The environmental footprint of our digital world

POINT DE M.I.R
Maison de l'Informatique Responsable

- Founder of Point de M.I.R, Maison de l'Informatique *plus* responsable
- Co-founder of M.I.R, Conseil & Formation
- Author of :
  - ✓ *Le son sur le web*, Editions Dunod, 2002
  - ✓ *Les éco-gestes informatiques au quotidien*, Ademe, 2017
  - ✓ *Le guide d'unnumérique plus respnsable*, Ademe, 2020
  - ✓ *A Handbook of a More Responsible Digital Life*, Ademe, 2021
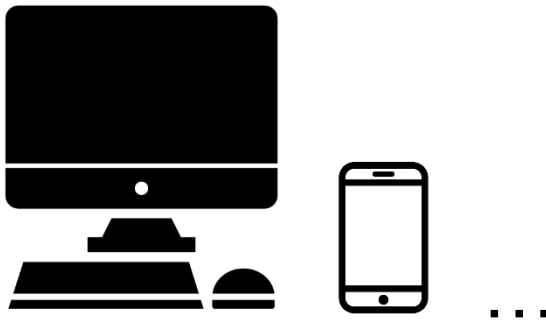- Trained at Université Paris Dauphine, Université Aix-Marseille II

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As a starter, worldwide

4.1 billion users, 8 pieces
of equipment / user*

…

Data : 33 Zb in 2018
and 175 Zb in 2025***

50 % of the worldwide population
is connected
to the internet**

Digital world growth :
x 3 to 5 between
2010 and 2025*

Sources :
*The environmental footprint of the digital world, GreenIT.fr, 2019
**https://fr.statista.com/statistiques/985232/nombre-utilisateurs-internet-monde
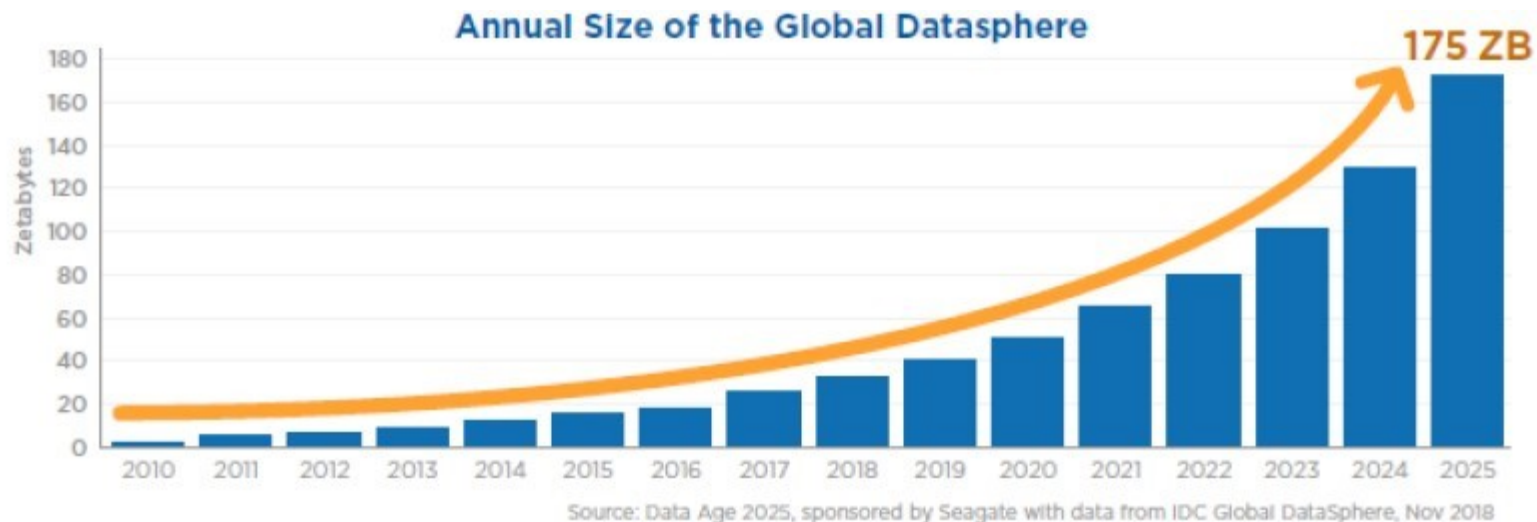****Dataedge 2025, 2018*

Key figures

- Primary energy consumption: 4.2%
- Greenhouse gas emissions: 3.8%
- Water consumption: 0.2%

- Electricity consumption (Elec.): 5.5%

- 22 million tonnes of antimony eq

User equipment is the main source of environmental impact, accounting for between 59% and 84% of total impact

ENVIRONMENTAL FOOTPRINT OF THE DIGITAL WORLD - Version 2.0 - Published in October 2019 - GreenIT.fr

Key figures

Annual Size of the Global Datasphere

175 ZB

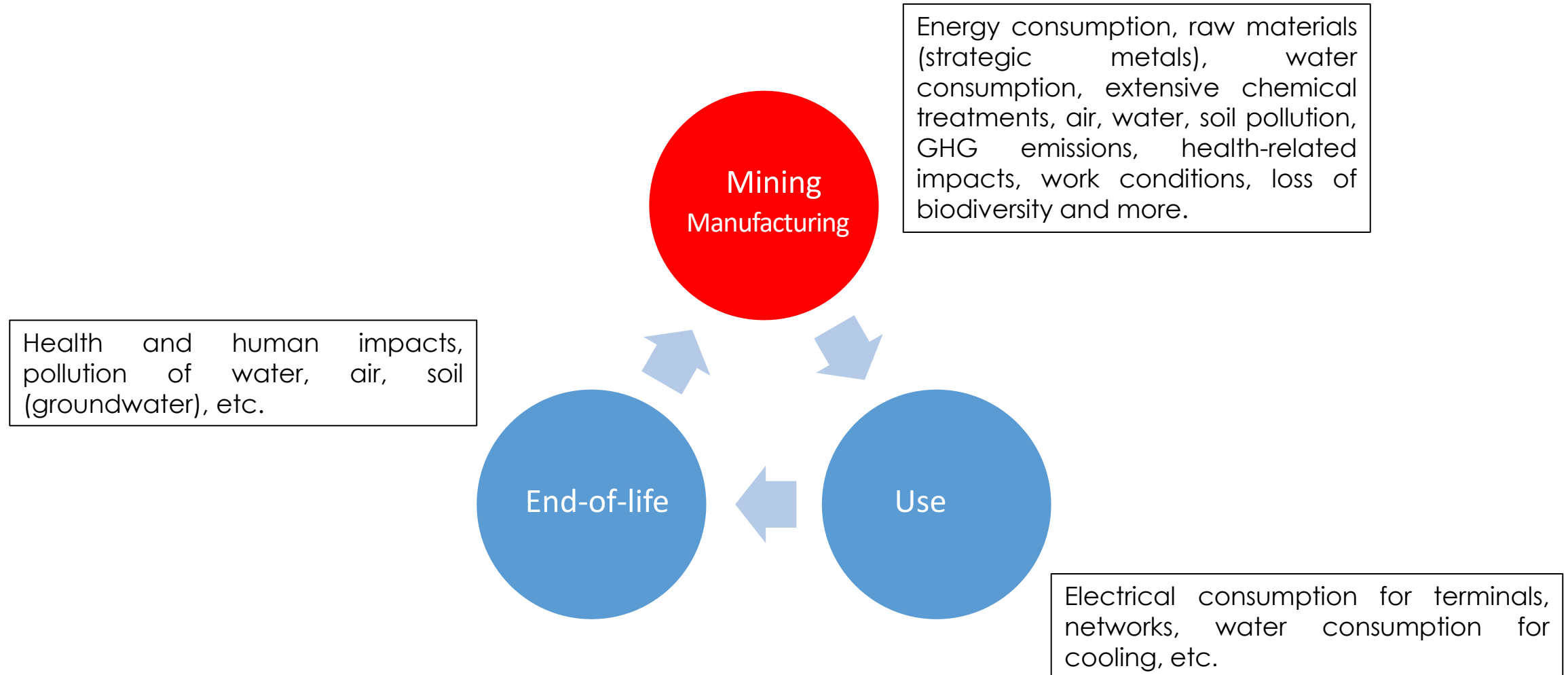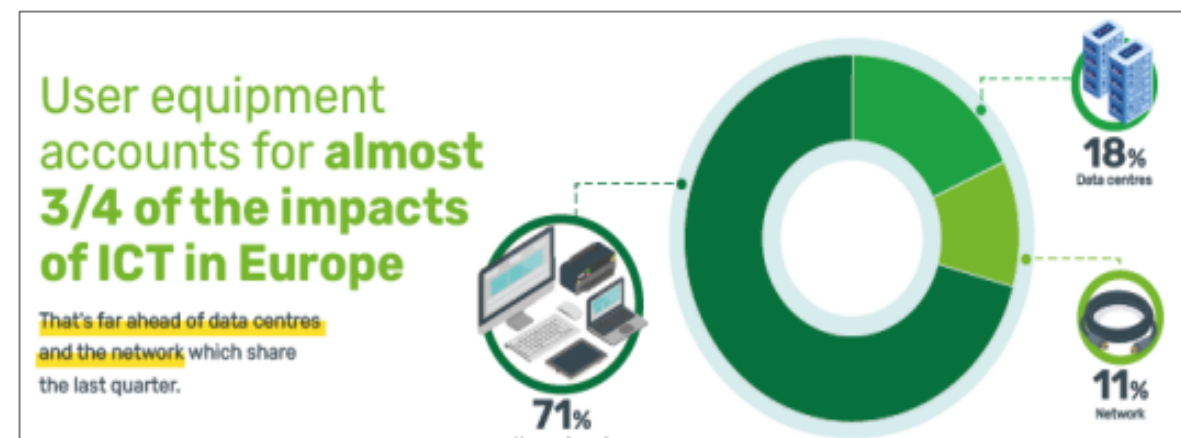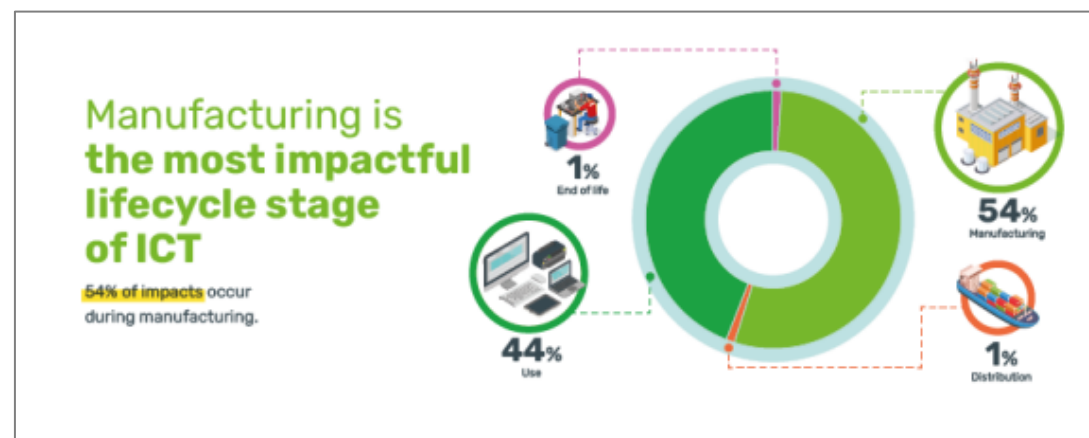Source: Data Age 2025, sponsored by Seagate with data from IDC Global DataSphere, Nov 2018

Figure 10 - les courbes d'explosion des données autrefois synonymes de croissance deviennent très préoccupantes
[Source : (Reinsel, D., Gantz, J., Rydning, J., 2018)]

Simplified life cycle

Energy consumption, raw materials (strategic metals), water consumption, extensive chemical treatments, air, water, soil pollution, GHG emissions, health-related impacts, work conditions, loss of biodiversity and more.

Mining
Manufacturing

Health and human impacts, pollution of water, air, soil (groundwater), etc.

End-of-life

Use

Electrical consumption for terminals, networks, water consumption for cooling, etc.

Manufacturing and user equipment

Manufacturing is **the most impactful lifecycle stage of ICT**

54% of impacts occur during manufacturing.

1% End of life
54% Manufacturing
44% Use
1% Distribution

User equipment accounts for **almost 3/4 of the impacts of ICT in Europe**

That's far ahead of data centres and the network which share the last quarter.

71% User equipment
18% Data centres
11% Network

Bordage, F., de Montenay, L., Benqassem, S., DelmasOrgelet, J., Domon, F., Prunel, D., Vateau, C. et Lees Perasso, E. GreenIT.fr. 2021. Behind the figures: understanding the environmental impacts of ICT and taking action

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Digital services impacts
per EU-28 inhabitant (one year- environmental impacts & flow indicators)

- Climate change impacts are similar to 1 round trip by a plane passenger between Paris and Athens.
- Resource use, mineral and metals: 0.69 kg of tin in terms or rarity, and 1,110 kg of displaced materials, equivalent to the weight of 18 humans (averaging 62 kg).
- Waste production: 225 kg of global waste, equivalent to the weight of 3.6 humans (averaging 62 kg).
- Electricity consumption: 1 heater (1,000W) powered non-stop for 23 days

Bordage, F., de Montenay, L., Benqassem, S., DelmasOrgelet, J., Domon, F., Prunel, D., Vateau, C. et Lees Perasso, E. GreenIT.fr. 2021. Behind the figures: understanding the environmental impacts of ICT and taking action
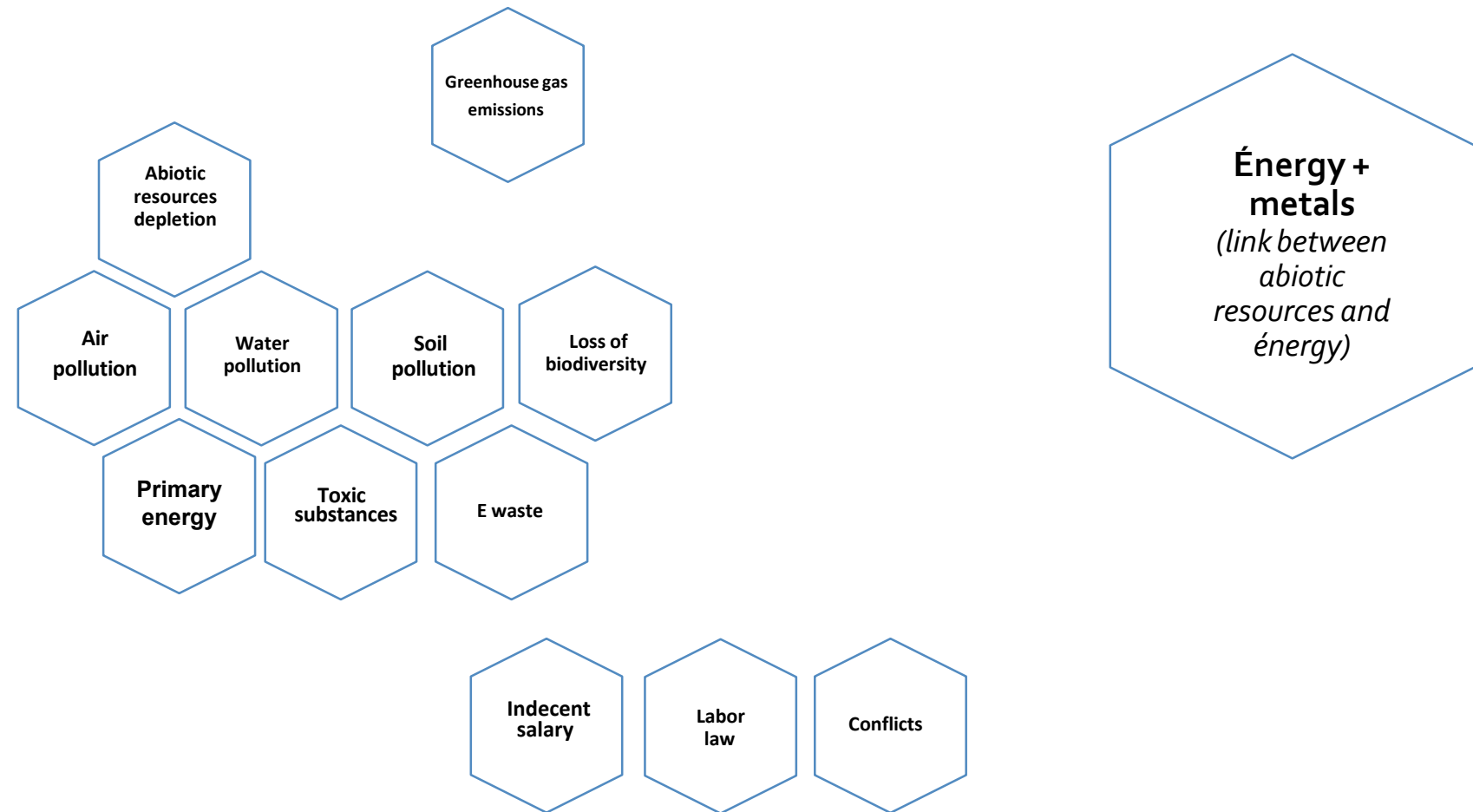
Environemental Indicators (selection)

- Abiotic resource depletion (ADP)
- Global Warming (GWP)
- Energy balance (PE primary energy)
- Tension on fresh water (Water)

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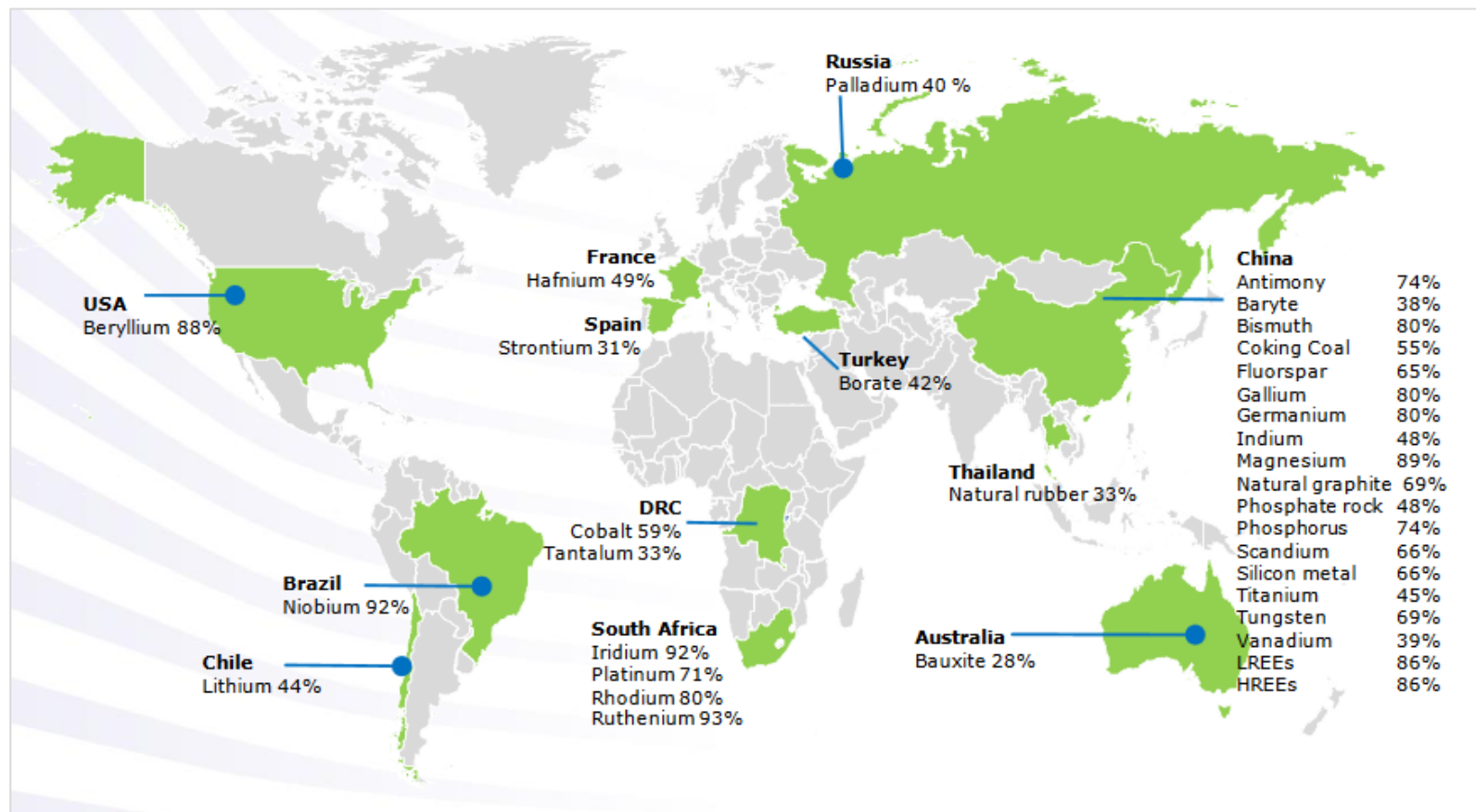Maison de l'Informatique Responsable

The bigger picture

Greenhouse gas emissions

Abiotic resources depletion

Air pollution

Water pollution

Soil pollution

Loss of biodiversity

Primary energy

Toxic substances

E waste

Indecent salary

Labor law

Conflicts

Énergy + metals
(link between abiotic resources and énergy)

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Critical Raw Materials

Critical Raw Materials, UE, 2020

Recycling?

Recycling rates of metal UNEP, 2011

○ < 1 %

Terres rares (Lanthanides) ○ < 1 %
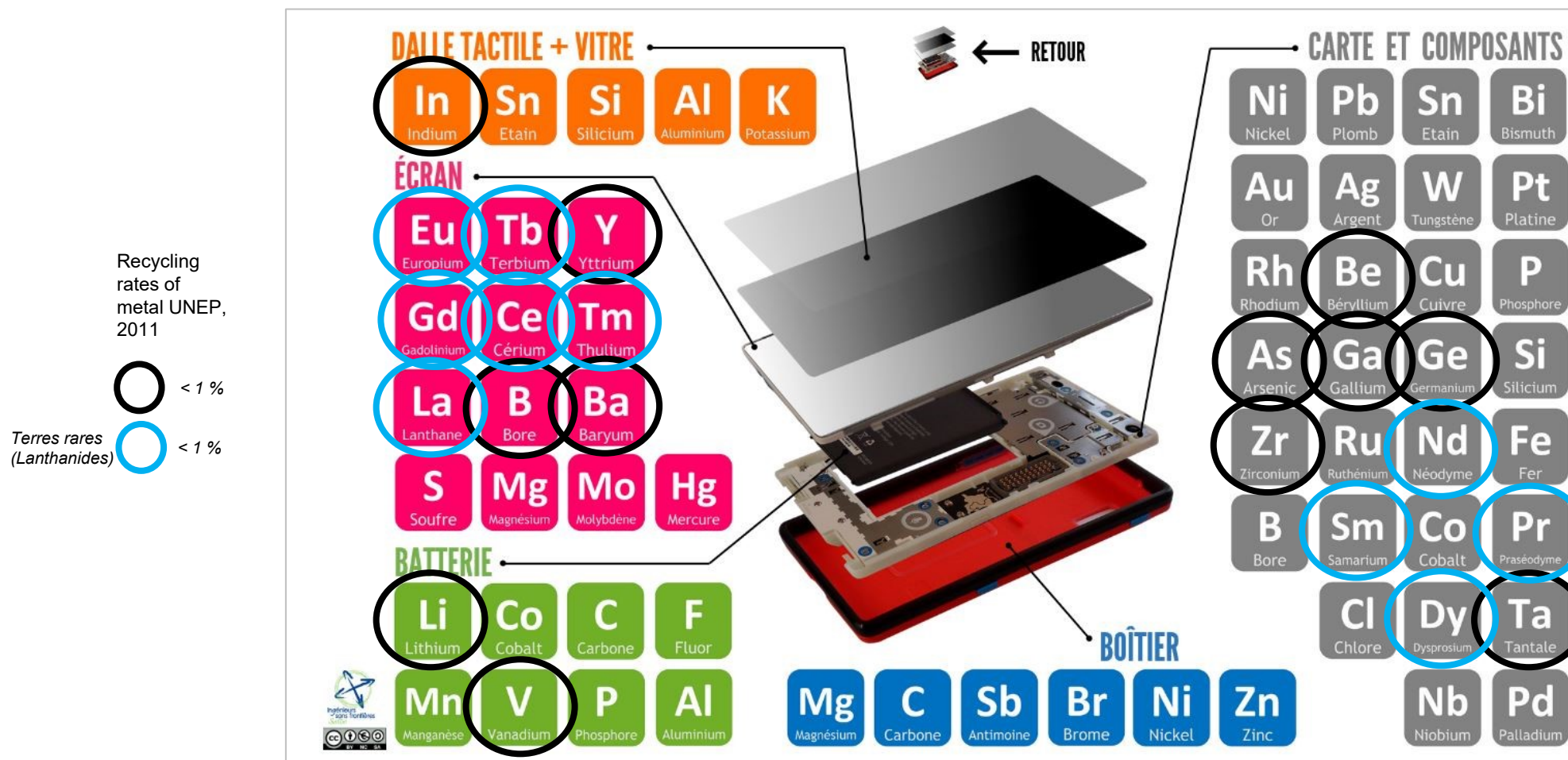
If we had only
one thing to remember…

LESS EQUIPMENT,
LONGER LIFE!

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