THALES
Building a future we can all trust

Rethinking 6G through lessons learnt from 5G deployment

ETSI and ITU Symposium on ICT Sustainability: Standards Driving Environmental Innovation

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Pierre Girard

www.thalesgroup.com

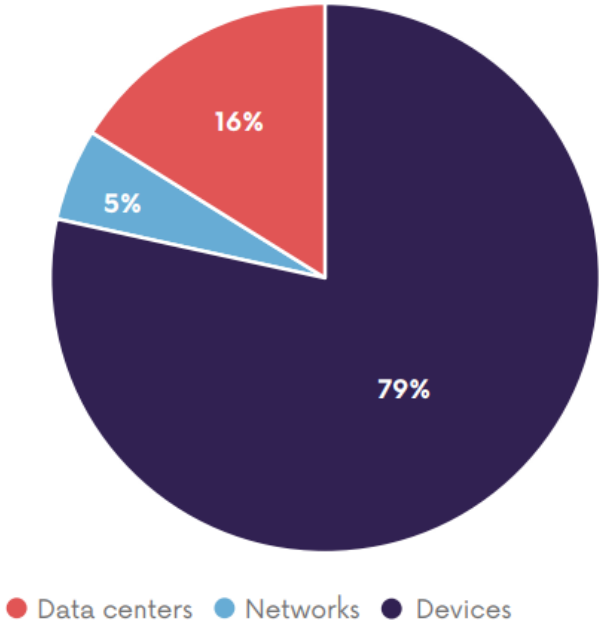
5G: the scapegoat of digital excesses ?

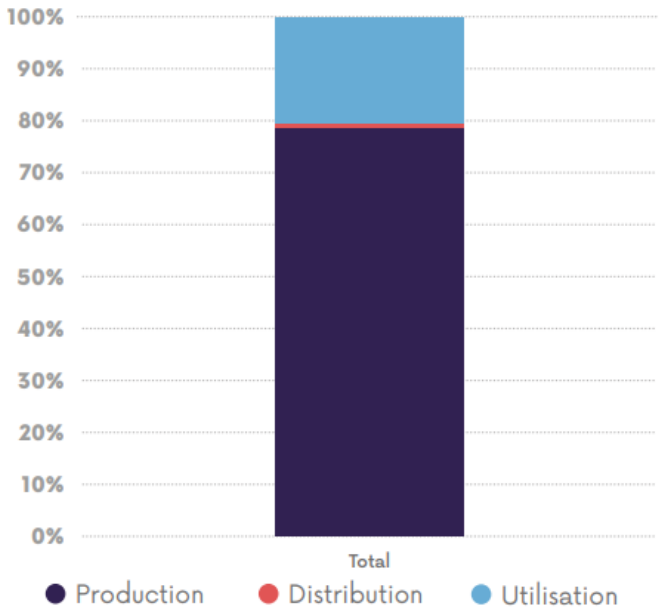
Destroyed 5G tower in Toulouse following a sabotage (November 2020)

The impact of ICT in greenhouse gases emissions

> 3-4% of worldwide GHG emissions in 2020 … but the impact could triple between and 2050 !

Source: ADEME-ARCVEP study for France in 2020





For France +12% YoY mobile network energy consumption in 2022

Source: ARCEP

Unmet societal promises or early adopters ?

Remote surgery

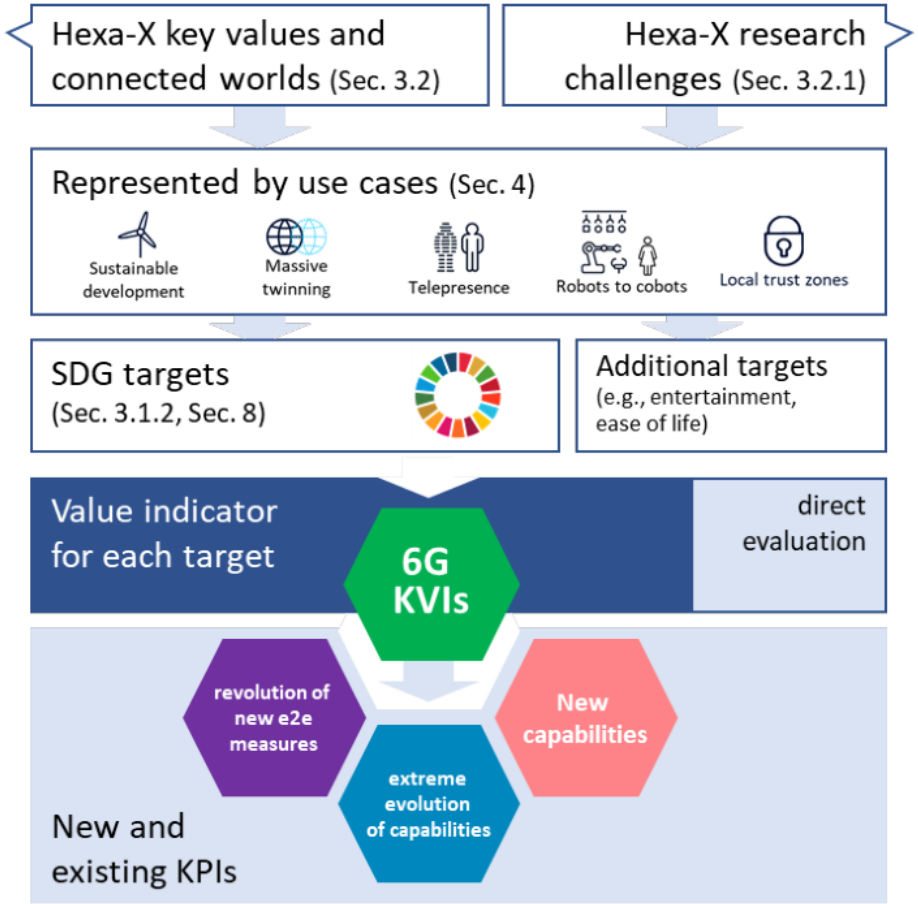
Remote surgery, September 24, 2020 in Qingdao, China

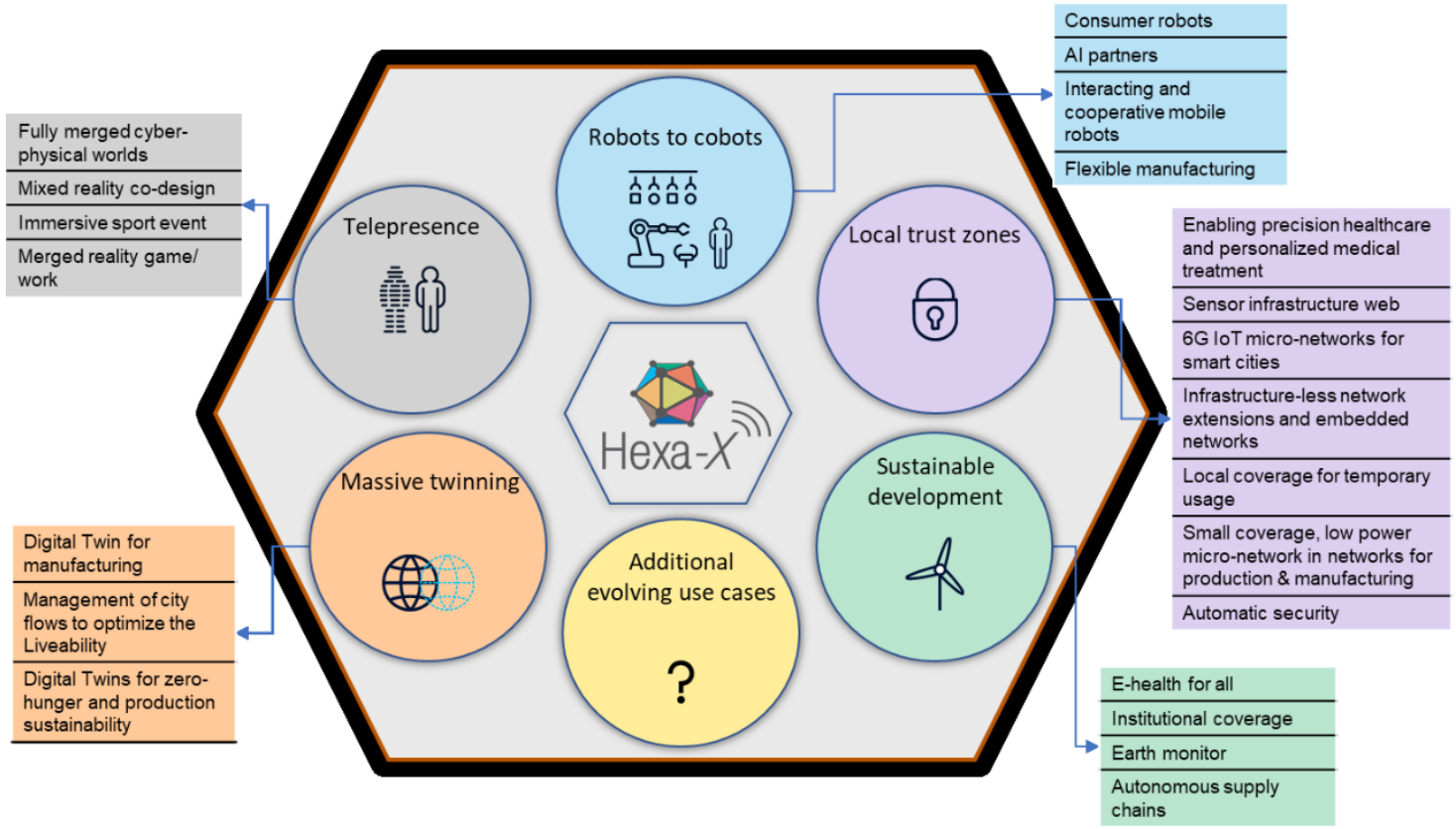
Autonomous vehicles

Cruise (owned by General Motors) robotaxi operating in San Francisco, 2023

6G: from techno push to use cases based design

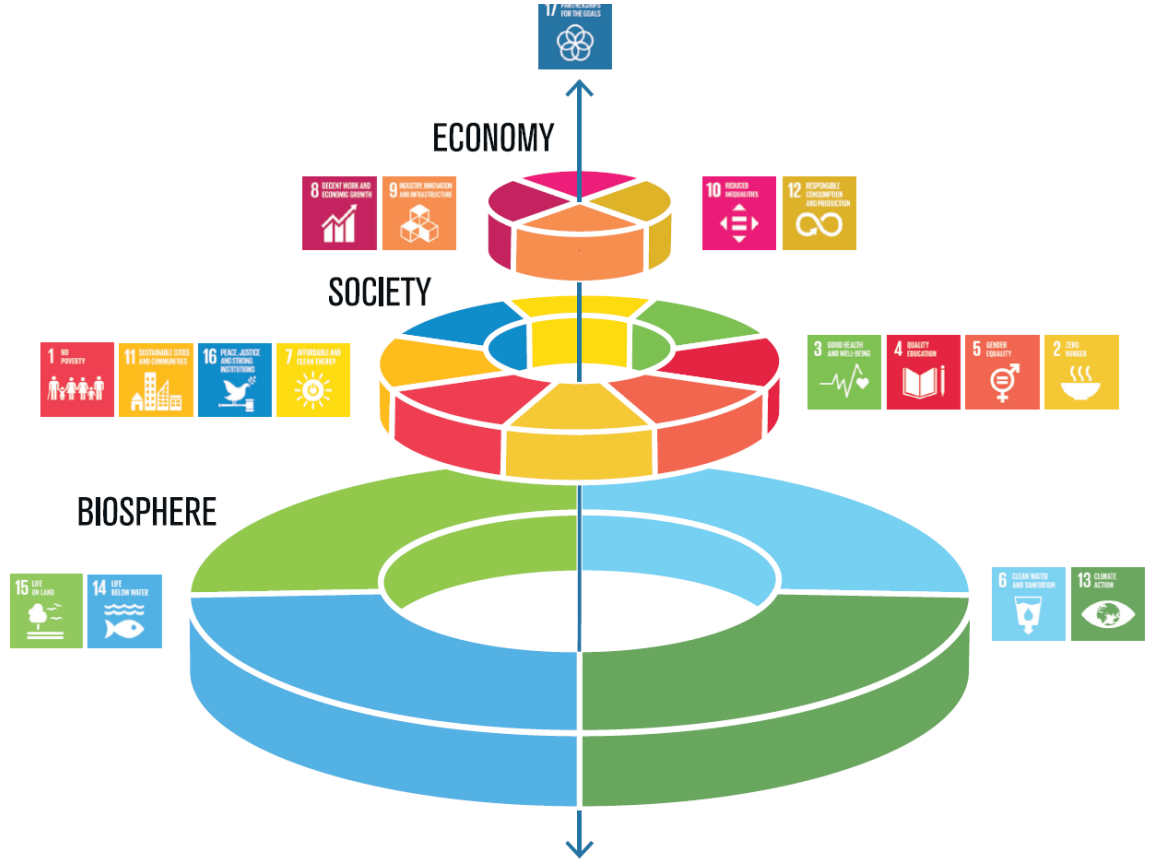
> Hexa-X project





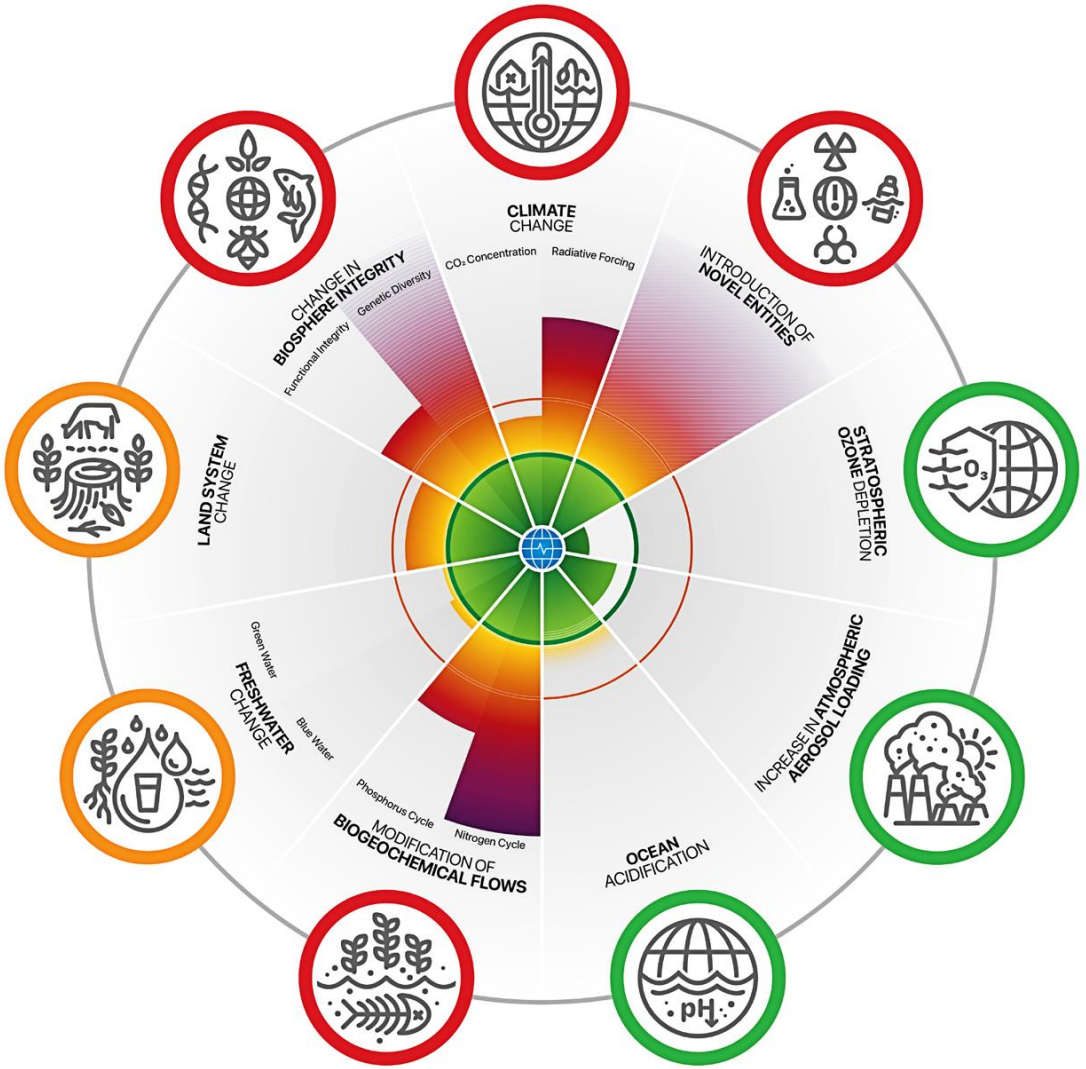
Source: Hexa-X project

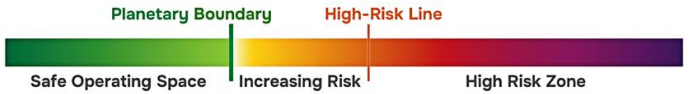
SDG targets: from flat to hierarchical representation



Source: Stockholm resilience centre - CC BY-ND 3.0

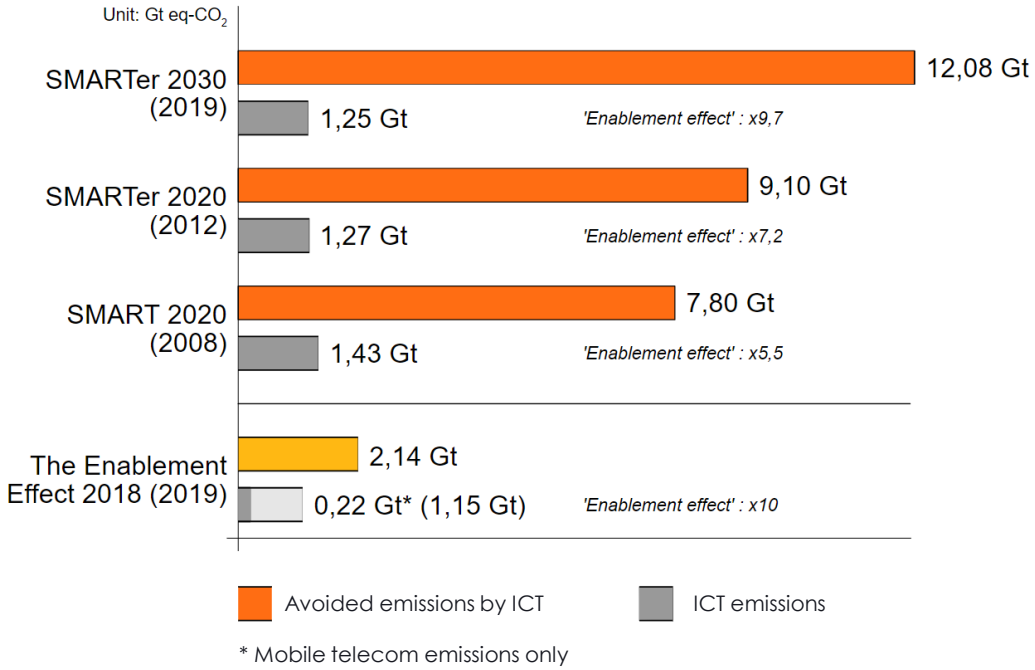
We now have quantified planet boundaries





Source: Planetary Health Check

The enablement effect is getting controversial



Data sources: GeSI and GSMA
Graph from Gauthier Roussilhe - CC BY-NC-SA 4.0

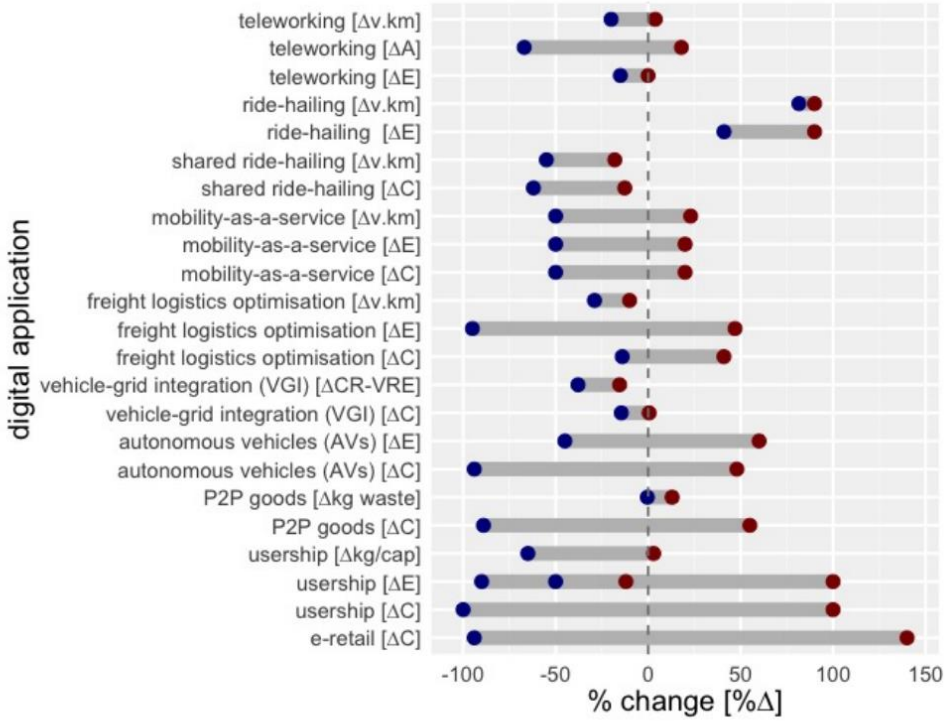
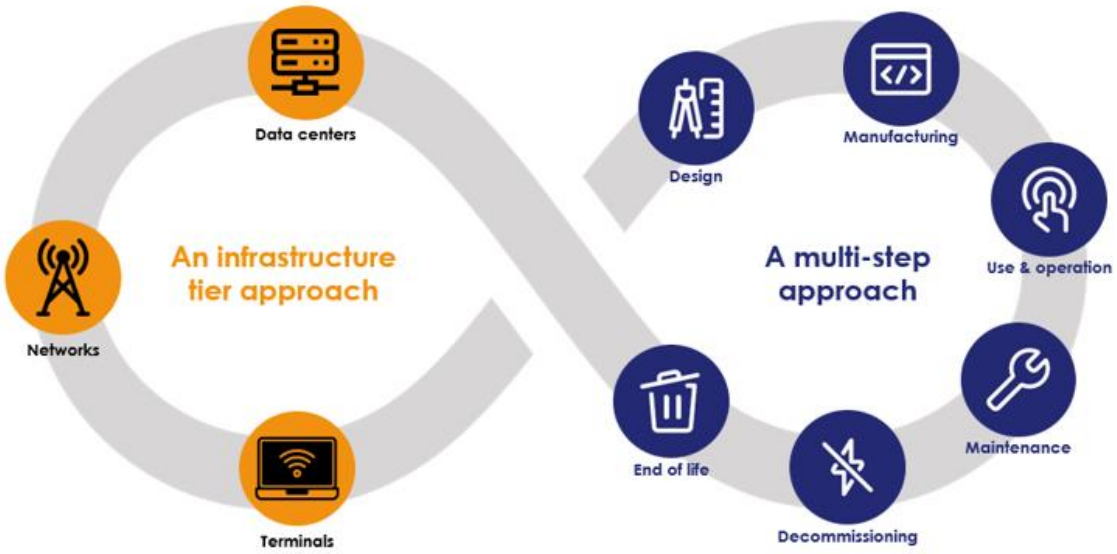


Fig. 1. Summary of estimates of indirect impacts of digital applications in transport and consumer goods sectors on activity, energy, or emission outcomes.

Source: Evidence Synthesis of Indirect Impacts of Digitalisation on Energy and Emissions, ICT4S 2024

Reminder: Recommendation ITU-T L.1480

Way forward: full assessment of ICT impact



> Full life cycle

> All impacts

- Not only carbon

> The rebound effects

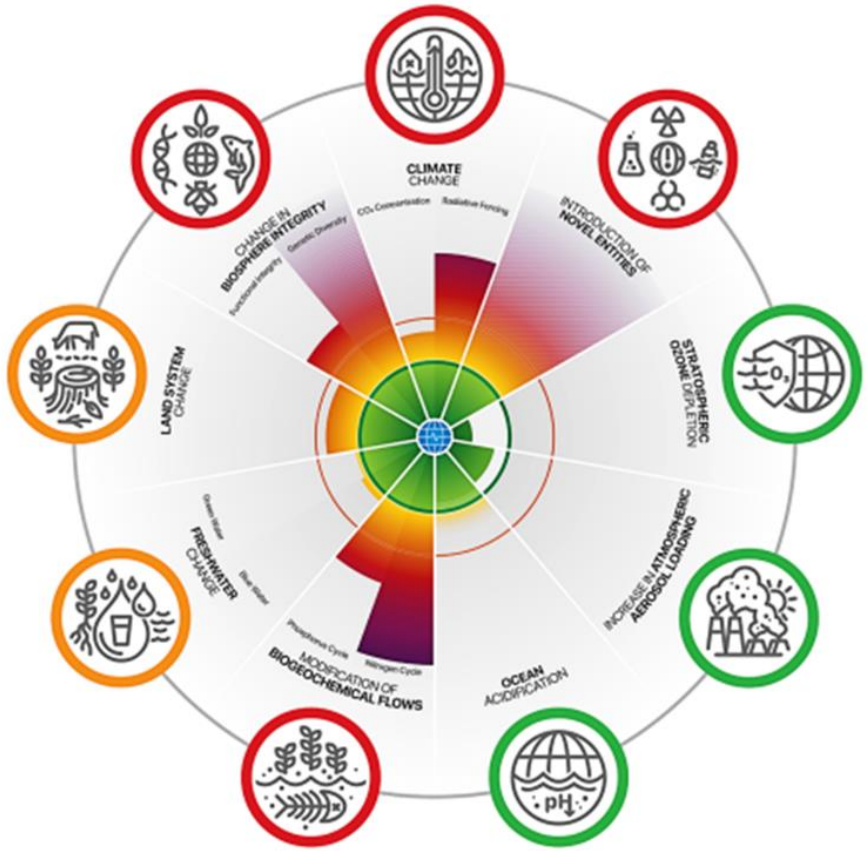
- Including higher orders, lock-in, …

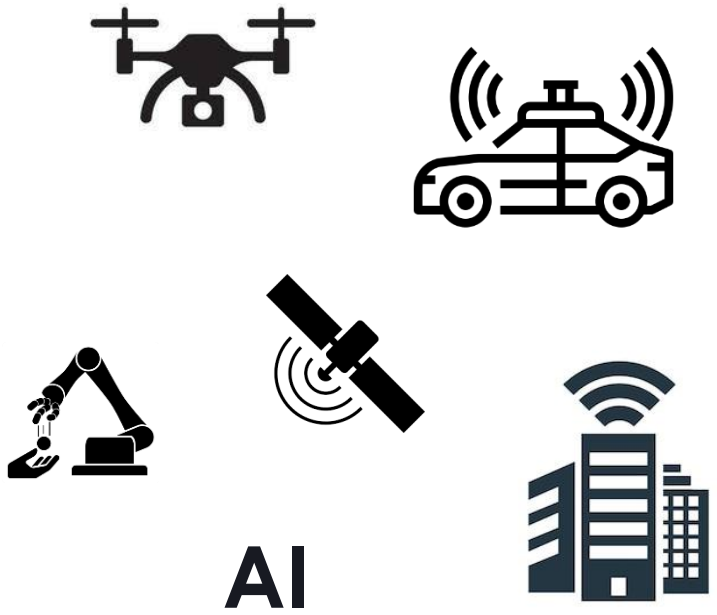
> Systemic view

- Absolute values, dynamic of usage / offer effect

Reminder: Recommendation ITU-T L.1410

Acknowledging the double bind (aka twin transition)





The future is wide, let's be open

SOCIETY IN 2050

S1 FRUGAL GENERATION

S2 REGIONAL COOPERATION

S3 GREEN TECHNOLOGIES

S4 RESTORATION GAMBLE

	S1 FRUGAL GENERATION	S2 REGIONAL COOPERATION	S3 GREEN TECHNOLOGIES	S4 RESTORATION GAMBLE
Society	• Search for meaning • **Frugality chosen but also imposed** • Preference for local • Nature protected	• Sustainable changes in lifestyles • **Sharing economy** • Fairness • Preservation of nature enshrined in law	• **New technologies rather than reduced consumption** • Green consumerism for the benefit of populations with financial means, connected society • Services provided by nature are optimised	• Mass consumption **lifestyles safeguarded** • Nature is a resource to be exploited • Confidence in the ability to repair damage to ecosystems
Technology Relationship to progress, digital, R&D	• Organisational and technical innovation • **Prevalence of *low-tech***, reuse and repair • Digital collaboration • **Stable data centre consumption** due to stabilisation of flows	• Massive investment (energy efficiency, renewable energy and infrastructure) • Digital technology in support of regional development • **Stable data centre consumption** due to stabilisation of flows	• Targeting of **the most competitive decarbonisation technologies** • Digital technology in support of optimisation • Data centres consume 10 times more energy than in 2020	• Innovation on all fronts • Capture, storage or use of captured carbon essential • Pervasive presence of the Internet of Things and artificial intelligence: **data centres consume 15 times more energy** than in 2020

Source: ADEME Futures in transition

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Thank you

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