

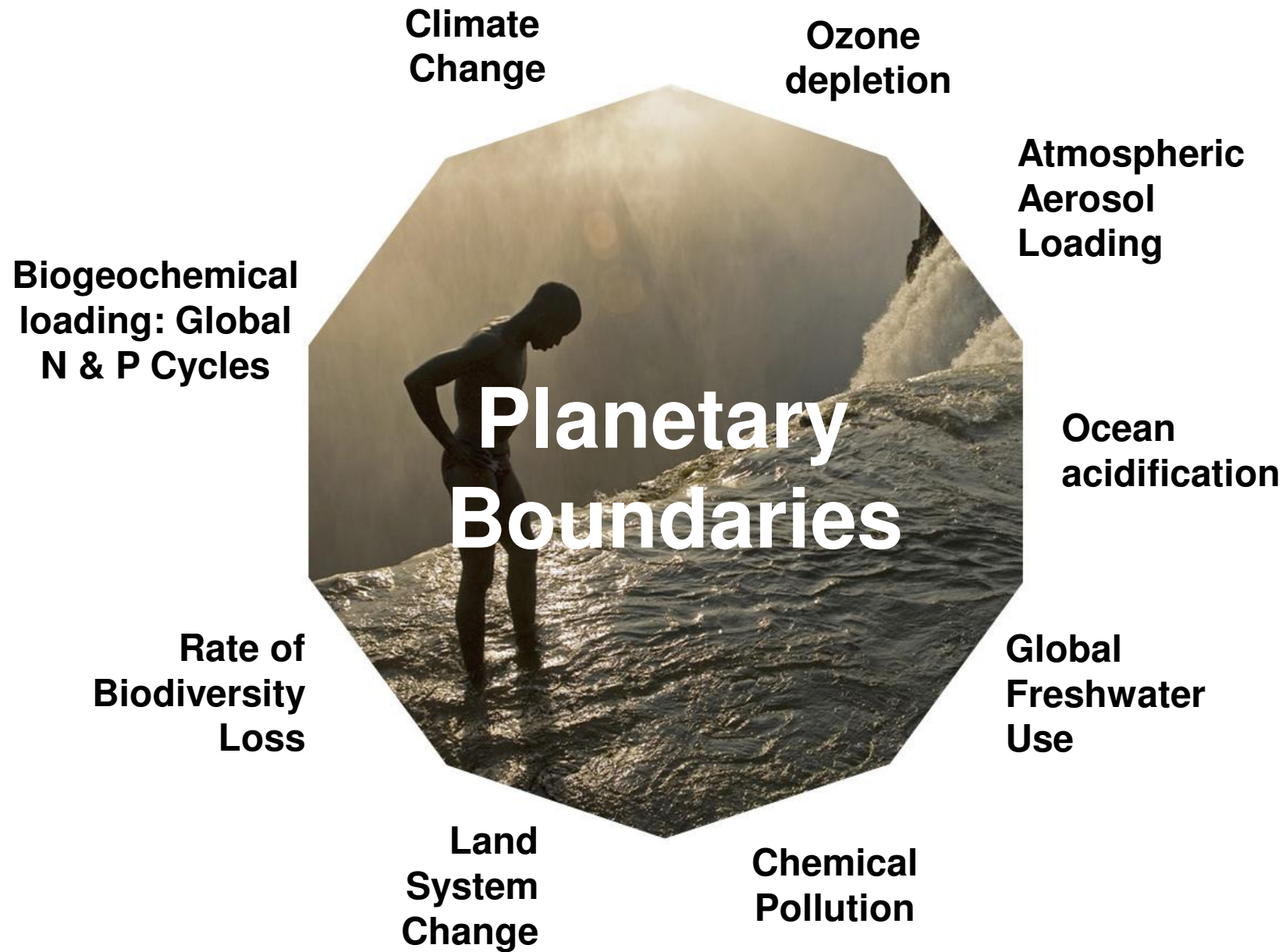


# The Earth System, the Great Acceleration and Planetary Boundaries



**Will Steffen**

## Part 2 – presentation for AECLA's consumption workshop





# PB Conceptual Framework

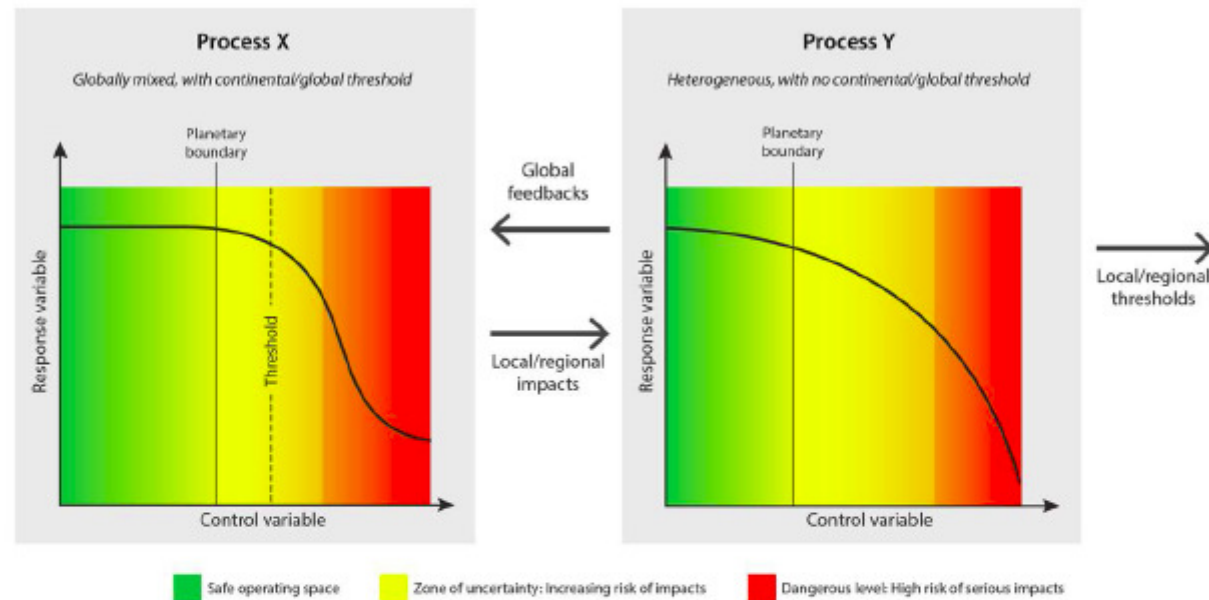


Fig. 1. The conceptual framework for the planetary boundaries approach, showing the safe operating space, the zone of uncertainty, the position of the threshold (where one is likely to exist) and the area of high risk. Modified from (1).

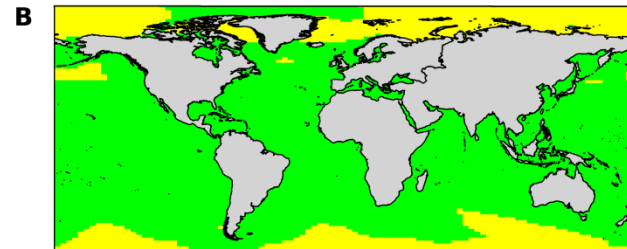


# Ocean Acidification boundary

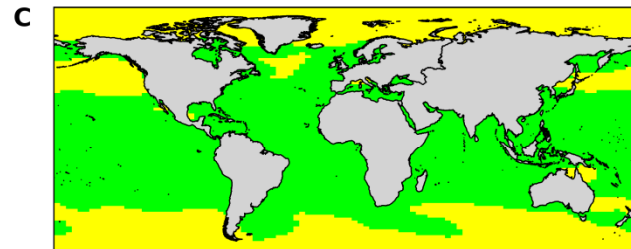
280 ppm



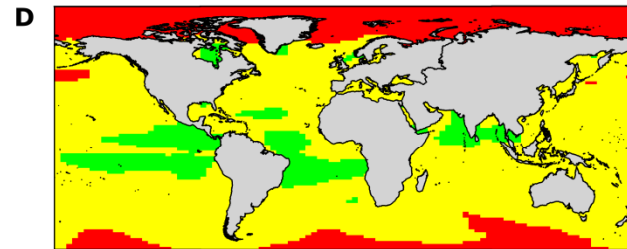
380 ppm



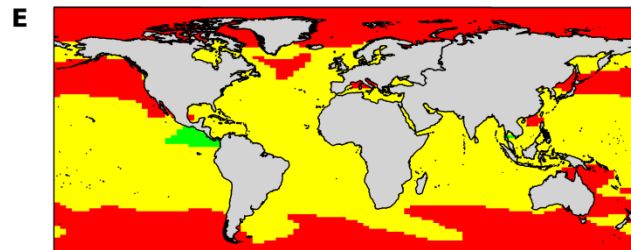
400 ppm



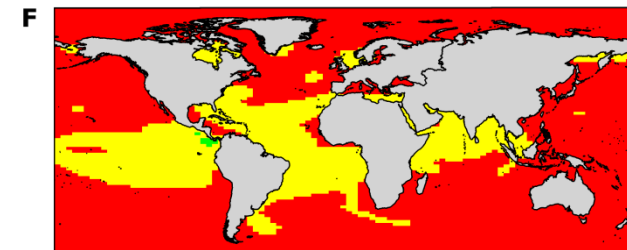
450 ppm



500 ppm

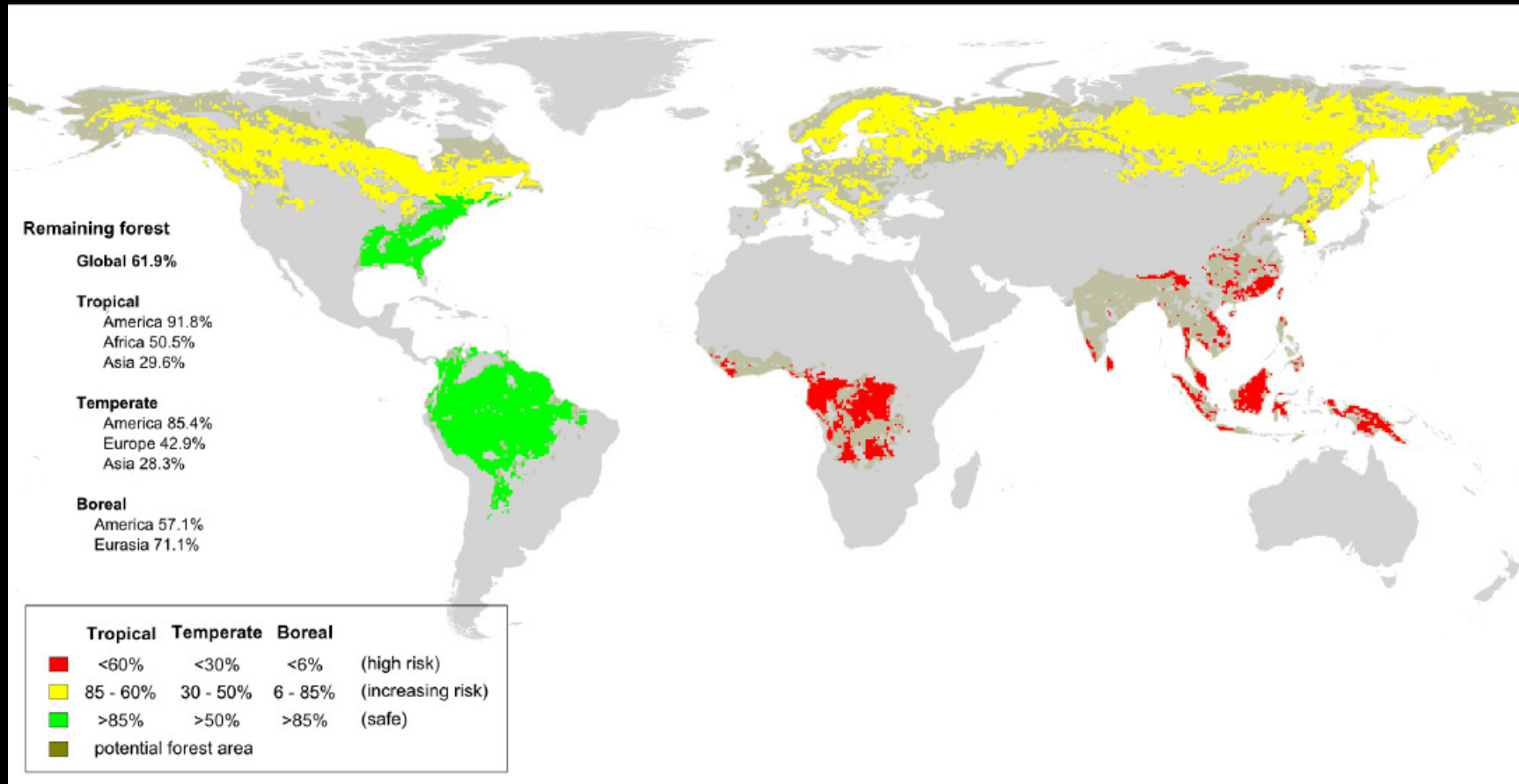


550 ppm



The Planetary Boundaries framework also opens the door for discussion of equitable distribution of resources...

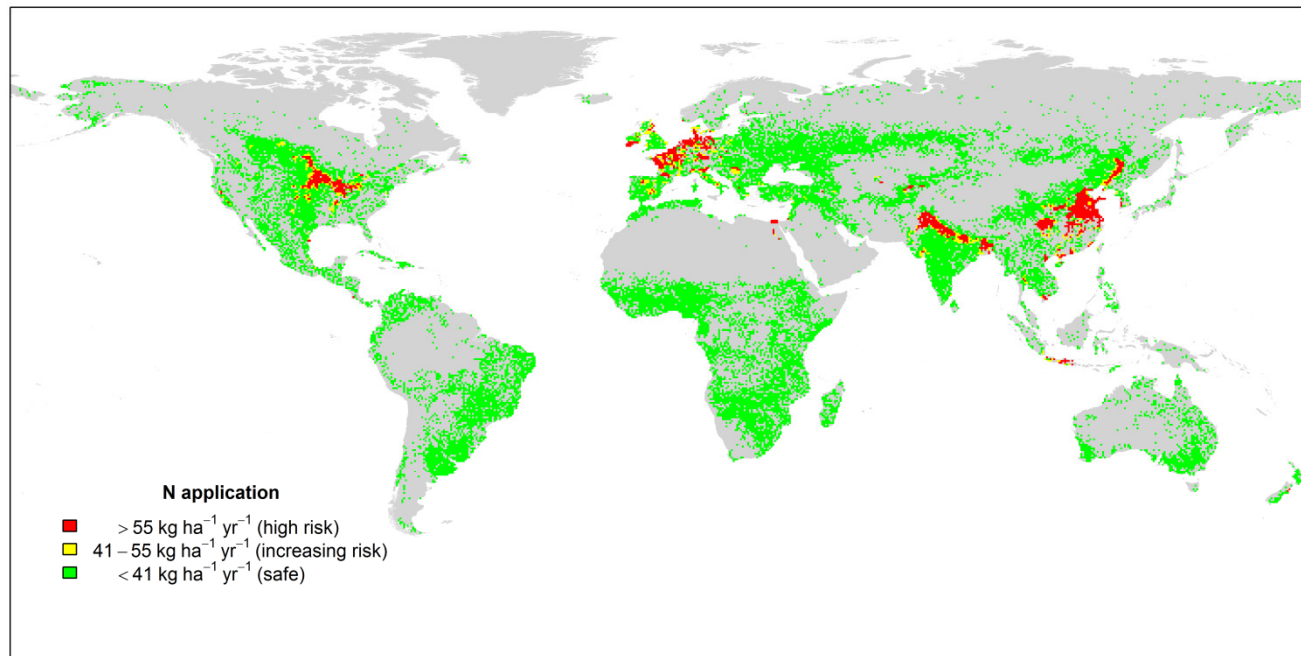
# Land-system change PB: Amount of forest cover remaining





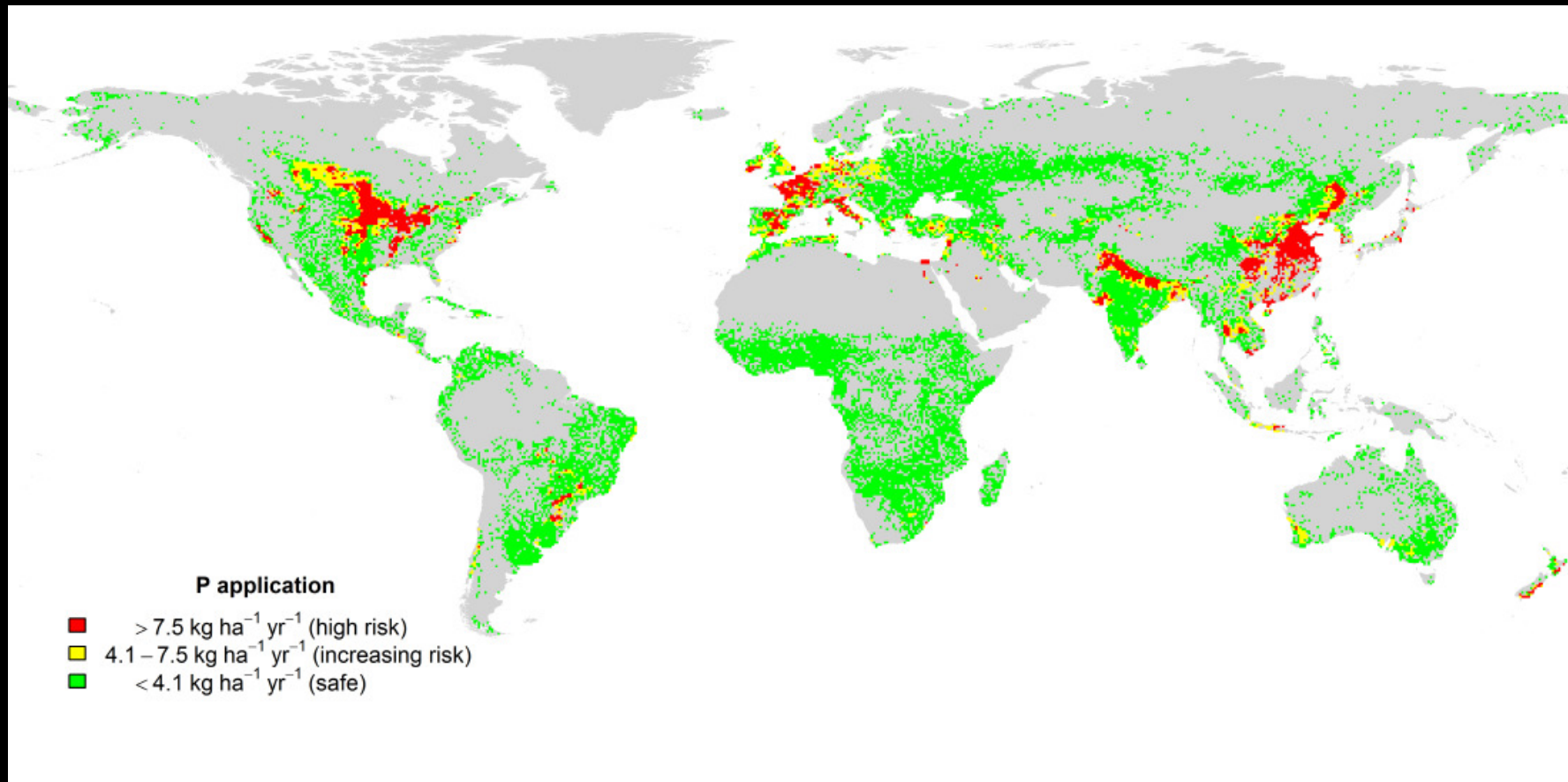
# Biogeochemical flows PB:

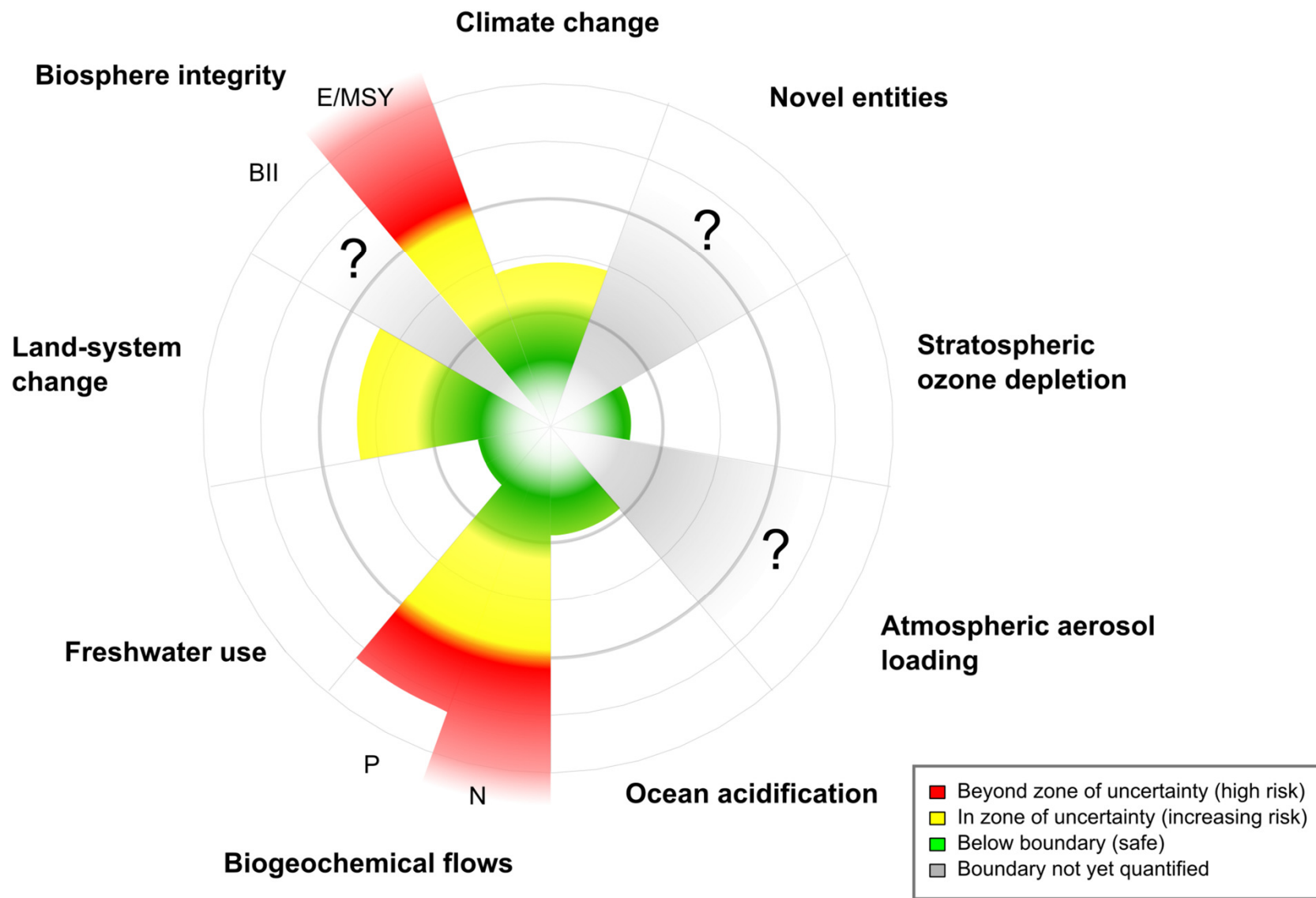
## Application of fertilizer N to soils



# Biogeochemical flows PB:

## Application of fertilizer P to soils







## **Planetary Boundaries:**

*a potentially valuable  
framework for guiding  
policy directed at  
achieving sustainable  
development*

- **OECD Environmental Outlook 2012**
- **Global Energy Assessment 2012**
- **UNEP 2012**
- **UN High-level Panel on Global Sustainability (GSP) 2012**
- **UN Sustainable Development Solutions Network**
- **World Economic Forum 2013**
- **World Economic Forum 2015**
- ...



PBs are scientifically-based levels of human perturbation of the ES beyond which ES functioning may be significantly altered.

**The PB framework does not dictate how societies should develop.**

By identifying a safe operating space for humanity on Earth, the PB framework can make a valuable contribution to decision-makers in charting desirable courses for societal development and they (or something like them) are essential for SDGs.

Prof Katherine Richardson  
University of Copenhagen



We shouldn't be trying to manage the Earth System. We should focus on managing our relationship to the Earth System. That is, we should manage ourselves and our activities.



## Was the Anthropocene anticipated?

Clive Hamilton<sup>1</sup> and Jacques Grinevald<sup>2</sup>

### Abstract

Various authors have identified 'precursors' of the new concept of the Anthropocene, with most frequent reference made to Antonio Stoppani, Vladimir Vernadsky and Pierre Teilhard de Chardin. The effect, intended or otherwise, of finding forerunners is to deflate the significance of the proposed new geological epoch. We argue there were no precursors to the notion of the Anthropocene, and that there could not have been because the concept (put forward in the year 2000) is an outgrowth of the recent interdisciplinary understanding of the Earth as an evolving planet inaugurated in the 1980s by the International Geosphere Biosphere

The Anthropocene Review

1-14

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There are no precursors to the concept of the Anthropocene (e.g., “the age of man”; “the face of the Earth”. The Anthropocene cannot be equated to impact on the (global) environment.

“The Anthropocene represents a radical rupture with all evolutionary ideas in human and Earth history.”

Dispels the notion of a progressive and linear evolutionary advance of human societies to a higher stage

Prof Dipash Chakrabarty  
University of Chicago



## Homo-centric v. Zoe-centric (human-centric v. life-centric)

Contemporary society is based on a homo-centric approach, but the Anthropocene demands a zoe-centric approach.

Prof Carl Folke  
Stockholm Resilience Centre  
and  
Beijer Institute of Ecological Economics



On humanity's challenge in the 21<sup>st</sup> century:

“Reconnect to the biosphere”



“I just love life”



Sonja Steffen  
AusAID volunteer  
Bangladesh 2013-2014



*We're only here for a short amount of time to do what we've been put here to do, which is to look after the country. We're only a tool in the cycle of things. ...(we) go out into the world and help keep the balance of nature. It's a big cycle of living with the land, and then eventually going back to it....*

Vilma Webb, Noongar People, Australian Aborigines, from: 'Elders: Wisdom from Australia's Indigenous Leaders'





