

Digitalisation and the Anthropocene *

(including 'Moving to Smart Digital Electrification'!)

Tyndall Assembly, 15 September 2022

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Environmental *Change* Institute
SCHOOL OF GEOGRAPHY AND THE ENVIRONMENT

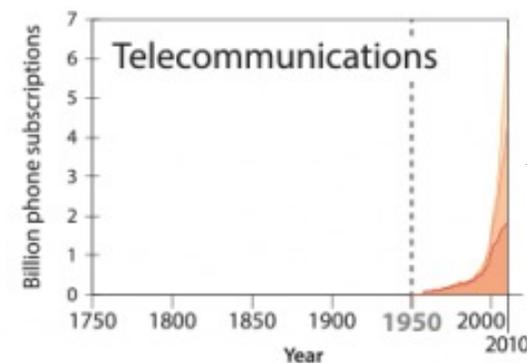
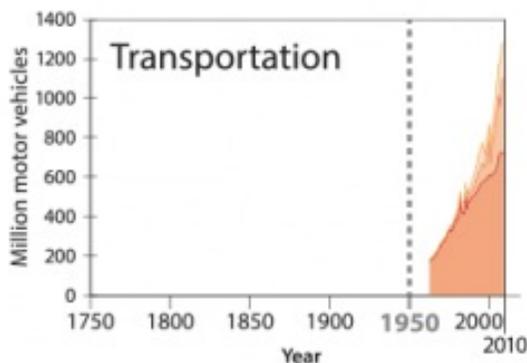
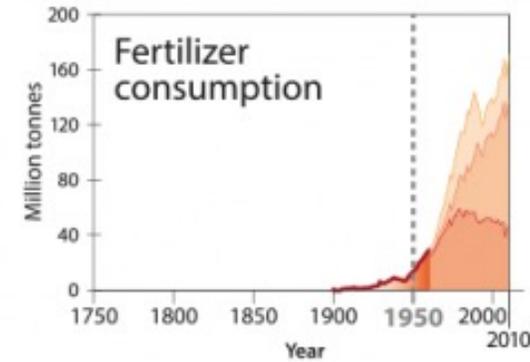
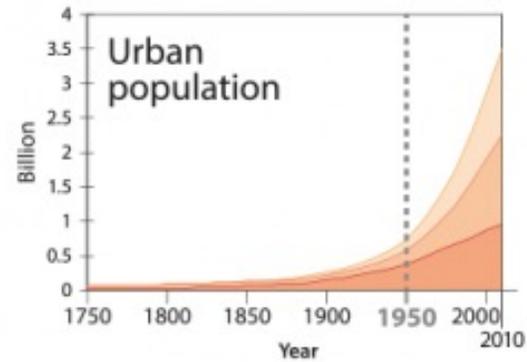
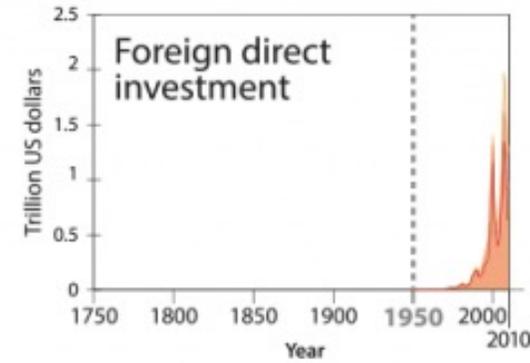
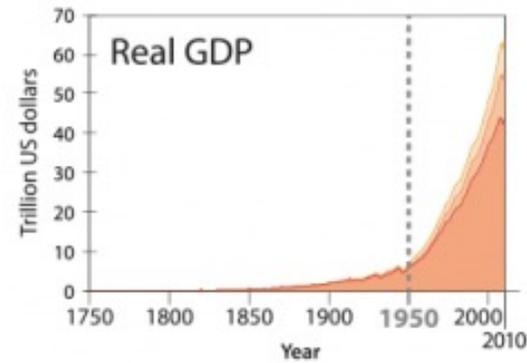
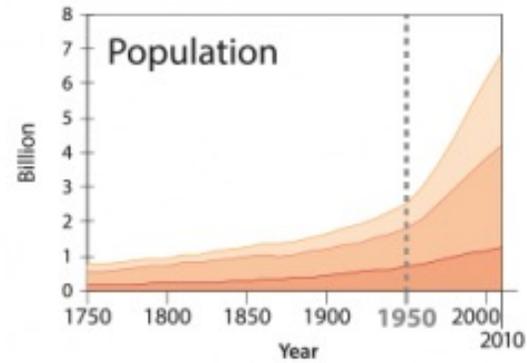
iDODDLE

The Impacts of Digitalised Daily Life on Climate Change

* this talk is based on a paper just out in *Annual Review of Environment and Resources* written by a large author team led by Felix Creutzig

doi.org/10.1146/annurev-environ-120920-100056

The digital and computer revolution from the 1950s coincides with the beginning of the Anthropocene.



digitalisation as 'latest generation' of information system

Digitalisation and climate change are two 'megatrends' that will shape life in the Anthropocene.

EXECUTIVE SUMMARY

Report of the UN Economist Network for the UN 75th Anniversary Shaping the Trends of Our Time

SEPTEMBER 2020



Digital technology and the planet

Harnessing computing
to achieve net zero

THE
ROYAL
SOCIETY



WBGU
German Advisory Council on Global Change

Flagship Report

Towards Our Common Digital Future



Digitalisation = collecting, exchanging, storing, analysing **data** through widespread use of devices, software and infrastructure

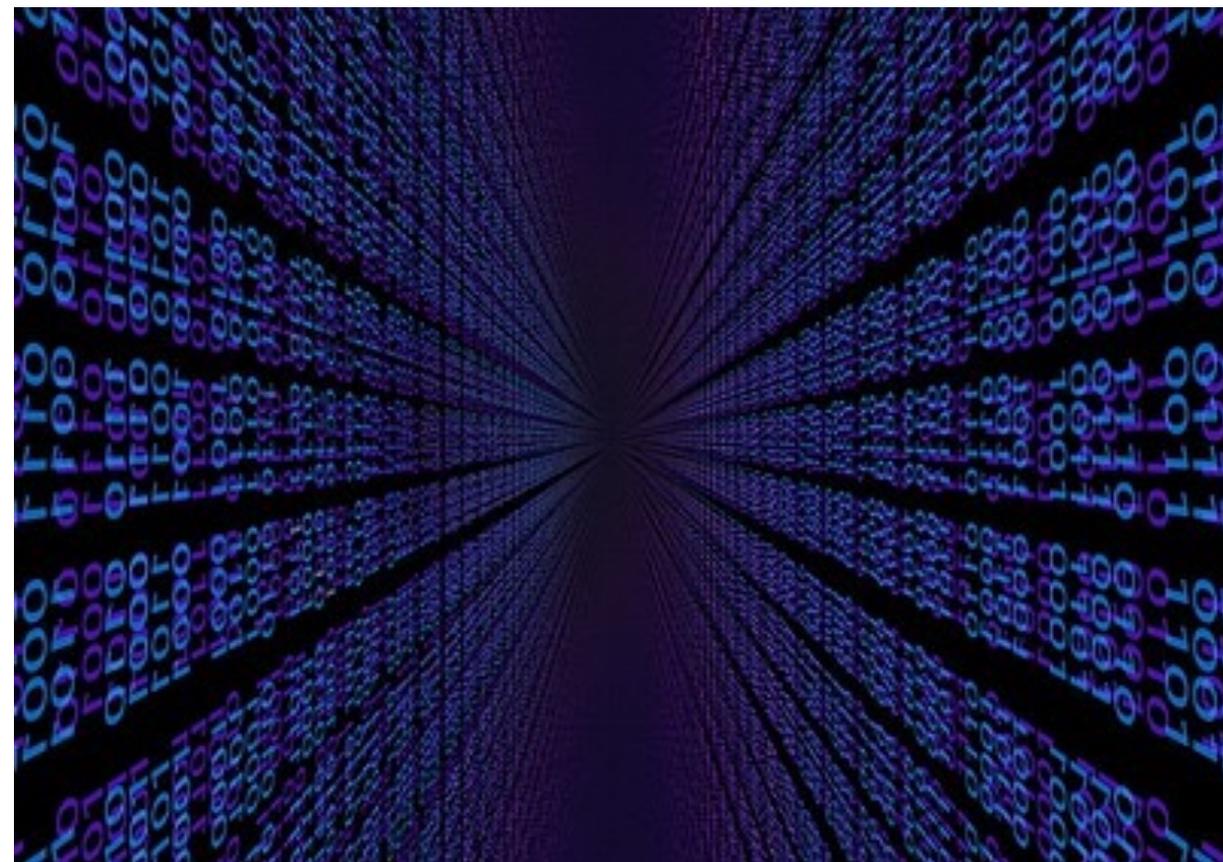


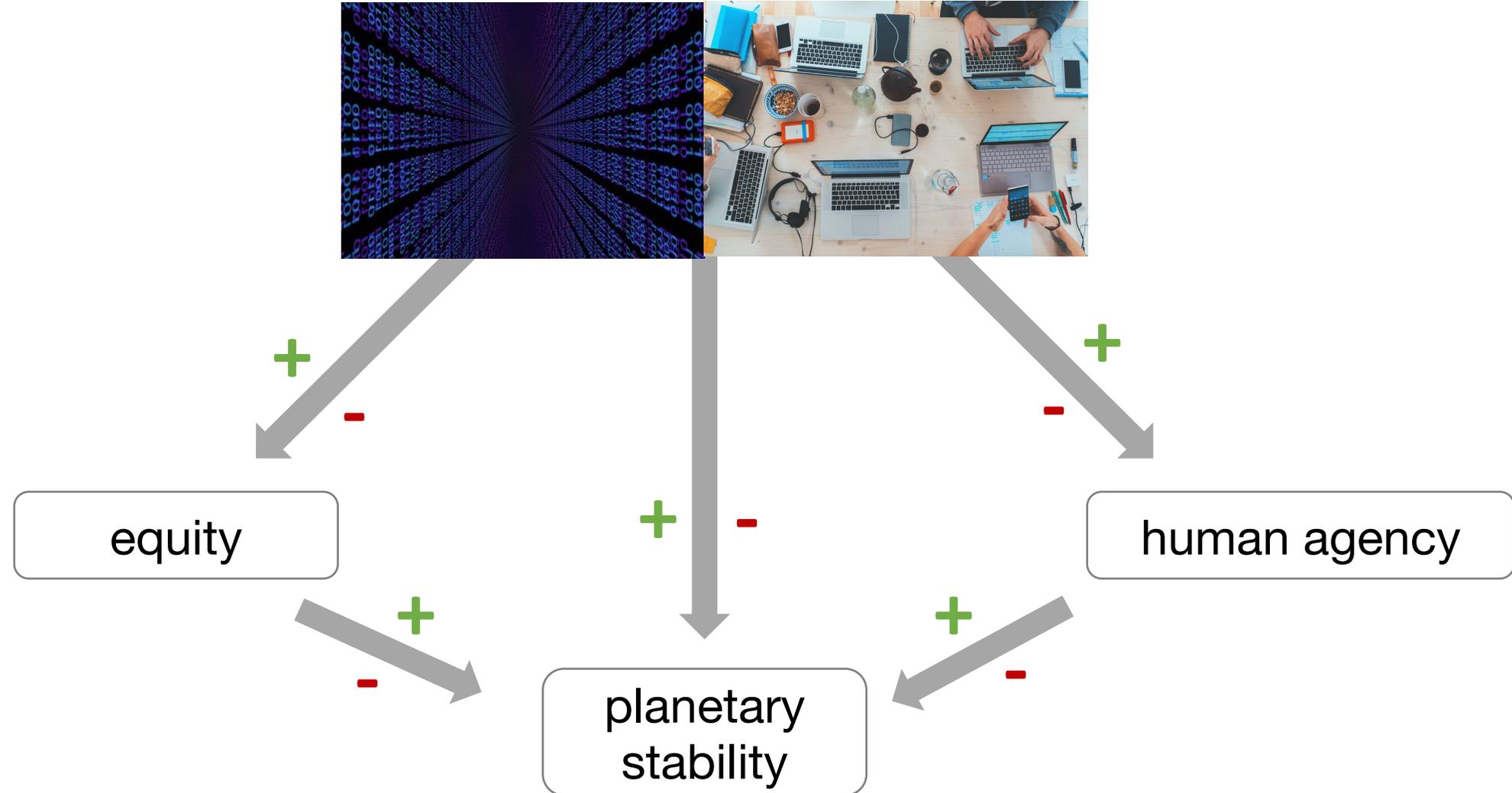
Image: Chambre des Deptues @Flickr. CC BY-ND 2.0.



Photo: Marvin Meyer @Unsplash.

Digitalisation = **general purpose technology**

Digitalisation brings both **opportunities and risks** for three critical elements of resilient futures in the Anthropocene.



Implications of digitalisation for **equity** are seen in patterns of access, labour markets, resource mining ...

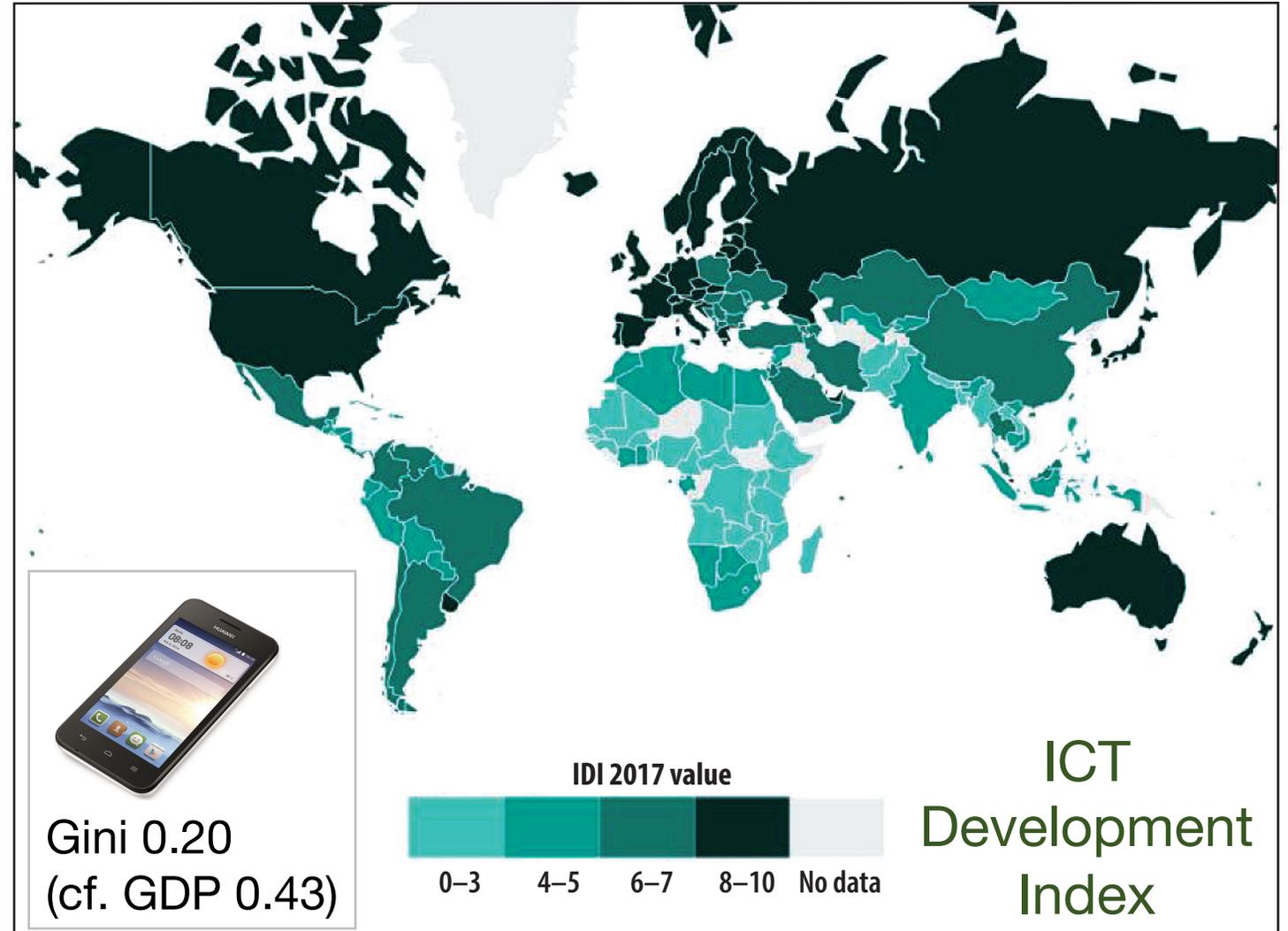
digitalisation and jobs

+ new opportunities, value of services

- automation, wage polarisation



Photo Credit: Ondřej Martin Mach via Wikimedia Commons licensed under CC BY-SA 3.0.
www.nhm.ac.uk/discover/what-is-ewaste-and-what-can-we-do-about-it.html



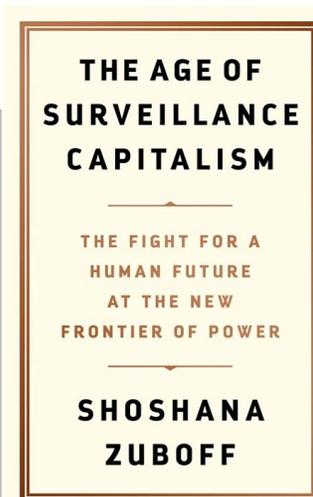
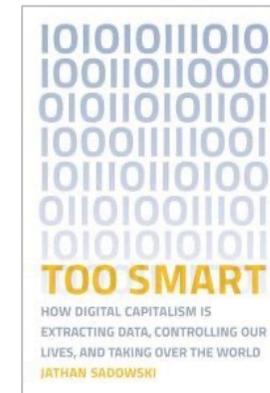
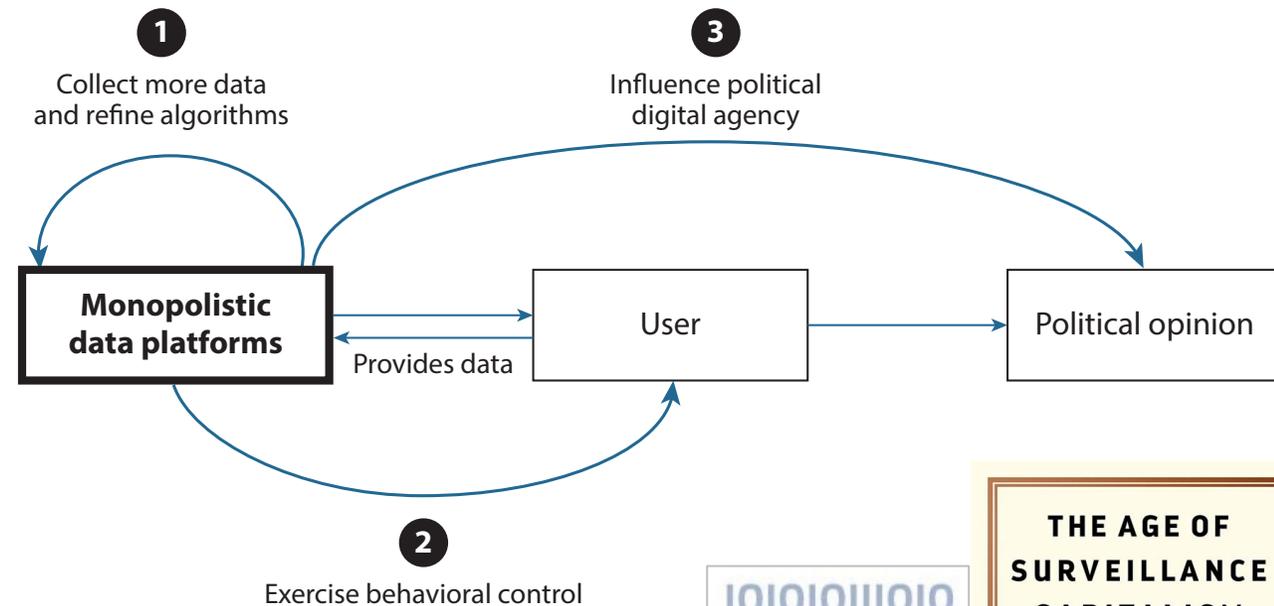
Source: ITU ICT Development Index 2017. The index is based on ten indicators, inc. households with internet access, mobile-broadband subscriptions

Implications of digitalisation for **human agency** are both enabling and empowering, but also undermining and polarising.

digital platforms and services **enable**:

- access to finance, health, education
- livelihoods
- formation of social & political organisations
- communities of identity
- local networks
- rapid info diffusion (e.g., disaster response)
- training resources for AI

digital platforms and services **risk**:



Implications of digitalisation for **energy, materials, climate** and other planetary boundaries are large but uncertain.

direct effects

- manufacture and use of devices and servers
- + efficiencies, circular economy

indirect effects

- rebound, intensification
- + substitution, coordination, optimisation

systemic effects

- scale, growth, acceleration
- + AI for SDGs, digital twins, renewable grids
... 'smart digital electrification'!



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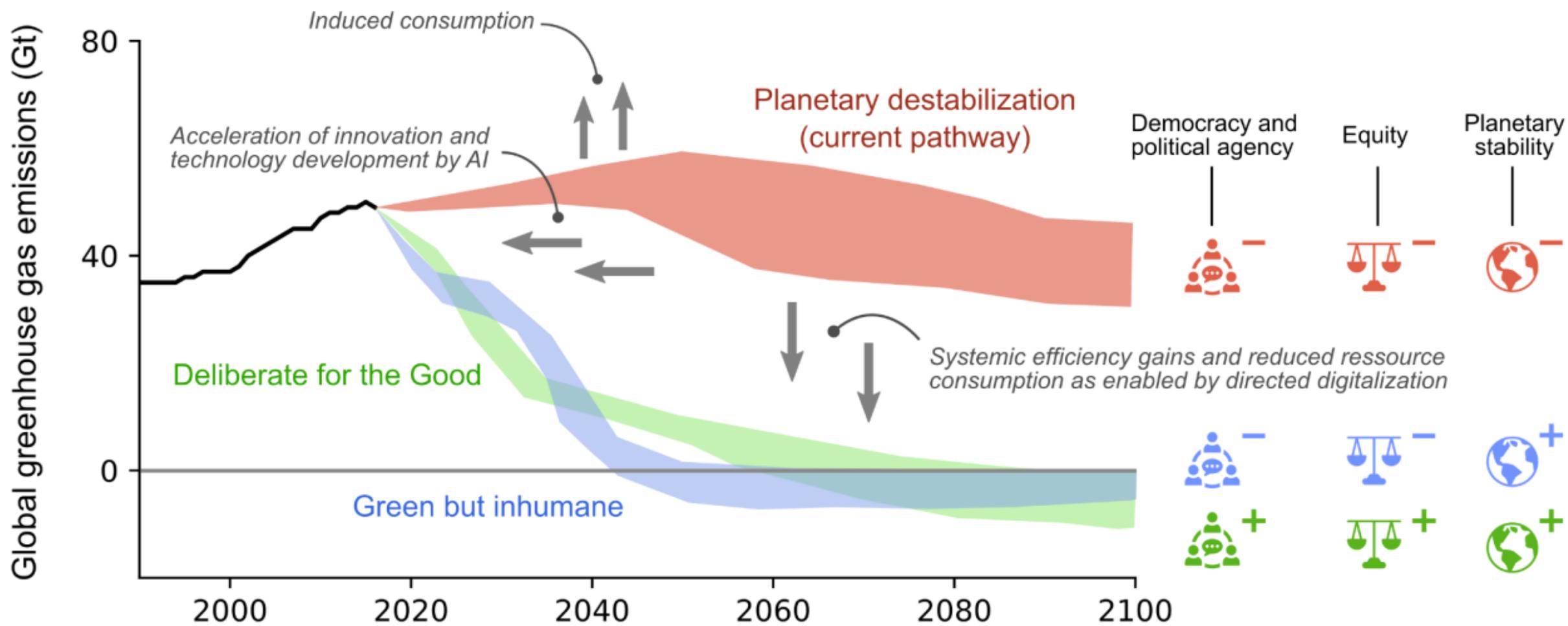


Photo: Science in HD @Unsplash.



Photo: Nicholas Picard @Unsplash.

Illustrative pathways for digitalisation in the Anthropocene have markedly different implications for resilience.



Making the 'Deliberate for the Good' scenario a reality: directed digitalisation for public purpose.

planetary boundaries

- tackling e-waste through circular economy
- energy proportionality test on new digital applications
- natural hazard early warning and impact management

equity

- regulation of data-based monopolies
- mandated private-to-public data sharing
- investments in digital infrastructure

human agency

- empowerment of digital subjects and their data
- digital skills and capabilities
- democratic governance of digital world