A. Bryan[5], Francis H. S. Chiew[1], Paul W. Graham[4], Mike Grundy[6], Tom Harwood[1], Rebecca McCallum[1], Rod McCrea[7], Lisa E. McKellar[7], David Newth[8], Martin Nolan[5], Ian Prosser[1]† & Alex Wonhas[3]

Over two centuries of economic growth have put undeniable pressure on the ecological systems that underpin human well-being. While it is agreed that these pressures are increasing, views divide on how they may be alleviated. Some suggest technological advances will automatically keep us from transgressing key environmental thresholds; others that policy reform can reconcile economic and ecological goals; while a third school argues that only a fundamental shift in societal values can keep human demands within the Earth's ecological limits. Here we use novel integrated analysis of the energy–water–food nexus, rural land use (including biodiversity), material flows and climate change to explore whether mounting ecological pressures in Australia can be reversed, while the population grows and living standards improve. We show that, in the right circumstances, economic and environmental outcomes can be decoupled. Although economic growth is strong across all scenarios, environmental performance varies widely: pressures are projected to more than double, stabilize or fall markedly by 2050. However, we find no evidence that decoupling will occur automatically. Nor do we find that a shift in societal values is required. Rather, extensions of current policies that mobilize technology and incentivize reduced pressure account for the majority of differences in environmental performance. Our results show that Australia can make great progress towards sustainable prosperity, if it chooses to do so.

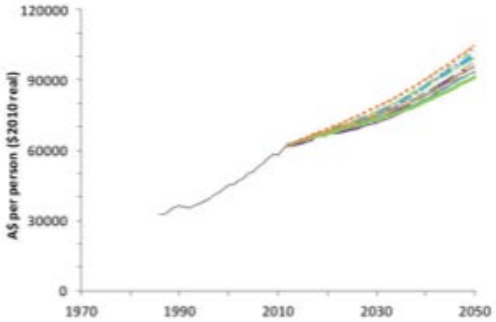
1a Australian Gross Domestic Product (GDP), 20 scenarios, 1970-2050



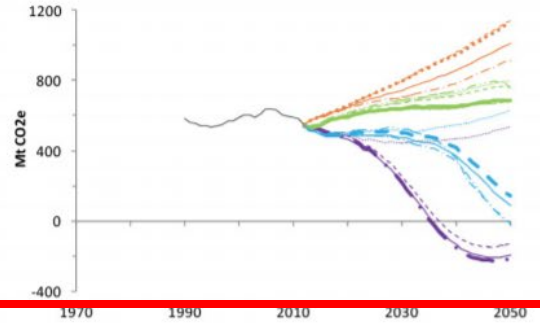
1b Australian Gross National Income (GNI), 20 scenarios, 1986-2050



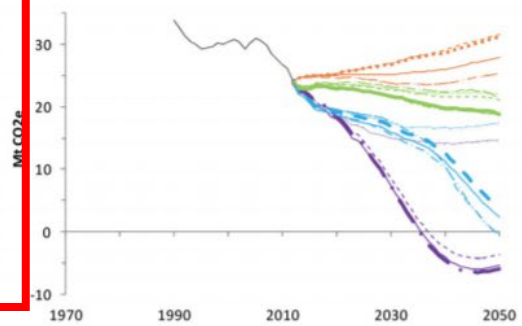
1c Australian Gross National Income (GNI) per person, 20 scenarios, 1986-2050



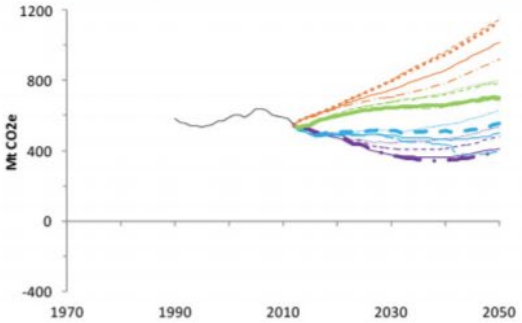
6a Domestic Net Greenhouse Gas Emissions, 18 scenarios, 1990-2050



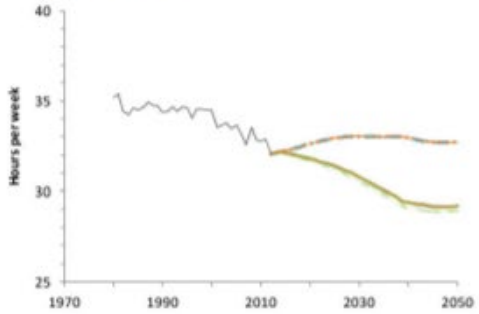
6b Domestic Net Greenhouse Gas Emissions per person, 18 scenarios, 1990-2050



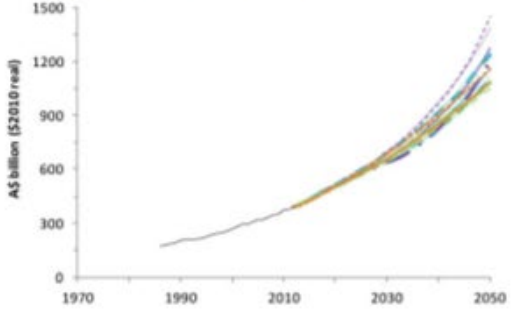
6c Domestic Greenhouse Gas Emissions (not including land sequestration), 18 scenarios, 1990-2050



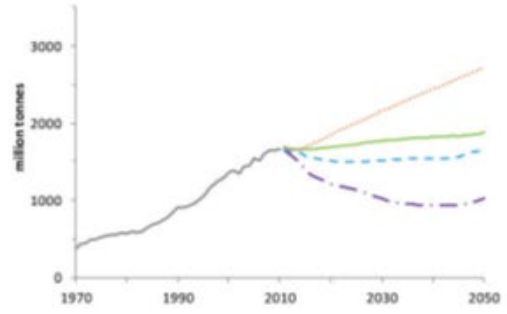
1f Australian Average Working Hours (per person in the workforce), 20 scenarios, 1980-2050



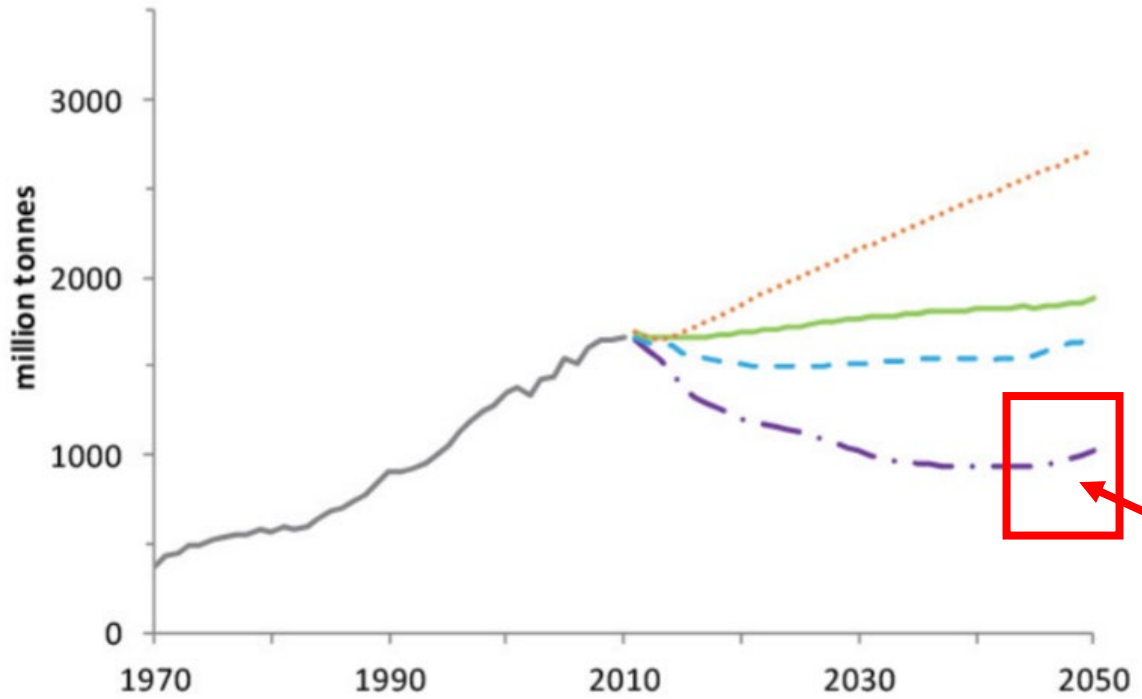
1g Australian material and energy intensive industries, total gross value added, 20 scenarios, 1986-2050



1h Australian Domestic Material Extractions (DME), touchstone scenarios, 1970-2050



1h Australian Domestic Material Extractions (DME), touchstone scenarios, 1970-2050



«Stretch»

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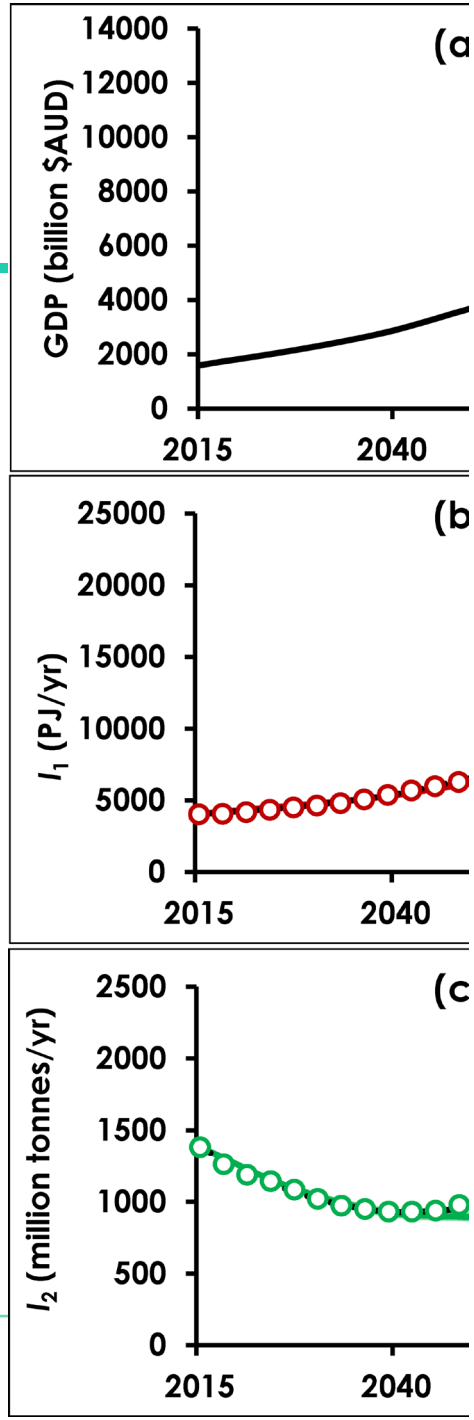
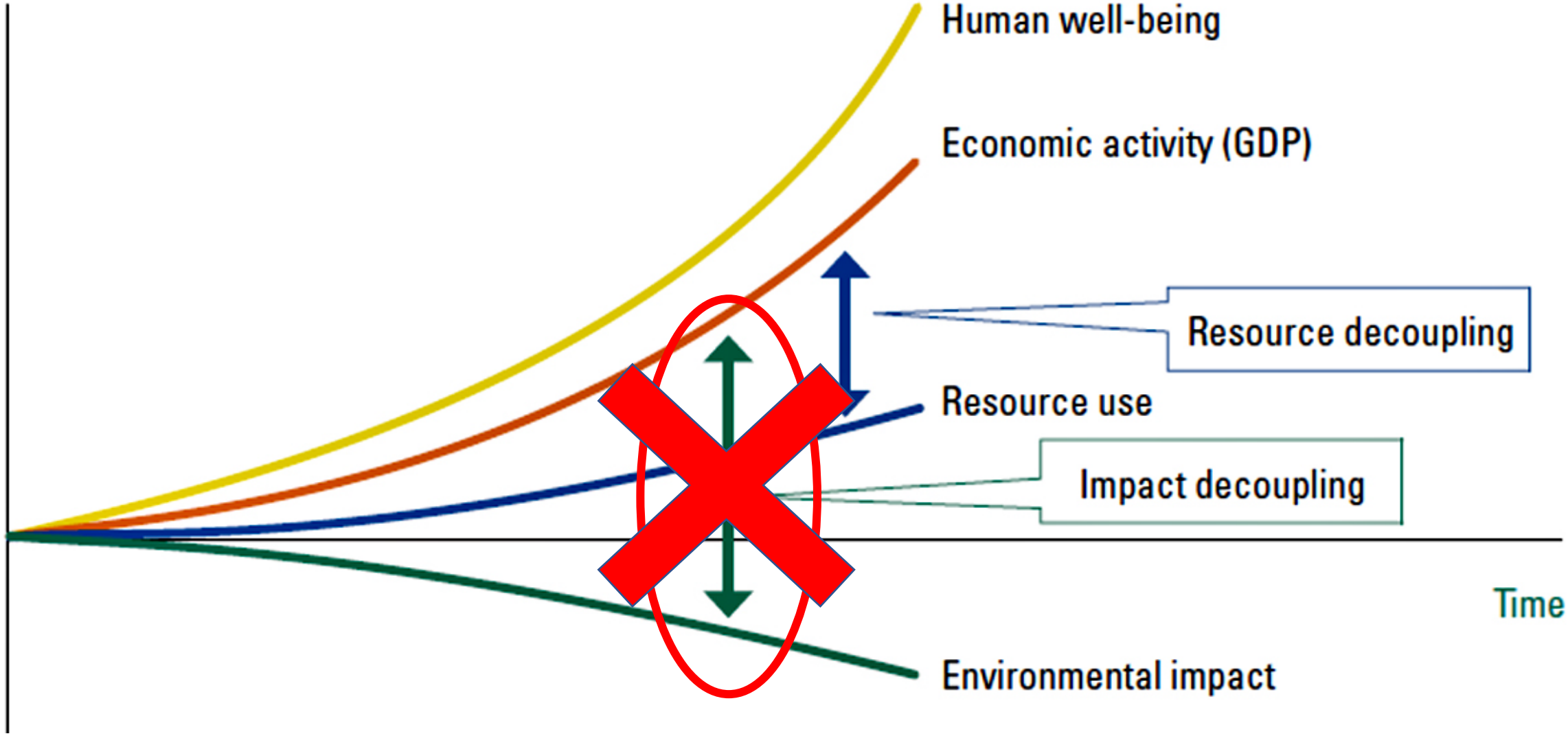


Ward et al, 2016

Det betyr at me ikkje klarar dette:


Human well-being
Economic activity (GDP)
Resource decoupling
Resource use
Impact decoupling
Time
Environmental impact

Kva gjer med då?

Economic Growth

Change in GDP, % per year

Vil ha brei avtale om klimakutt – så lenge veksten får halde fram

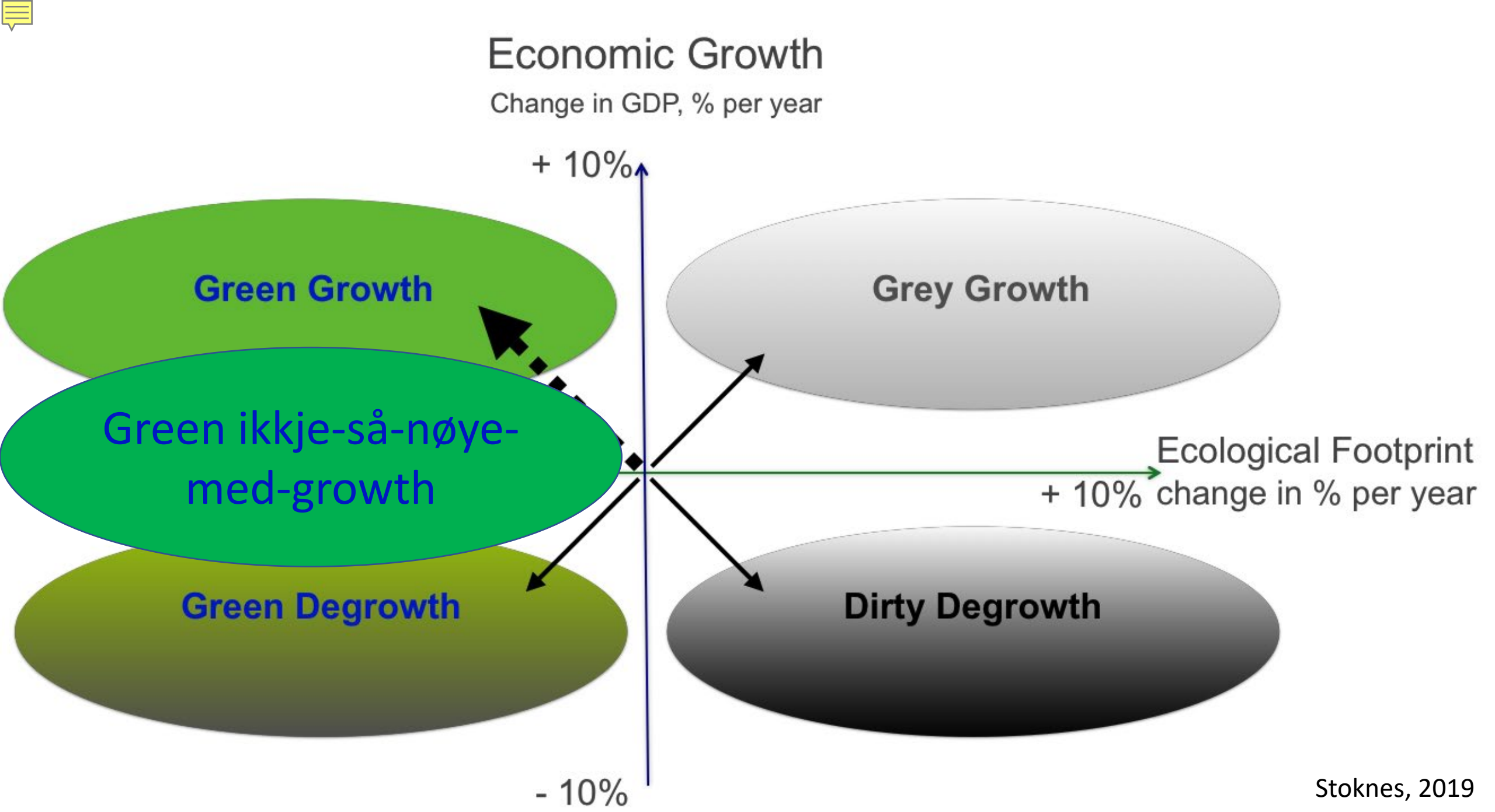
Regjeringa lovar klimatiltak for å nå utsleppsmåla i 2030. Dei tre regjeringspartia vil gjerne ha ein brei politisk avtale om klimakutta. Men det er eitt vilkår: Den økonomiske veksten skal ikkje stoppe opp.

Håvard Grønli
@havardgr
Journalist

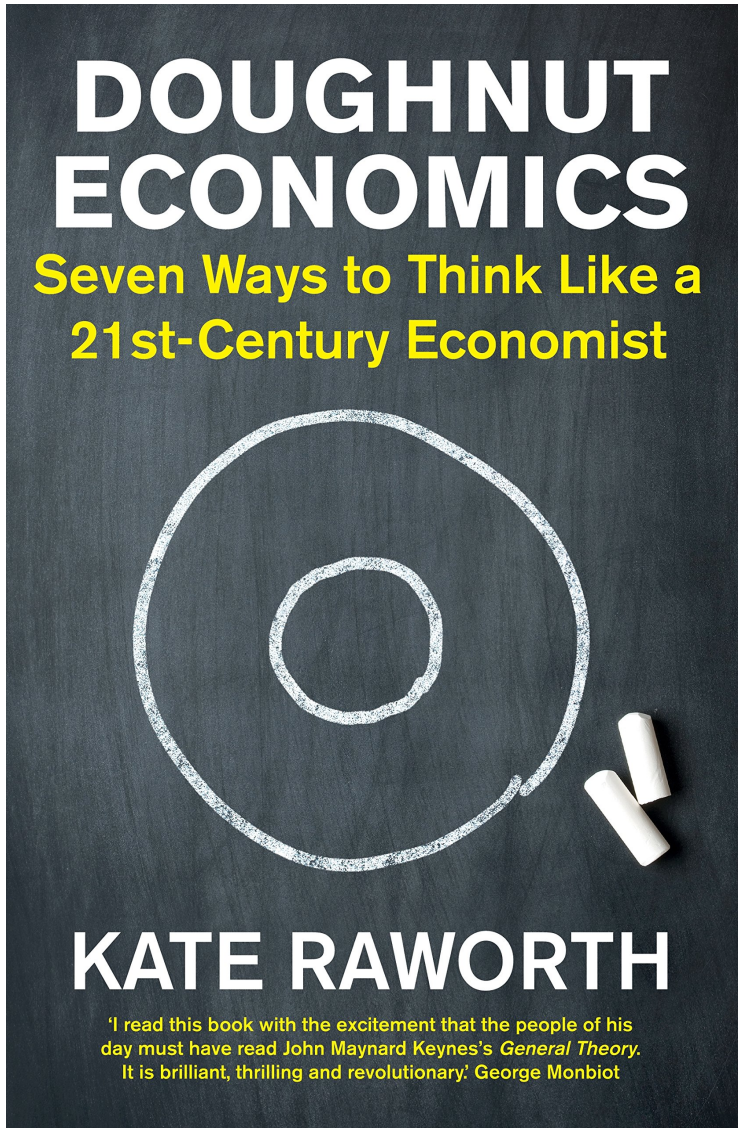
Publisert 31. jan. kl. 05:47

- 10%

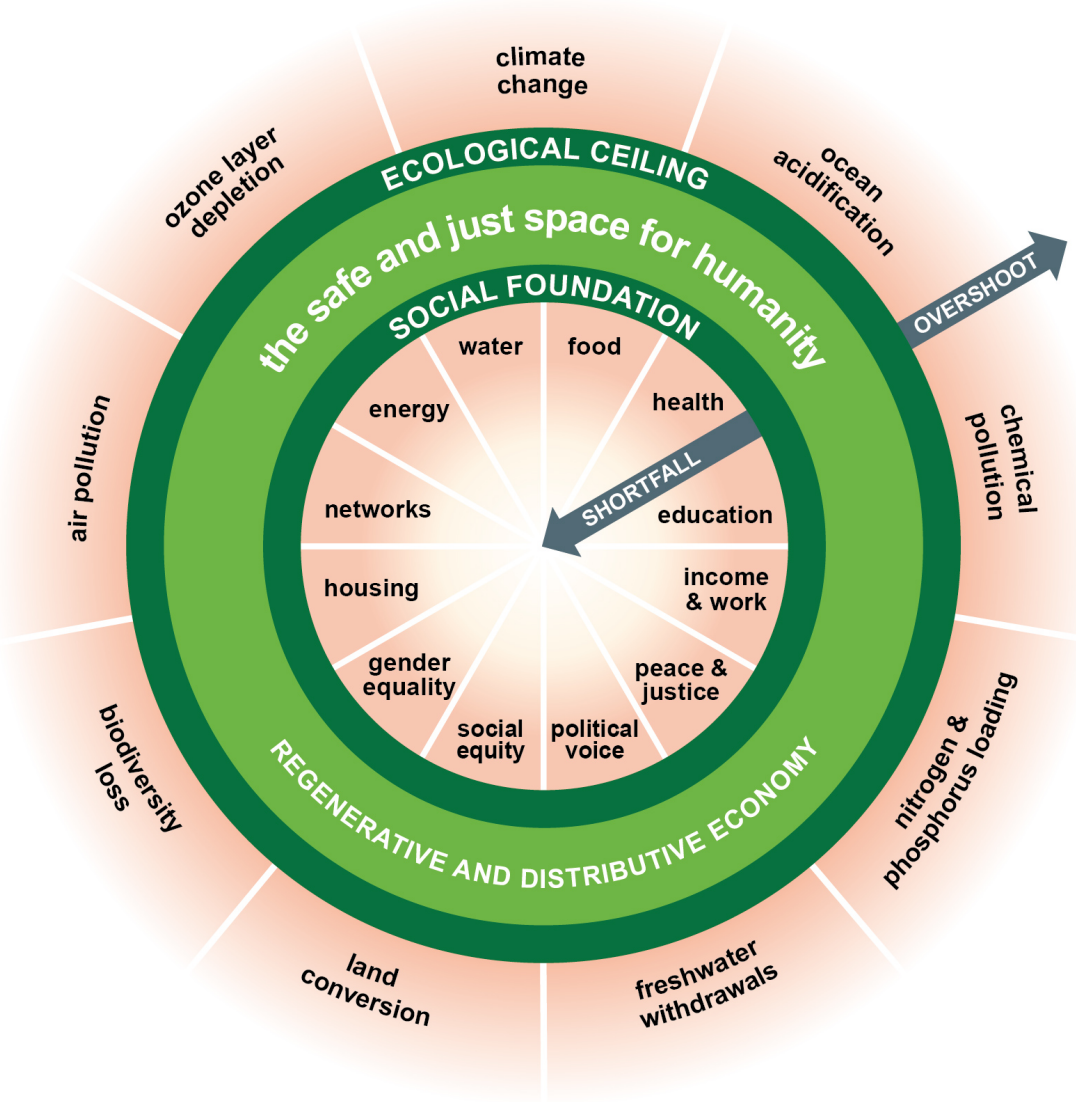
Stoknes, 2019



Stoknes, 2019


DOUGHNUT ECONOMICS
Seven Ways to Think Like a 21st-Century Economist
KATE RAWORTH
'I read this book with the excitement that the people of his day must have read John Maynard Keynes's *General Theory*. It is brilliant, thrilling and revolutionary.' George Monbiot

LANDSFORSKING



Raworth, 2017

Referansar

VESTLANDSFORSKING

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Takk for meg!

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