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Institute for Global Sustainable Development
The University of Sheffield
COLLABORATE - CRITIQUE - TRANSFORM

Recognising the sustainability costs of digitalisation and increased data flows

Analysis and Policy Recommendations

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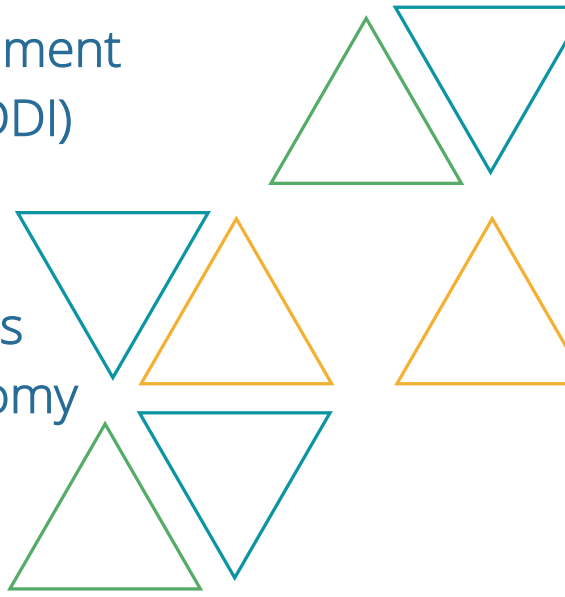
Intergovernmental Group of Experts
on E-Commerce and the Digital Economy
UNCTAD, Geneva, 10 May



Environmental (in)justices

- Climate change is a defining challenge of our time
- Many developing countries feel the impact of climate change most acutely
- Often the most vulnerable in society are most impacted by environmental impacts
- The global digital economy is underpinned by key unsustainable trends, which are currently not accounted for in business models or in policy making. Many of these exacerbate climate change.

Data (in)justices

- Ongoing digital divides in low-income countries vs high bandwidth and data consumption in higher-income countries
- Data extraction from lower-income countries, but limited data processing and monetisation
- Data flows trace unequal relations and increase concentration of power

D4S Digitalization for Sustainability Science in Dialogue

DIGITAL RESET

https://digitalization-for-sustainability.com/digital-reset

Robert Bosch Stiftung

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ETH Zurich


U of Sheffield


Shift Project


EU Commission (Observer)


Cardiff University


UZH Zurich


U Cambridge


NTNU Trondheim


KTH Stockholm


HU Berlin/ECDF


IÖW Berlin


Tactical Tech Collective


TU Berlin/ECDF


U of Oxford


IAAC Barcelona

Taking stock of digitalization for sustainability

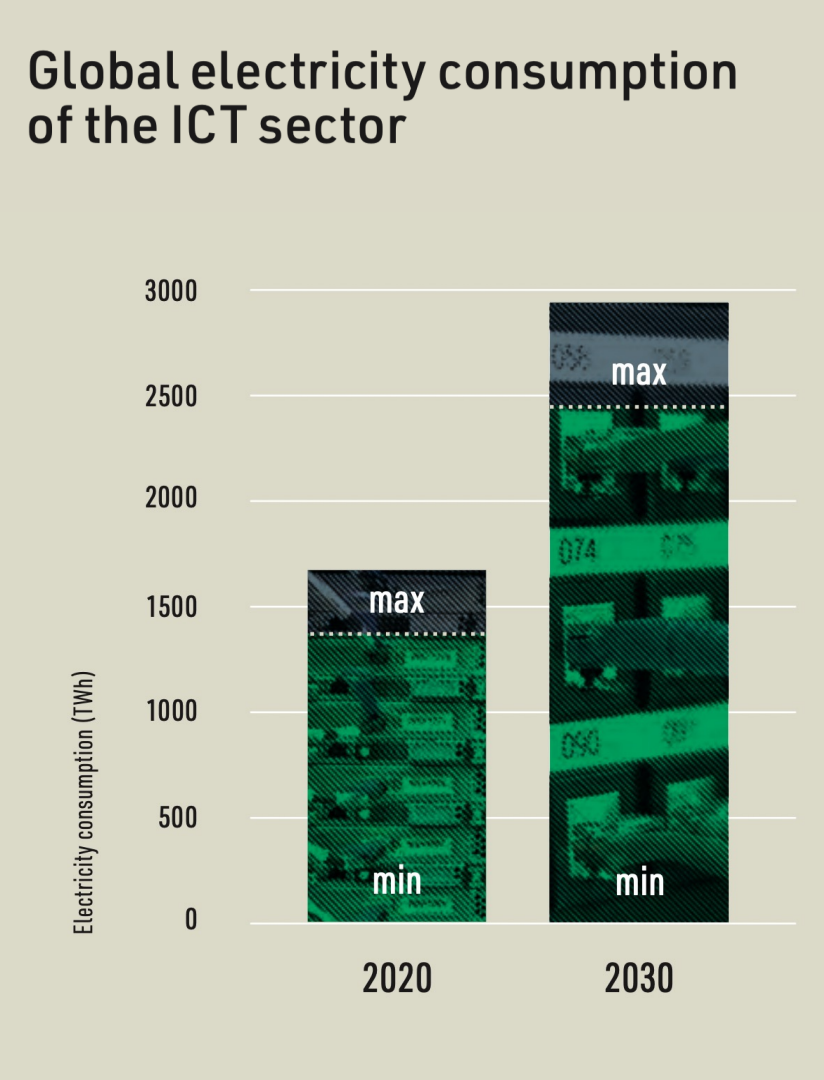
Digitalisation is a double-edged sword regarding social and environmental sustainability. Positive contributions do not occur automatically.

Unless action, including regulatory action is taken, current trends in digitalisation and datafication are set to further worsen global challenges of environmental sustainability.

Energy costs

* Electricity use for production and use of all ICT is currently approx. 8% of global electricity use
  (Santarius et al. 2020)

* Electricity use is estimated to rise by 50-80% by 2030
  (Hintemann et al. 2022)



Resource use for devices

* ICT hardware production is largely a linear economy
* Recycling is minimal and only a small sub-set of minerals can be recovered
* Global demand for copper, lithium, and cobalt will exceed projected production and processing capacities by 2030 (IEA 2022)

Hopes and Realities

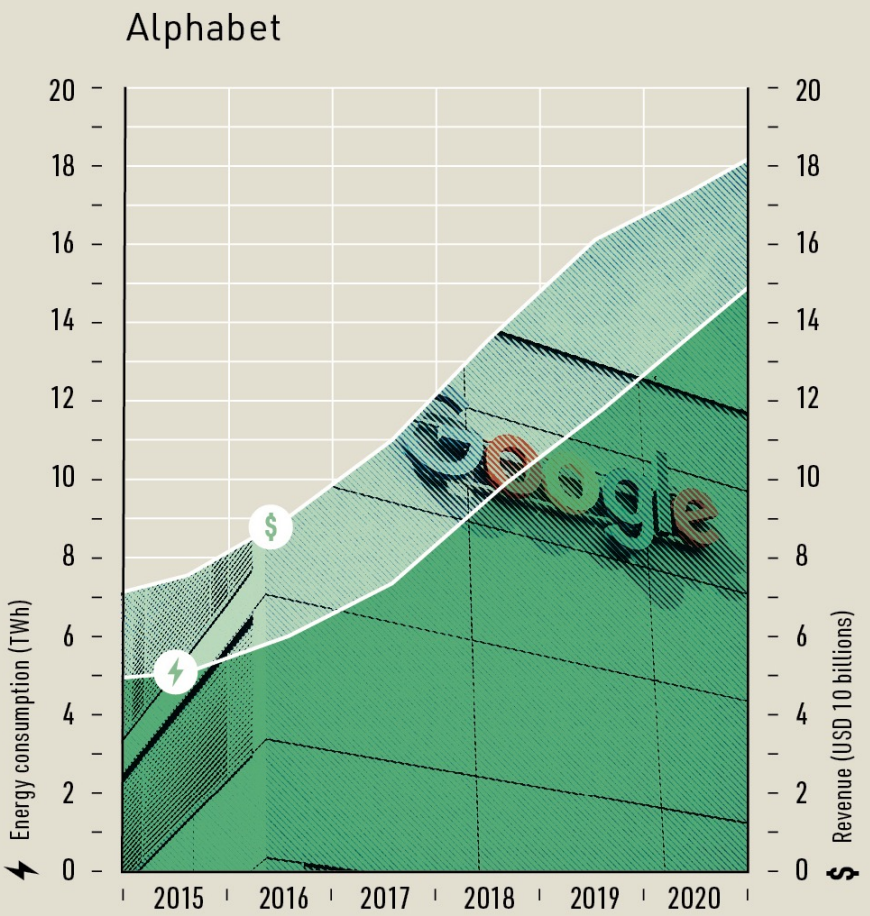
* Efficiency gains in telecommunication design are counterbalanced by new data-intensive mobile services (Cisco 2020)
* Rebound effects wipe out efficiency gains
* Data centres are making energy improvements but these are outstripped by demand (Ferreboeuf et al. 2021)
* “Smart“ devices and Internet of Things are energy-intensive
* AI is highly energy-intensive

Revenue Generation of Big Tech is closely linked to electricity use

* The energy use of e.g. Alphabet und Meta has tripled in 5 years, rising linear with revenue

* Business models include: maximising user engagement; data extraction, stockpiling and monetisation; online advertising, including video-based

Energy consumption of Alphabet



The digital economy is currently not on course for 1,5 C degrees Global Warming Limit

Company	Rating	Climate Pledge — What's there: / What's missing:
Alphabet	C	Achieve net zero emissions and use 100% carbon-free energy by 2030. No concrete targets to reduce indirect emissions outside the organisation's energy consumption.
Meta	C	Reach net zero by 2030 by reducing its emissions and supporting carbon removal projects. No concrete targets to reduce indirect emissions outside the organisation's energy consumption.
amazon	D	Reach net zero by 2040 and use 100% renewable energy for operations by 2025. No credible and publicly available plan to reduce its emissions.
NETFLIX	C	Reach net zero by 2022, reduce internal and energy emissions by 45% by 2030, and encourage suppliers to set reduction targets by 2025. No concrete targets to reduce indirect emissions.
ebay	C	Reduce direct emissions by 90% and indirect emissions by 20% by 2030. No net zero pledge.
Microsoft	B	Become carbon negative by 2030, by investing in carbon removal projects and reducing overall emissions by over 50%. Indirect emissions other than the organisation's energy consumption still increased in 2021.
Spotify	C	Reach net zero by 2030, by reducing overall emissions and offsetting the rest. No concrete and transparent reduction targets for all indirect emissions.
twitter	D	Significantly reduce emissions by 2030 and power data centres with 100% carbon-neutral energy by 2022 No net zero pledge and no concrete reduction targets.
Etsy	C	Reach net zero, reduce direct and energy emissions by 50%, and further indirect emissions by 13.5% by 2030. Pledge to reduce indirect emissions other than the organisation's energy consumption is too low.
Pinterest	F	No publicly available climate pledge

Seven Principles for a Digital Reset

* Regenerative Design
* System Innovations
* Sufficiency
* Circularity
* Sovereignty
* Resilience
* Equity

Perspectives, policies and new institutions for…

* Agriculture
* Mobility
* Circular Industry
* Distributed Energy
* Building Sector
* Consumption

Data (in)justice issues

- Data extraction from lower-income countries, but limited data processing and monetisation
- Data flows trace unequal relations and increase concentration of power

Example: Datafication of Agriculture

- Vertically integrated global seed and fertilizer companies collect data from farmers
- Data is aggregated and resold as a package – data, inputs (seed, fertilisers, pesticides), instructions geared to intensive methods
- Farmers buy the expensive package, follow instructions and report their data
- De-skilling of farmers and lock-in into socially and ecologically unsustainable practice
- Alternative: how can digital and data be used to support small-scale farming with lower inputs where farmers retain agency?

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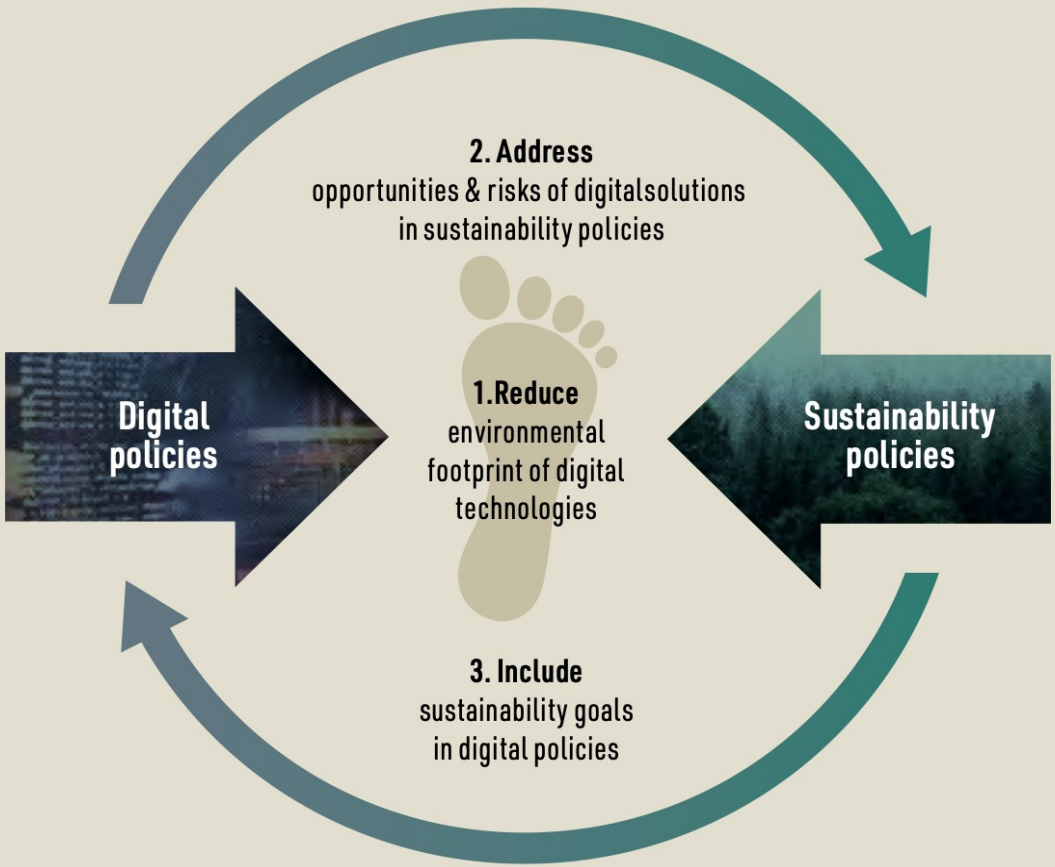
Policy Strategies



Policy recommendations

- Reaffirm belief that policy makers as stakeholders can co-shape the curve rather than run after it
- Maximise smart environmental gains – e.g. smart logistics
- Ask how much “smart” is sufficient?
- Insist on transparency and open design processes for technologies that provide public services – social media, internet search, e-commerce, app stores, learning platforms
- Foster repair culture – right to repair

Policy recommendations (data)

- Incentivise companies towards data sharing not data stockpiling
- New institutions are needed to share data and support the development of commons-orientated applications of data-based products
- Agree mandatory standards for data accessibility
- Use competition law to break up data monopolies
- Support alternative models – public companies, civil-society-run social enterprises and networks, cooperatively owned platforms

Concluding thoughts

Integrate sustainability goals into digital policymaking to achieve…

* Sufficiency in Infrastructures and Devices
* Business Models with Purpose
* Data Governance for Transformation
* Artificial Intelligence within Limits

Western individualist capitalism emphasises individual ownership, wealth increase and perpetual growth.
Other approaches are available – can we expand and diversify our thinking?

The climate crisis should encourage us to question long-held, but unsustainable orthodoxies.


We live in an age of massive disruptions – climate change, pandemic, war, digitalisation, AI.
Business as usual is over anyway.
Bold new visions are required
– let us make them sustainable.

MATERIAL

Full Report ‘DIGITAL RESET‘

Summary

DOWNLOAD:
https://digitalization-for-sustainability.com/digital-reset/

Thank you

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www.digitalization-for-sustainability.com