



# Verdensmålene- synergi, afvejninger og handlemuligheder: hav og land

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## Sustainability Challenge:

**To bring and maintain the human demand for Earth resources to within their supply!**

**Sustainable development is a "need to have" not a "nice to have" ....**



# SDGs are a vision for how we want to share the Earth's resources!



Relevant for all global citizens – not just for those in developing countries





THE FUTURE  
IS NOW  
SCIENCE FOR ACHIEVING  
SUSTAINABLE DEVELOPMENT

 GLOBAL SUSTAINABLE  
DEVELOPMENT REPORT  2019



September 11, 2019

[https://sustainabledevelopment.un.org/content/documents/24797GSDR\\_report\\_2019.pdf](https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019.pdf)



**Few goals are on track  
to be met... and for  
several critical goals, the  
trends are in the wrong  
direction!**

KØBENHAVNS UNIVERSITET

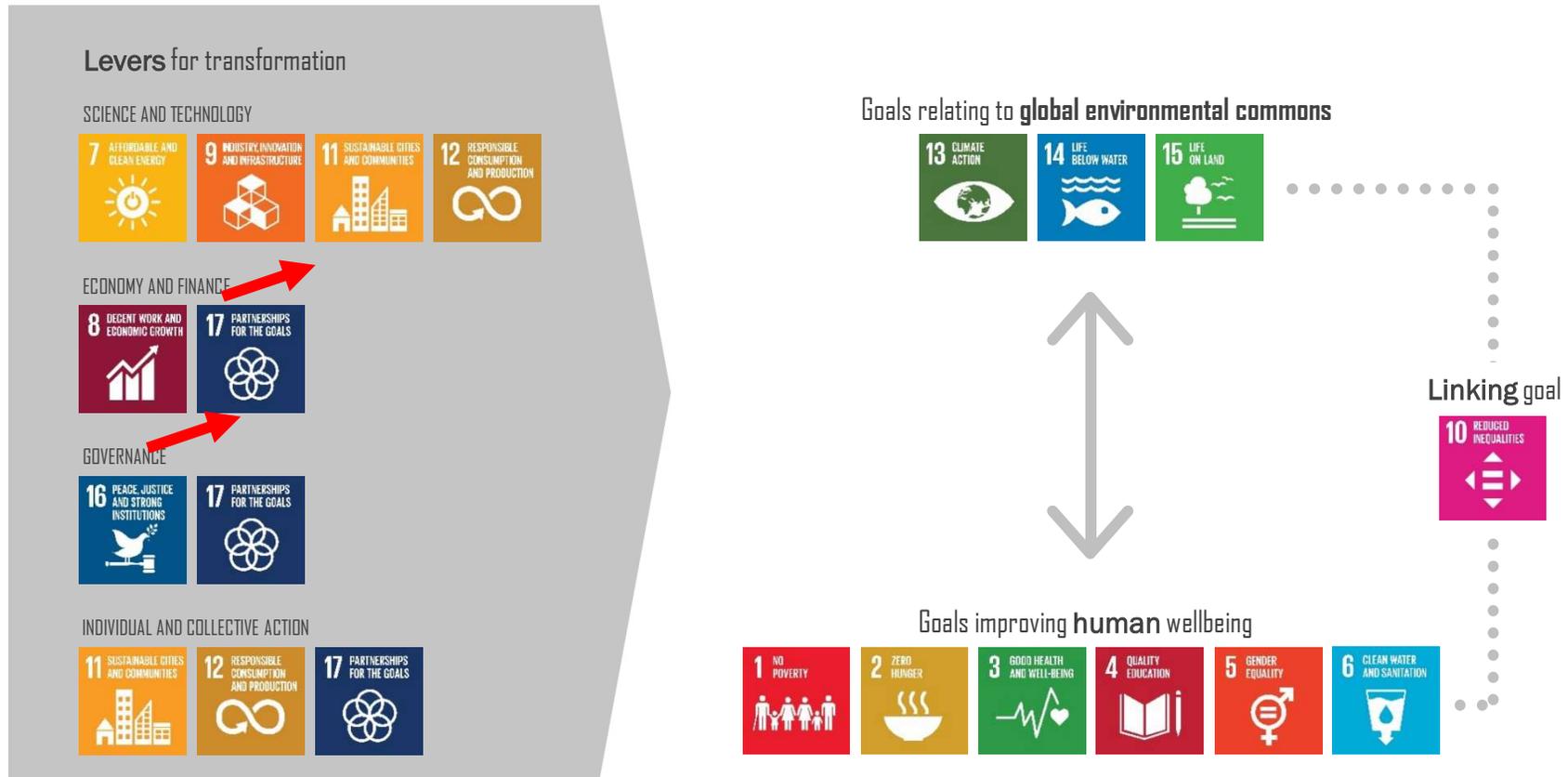


Business-as-usual approaches

GOAL	WITHIN 5%	5-10%	>10%	NEGATIVE LONG-TERM TREND
Goal 1		1.1. Eradicating extreme poverty	1.3. Social protection for all	
Goal 2		2.1. Ending hunger (undernourishment)	2.2. Ending malnutrition (stunting) 2.5. Maintaining genetic diversity 2.a. Investment in agriculture*	2.2. Ending malnutrition (overweight)
Goal 3	3.2. Under-5 mortality 3.2. Neonatal mortality		3.1. Maternal mortality 3.4. Premature deaths from non-communicable diseases	
Goal 4	4.1 Enrolment in primary education	4.6 Literacy among youth and adults	4.2. Early childhood development 4.1 Enrolment in secondary education 4.3 Enrolment in tertiary education	
Goal 5			5.5. Women political participation	
Goal 6		6.2. Access to safe sanitation (open defecation practices)	6.1. Access to safely managed drinking water 6.2. Access to safely managed sanitation services	
Goal 7		7.1. Access to electricity	7.2. Share of renewable energy* 7.3. Energy intensity	
Goal 8			8.7. Use of child labour	
Goal 9		9.5. Enhancing scientific research (R&D expenditure)	9.5. Enhancing scientific research (number of researchers)	
Goal 10			10.c. Remittance costs	Inequality in income**
Goal 11			11.1. Urban population living in slums*	
Goal 12				12.2. Absolute material footprint, and DMC*
Goal 13				Global GHG emissions relative to Paris targets**
Goal 14				14.1. Continued deterioration of coastal waters* 14.4. Overfishing*
Goal 15				15.5. Biodiversity loss* 15.7. Wildlife poaching and trafficking
Goal 16			16.9 universal birth registration *	

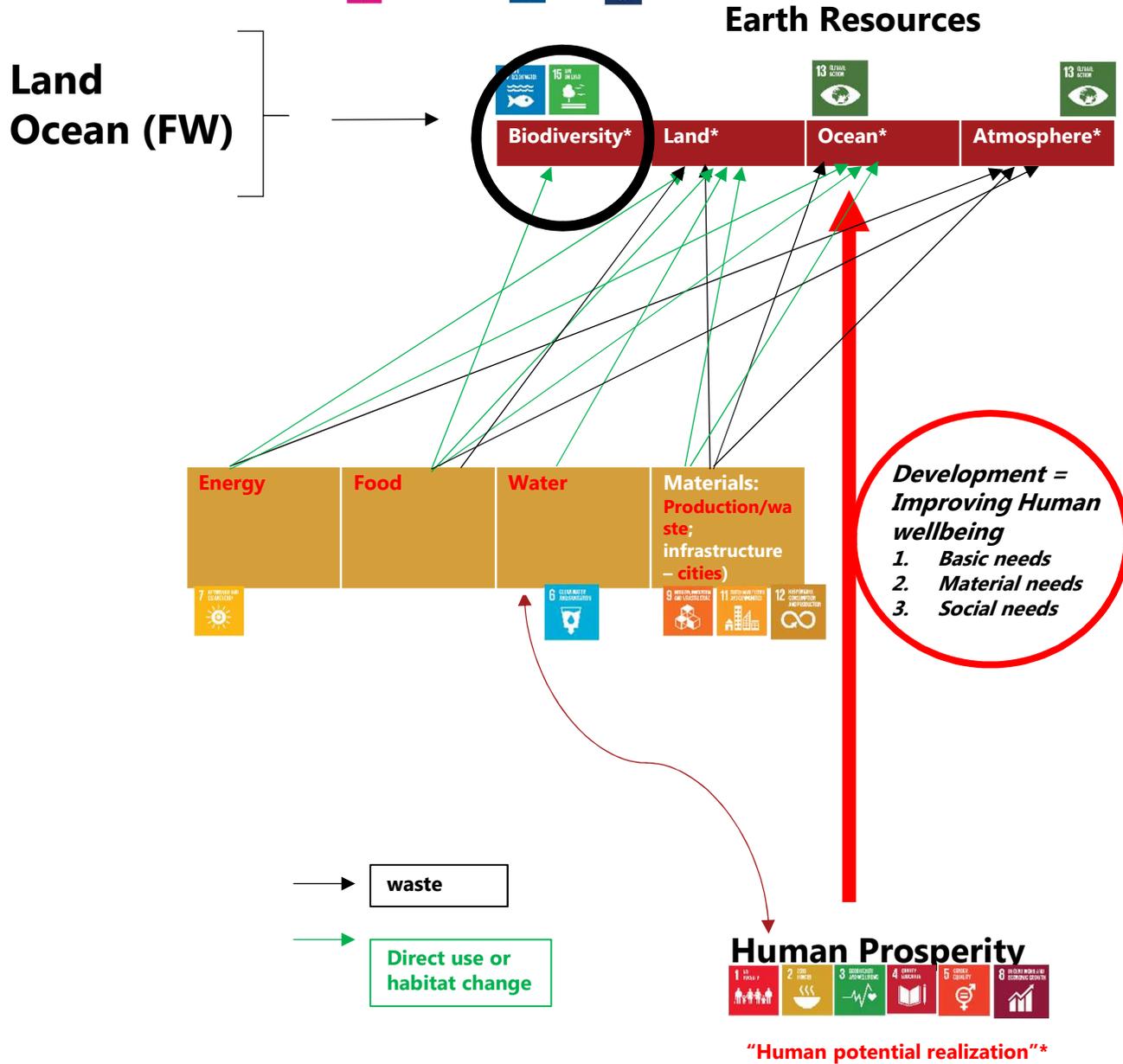
\* target not specified \*\* based on most recently available data

# Interactions between the SDGs

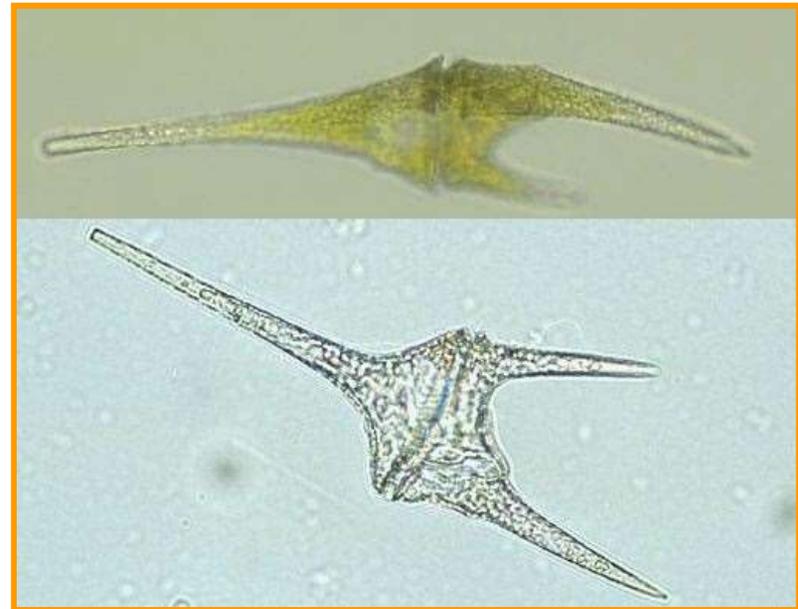


**But we do not “think” in terms of SDGs!**

The challenge of SD is giving all access to the finite resources necessary to allow continued development. This requires [SD 10] and [SD 17].



# *Differences between terrestrial and marine ecosystems:*

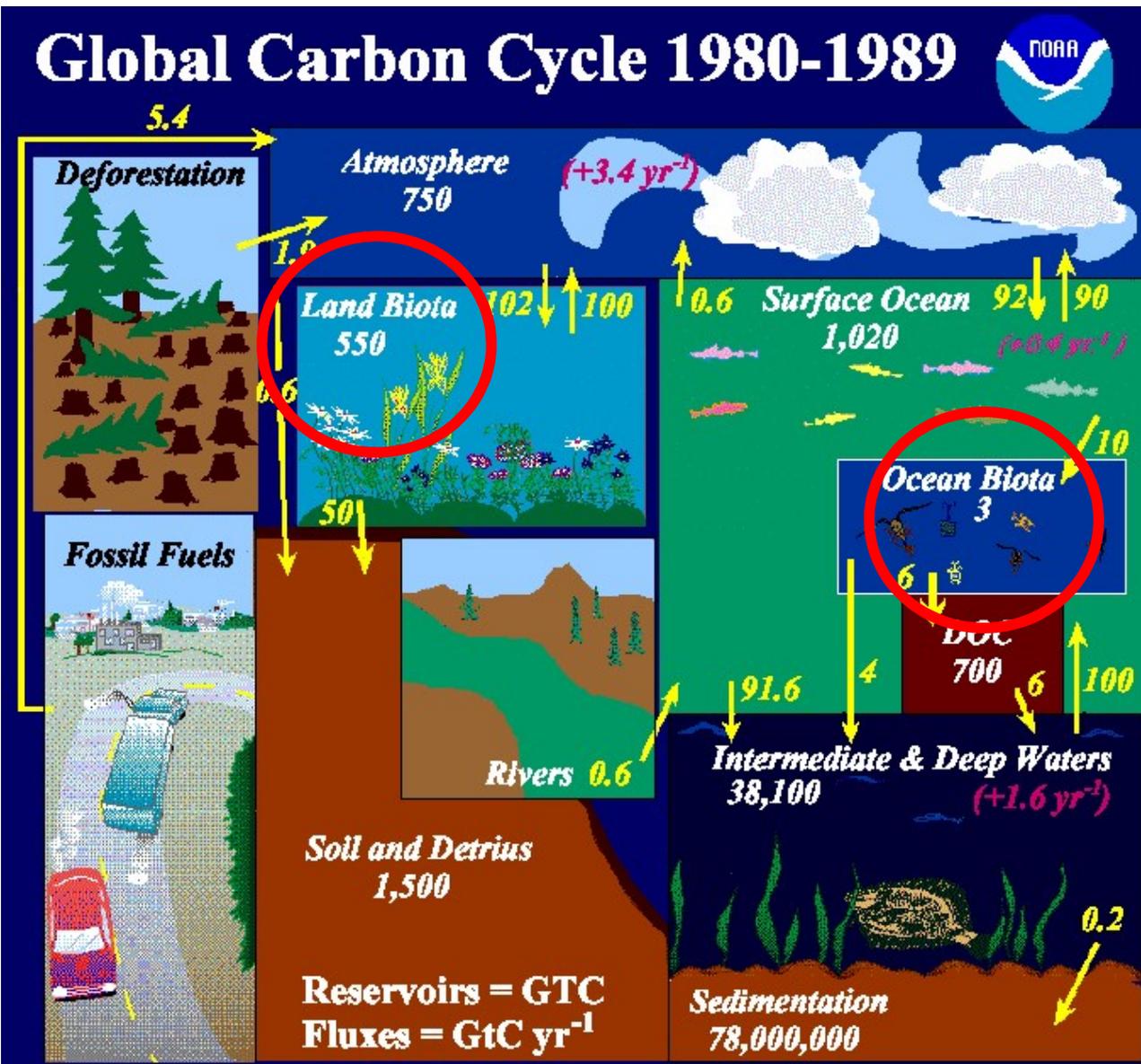


**What structures ecosystems?**

Access to water

vs.

predation

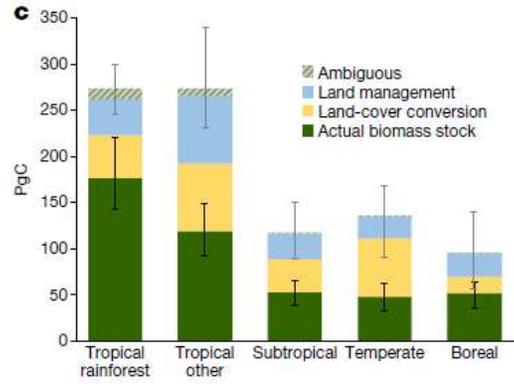
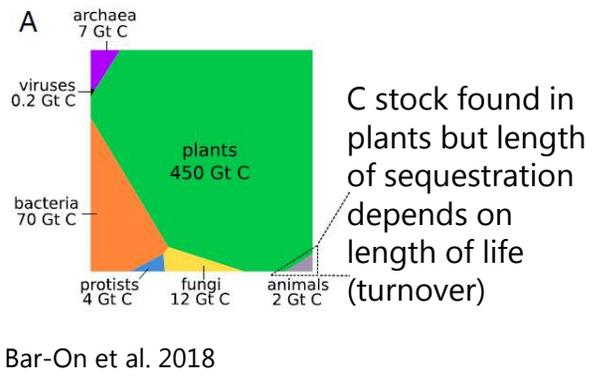


*Structure* of ecosystems controls ocean biosphere interactions in the Earth System, i.e. climate.

# Biodiversity (biosphere) is an important manipulator of elements in the Earth System

(C,N,P,O,S,Si...)

**Land:**  
Biota=  
~500 Gt

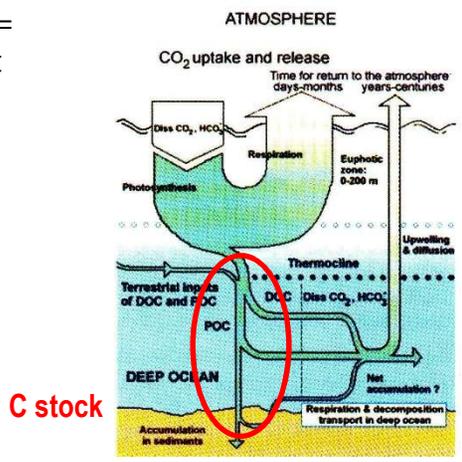


Erb et al., 2018

**Humans have directly changed habitats but ALSO stocks and flows of elements**

**Ocean:**

Biota=  
~3 Gt



Here, it is shape of the food web that is important, i.e. size structure of the phytoplankton – we know this has changed through geological time as a function of climate

**Humans have directly changed (especially) coastal habitats but not stocks;**

**Indirect changes (CC) are changing stocks and flows.**



Seneste ny Se tv Podcast Tip os

SØG Q MENU ≡

## Fra pestilens til protein: Nu bliver søstjerner lavet til grise foder

Der er søstjerner på menuen hos svineproducent Knud Anker Munch. Foderet kommer fra en ny søstjernefabrik i Salling, som både landmæn



## Fiskere tripper for at fange søstjerner: Udnytter havbundens plage til dyrefoder

Søstjerner har i mange år været en plage. Nu står et nyt industrieventyr på spring.

### Ny fabrik forvandler søstjerner til grise foder

29-03-2019

GUDP

Støtte fra det grønne demonstrations- og udviklingsprogram GUDP har banet vejen for verdens første søstjernefabrik, som indvies af finansminister Kristian Jensen fredag den 29. marts. Fabrikken forvandler en irriterende plage for fiskerne til et godt proteinfoder til økologiske svin.

**Søstjerner er ikke sat i verden bare for at irritere fiskere!! ☹️**

Check for updates

# Emergence of a global science–business initiative for ocean stewardship

Henrik Österblom<sup>a,1,2</sup>, Jean-Baptiste Jouffray<sup>a,b,1</sup>, Carl Folke<sup>a,b,c</sup>, and Johan Rockström<sup>a</sup>

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Edited by Bonnie J. McCay, Rutgers, The State University of New Jersey, New Brunswick, NJ, and approved July 14, 2017 (received for review March 16, 2017)

All activities have both **positive** and **negative** interactions with SDGs!



Sustainable development is all about finding the “sweet spot” where synergies are exploited while negative impacts are minimized!

