Study on the environmental impacts of the ICT sector in Switzerland

Joint Publication – ITU x Resilio

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resilio

ITU

Solutions for a sustainable world.

The study

How was it conducted?

An easy question:

What are the (hidden?) **environmental costs**
of ICT in Switzerland?

What does it mean to us?
Environment = much more than CO_2

Participants

More than **20 public and private** Swiss and international organizations and individuals have provided data, information, their knowledge and expertise to make this study possible.

Swiss authorities, Swiss academics, Swiss Research Centers, Industry leaders, IT and Sustainability experts have helped us in this journey.

■ Joint authors

■ Participants

The scope

■ **Temporal scope**

- Data for 2024
- Projections for 2035

■ **Methodology**

- Complete **Life Cycle Assessment**
- Manufacturing, usage, distribution and end-of-life phases
- **6 environmental indicators** (from particulate matter to CO_2 emissions)

■ **ICT scope**

- **User equipment:** laptops, smartphones, game consoles, IoT equipment, etc.

- **Networks:** fixed and mobile networks, optical fiber, copper cables, 2,3,4,5G antennas, etc.

- **Datacenters:** servers, servers dedicated to AI, storage, cooling infrastructure, **imports/exports** of Cloud services from/to other countries

Alignment with ITU Standards

ITU-T L.1450 rev

Standards considered

ITU-T L.1450 rev: Methodologies for the assessment of the environmental impact of the information and communication technology sector

No full compliance to the standard. Discrepancies concerning the **ICT sector boundaries**:

- Not taken into account (lack of data):

    - Computers peripherals

    - Enterprise networks

    - Satellite telecommunication

    - ICT services (consulting)

- Inclusion of some entertainment and media elements (TV, printer, video games, etc.)
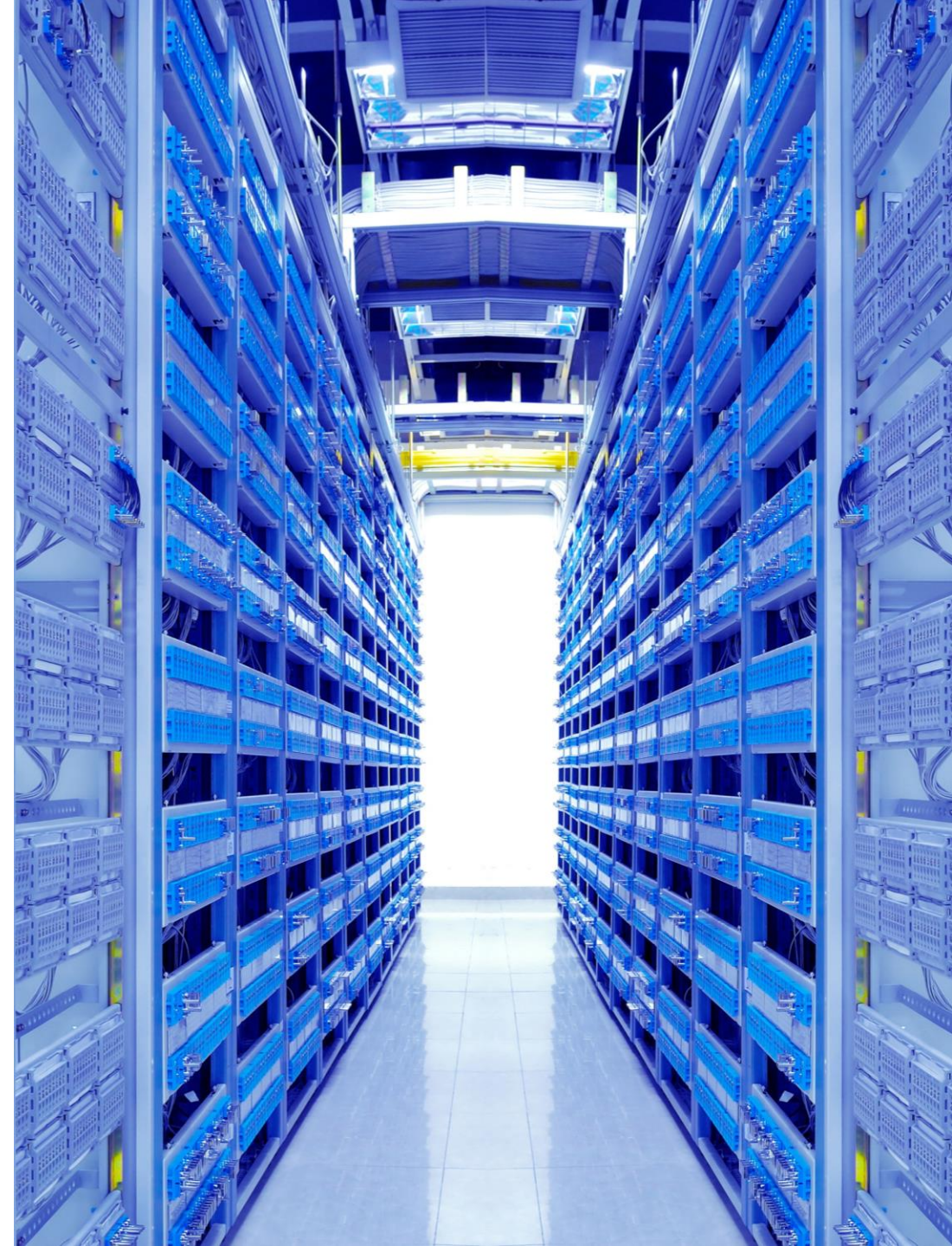
Zoom on ITU-T L.1450 rev

Following the tier approach defined in ITU-T L.1450 rev, this study followed a Tier-2 assessment:

Tier 1 Assessment

Detailed assessment that relies mainly on ICT-specific primary data

Tier 2 Assessment

Simplified assessment that relies on a mix between primary/ICT-specific and secondary data

Tier 3 Assessment

Screening assessment aiming at accounting for the significant and relevant sources of emissions

The results

The key takeaways

The use of ICT in Switzerland

- 99% of inhabitants are active internet users

- 8.5 devices per inhabitant
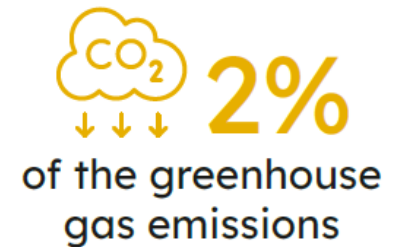
- 6.9 TWh, 12% of the country's overall electricity use

⚡ **12%**
of the electricity
consumption

=

1 in 3
household!

ICT impacts in 2024

- **Climate change impacts** : almost 2 million tons of CO_2 eq.

- Comparison of the impacts to the **planetary boundaries**: critical ecological thresholds that define a safe operating space for humanity.

At individual scale :

Indicator	Impacts	Planetary boundary
Climate change	221 kg of CO_2 eq.	22% of the budget (to stay below 1°C)
Minerals and metals use	21 g of Sb eq.	65% of the budget
Ecotoxicity, freshwater	7,224 CTUe	38% of the budget

Growing datacenters impacts

The results suggest that datacenters footprint is increasing strongly with new usages (generative IA, high-definition video streaming, etc.).
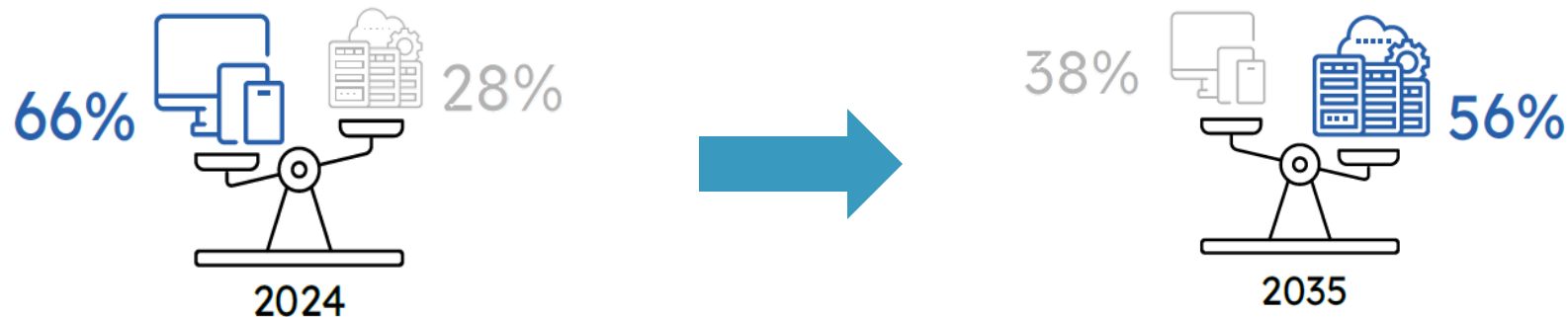
Switzerland is at the heart of this trend, particularly the **Zurich area**. It is the second largest AI development hub in Europe.

Recommendations

The environmental footprint of ICT in Switzerland is on a **trajectory that is incompatible with long-term global sustainability goals**.

➢ Need for **targeted mitigation strategies** as well as a broader governance framework to ensure the **sustainability of the digital transformation**

➢ **Responsibility** for mitigating the environmental impacts **must not rest solely with individual consumers**:

- Manufacturers
- Policy makers
- Organizations

Recommendations

Public authorities

Enhance collection & **local recycling of e-waste** to ensure proper disposal and recovery of valuable materials, reducing our current dependency.

Businesses

Implement **BYOD** (Bring Your Own Device) approach to combine personal and professional use of devices.

Citizens

Prefer **high reparability** index, **second-hand**, or certified (TCO, EPEAT) **equipment**. They are more robust & last longer.

As a society, open a debate on the cost of our ICT usage on our living environment!

Thank you for your attention!

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https://sustainableit.ch/