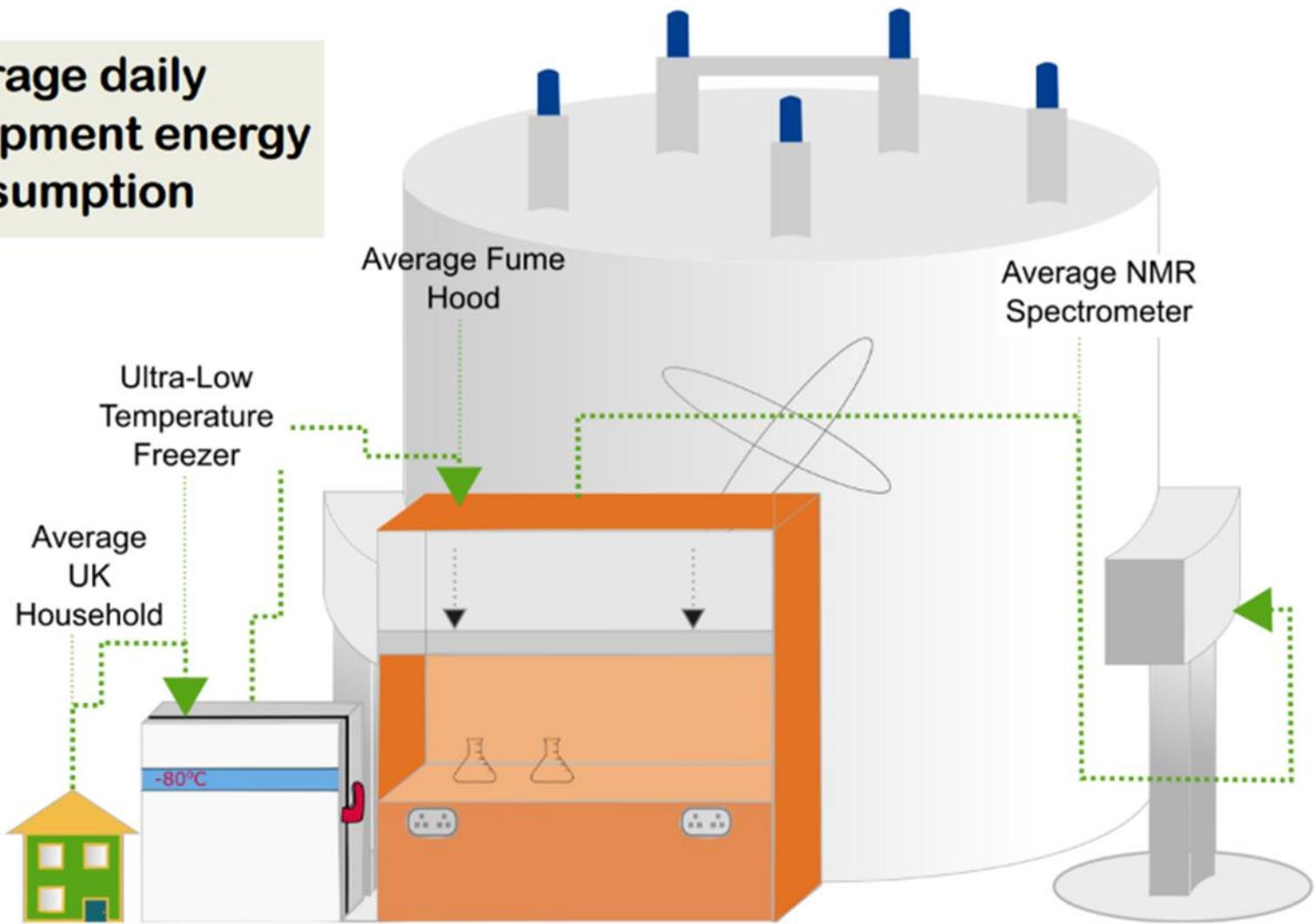


Sustainability in Science

- Science is about 2% of the world's GDP, and about 0.1% of the population are scientists
- Clinical research ~100 megatonnes CO₂e emissions per year – equivalent to the emissions from Belgium
- Scientific output increases every year by 8-9%, which means that it doubles just every 9 years
- Labs are the **most expensive to operate & environmentally intensive** buildings of any kind: 10x more energy, 4x more water than office spaces and produce 5.5mil metric tons of plastic waste each year (2% of global total)
- A typical new ULT freezer will consume as much energy in a year as an average UK household

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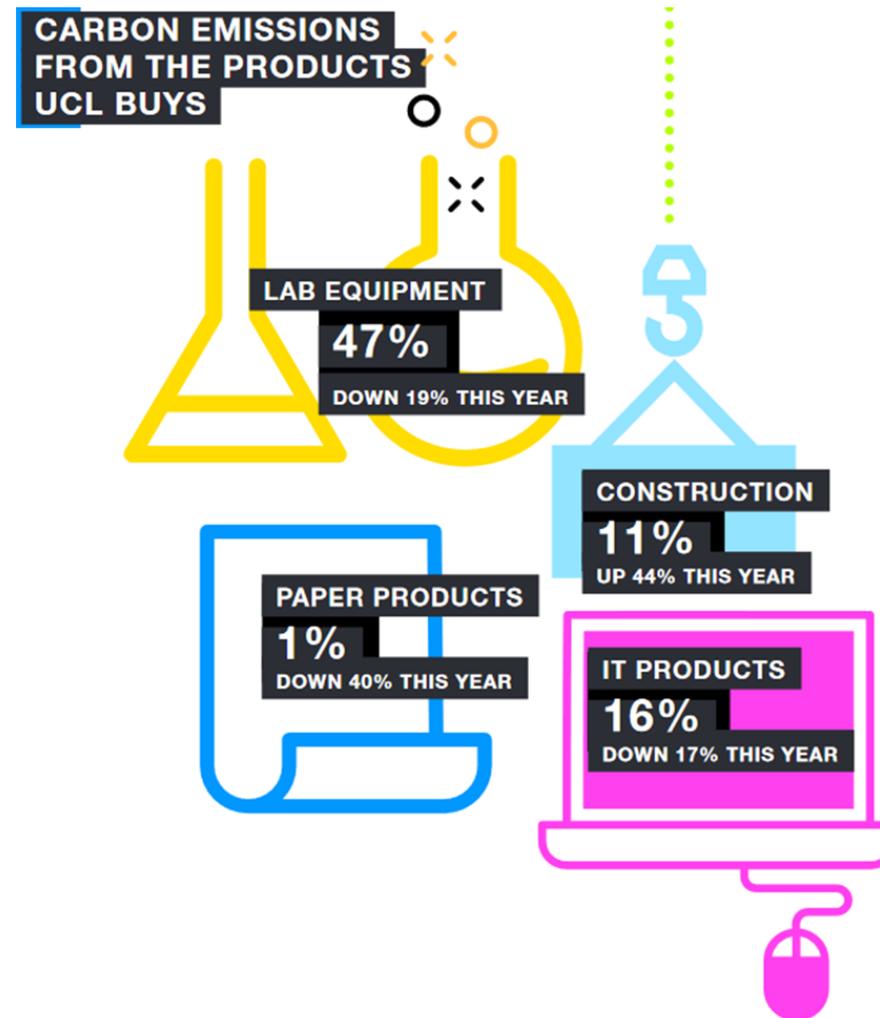
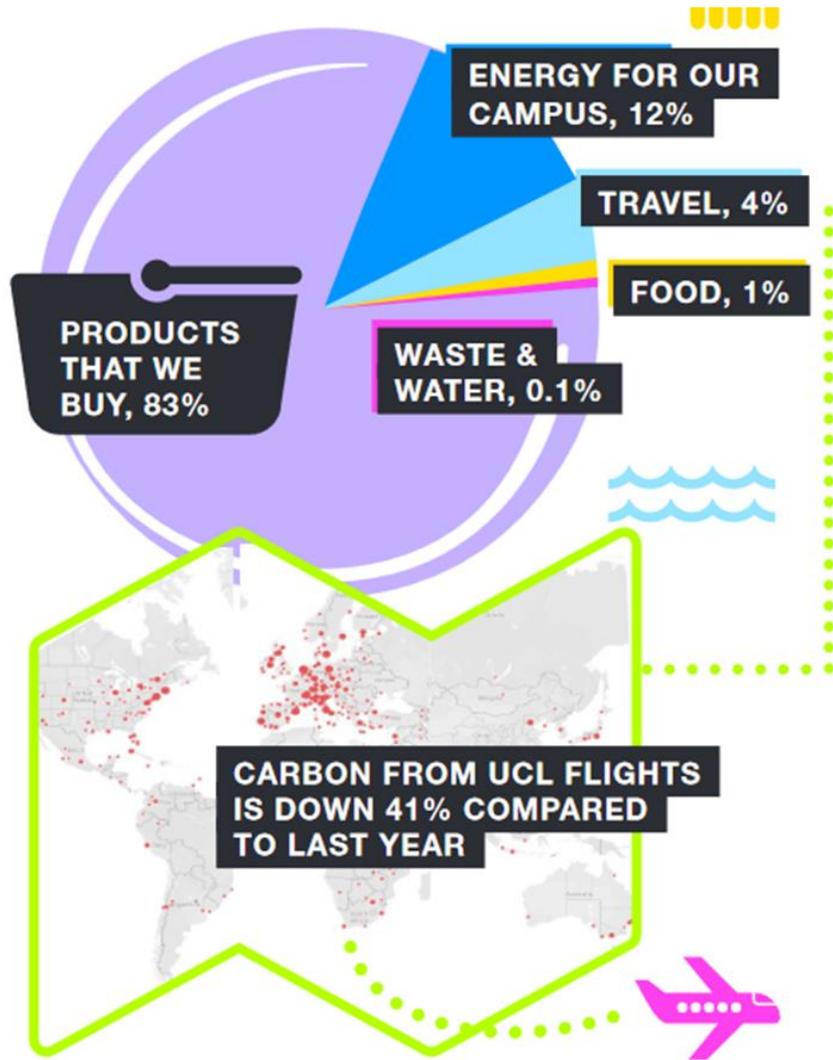
Average daily equipment energy consumption



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Sustainable Labs

- Built Environment (ventilation rates, Net-zero construction)
- Equipment and Consumables (sustainable tenders, manufacturers impact, life-cycle carbon assessments)
- Lab Operations (chemicals, equipment use, how staff interact with their facility)





Sample storage – what and how



Global research without the global footprint



Disposable to Reusable

There's a reason we all follow Health & Safety,
but don't all implement sustainable practices...



If there was a standard, what might it look like?
How do we know if a lab is “green”?

LEAF

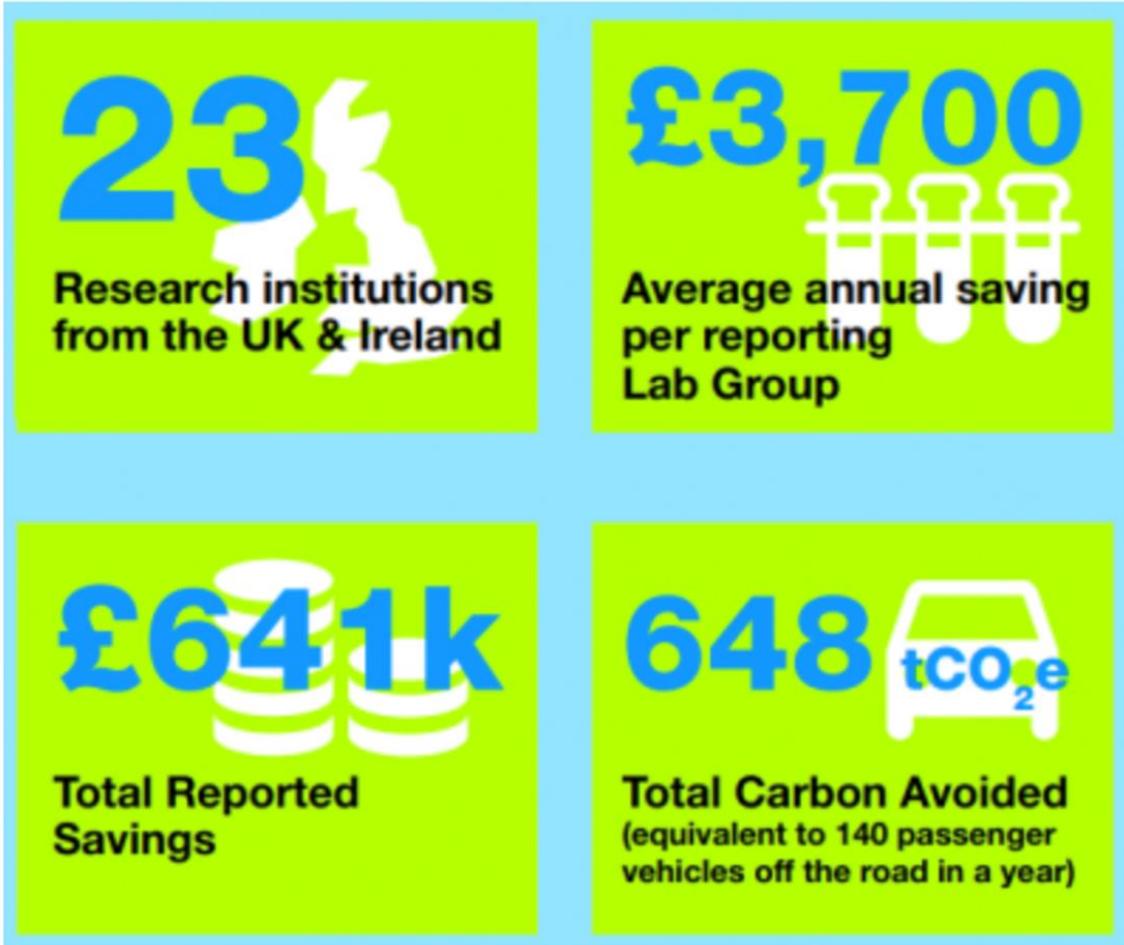
Laboratory Efficiency Assessment Framework

- Standard in Sustainable Laboratory Operations
- Criteria in areas like ventilation, equipment, people, facilities/space, procurement & waste, samples & chemicals, and research quality
- Bronze, Silver, Gold categories of criteria
- User-led initiative
- Allows you to estimate impact in CO2 and money saved, with inbuilt calculators

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LEAF Support

- LEAF Tool: Contains criteria and calculators
- Audit Guide: Contains information on how to assess each criteria
- Process Guide: How to run a sustainable labs programme
- Helpful Guides and Support: Linked in throughout LEAF's criteria (posters, inductions, departure docs etc.)
- <https://www.ucl.ac.uk/sustainable/leaf/leaf-resources-and-materials>



LEAF's pilot savings

Before making LEAF widely available, we piloted LEAF for 2 years with 23 other universities and research institutes from 2018-2020.

- 235 Lab groups took part
- £3700 average annual saving reported by Lab group
- £641k total reported savings
- 648tCO₂e total carbon avoided (equivalent to 140 passenger vehicles off the road in a year)
- 99% of those surveyed said they would use LEAF again

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LEAF Today



- 104 Institutions using LEAF from 14 countries.
- Several thousand users, 1,500 labs
- World's largest Green Lab Programme



How Does LEAF Work?

- Register
- Choose your level (Bronze, Silver, Gold)
- Work through the criteria, provide a sentence for each
- Use Calculators to estimate the impact of your actions (optional)
- Submit
- Audits



Welcome to LEAF

Sustainable UCL Mock Lab

IoE > IoE > TBD > TBD

Manage Audits

0

Manage Lab

0

Welcome to **LEAF** (Laboratory **E**fficiency **A**ssessment **F**ramework), a standard in sustainable laboratory operations.

[User Guide](#)

Manage Award Criteria

Manage Calculators

Manage Open Initiatives

How LEAF works

- Address each criteria for the Award Level sought. Each criteria must be addressed for your award level, even if it's to say why it's not applicable. Make sure to save as you go!
- Optionally, you may use the "Calculators", which allow you to estimate your carbon reductions or financial savings.
- Optionally, you may fill in "Open Initiatives", which are initiatives that may not have fit within a criteria but are worth sharing.
- Review and submit your work once complete



Criteria

Supporting Resources

Feedback

Category - Waste

Description

1. The lab possesses required waste bins (possibly clinical, glass/sharps, hazardous etc.), as well as recycling/general waste bins with appropriate and clear signage.

Why?

Laboratories produce immense amounts of waste (often plastics), much of which is incinerated at high-temperatures. Reducing the waste produced as well as treatment the waste receives can have significant environmental benefits, as well as reduce associated costs. Clinical waste will cost 3-10 times more than typical waste streams.

How did you meet this?

We now have recycling bins in place.]

Last updated: 14 Jan 2024 19:44
Save Answers



Some Targets for Bronze

- Inductions
- Exit policies
- You have non-clinical waste streams available
- Things are being turned off at the end of the day
- You consider sustainability when you buy kit
- You have signage encouraging good-practice on fume cupboards
- You have common shared space for chemicals

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Thank you!

b.kollo@ucl.ac.uk

@SustainableUCL  



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