

SC4RC

May 4 – 8, 2026
CERN

MITSI

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**Methodology for IT service
environmental impact
assessment**

- Context

- MITSI
 - Goals
 - Use case
 - Content
 - Use
 - Limitations

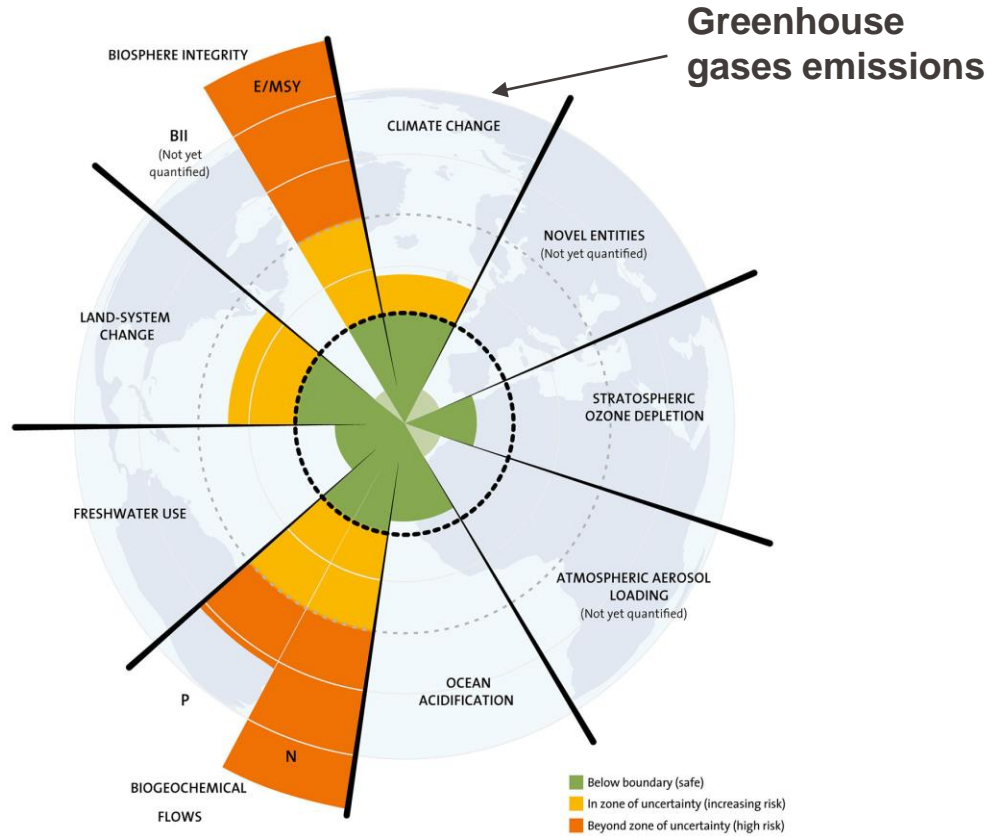
- Questions

Context - What is Sustainability?

United Nations Brundtland Commission (1987) give first definition:

“Meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

Context - Planetary boundaries



BIOSP
INTEG

LAND-SYSTEM
CHANGE

FRES

RIC OZON
TION

STRATOSPHERIC
OZONE
DEPLETION

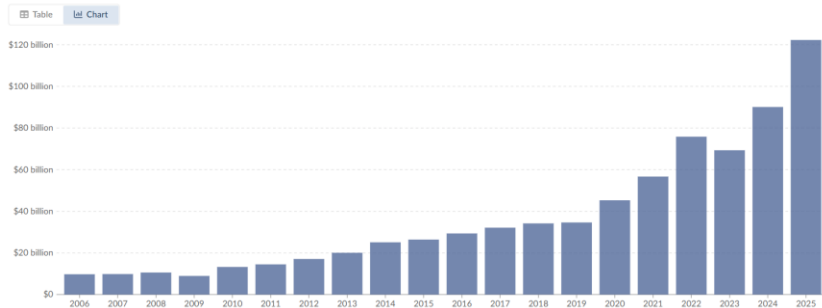
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<https://www.stockholmresilience.org/research/planetary-boundaries.html>
<https://www.ecologyandsociety.org/vol14/iss2/art32/>
<https://www.planetaryhealthcheck.org/>

- Use of IT/ICT is growing

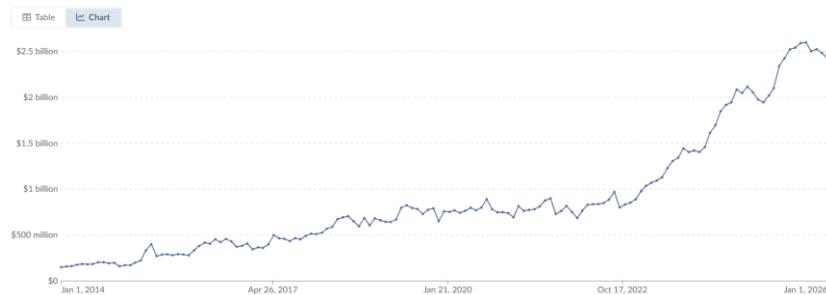
TSMC's annual revenue

Annual revenue of Taiwan Semiconductor Manufacturing Company (TSMC), in US dollars. TSMC is a semiconductor foundry that manufactures advanced chips for other companies, including processors used in AI, smartphones, computers, and other technologies. This data is not adjusted for inflation.



Monthly spending on data center construction in the United States

Cost of on-site work to build data centers each month, including materials and construction labor. It excludes the cost of IT hardware like servers and storage, which can account for a large share of total investment. This data is expressed in US dollars, adjusted for inflation.



- If we want to reduce our impact, we have to assess it
- Anyone should be able to assess the environmental impact of their IT service

Develop a methodology to assess the environmental impact of an organization's internal IT service.

This initiative received support from the ETH Board under the Joint Initiatives scheme

MITSI will **help** organizations' IT Service Providers **to assess** the environmental impact of an internal IT service.

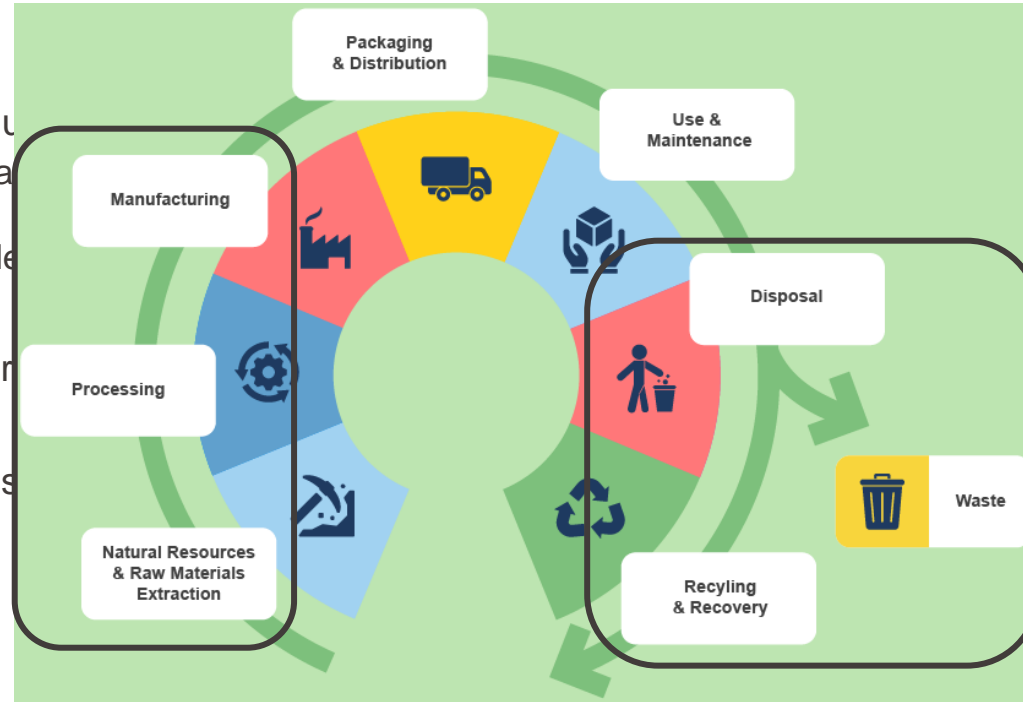
The main goal is to be **accessible** (time and competencies) and produce **results with realistic orders of magnitude**.

- Is LCA based
 - Stages

- Functional u

- Official “unit”
- Our de

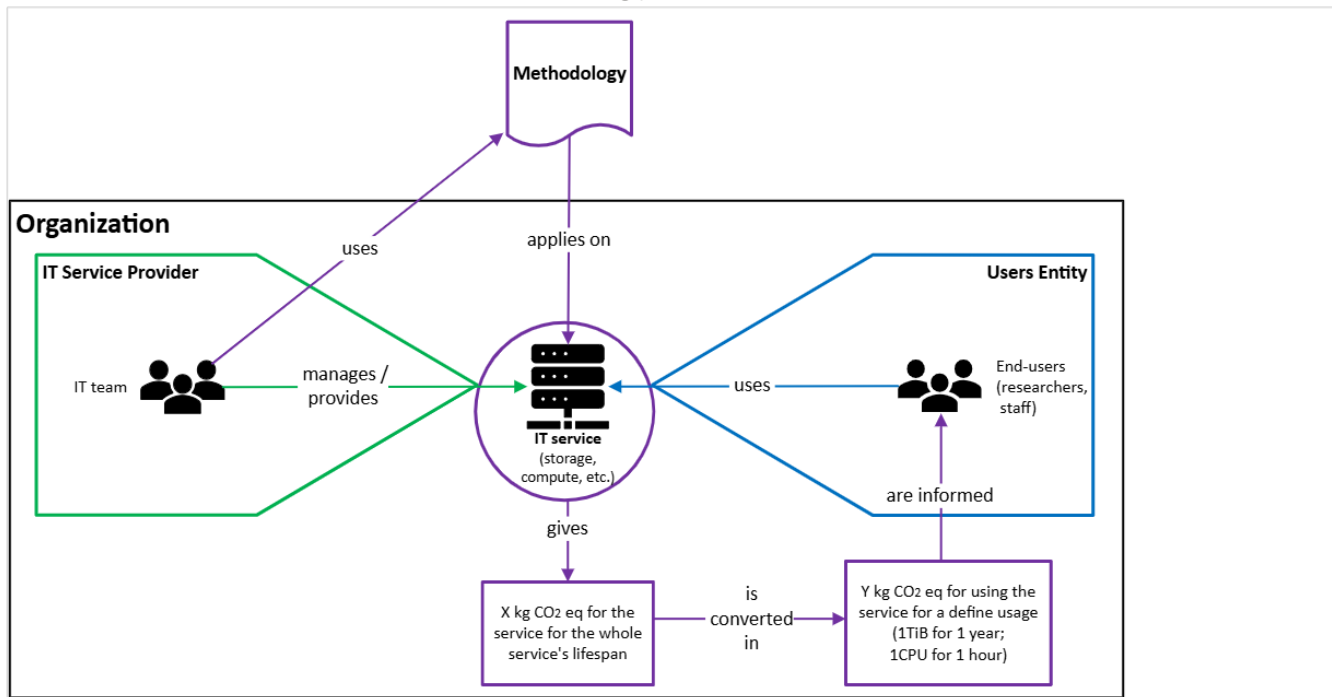
- Uses a single cr
- Relies on repres






e as a reference

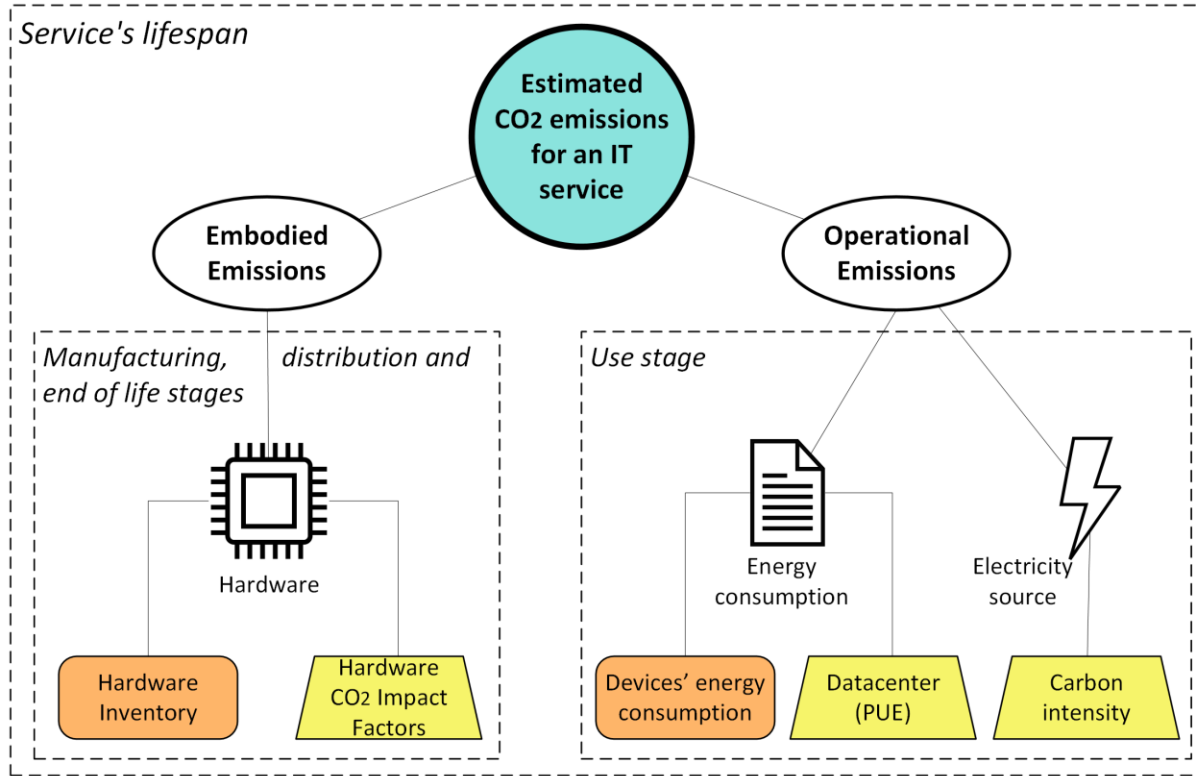
act category)

Representation of how the methodology will be used

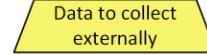
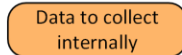
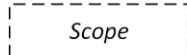
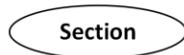


Legend

-  action linked to IT Service Providers
-  action linked to the End Users
-  action linked to the methodology



Legend



Results:

- Total amount of carbon emissions equivalent for the whole lifespan of the IT service
- Amount of carbon emissions equivalent in relation with the defined functional unit
- Repartition of emissions (embodied / operational)

By-product:

- Observing differences in results when data is modified:
 - Hardware inventory
 - Datacenters' PUE and carbon intensity

The main ones:

- Environmental impact category: carbon emissions only
- Hardware factors: behind paywall
- Work: energy monitoring has to be implemented
- PUE value: reliability
- Use: cannot be used to compare two IT services having the same function

Technical report (2026)

Paolini J. et al., MITSI - Methodology for IT Services Environmental Impact Assessment

<https://infoscience.epfl.ch/handle/20.500.14299/261022>

Scientific article

To come

A big thank you to my colleagues: Manuel Cubero-Castan (Sustainability team), Xavier Ouvrard (EcoCloud), Miguel Peón Quirós (EcoCloud) and Nicolas Richart (SCITAS)

Questions?

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**Thank you for your
attention!**