

A SAFE AND JUST SPACE FOR HUMANITY

Exploring planetary and social boundaries

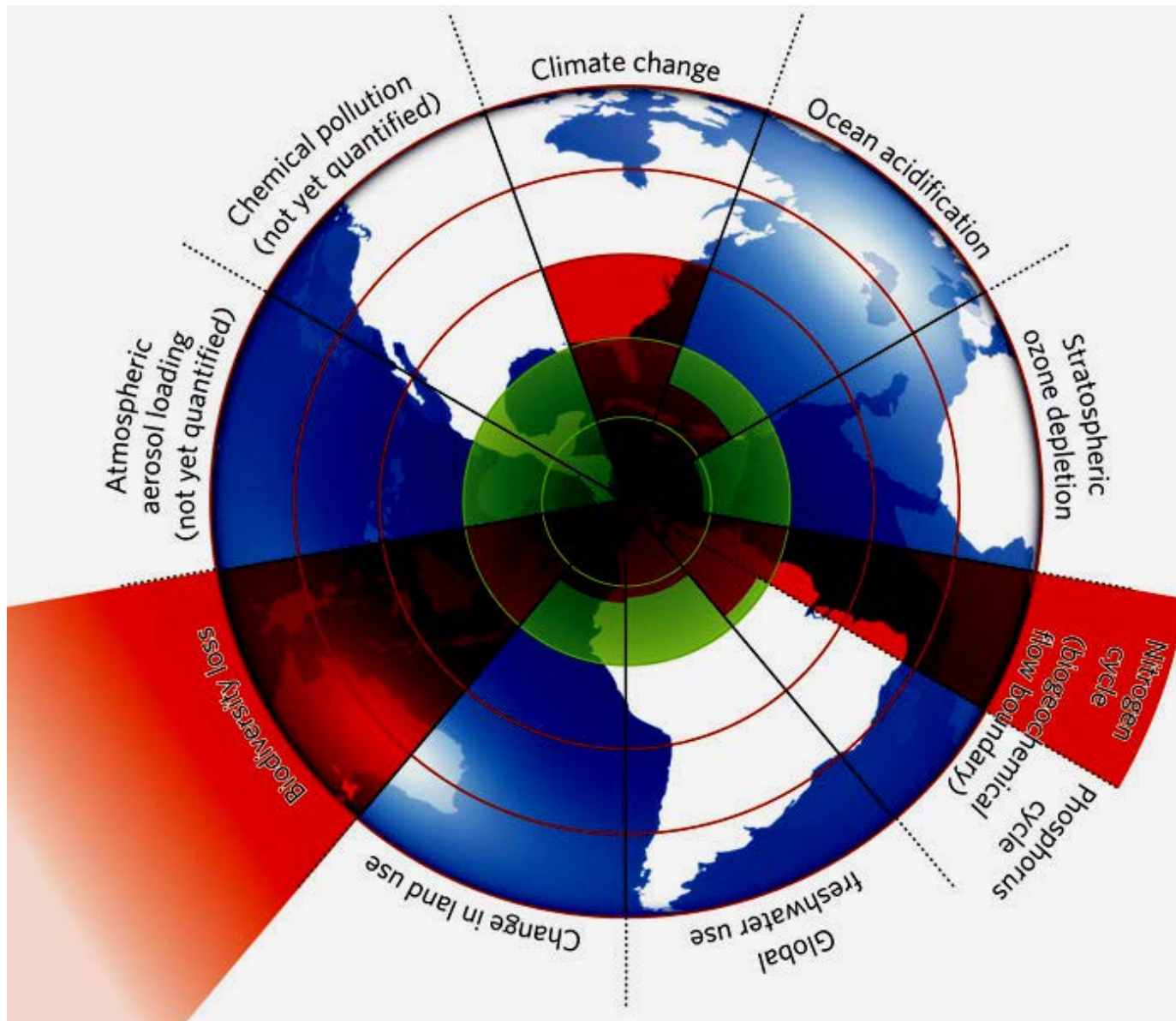
Kate Raworth

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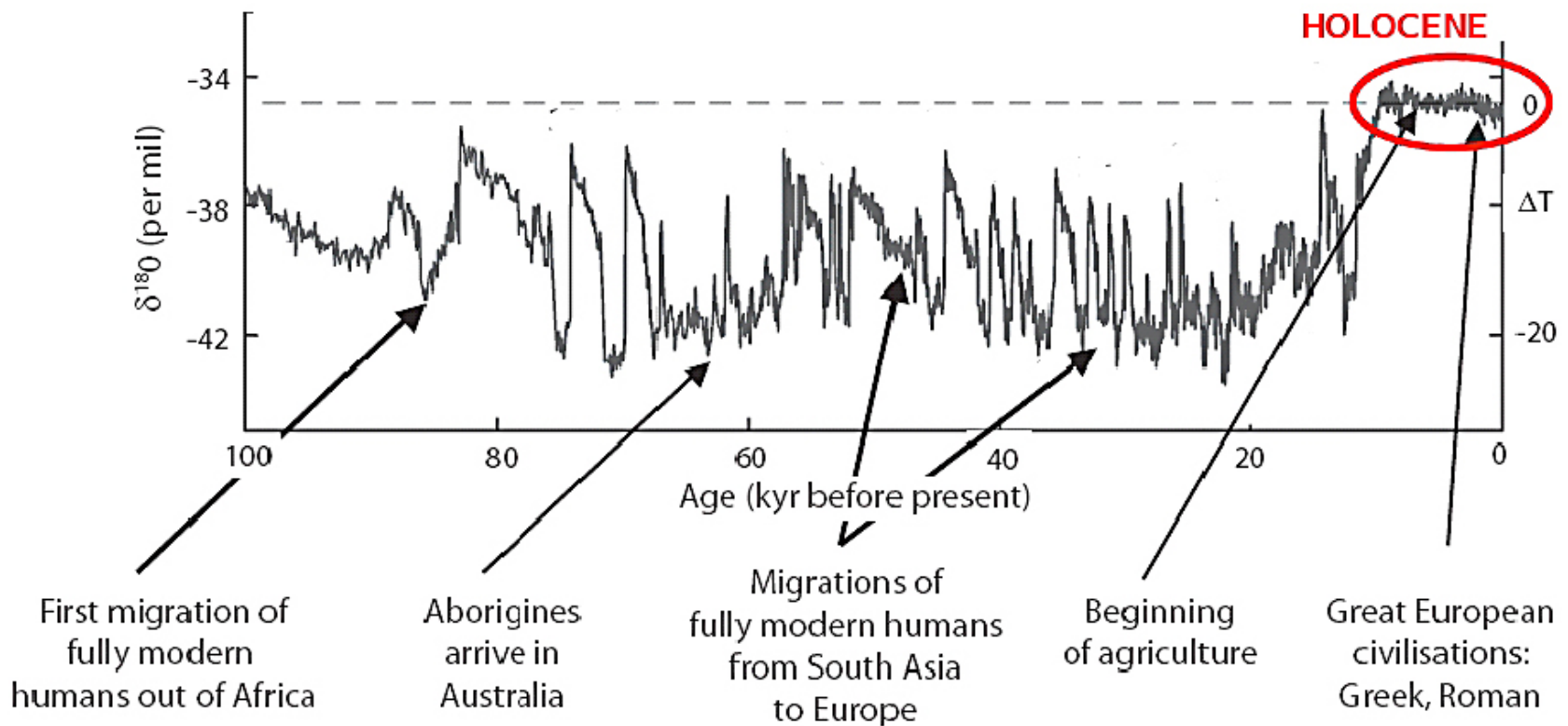
Nine planetary boundaries



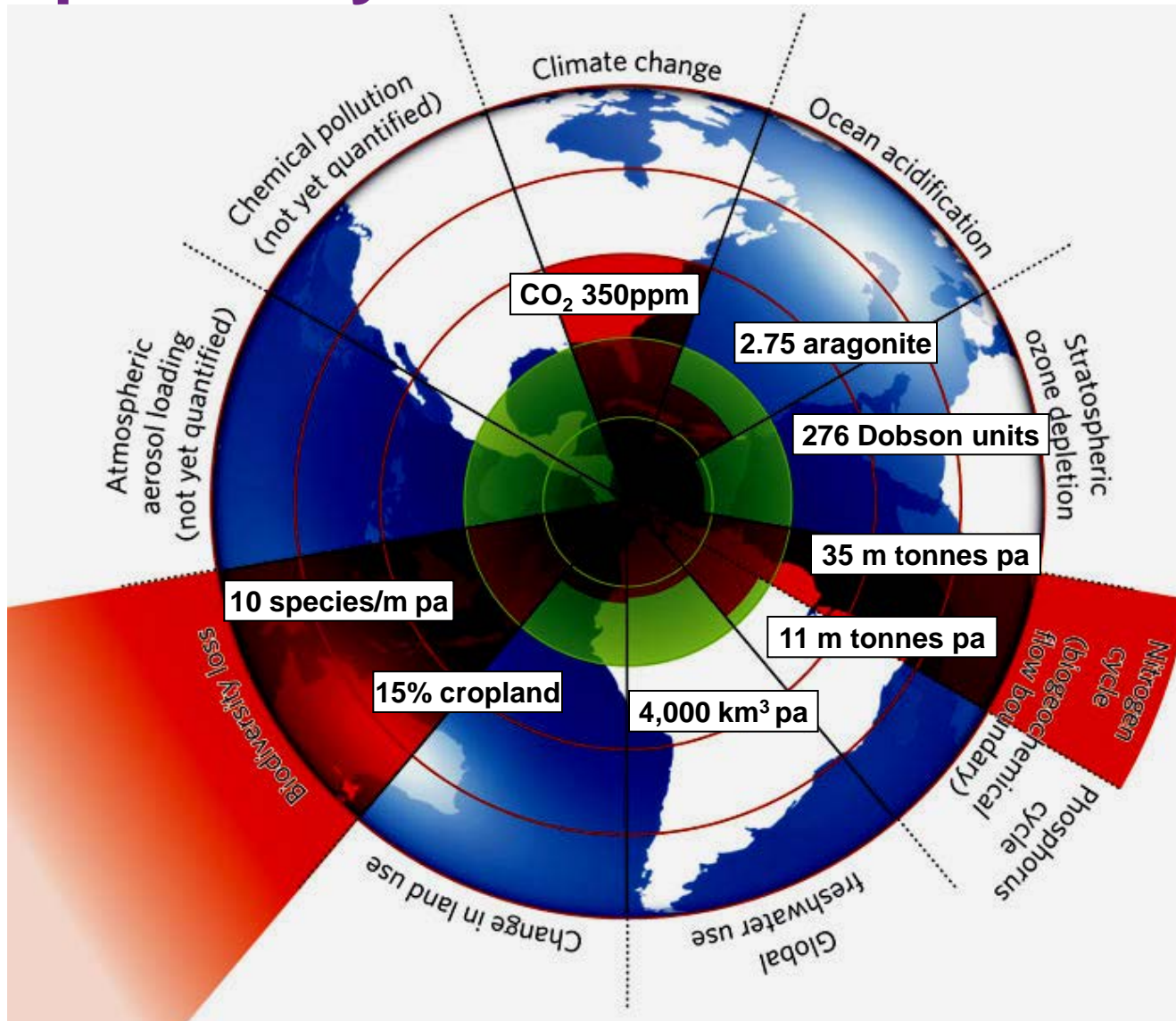
Source: Rockström et al 2009

Hang on to the Holocene

Fig. 1. The last glacial cycle of $\delta^{18}\text{O}$ (an indicator of temperature) and selected events in human history. The Holocene is the last 10 000 years. Adapted from Young and Steffen (2009).

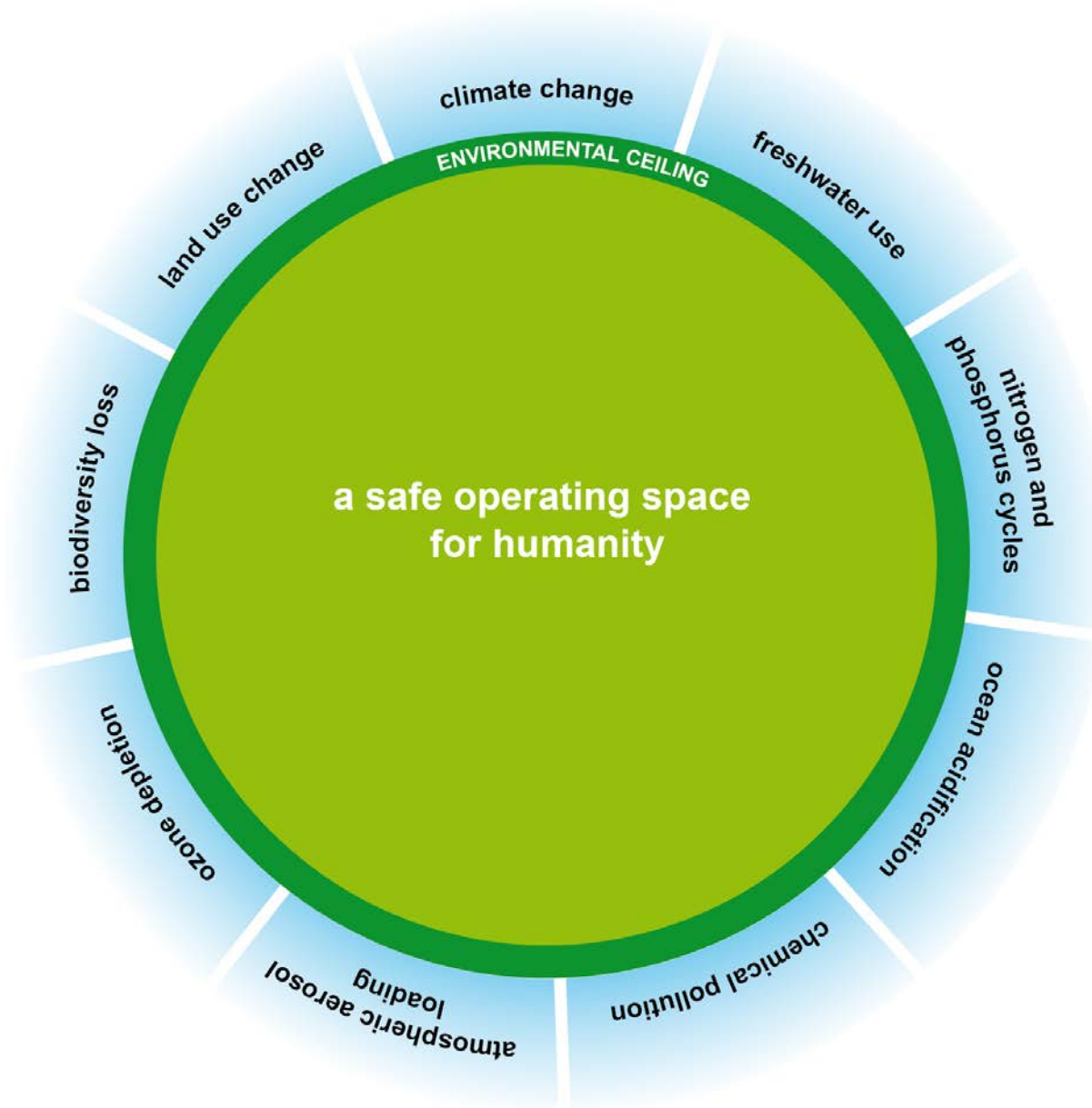


Nine planetary boundaries

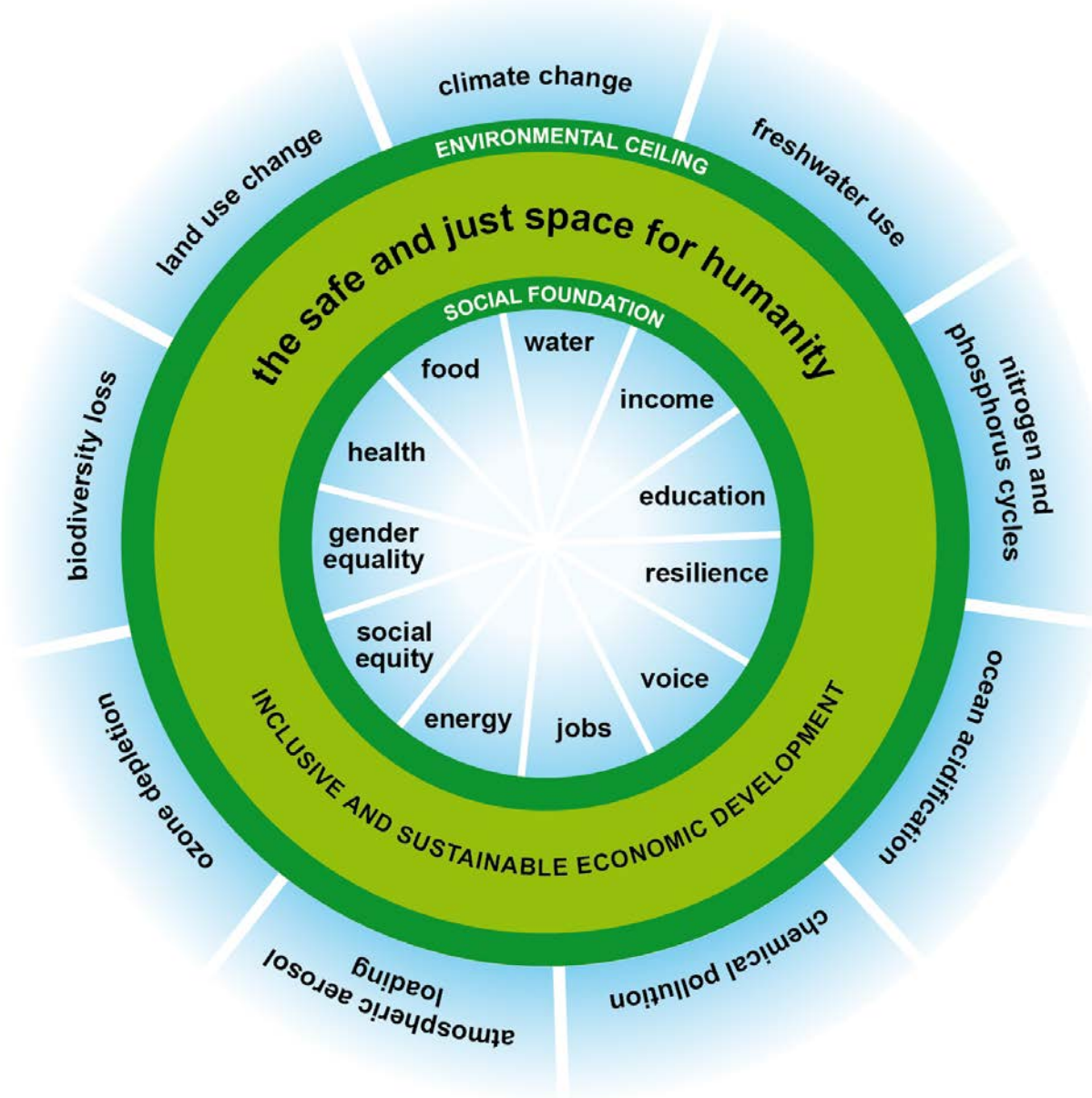


Source: Rockström et al 2009

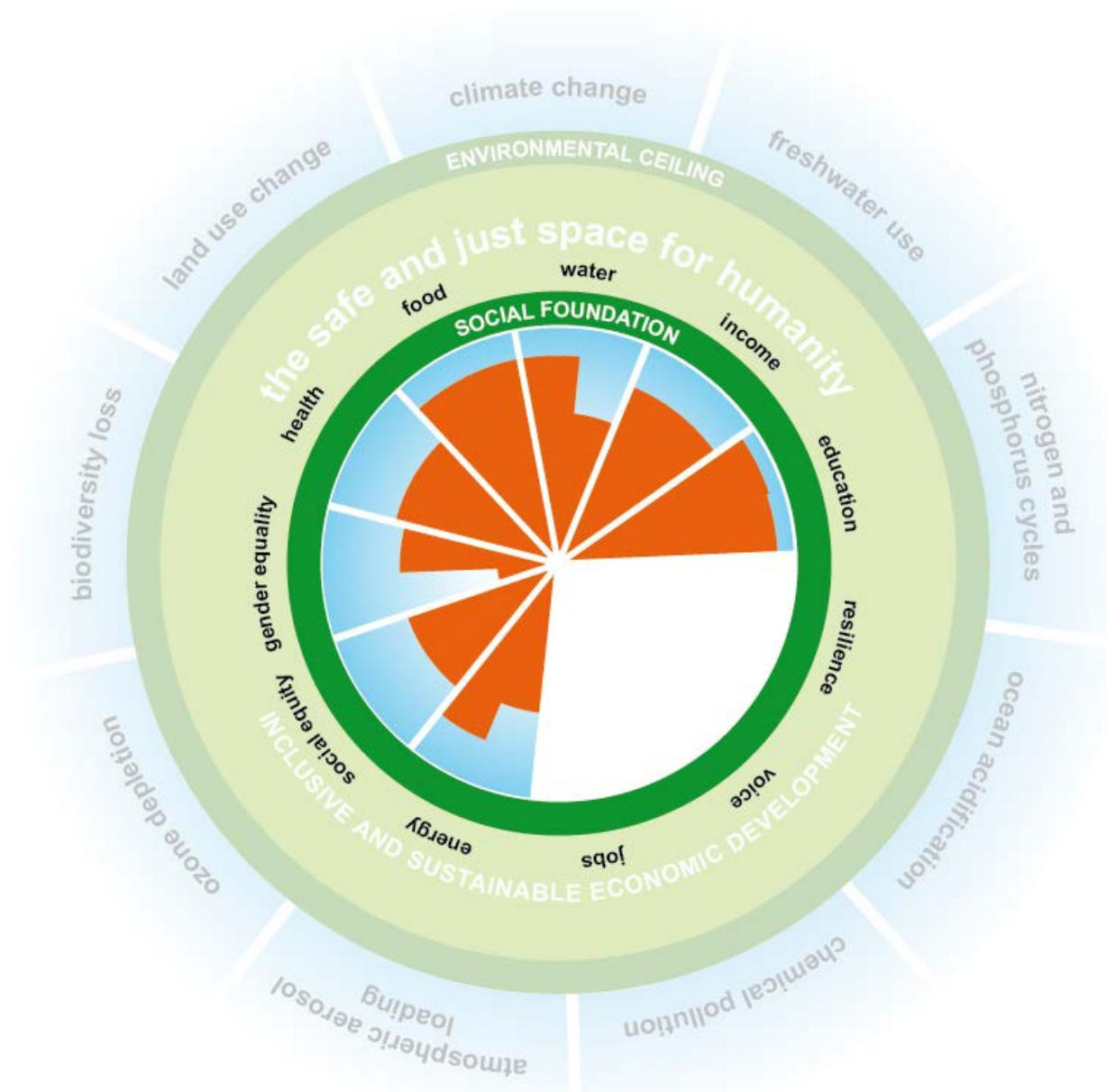
Nine planetary boundaries



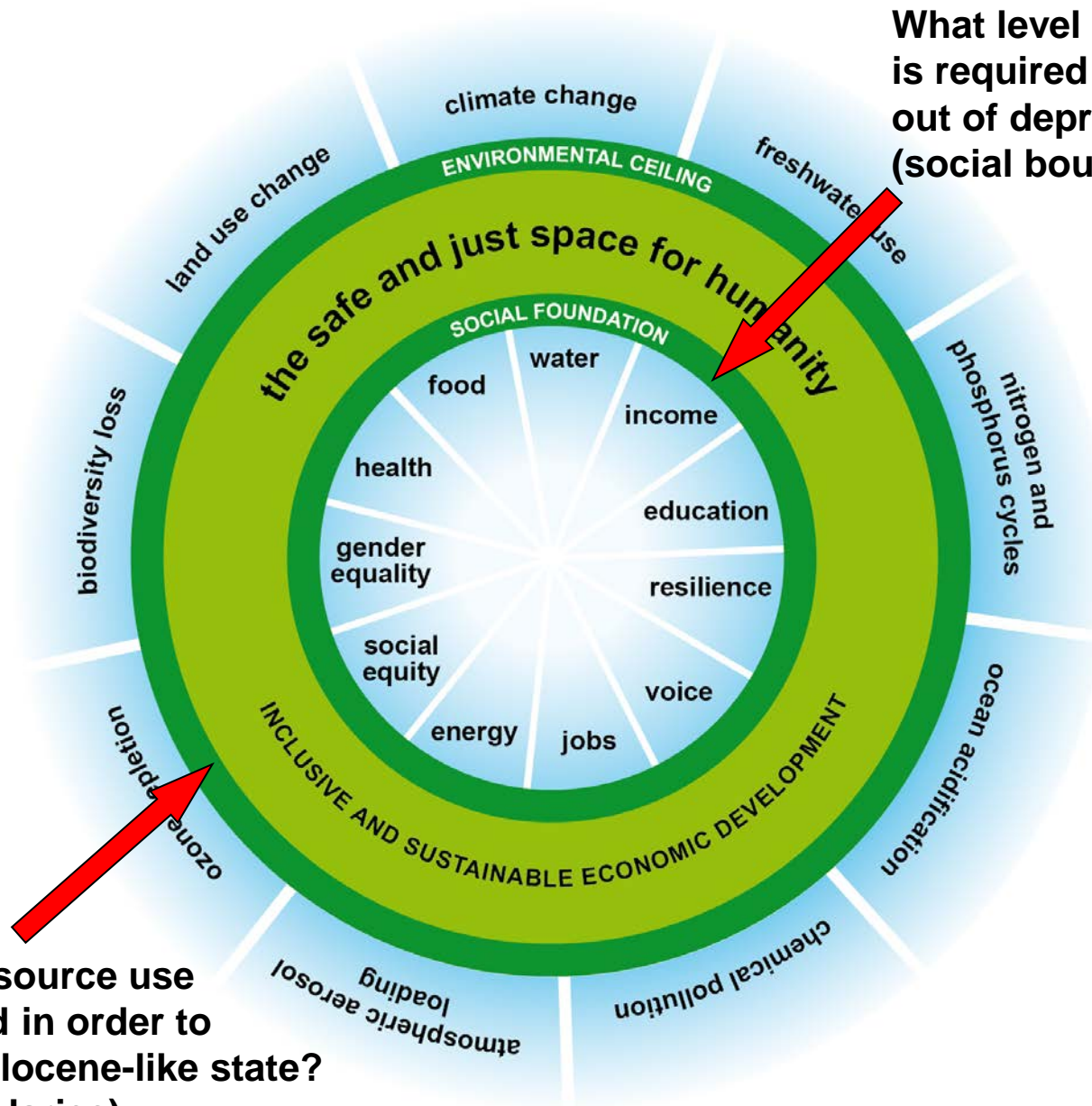
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Falling far below the social foundation



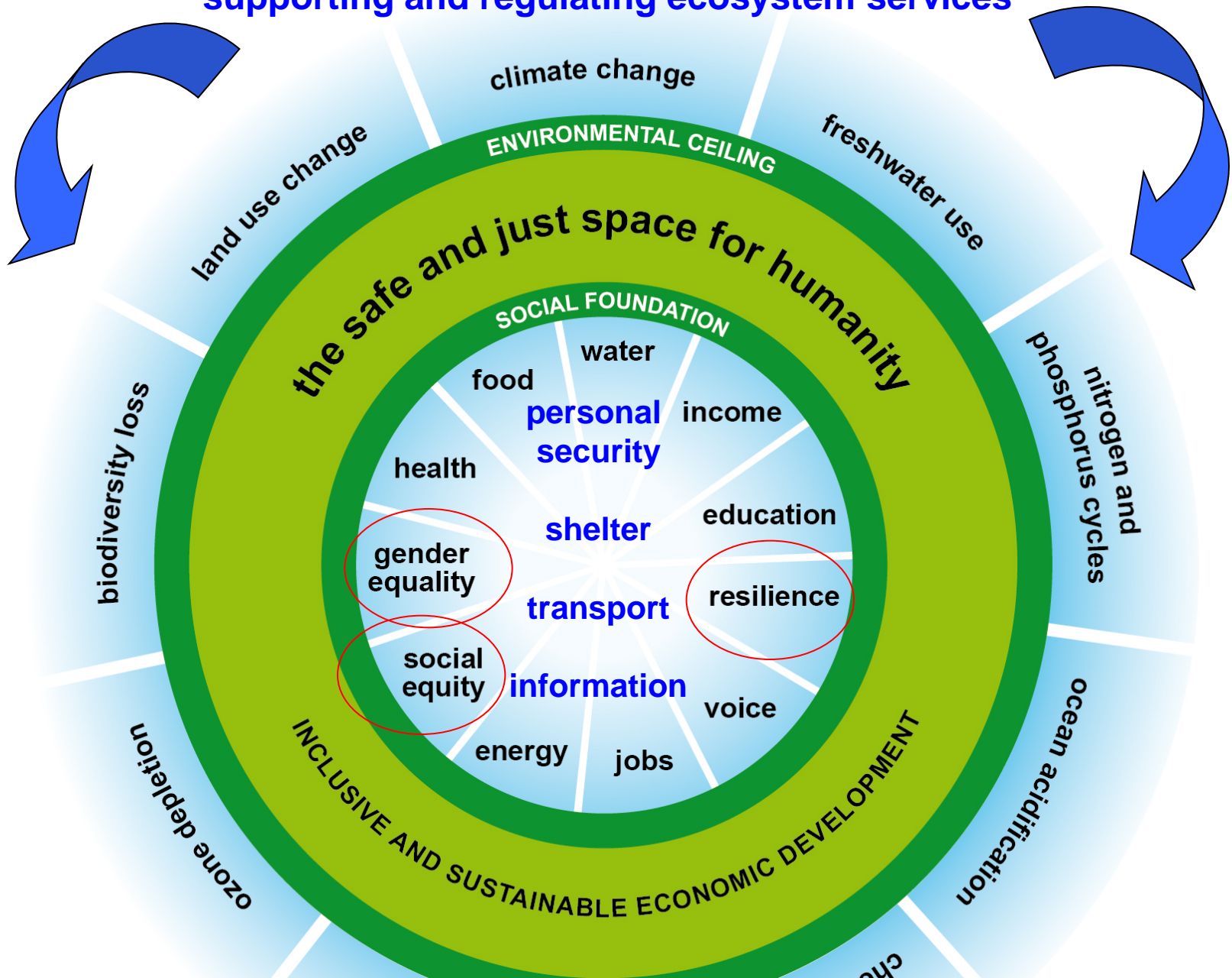
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What level of resource use is required to get all people out of deprivation?
(social boundaries)

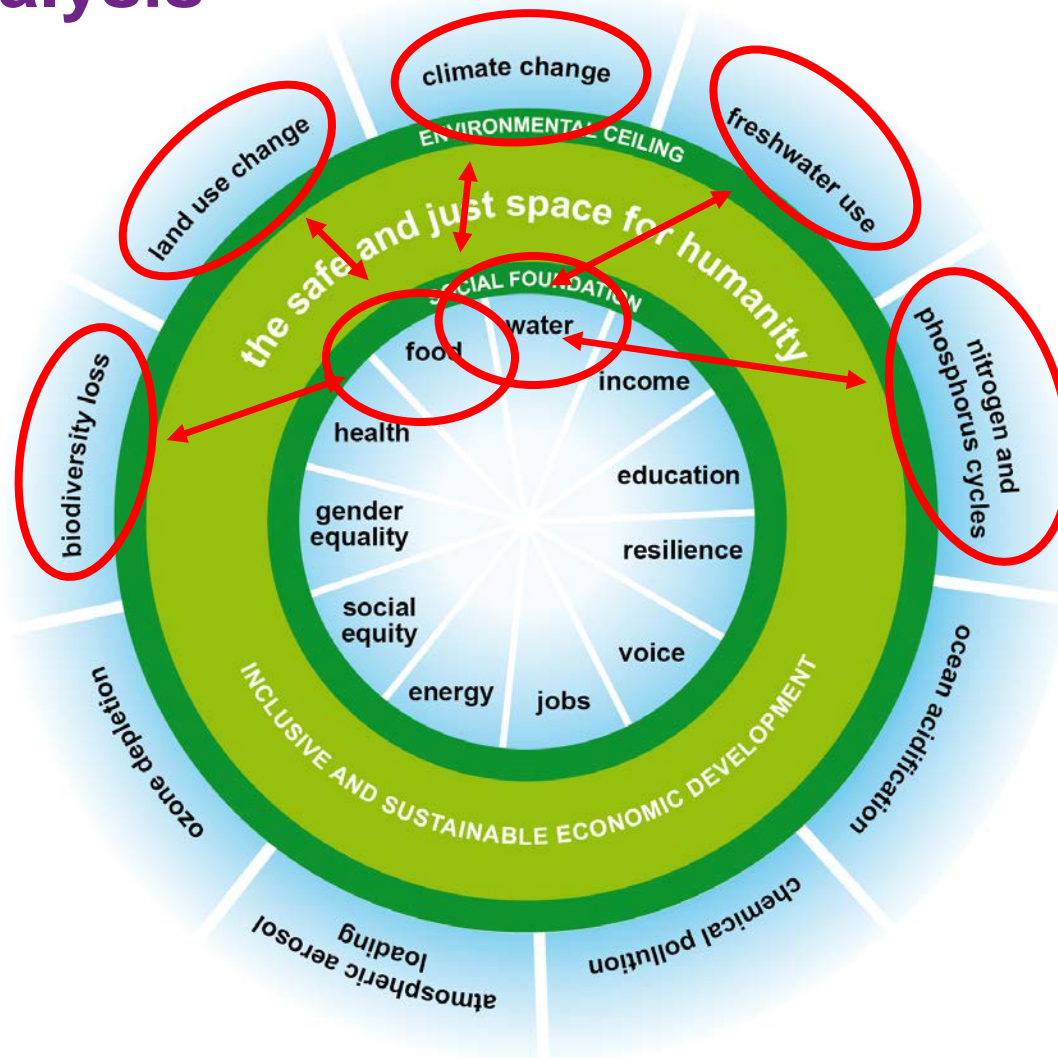
What level of resource use must be avoided in order to stay within a Holocene-like state?
(planetary boundaries)

supporting and regulating ecosystem services



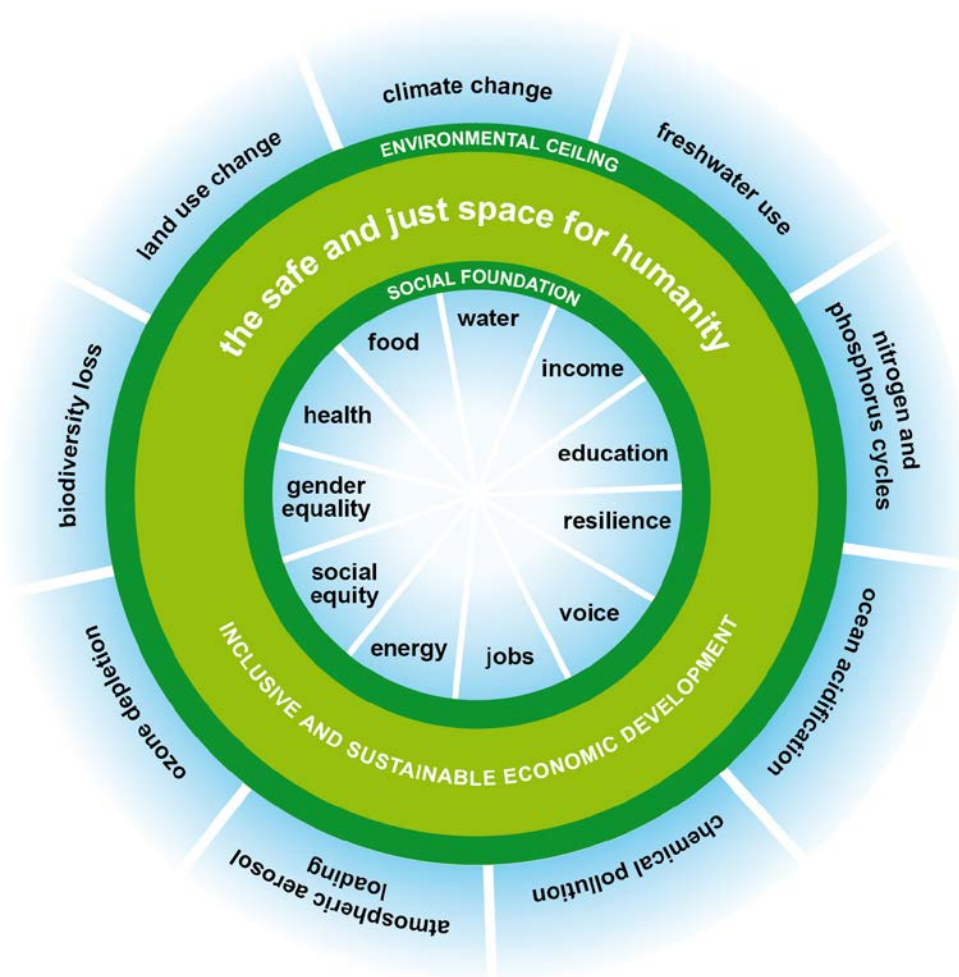
From conceptual to applied...

Issue analysis



From conceptual to applied...

National and local doughnut analyses



What is the state of X's social foundation?

How is X contributing to planetary boundary stress?

How is X affected by planetary boundary stress?

How is this stress undermining X's prospects for human development?

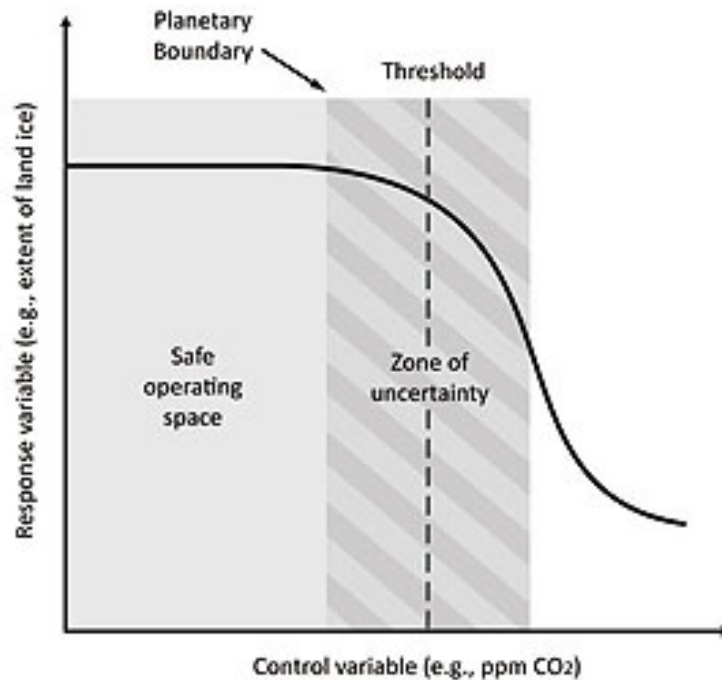
Which development pathways can best bring X between social and planetary boundaries?

What scale are planetary boundaries?

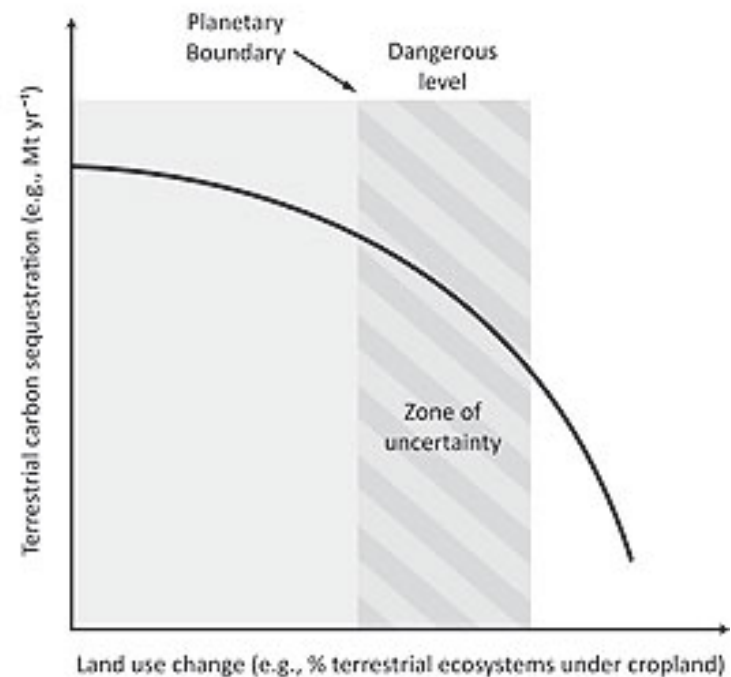
Fig. 4. Categories of planetary boundaries.

Boundary character	Processes with global scale thresholds	Slow processes without known global scale thresholds
Scale of process		
Systemic processes at planetary scale	Climate Change	
	Ocean Acidification	
	Stratospheric Ozone	
Aggregated processes from local/regional scale	Global P and N Cycles	
	Atmospheric Aerosol Loading	
	Freshwater Use	
	Land Use Change	
	Biodiversity Loss	
	Chemical Pollution	

Planetary boundaries and planetary thresholds: and tipping points vs. slippery slopes



Tipping point



'Slippery slope' or gradient