Bærekraft i prosjekter – fra overordnede mål til praktisk gjennomføring

7. mars @ 08:30 - 13:00

Arena Bærekraft (BK) i Prosjekt Norge

ProsjektNorge 20 ÅRS JUBILEUM
VI UTFORDRER OG UTVIKLER

Arena Bærekraft (BK) i Prosjekt Norge
(vi ønsker flere med …)

Rolf André Bohne

Asmamaw Tagede

Irene Meyer

Freja Rasmussen

Hilde Nordang

Lars Petter Bingh

Amund Geicke

Merete Saugestad

Magnus Sparrevik

Sigurd M. Stray

Og?.....Siri T. Ravndal, Knut Landstad, Runar Hafsteen, Henrik Kristoffersen, ...

ProsjektNorge 20 ÅRS JUBILEUM

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Our Planet – Vårt utrolige hjem-samlingen

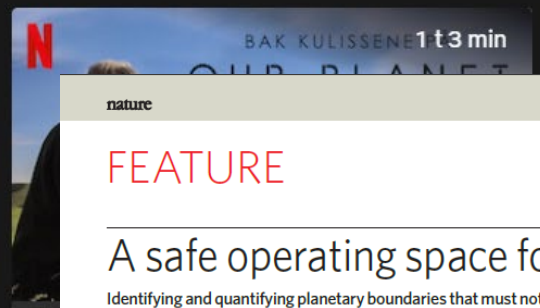
98 % match

7+ 2020

En programleder se[illegible] på sitt eget liv og jordens evolusjonshistorie for å sørge over tapet av urørte steder og presentere en visjon for fremtiden.

7+ 2021

David Attenborough og forskerenJohan Rockström undersøker faren for kollaps i jordens biologiske mangfold og hva som kan gjøres for å unngå denne krisen.



nature Vol 461|24 September 2009

FEATURE

A safe operating space for humanity

Identifying and quantifying planetary boundaries that must not be transgressed could help prevent human activities from causing unacceptable environmental change, argue Johan Rockström and colleagues.

ROAD TO COPENHAGEN

SUMMARY

- New approach proposed for defining preconditions for human development
- Crossing certain biophysical thresholds could have disastrous consequences for humanity
- Three of nine interlinked planetary boundaries have already been overstepped

Although Earth has undergone many periods of significant environmental change, the planet's environment has been unusually stable for the past 10,000 years[1–3]. This period of stability — known to geologists as the Holocene — has seen human civilizations arise, develop and thrive. Such stability may now be under threat. Since the Industrial Revolution, a new era has arisen, the Anthropocene[4], in which human actions have become the main driver of global environmental change[5]. This could see human activities push the Earth system outside the stable environmental state of the Holocene, with consequences that are detrimental or even catastrophic for large parts of the world.

During the Holocene, environmental change occurred naturally and Earth's regulatory capacity maintained the conditions that enabled human development. Regular temperatures, freshwater availability and biogeochemical flows all stayed within a relatively narrow range. Now, largely because of a rapidly growing reliance on fossil fuels and industrialized forms of agriculture, human activities have reached a level that could damage the systems that keep Earth in the desirable Holocene state. The result could be irreversible and, in some cases, abrupt environmental change, leading to a state less conducive to human development[6]. Without pressure from humans, the Holocene is expected to continue for at least several thousands of years[7].

Planetary boundaries

To meet the challenge of maintaining the Holocene state, we propose a framework based on 'planetary boundaries'. These boundaries define the safe operating space for humanity with respect to the Earth system and are associated with the planet's biophysical subsystems or processes. Although Earth's complex systems sometimes respond smoothly to changing pressures, it seems that this will prove to be the exception rather than the rule. Many subsystems of Earth react in a nonlinear, often abrupt, way, and are particularly sensitive around threshold levels of certain key variables. If these thresholds are crossed, then important subsystems, such as a monsoon system, could shift into a new state, often with deleterious or potentially even disastrous consequences for humans[8,9].

Most of these thresholds can be defined by a critical value for one or more control variables, such as carbon dioxide concentration. Not all processes or subsystems on Earth have well-defined thresholds, although human actions that undermine the resilience of such processes or subsystems — for example, land and water degradation — can increase the risk that thresholds will also be crossed in other processes, such as the climate system.

We have tried to identify the Earth-system processes and associated thresholds which, if crossed, could generate unacceptable environmental change. We have found nine such processes for which we believe it is necessary to define planetary boundaries: climate change; rate of biodiversity loss (terrestrial and marine); interference with the nitrogen and phosphorus cycles; stratospheric ozone depletion; ocean acidification; global freshwater use; change in land use; chemical pollution; and atmospheric aerosol loading (see Fig. 1 and Table).

In general, planetary boundaries are values for control variables that are either at a 'safe' distance from thresholds — for processes with evidence of threshold behaviour — or at dangerous levels — for processes without

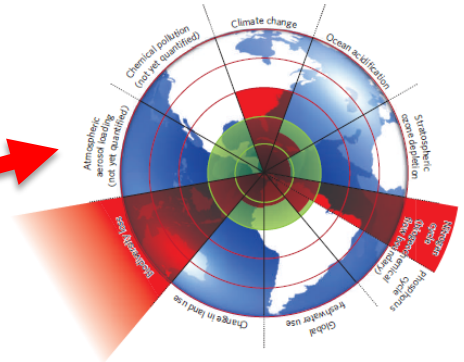
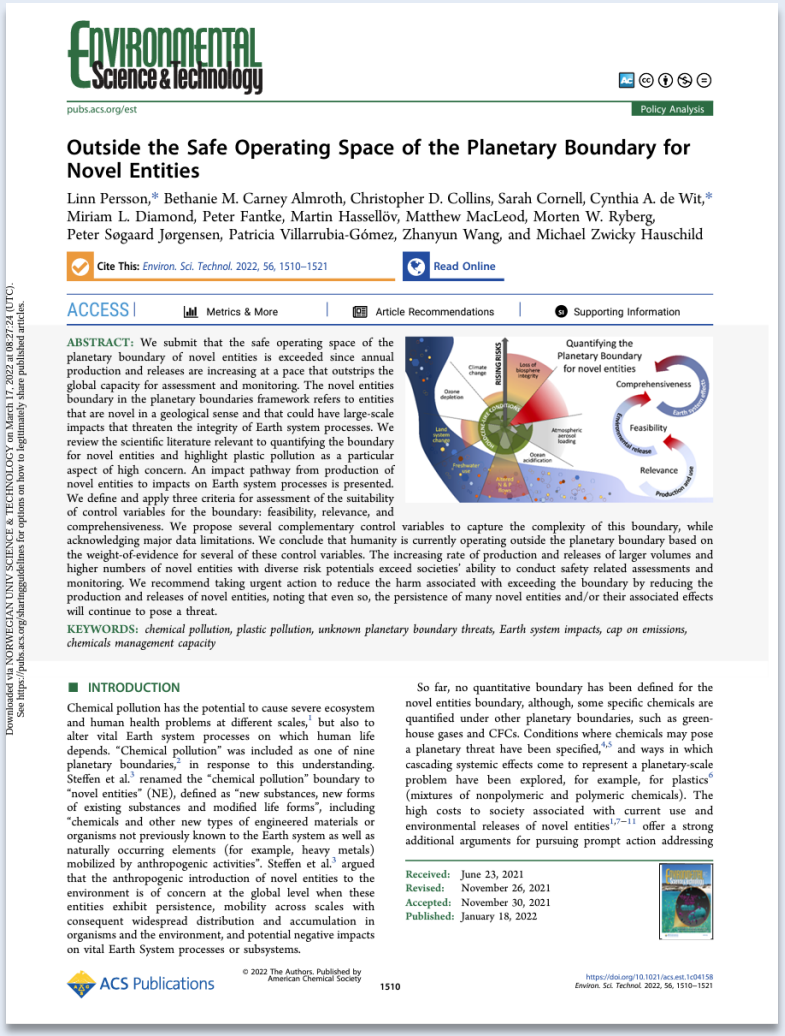


Figure 1 | Beyond the boundary. The inner green shading represents the proposed safe operating space for nine planetary systems. The red wedges represent an estimate of the current position for each variable. The boundaries in three systems (rate of biodiversity loss, climate change and human interference with the nitrogen cycle), have already been exceeded.

PLANETARY BOUNDARIES

Earth-system process	Parameters	Proposed boundary	Current status	Pre-industrial value
Climate change	(i) Atmospheric carbon dioxide concentration (parts per million by volume)	350	387	280
	(ii) Change in radiative forcing (watts per metre squared)	1	1.5	0
Rate of biodiversity loss	Extinction rate (number of species per million species per year)	10	>100	0.1–1
Nitrogen cycle (part of a boundary with the phosphorus cycle)	Amount of N_2 removed from the atmosphere for human use (millions of tonnes per year)	35	121	0
Phosphorus cycle (part of a boundary with the nitrogen cycle)	Quantity of P flowing into the oceans (millions of tonnes per year)	11	8.5–9.5	~1
Stratospheric ozone depletion	Concentration of ozone (Dobson unit)	276	283	290
Ocean acidification	Global mean saturation state of aragonite in surface sea water	2.75	2.90	3.44
Global freshwater use	Consumption of freshwater by humans (km^3 per year)	4,000	2,600	415
Change in land use	Percentage of global land cover converted to cropland	15	11.7	Low
Atmospheric aerosol loading	Overall particulate concentration in the atmosphere, on a regional basis		To be determined	
Chemical pollution	For example, amount emitted to, or concentration of persistent organic pollutants, plastics, endocrine disrupters, heavy metals and nuclear waste in, the global environment, or the effects on ecosystem and functioning of Earth system thereof		To be determined	

2022 update on Planetary Boundaries



Environmental Science & Technology

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Policy Analysis

Outside the Safe Operating Space of the Planetary Boundary for Novel Entities

Linn Persson,* Bethanie M. Carney Almroth, Christopher D. Collins, Sarah Cornell, Cynthia A. de Wit,* Miriam L. Diamond, Peter Fantke, Martin Hassellöv, Matthew MacLeod, Morten W. Ryberg, Peter Søgaard Jørgensen, Patricia Villarrubia-Gómez, Zhanyun Wang, and Michael Zwicky Hauschild

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ABSTRACT: We submit that the safe operating space of the planetary boundary of novel entities is exceeded since annual production and releases are increasing at a pace that outstrips the global capacity for assessment and monitoring. The novel entities boundary in the planetary boundaries framework refers to entities that are novel in a geological sense and that could have large-scale impacts that threaten the integrity of Earth system processes. We review the scientific literature relevant to quantifying the boundary for novel entities and highlight plastic pollution as a particular aspect of high concern. An impact pathway from production of novel entities to impacts on Earth system processes is presented. We define and apply three criteria for assessment of the suitability of control variables for the boundary: feasibility, relevance, and comprehensiveness. We propose several complementary control variables to capture the complexity of this boundary, while acknowledging major data limitations. We conclude that humanity is currently operating outside the planetary boundary based on the weight-of-evidence for several of these control variables. The increasing rate of production and releases of larger volumes and higher numbers of novel entities with diverse risk potentials exceed societies' ability to conduct safety related assessments and monitoring. We recommend taking urgent action to reduce the harm associated with exceeding the boundary by reducing the production and releases of novel entities, noting that even so, the persistence of many novel entities and/or their associated effects will continue to pose a threat.

KEYWORDS: *chemical pollution, plastic pollution, unknown planetary boundary threats, Earth system impacts, cap on emissions, chemicals management capacity*

INTRODUCTION

Chemical pollution has the potential to cause severe ecosystem and human health problems at different scales,[1] but also to alter vital Earth system processes on which human life depends. "Chemical pollution" was included as one of nine planetary boundaries,[2] in response to this understanding. Steffen et al.[3] renamed the "chemical pollution" boundary to "novel entities" (NE), defined as "new substances, new forms of existing substances and modified life forms", including "chemicals and other new types of engineered materials or organisms not previously known to the Earth system as well as naturally occurring elements (for example, heavy metals) mobilized by anthropogenic activities". Steffen et al.[3] argued that the anthropogenic introduction of novel entities to the environment is of concern at the global level when these entities exhibit persistence, mobility across scales with consequent widespread distribution and accumulation in organisms and the environment, and potential negative impacts on vital Earth System processes or subsystems.

So far, no quantitative boundary has been defined for the novel entities boundary, although, some specific chemicals are quantified under other planetary boundaries, such as greenhouse gases and CFCs. Conditions where chemicals may pose a planetary threat have been specified,[4,5] and ways in which cascading systemic effects come to represent a planetary-scale problem have been explored, for example, for plastics[6] (mixtures of nonpolymeric and polymeric chemicals). The high costs to society associated with current use and environmental releases of novel entities[1,7−11] offer a strong additional arguments for pursuing prompt action addressing

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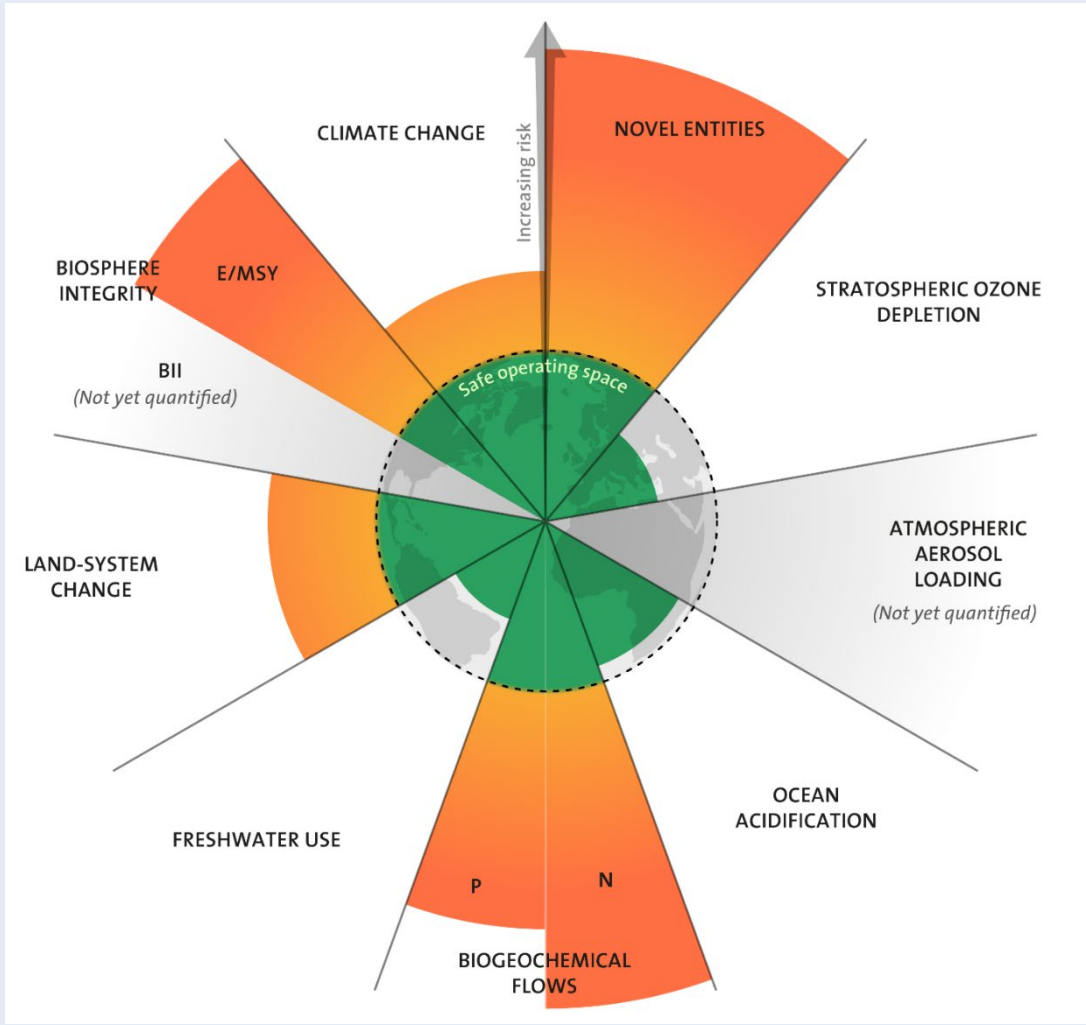

Mål for dagen

Målet med seminaret er å trekke bærekraftfokuset ned fra overordnede mål til praktisk gjennomføring i prosjekter. Da blir det naturlig med en kobling mellom ambisjoner, økonomi og det muliges kunst.

NTNU, Sweco, Boston Consulting Group, Sweco, Asplan Viak, Statsbygg, Sparbank 1 Sørøst-Norge og Veidekke vil delta med deling av sine kunnskaper og erfaringer.

08-30 Kaffe og intro

08.50 – 09.00 Amund Geicke, Sweco. Velkommen til Sweco

09.00 – 09.10 Rolf André Bohne, Prosjekt Norge, Velkommen til bærekraftseminar. Intro av programmet.

09.10 – 09.30 Christian Haslestad, Boston Consulting Group. Overordnet perspektiv og strategiske veivalg.

09.35 – 09.55 Merete Saugestad, Sweco. Presentasjon av Sweco + Ambisjonsnivå: Fra tidligfase til utførelse – hva har skjedd?

10.00 – 10.20 Bjørge Sandberg-Kristoffersen, Asplan Viak. Gjenbruk i prosjekter.

Pause

10.40 – 11.00 Lars Petter Bingh, Statsbygg. Krav om hvordan de jobber i prosjekt.

11.05 – 11.25 Jørund Buen, SpareBank 1 Sørøst-Norge, Grønn finansiering – kravene vil skjerpes og mulighetene må styre.

11.30 – 11.50 Bjørnar Gullbrekken, Veidekke. Har alle prosjekter for lave ambisjoner om bærekraft? Målstyring løsning for oppnåelse av bærekraft i prosjektet.

11.50 Diskusjon i grupper og plenum

12.10 Lunsj

13.00 Vel hjem!