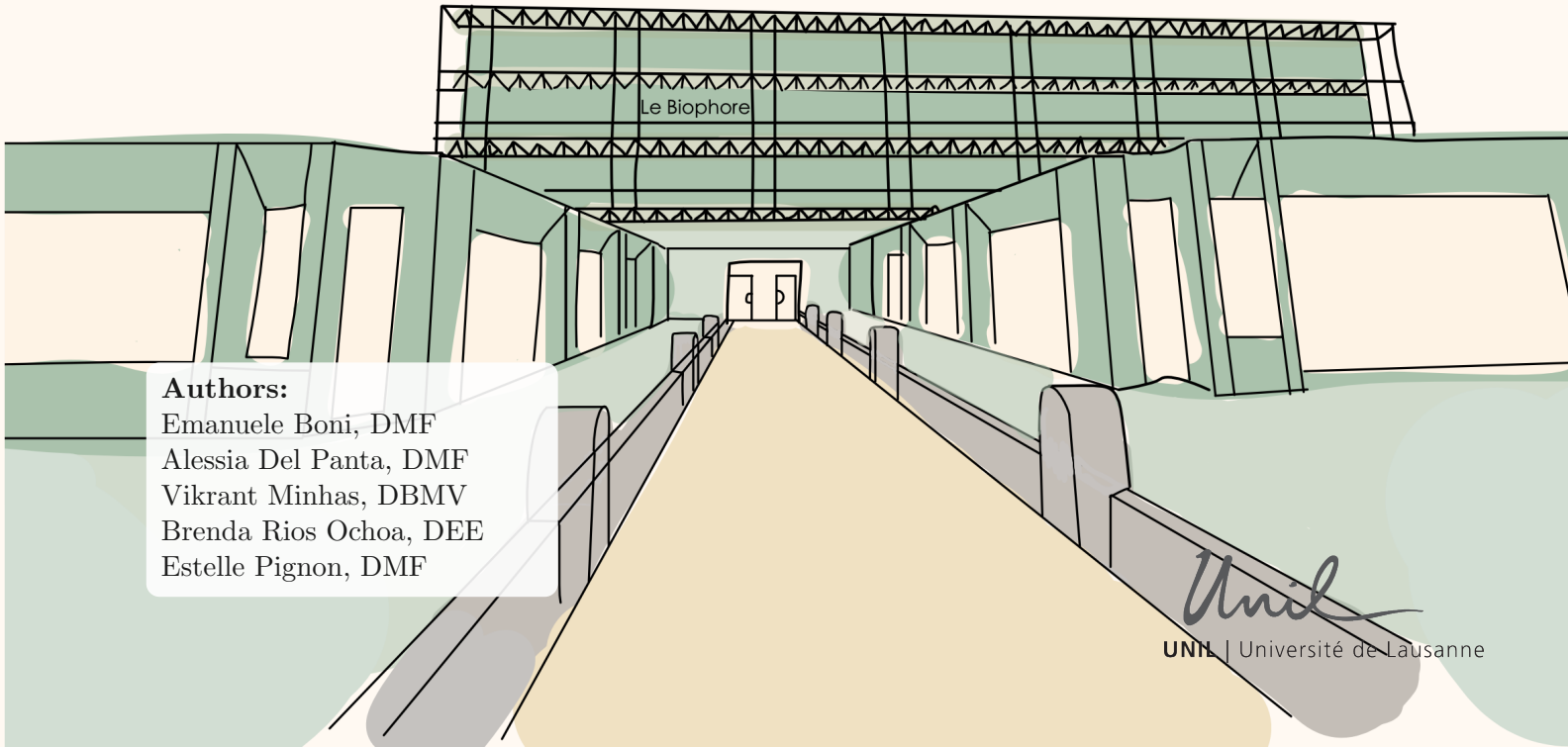
GREENER BIOPHORE

Greener Biophore - Summary for Department Members

Conversation on sustainable science



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Summary for Department Members

This document contains a selection of the policies proposed by Greener Biophore participants to reduce the environmental impact of our research practices. As opposed to the document "Summary for Department Directors", which also contains policies that Department Directors need to negotiate across departments or with the extended perimeter (Faculty, University), this document only contains **measures that can be entirely addressed** within the practical perimeter (**at the personal, group or department-level**). We believe members of the Biophore community possess the skills and knowledge to turn these proposals into reality, for example by **self-organizing, keeping up the conversations on sustainability, and sharing best practices**. We invite everyone to also read the "Summary for Department Directors" and to form an opinion on those policies as well.

Transversal propositions

1. Department members create a **Department sustainability task force** if it does not exist in their department. Department sustainability task forces from the three departments join into a **Biophore sustainability task force**, with the mandate to propose and coordinate sustainability efforts at the building level and potentially organise yearly/biyearly a Greener Biophore event.

2. PIs allow PhD students to devote part of their time to **sustainability related projects**, and to write a thesis chapter or publication about it.

3. **New hiring practices**: PIs address at least qualitatively the topic of sustainability in hiring interviews. It should not be a reason for exclusion, but it could be an extra point to distinguish among two equally valuable candidates.

Experimental research resources

1. One member (either the department sustainability task force representative or a lab technician) takes the lead to **prepare / re-organize common stocks of consumables**, and make sure the stock system is clear to everyone (which consumables are available, where they are located, how to correctly handle, separate, clean, store or dispose of them, how to refill when running short...).

2. **Increase the use of glassware**. The department sustainability task force identifies where the potential for replacement lies (which practices, which groups...) and supports people from the laveries to implement a washing and reusing system (collection, re-staking, distribution to users...).

3. The department sustainability task force is responsible for organising every 3-4 months **a sustainability training for all newcomers** and regularly updates its content (sustainable practices, where to find and how to handle glassware and other autoclavable/reusable items, raise awareness about the precious work of people from the kitchens and about the financial cost of machines & consumables...). The training is highly recommended or even mandatory.

4. The department hires **1-2 more people in the laverie** to ensure the correct washing and reusing of glassware.

5. The department purchases a machine (and the appropriate adaptors, if needed) to **pour solid media in small Petri dishes** instead of regular ones.

6. 2-3 members per each department meet yearly and re-think the **Biophore magasin's list to be more sustainable** (e.g., 10x10 glycerol stock boxes, paper 'boats' to weigh chemicals, local suppliers...). They coordinate with Christophe to remove or add items.

7. PAT representatives of the 3 departments propose a pilot project to **share highly energy-intensive machines** (e.g. autoclaves) for 1 month. After the pilot, they evaluate the feasibility of a long-term interdepartmental sharing system.

8. The department sustainability task force creates **explanatory posters** that describe the environmental impact and the price of commonly used consumables or machines. Posters are hung in visible locations, like the Biophore hall. Alternatively, the price and the environmental impact of a machine could be written on the machine itself.

Computational research resources

MISSING DATA

We believe a series of data and information would be necessary to have a better understanding of the problem and make informed decisions (e.g. carry out cost-benefit analyses).

- **Hardware purchases**: historical data should be available in each department's order list / reimbursement forms.
- **Computational resources**: we need more refined data about cluster usage and data storage (which kind of data, frequency of access...).
- **AI**: we suggest implementing a survey about the usage of AI (which models, which tasks, how frequently) in daily research practices. Also, we need better data on the environmental impact of AI (both training models and everyday usage).
- **Specific needs of computational resources for research**: a combination of hard data and researchers' perception should be used, to clarify whether resources are used 'just because they are available' or because they are really needed.

Such a broad investigation could be carried out by the CCD with the support of some members of the DCSR service and some computational researchers working in Biophore.

PROPOSED POLICIES

1. Each researcher should **limit the amount of computational resources** (computing power, data storage and AI, in particular Large Language Models) **to what is really necessary for their work**. Tension: Usage of computing resources responds to needs and a thorough analysis of the costs and benefits should be conducted: what would be the impact on research output?

2. Each researcher should test their code before running it on a large dataset to avoid failure and over requesting memory. The **efficiency of a job submitted on the cluster** can be checked with the command seff job-id.

3. Prioritize the use of **shared desktops** instead of personal laptops.

4. The secretariat is responsible for **reallocating IT equipment** (laptops, desktops...) when new items are purchased. If an item is not suitable for computational research any more, it should be repurposed for less intense tasks. If an item is not suitable for any kind of work, it should be properly disposed of to ensure recycling.

Energy and Spaces

1. **Turning off lights at night**. A simple yet effective individual practice is to ensure lights in labs, offices, and corridors are turned off when not needed, especially overnight. Raising awareness about this low-effort action can lead to significant savings.

2. **Encouraging trust in home office practices**. Groups are encouraged to adopt policies that allow and normalize working from home when appropriate. To do so, a foundation of trust must be built, where remote work is not equated with avoidance but recognized as a valid and sometimes more efficient way of contributing.

3. **Sharing lab equipment and storage space**. To reduce the duplication of high-energy devices (e.g. freezers, incubators...), departments should incentivize the sharing of both equipment and storage space across research groups. Not only does this reduce energy use, but it also maximizes the utility of existing resources. Tension: it is hard to attribute the cost of shared equipment, and its responsibility for maintenance.

4. **Transparent sharing of energy consumption data**. By sharing energy usage data at the group or department level, we can foster transparency, create peer accountability, and encourage friendly competition to reduce energy footprints.

Professional mobility

MISSING DATA

There is an apparent **inconsistency between the impact of aviation at the University and at the Biophore level**, which seems to be proportionally smaller. The current method used to estimate the impact of aviation at the Biophore level consists of considering the reimbursement forms for flights. **This method might not take into account certain trips** such as the ones paid by other institutions, or personally paid flights. We propose to:

- Clarify if the current figures on air travel are correct or an underestimate.
- Implement a yearly survey to declare all flights and check for flights potentially not captured by the system (e.g. flights when invited elsewhere, personally paid flights, students field trip...)

This could be done by the Department sustainability task force in collaboration with the CCD.

PROPOSED POLICIES

1. When forming a **PhD committee**, the PI and the student preferentially **select experts that can travel** to Lausanne **by train**, otherwise they clarify from the beginning that **attending virtually** will be highly encouraged over coming in person (at least for the 8 month and the mid-thesis evaluation).

2. When someone invites an external speaker that needs to fly, they are responsible to **ensure the speaker combines various activities**, instead of flying here - presenting - flying back. For example, they could organize a tour of talks with other interested departments/universities. Potentially, the reimbursement of the flight should be bound to a minimum number of days between the speaker's arrival and departure. The same principle should be applied when we are invited or travel for conferences elsewhere.

3. All Biophore members could keep in mind their potential of influencing the extended perimeter by **raising awareness about the impact of air-travel and the importance of virtual talks**. For example, they could mention these topics after congresses talks, on their group websites or in publications.

4. Each PhD student is allowed only **one intercontinental flight per year**, but they are highly encouraged to make **a 6 month stay** in the country of destination.

5. The following indirect measures could be implemented (at the department, building, and University level) to increase awareness about alternative solutions to air travel:
   - Raise awareness of **train discounts** like interrail, eurorail, etc.
   - Encourage an increase in the number of **virtual and hub-based conferences**, and reserve slots for virtual lectures during in-person congresses. Tension: There is a general belief that virtual conferences cannot substitute the value of face-to-face interactions and the superior networking opportunities that in-person events provide.
   - Empower researchers to **respect their values** and be true to their decision to attend congresses virtually. Encourage communication between PIs and researchers to respect their decision of not traveling abroad due to climate anxiety.

6. Moreover, the internet could be exploited both as a means of promoting certain values, as well as a substitute for creating networks without traveling. In this regard the proposed measures are:
   - On the university's database with research groups (or ORCID, Researchgate, etc.), **share values and ethics of each lab**, as well as if they form collaborations with universities outside EU for their research.
   - Create **a database of groups** by research subject **to promote local collaborations**. Implement a software that automatically creates a network of potential collaborations with people everywhere in the world, prioritizing local collaborations. Tension: the software should be trained such that it does not have a bias towards the western world. The Department sustainability task force could try to implement a trial version of the database that is relevant for the Department groups.

Beyond research: food and commuting

1. **For events** organized in Biophore (talks, conferences, networking sessions, team building sessions, thesis defenses, farewell apéros...), the organizer(s) should preferentially choose a **vegetarian or vegan menu**.

2. For events organized in Biophore, organizer(s) should encourage participants to bring their containers to **bring home potential food leftovers** and avoid food waste.

3. The Department sustainability task force organizes (or reaches out to associations that can help organize) an **awareness campaign** to inform about the impact of meat and promote alternatives to meat. Tension: people might feel judged for eating meat.