Evaluating the carbon footprint of an IT infrastructure

I&E Advanced 1 - CS & Ecology

2022-2023

1 Life Cycle Assessment of products

First we will compare two laptop LCAs: Dell Precision 7760 and 16-inch MacBook Pro

1. What is the carbon footprint of Dell Precision 7760? And for the MacBookPro?
2. What proportion of it comes from manufacturing?
3. What proportion of the carbon footprint comes from the end of life phase? Do you think it as representative of its actual impact (explain why)?
4. Have a look at the characteristics of these two laptops (Dell's and Apple's specs): is it relevant to compare them? Why?

2 IT infrastructure of a company

We will now consider a company with 100 employees, and evaluate the carbon footprint of its IT infrastructure. We will use the EcoDiag tool to assess this carbon footprint in several configurations. Note that you can switch from French to English in the tool by clicking on the flag. Use the stock version of EcoDiag. The inventory of its IT equipment is given in Table 1.

	number	estimated life time
laptop	100	3
IP phone	100	7
screen	200	5
mouse	100	7
keyboard	100	7
smartphone	10	2
printer	10	4
wifi hub	15	5
server	30	5
desktop	100	5

Table 1: IT inventory

1. What is the carbon footprint due to these devices? What parts come from production and use?
2. Compare the carbon footprint of the IT equipment per employee to the average French carbon footprint (around 12 tons): Which proportion does it represent?

3. Suppose that we can extend laptops, smartphones, servers, screens, printers and desktops as proposed in Table 2. What is the impact on carbon footprint?
4. Explore the possibilities offered by EcoDiag to propose solutions to diminish the carbon footprint of the company. Propose 3 solutions to be more efficient and justify them. Be careful not to simply transfer an impact to another item.
5. If we now suppose that the company is located in Ireland, which has an electricity carbon intensity of 0.353 kgCO2e/kWh (source: EEA), what does the carbon footprint become?
6. Make a list of the IT items and services that are probably used by the company and are not taken into account in EcoDiag. Can you explain why for some of them? What would you expect their impact to be?
7. If you reach this part before the end of the session, you can:
   - compute your own footprint using EcoDiag for your devices
   - compute your global carbon footprint on (for example) `https://nosgestesclimat.fr/`

	number	estimated life time
laptop	100	5
IP phone	100	7
screen	200	8
mouse	100	7
keyboard	100	7
smartphone	10	5
printer	10	7
wifi hub	15	5
server	30	9
desktop	100	7

Table 2: IT inventory with new life times (the values for the equipment in italics have not changed)