



COVID-19 edition

Can our ecosystems sustain world population ? Early lessons from COVID-19

Alain Vidal

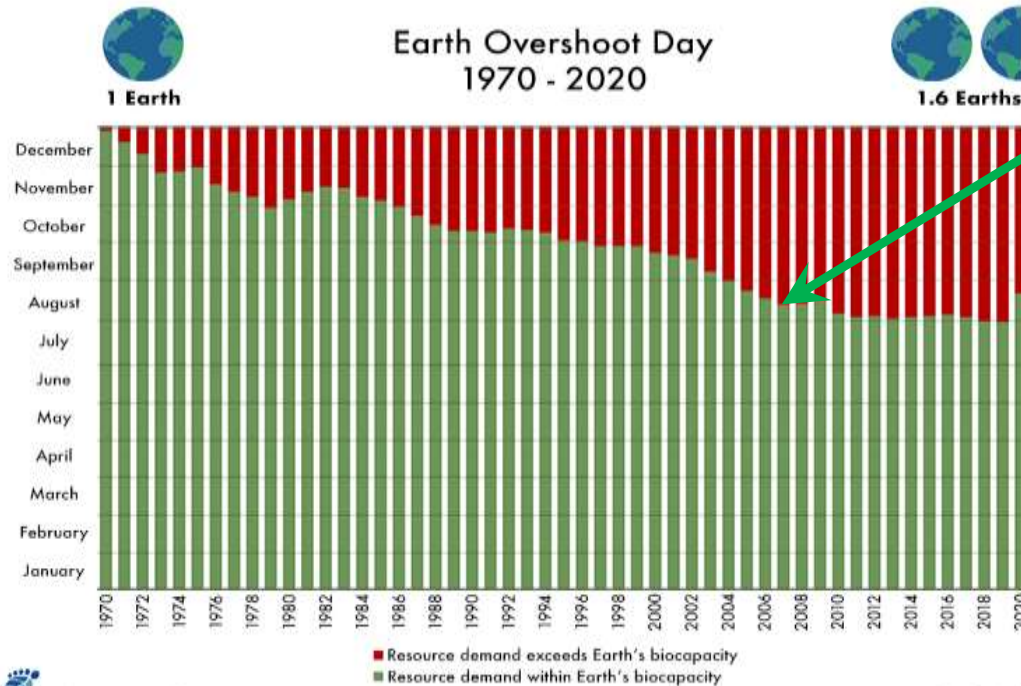
Master CLUES, Université Paris-Saclay, November 2020



**August
22nd**



Finally good news ? Cheer up !



Millenials get
15-30 years old

Is stabilization a sign that
growing individual
awareness of environmental
issues has a global impact ?

What about us ?

<http://www.footprintcalculator.org>

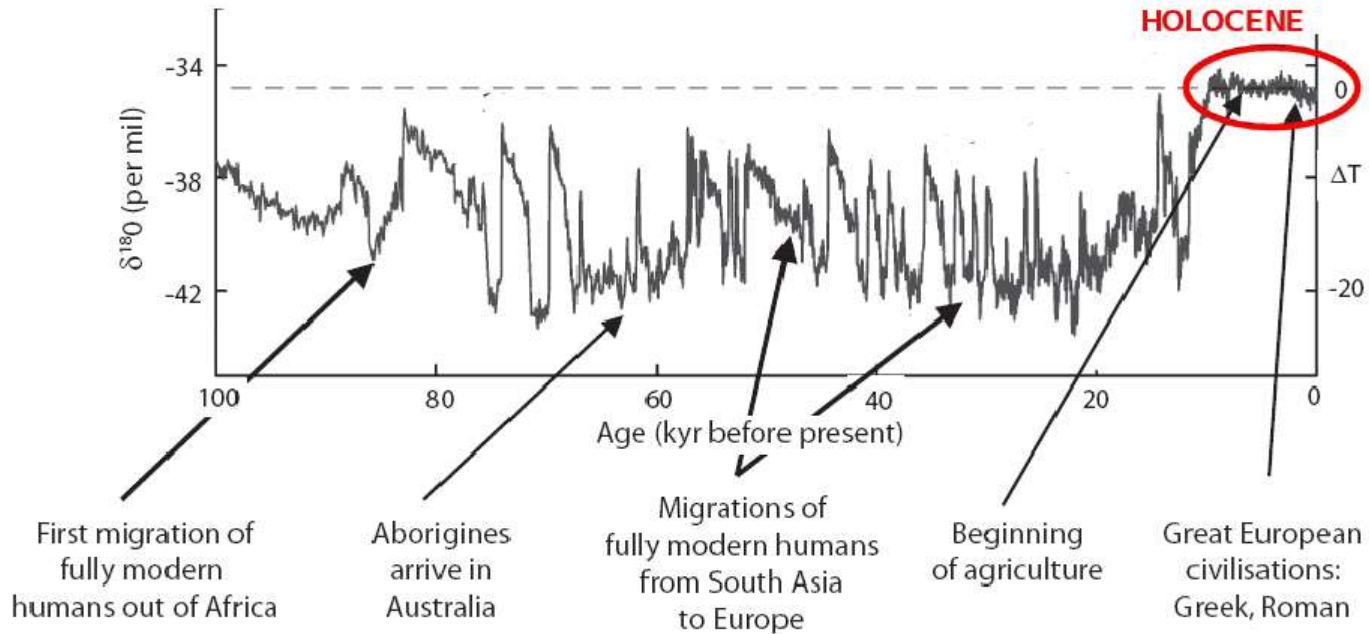
Can our ecosystems sustain world population ?



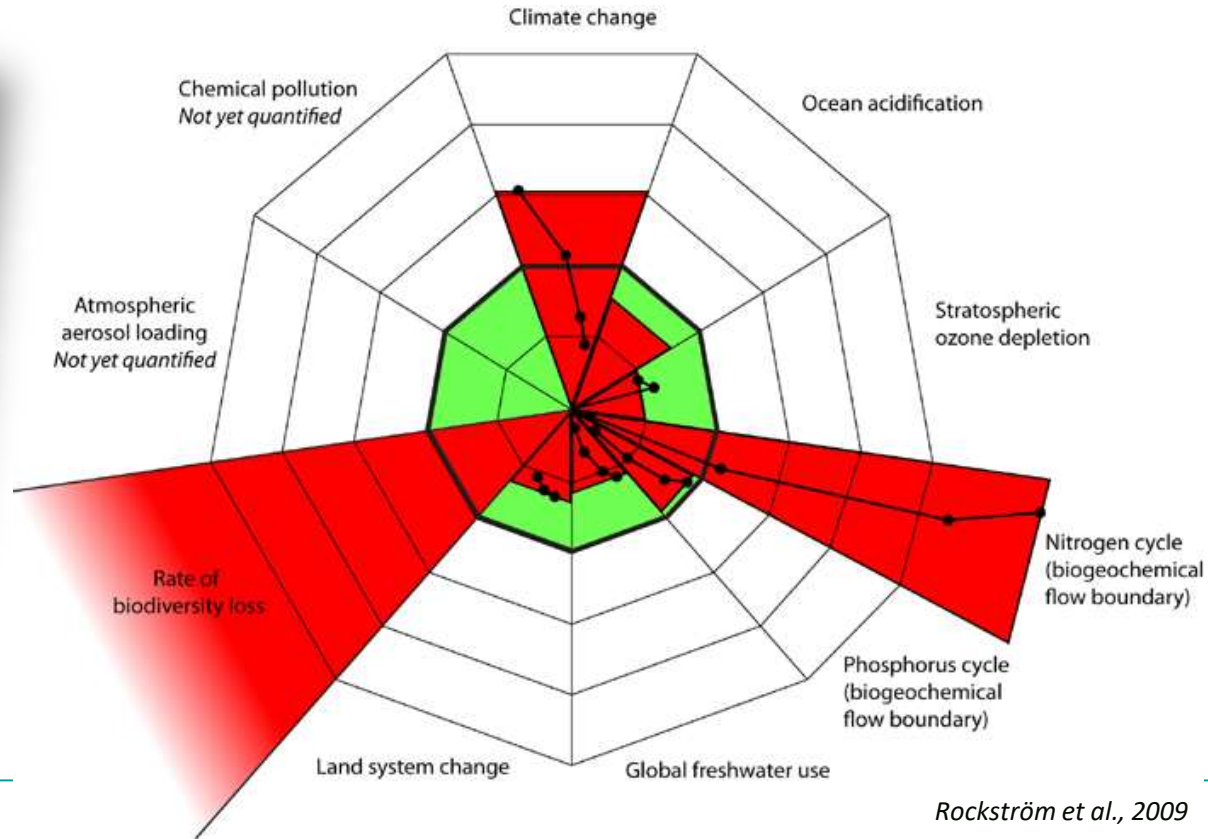
- Johan Rockström's TEDtalk
- Complements on planetary boundaries
- Early lessons from COVID-19
- Are planetary boundaries a political discourse ?
- Let's debate and share !



"Planetary boundaries" (Rockström et al., 2009) and our entry into Anthropocene



Planetary boundaries and their interconnections

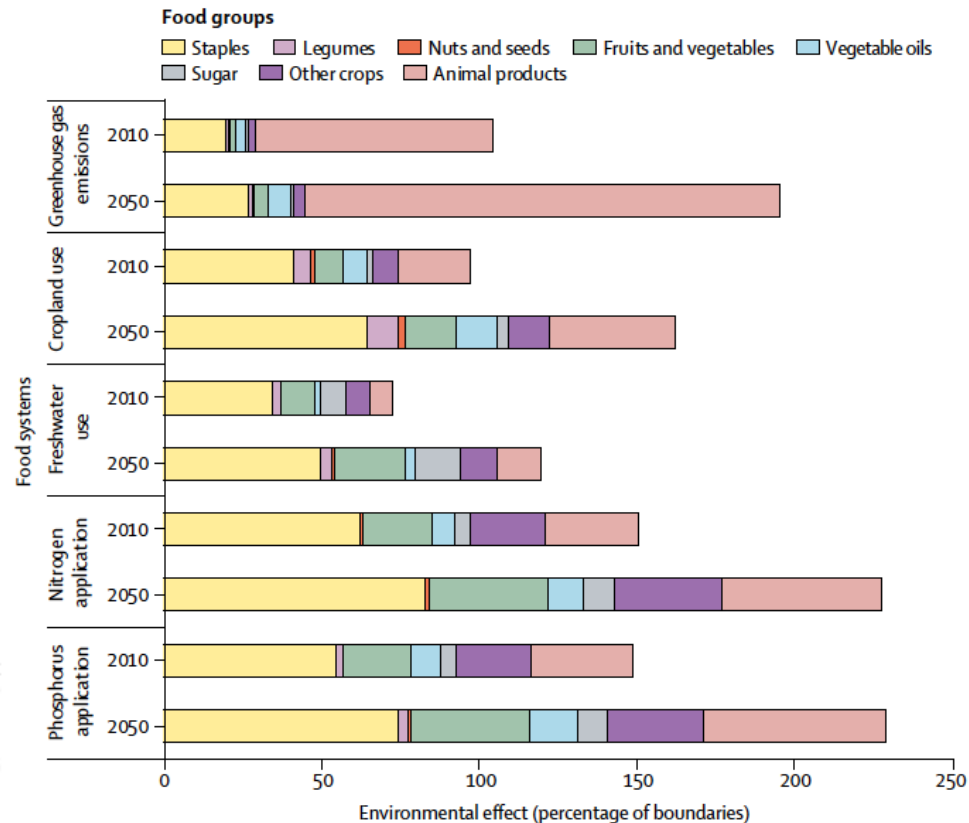


Rockström et al., 2009

Planetary boundaries: how our food system impacts

Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems

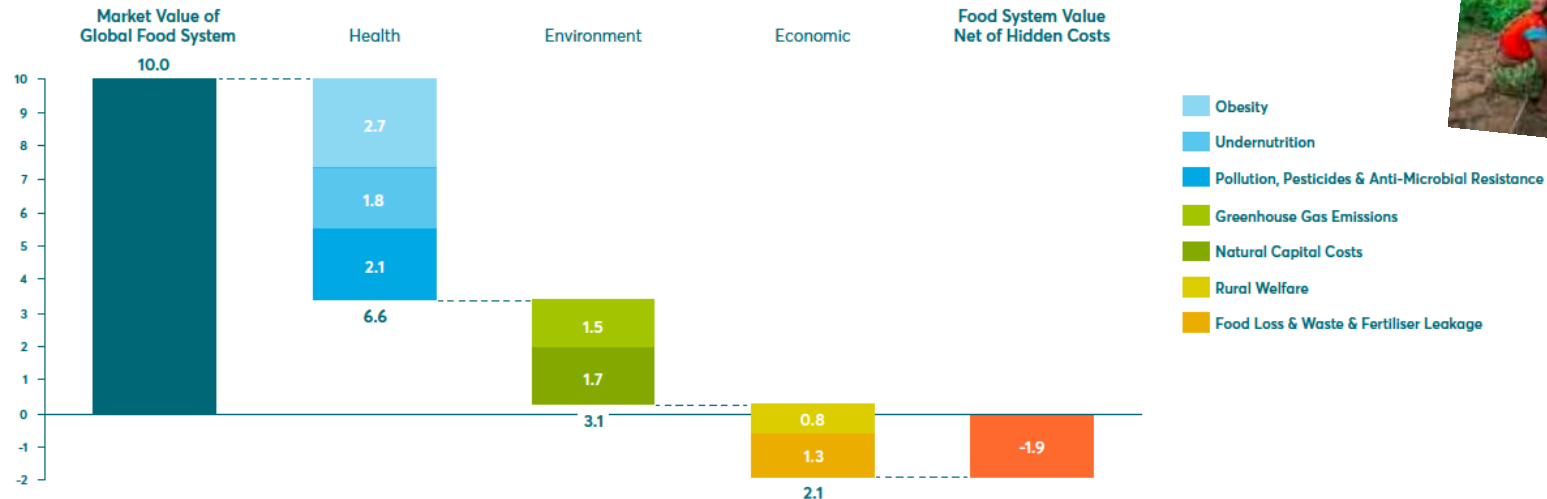
Walter Willett, Johan Rockström, Brent Loken, Marco Springmann, Tim Lang, Sanja Vermeulen, Tara Garnett, David Tilman, Fabrice DeClerck, Amanda Wood, Malin Jonell, Michael Clark, Line Gordon, Jessica Fanzo, Corinna Hawkes, Rami Zwi, Juan A. Rivera, Wim De Vries, Lindiwe Majole Sibanda, Ashkan Afshar, Abhishek Choudhary, Mario Herrero, Rina Agustina, Francesco Branca, Anna Larrey, Shenggen Fan, Beatrice Crona, Elizabeth Fox, Victoria Bignet, Max Trnka, Therese Lindahl, Sudhir Singh, Sarah E. Cornell, K. Srinath Reddy, Sunila Narain, Sania Nishtar, Christopher J. Murray



Hidden costs of negative externalities higher than market value

The hidden costs of global food and land use systems sum to \$12 trillion, compared to a market value of the global food system of \$10 trillion

Trillions USD, 2018 prices

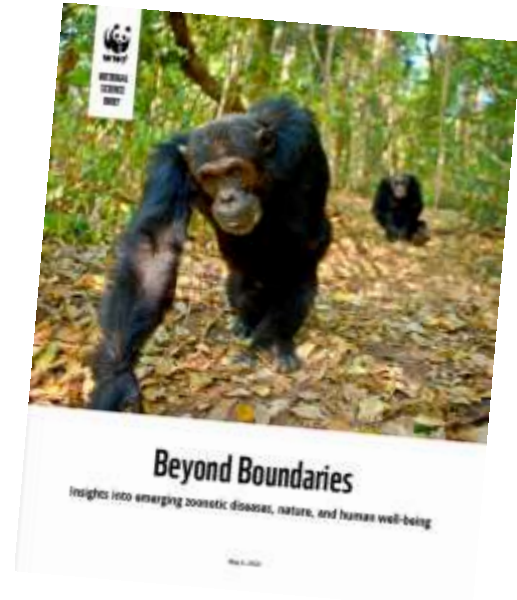
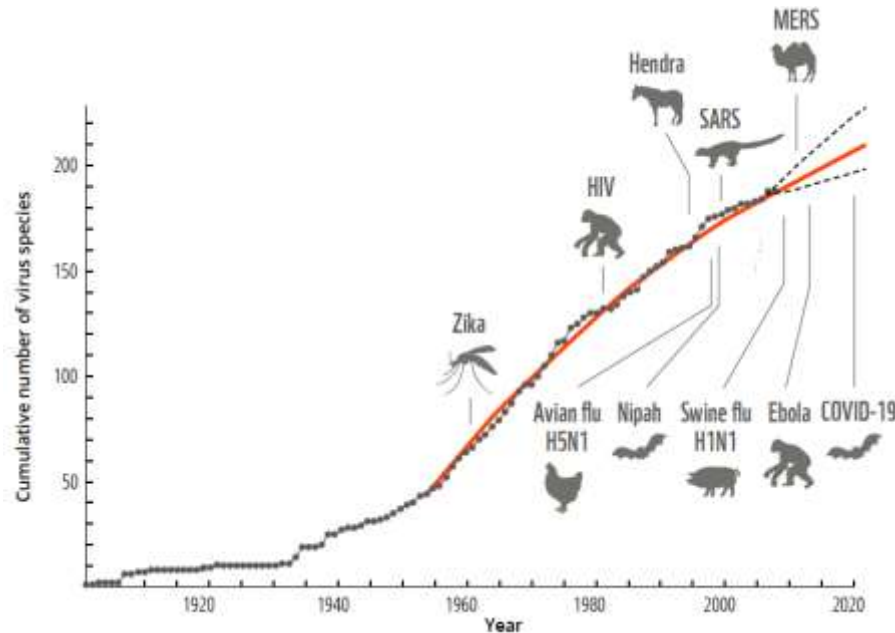




Early lessons from COVID-19

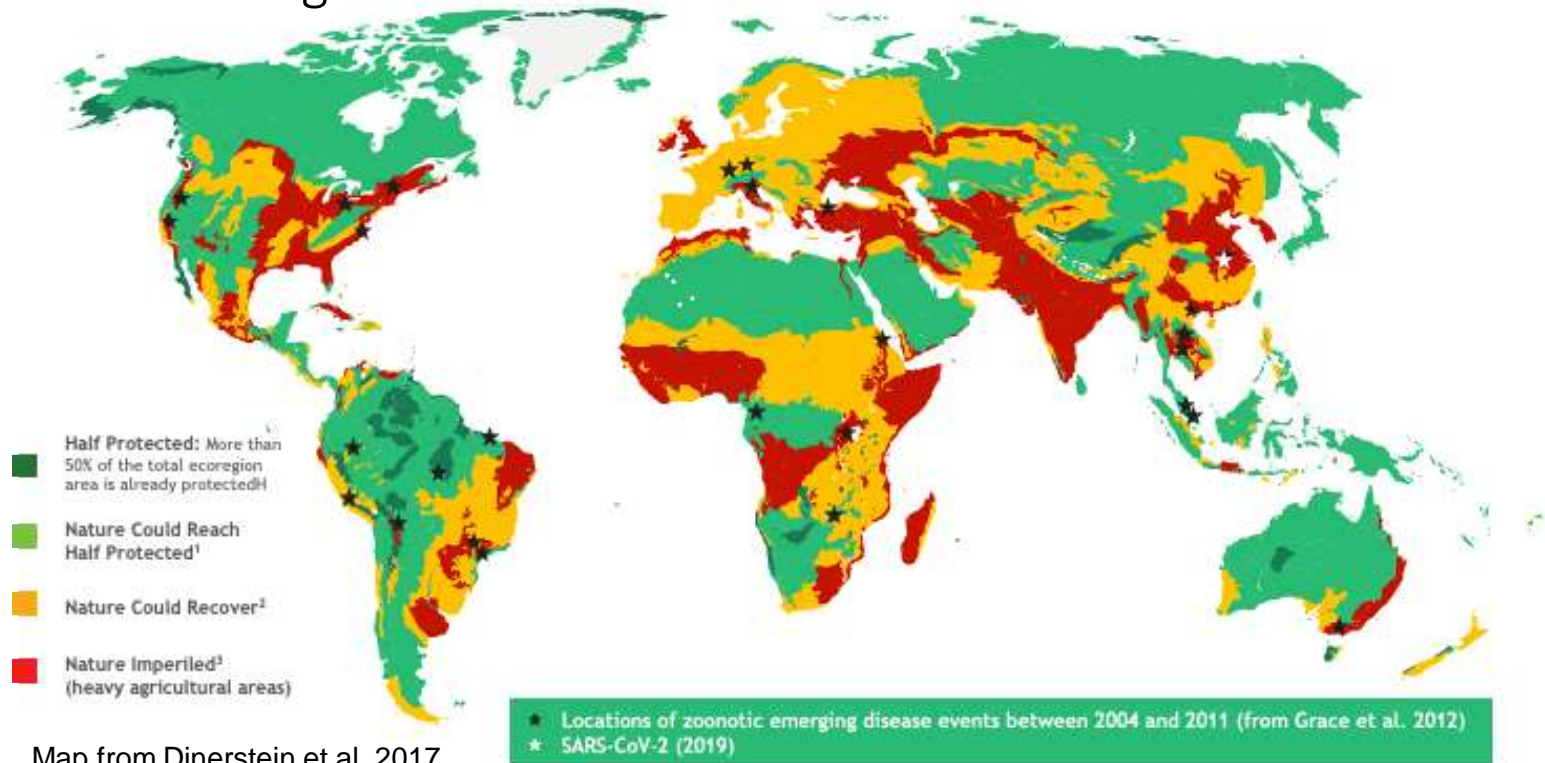
Several warnings from past zoonotic diseases

In recent decades, 3-4 new infectious diseases (parasites, bacterias and viruses) have emerged each year and the majority of these are zoonotic and originating from wildlife



WWF, 2020

61% of past 15 years emerging diseases originated from regions where nature is in danger



Map from Dinerstein et al, 2017

Why Nature matters

Nature loss recognized as the main direct (or indirect) driver in recent emerging diseases, mostly through

Land-use change

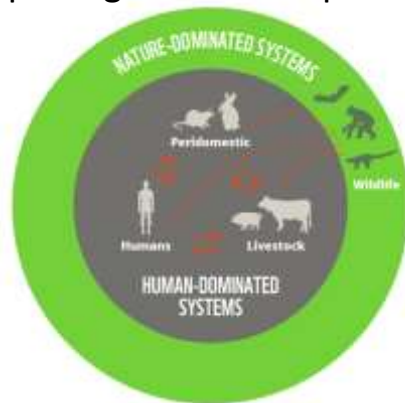
Exacerbates risk by expansion of human activities in natural ecosystems, increasing human-wildlife-domestic animal interactions hence cross-species transmission of pathogens

– in a sequence:

- Expansion of road networks
- Access to natural ecosystems (logging and/or mining)
- Human settlements closely followed behind by subsistence and commercial agriculture

Intensification of agriculture

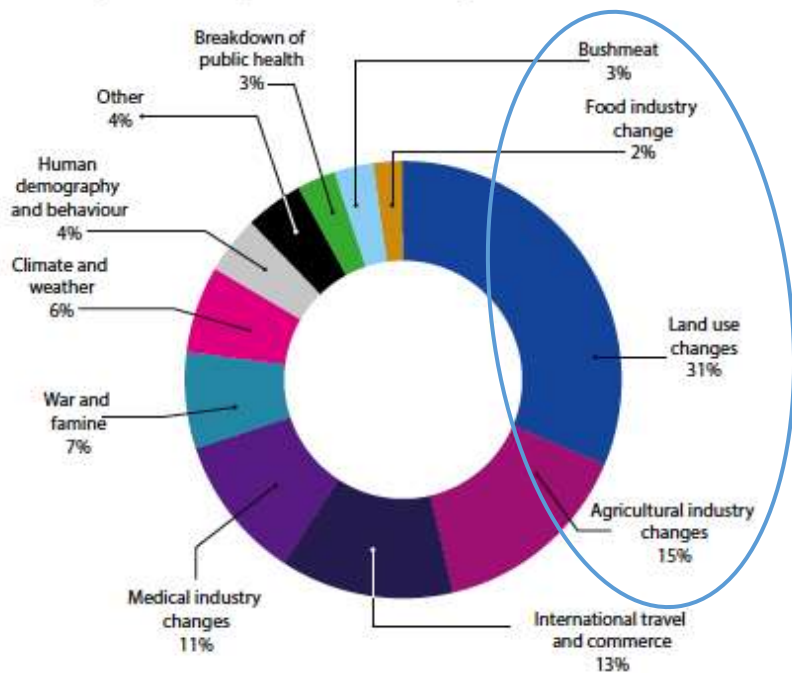
Promotes encroachment into wildlife habitats, bringing humans and livestock into closer proximity to wildlife and potential zoonotic pathogens across the globe



Wildlife species thrive in such transitional landscapes and become reservoirs for disease in livestock and humans

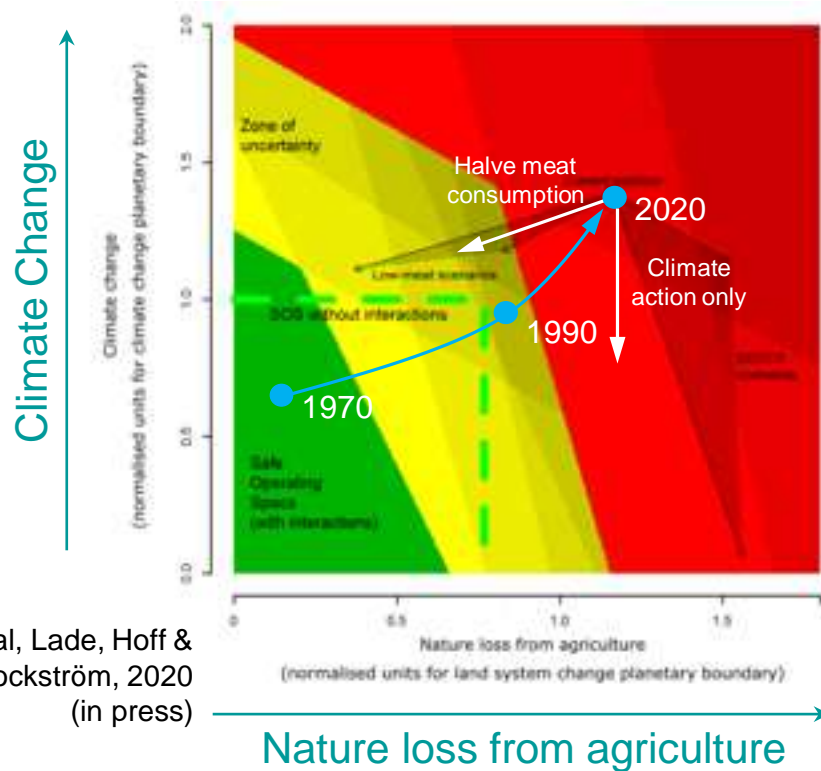
51% of past 75 years emerging communicable diseases are related to our food system

Primary drivers of past disease emergence



And also health services and industry (14%), international travel and trade (13%) and climate change (6%)

Using Planetary Boundaries as a dashboard to recovery



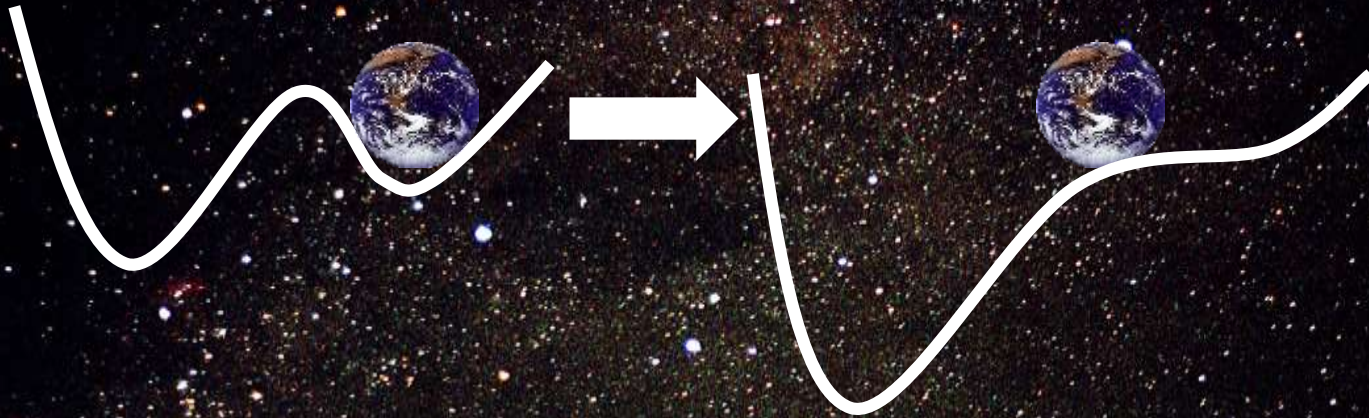
Vidal, Lade, Hoff &
Rockström, 2020
(in press)

As a *dashboard for recovery* and navigating back to the safe operating space where our civilization prospered, planetary boundaries call for:

- Nature restoration and regeneration
- Food system transformation

- Do you worry ?

- Would it help ? *



Planetary and social boundaries: Creating a *safe* and *just* space for humanity

“The 21st century’s unprecedented journey is to move into that space from both sides: to eradicate poverty and inequity for all, within the means of the planet’s limited resources.”

Raworth 2012 (Oxfam)



Rio+20 :
Combining planetary
with social boundaries

<http://bit.ly/1NQi0pb>



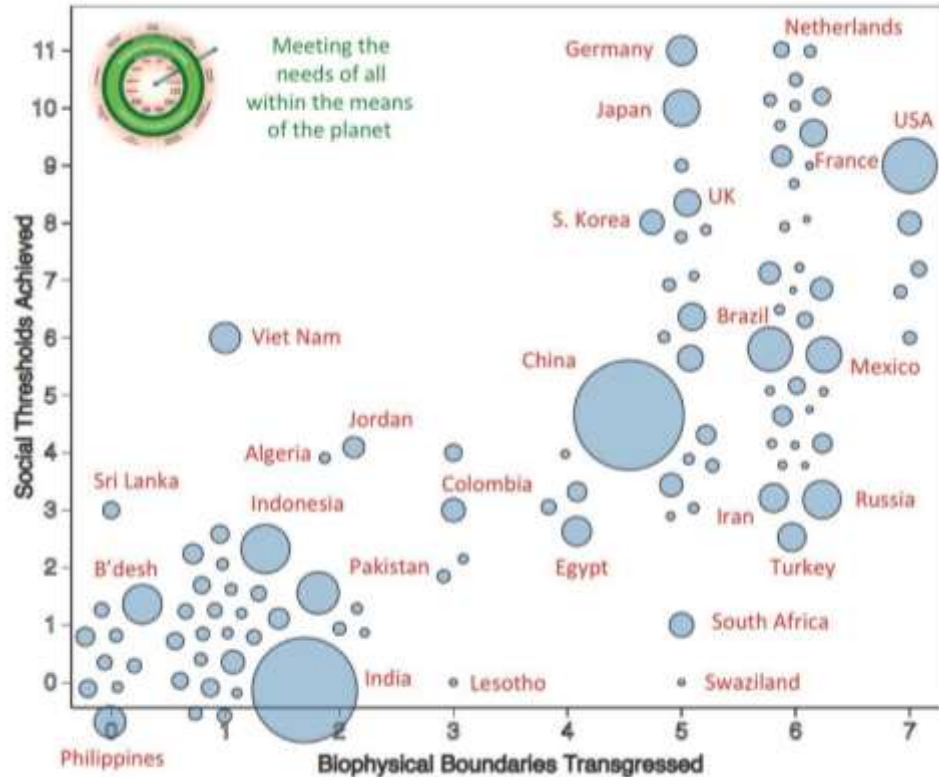
Which countries are closest to living within the Donut?

ARTICLES

nature sustainability

A good life for all within planetary boundaries

Daniel W. O'Neill^{1,2*}, Andrew L. Fanning^{3,4}, William F. Lamb^{5,6} and Julia K. Steinberger^{7,8}



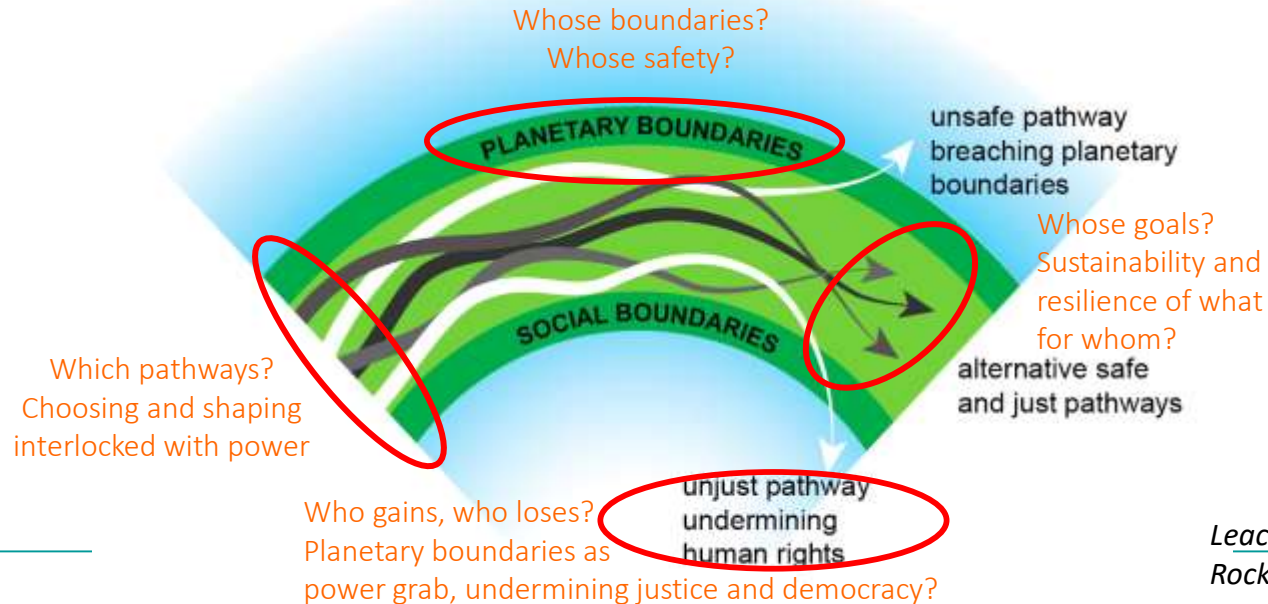
Planetary boundaries discourse and narrative (Melissa Leach)

- 'Planetary boundaries' as a **discourse**
 - *A particular 'regime of truth' co-constructed through power, knowledge and institutions*
- 'Accelerating human influence in the anthropocene threatening planetary boundaries' as a powerful **narrative**
 - A storyline – with a beginning, middle and end
 - Created by people and institutions
 - Assigns responsibility and blame
 - Underpins, justifies, legitimates action

Politicising planetary boundaries

Matters for inclusive deliberation and debate

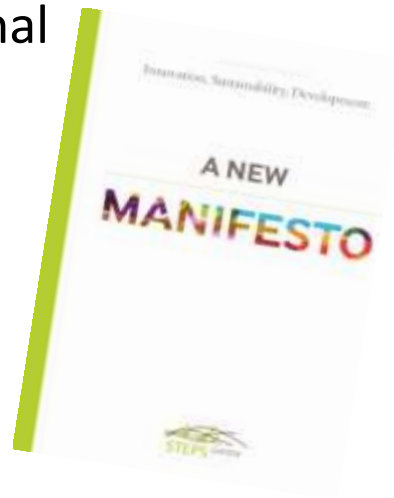
Possibilities within the safe and just space:
diverse pathways, alternative directions and varying distributional outcomes



*Leach, Raworth and
Rockström 2013*

Towards politics and governance for sustainability, resilience and development

- Challenging unsustainable and unjust pathways
- Opening up to appreciate alternatives
- Enabling and supporting transformational pathways
 - Multi-scale
 - Adaptive
 - Networked and alliance-based
 - Engaged with science





« It is no longer enough, then, simply to state that we should be concerned for future generations. We need to see that what is at stake is our dignity. »

Pope Francis



Thank you

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www.wbcasd.org - www.iucn.org

www.slideshare.net/alainjbvidal

References and links

- [Earth Overshoot Day](#)
- Stockholm Resilience Center
 - www.stockholmresilience.org
 - www.futureearth.org
- EAT-Lancet Commission
 - eatforum.org/eat-lancet-commission/
- Food and Land Use Coalition (FOLU)
 - www.foodandlandusecoalition.org
- STEPS Centre – Institute of Development Studies (U. Sussex)
 - steps-centre.org
 - steps-centre.org/aneumanifesto
- Hans Jonas – The imperative of responsibility
- Pope Francis – Laudato Si' - [Encyclical Letter on Care for our Common Home](#)

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- Stockholm Resilience Center
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