

GREENER BIOPHORE

Greener Biophore

-

Report 2025

Conversation on sustainable science

Authors:

Emanuele Boni, DMF
Alessia Del Panta, DMF
Vikrant Minhas, DBMV
Brenda Rios Ochoa, DEE
Estelle Pignon, DMF

01 Introduction

“Climate change is the defining issue of our time – and we are at a defining moment.”

This quote from António Guterres, UN Secretary-General, often resonates in our minds, reminding us the magnitude and the urgency of the challenge we are facing. When considering the scale and complexity of the problem, **we have frequently felt numb and powerless.** The belief that someone else is responsible for this global issue, the hope that others have the task to solve it, and the somewhat comforting perception that we ourselves do not have the skills nor the power to tackle climate change - they all contribute to a state of self-justification and inaction. Despite experiencing these mental barriers, we have decided to take a step, to challenge ourselves, to embrace the discomfort of saying '**I am part of the problem. I can therefore be part of the solution**'. We believe each and everyone has a certain degree of skills, a certain degree of power, and therefore a certain degree of responsibility, and we can all contribute to positive change locally and globally.

We are 5 early-stage researchers, working in the domains of ecology and evolution, microbiology and plant molecular biology. We asked what climate change means in our own lives, how are we actively contributing to it. The reassuring answer is that **our research contributes to the accumulation of knowledge and will potentially lead to innovative mitigation and adaptation solutions.** The uncomfortable truth is that **this future potential positive outcome needs to be carefully compared with the present concrete negative impact of our research practices** - the consumption of resources and emission of greenhouse gases. Instead of hiding behind the argument that ‘research and progress are justifiable at all costs’ we tried to quantify the environmental cost of our work activities, in order to have - and share - the data necessary to make informed decisions and evaluate for ourselves the ‘balance’ of our research.

The University of Lausanne (UNIL) is a leader in the social and ecological transition and in recent years has carried out an inspiring and bold series of initiatives. First, the Direction mandated the Centre de Compétence en Durabilité (CCD) to quantify the environmental impact of UNIL’s activities (research, teaching and links with society). The CCD adopted the framework of economist Prof. Kate Raworth “the Donut”, which considers not only CO₂ emissions, but all 9 planetary boundaries, as well as 12 social foundations. The donut model was adapted to UNIL’s scale and characteristics, and the quantification revealed that the University overshoots 7 out of 9 boundaries, among which **CO₂ emissions and impact on global biodiversity are respectively 20 and 30 times larger than the viable limit.** Therefore, the University launched a wide-scale participatory democracy experiment: 60 people were drawn randomly from the UNIL community and tasked with the objective of producing a series of measures to bring the impact of the University’s activities back into planetary boundaries. The Direction then built upon the report produced by this group, called the **Transition Assembly**, to produce a series of objectives to be met by 2037 - the CAP2037 Transition Strategy. Halfway between 2025 and 2050, and 500 years after UNIL foundation, 2037 will mark a pivotal point in the journey of the institution towards an equitable and sustainable operating mode.

Inspired by the dynamism of our University, we decided to **contribute to this effort.** We realized most objectives still lack clear operational measures, and believe that one-size-fits-all solutions will not be an option, due to the diversity and uniqueness of each

department, building and faculty. We have therefore committed ourselves to bring together the community of our **3 Departments** (Fundamental Microbiology, DMF ; Ecology and Evolution, DEE ; Plant Molecular Biology, DBMV) and start a conversation within our building, the Biophore, to discuss **how we can adapt the UNIL-wide objectives to our own scale.**

Our main goal was to engage our colleagues in a constructive discussion. We provided a space to be proactive, come up with our own ideas and to show that **we can collectively choose how to change our practices and behaviours in a way that aligns with our values and needs.** We are concerned that, if we miss this opportunity, we will get to a point where action must be taken urgently, and the Direction/Faculty will find themselves obliged to impose top-down measures that might be unsuitable for the particularities of each department and would encounter strong opposition.

We wanted this process to be as wide-ranging and inclusive as possible. We wished to give the chance to everybody, and not only the people who care about sustainability, to contribute. We believe in the necessity to **allow different voices to express their hopes, concerns and tensions, to ensure the transition is respectful and nobody feels left behind.** We have therefore put a significant effort in creating an event as neutral as possible, where different views and opinions could be stated and heard without fearing judgment or polarization.

Our main objective with Greener Biophore was to overcome the set of mental barriers we mentioned above. **We wanted the event participants to feel empowered,** that their voice matters, that they can take action, that they have the knowledge, the skills and the support they need **to promote positive change in their own sphere of influence.** We believe we successfully met our objective, as we organizers and the fantastic group of people that helped us in this inspiring journey, certainly felt this way.

Emanuele Boni, DMF
Alessia Del Panta, DMF
Vikrant Minhas, DBMV
Brenda Rios Ochoa, DEE
Estelle Pignon, DMF

02 Perimeter

Open conversations about sustainability can suffer from lack of focus and uncertainty in attribution of responsibility. The spotlight can move rapidly from an individual, to a group, to an organization, to society, which are all different and yet interconnected players.

In order to promote effective discussion, we identified three perimeters of action (Fig. 1), which guided initially the data collection process, and later on the participatory workshop. A perimeter is a group of partially overlapping or interlinked players. Perimeters help **setting the boundaries of a conversation**, so that a contribution is valuable and appropriate if it falls within the discussion perimeter.

- **Practical perimeter:** individuals, groups, departments (DMF - DEE - DBMV) and the Biophore building. Within this perimeter, it is easy to collect data, implement changes and track progress.
- **Institutional perimeter:** the FBM faculty, UNIL and its specific Units, Offices and Centres. Within this perimeter, there are well established communication channels and well defined roles and mandates.
- **Extended perimeter:** partners and collaborators, service and product providers, other universities, the canton Vaud and society. This perimeter considers the indirect (positive and negative) impact of UNIL's activities.

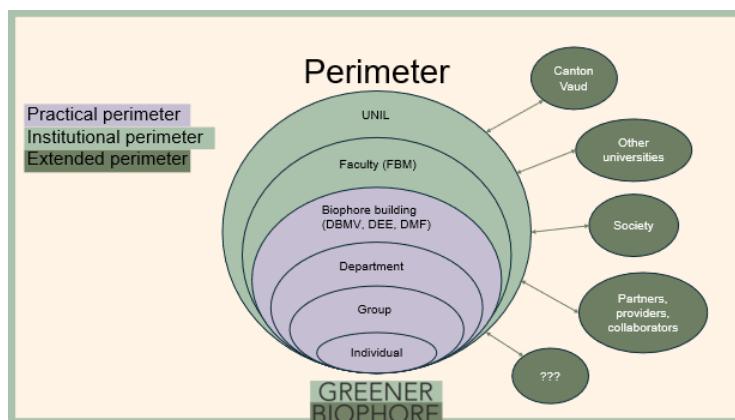


Figure 1: Perimeters of the Greener Biophore event

03 Data collection

To identify concrete solutions that align the Biophore building with the trajectory proposed in the CAP2037 strategy, we grounded our discussions in data. This event was therefore designed as a data-driven initiative, aimed at generating an evidence-based understanding of Biophore's environmental impact. To this end, we carried out an estimation of the carbon footprint of the Biophore building. For our analysis, we drew on the methodology developed by the CCD at UNIL, which quantified the environmental impact of the University through a comprehensive framework known as the "Donut" framework. This tool evaluates environmental impact across several environmental axes, including greenhouse gas (GHG) emissions, water consumption, and biodiversity. For simplicity, our focus was limited primarily to GHG emissions, though we highlighted biodiversity impacts when notable discrepancies with GHG arose at the University level. At the UNIL level, the CCD identified four main areas of environmental footprint: Energy and Spaces, Mobility (including professional travels and commuting), Food, Consumables (laboratory resources, IT resources, etc.). We adopted this structure as a framework for estimating the environmental impact of Biophore but adapted the categories to the Biophore context:

1. Experimental research resources
2. Computational research resources
3. Energy and Spaces
4. Professional mobility
5. Beyond Research: Food and Commuting

The data collection process was a collaborative effort involving Greener Biophore organisers, the CCD, Thomas Sauter from Unibat, and several researchers from Biophore (names listed in the acknowledgements). The CCD estimated Biophore's GHG emissions using a top-down approach, which starts from aggregate UNIL-level data and disaggregates it to the building level. For instance, consumables were tracked by identifying university-wide purchases attributed to individuals affiliated with Biophore. Similarly, data from the datacenter helped quantify computational impact.

In parallel, we performed a bottom-up analysis using data available in the individual departments, to provide finer resolution. This involved direct tracking of lab consumables such as plasticware, an inventory of lab and office equipment, and the direct calculation of emissions associated with cluster computing usage. For this analysis we did not manage to collect data for all three departments, although we managed to collect data for at least one department for almost all areas of influence. For food and commuting, we did not manage to find data available for any of the departments, but performed some useful analyses using UNIL-level data.

The combination of these two complementary approaches enabled us to build a robust picture of Biophore's environmental footprint. The top-down methodology offered a comprehensive view of total emissions, while the bottom-up approach provided detailed insights into specific contributions—such as the impact of pipette tips, or the relative space allocated to labs versus offices.

Looking at the summary of CO₂ emissions at the building level (Fig. 2), it is evident that infrastructures represent a major portion of the Biophore impact, as heating and cooling from greenhouses and from buildings consist, together, in roughly 40% of the total impact. Laboratory equipment and consumables represent an additional 20%, followed

by electricity (13%) and professional mobility (10%). To be aligned with the CAP2037 objectives, the Biophore community should reduce its emissions by 45% within the coming 12 years.

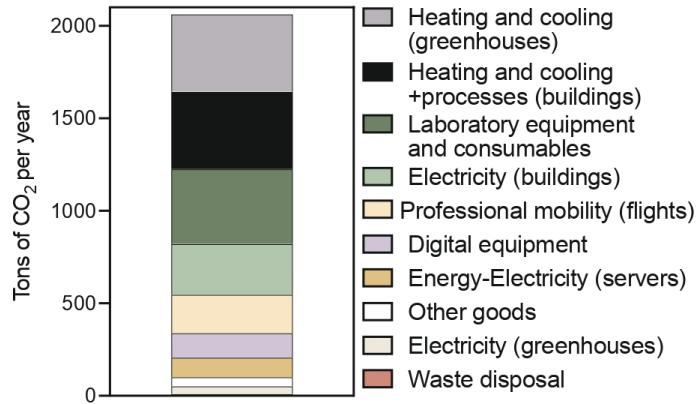


Figure 2: Summary of the CO₂ emissions at the building level.

The impact of Experimental research resources (Fig. 3) is dominated by plastic and gloves (27%), followed by chemical products (19%), machines (10%), and finally biological products (4%). A significant portion of emissions (40%) can only be indirectly attributed, and falls under the category ‘others’, owing to the limitation of the tracking system when items from different categories are purchased in the same order. Focusing on plastic, data collected from DMF (Fig 4) suggest that Petri dishes represent the largest share of emissions, followed by gloves, tips and tubes.

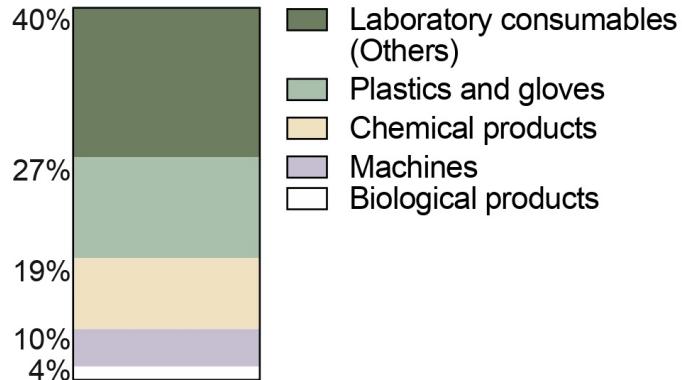


Figure 3: Proportion of emissions due to laboratory equipment and resources (Biophore, 2024)

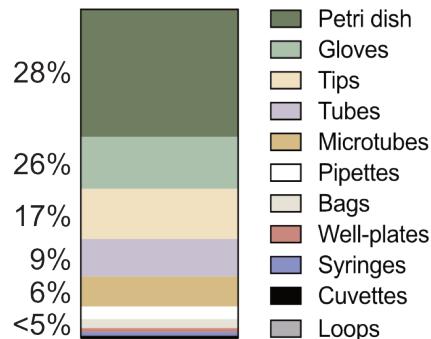


Figure 4: Tons of CO₂ eq of plastic consumables (DMF, 2024)

The impact of Computational research resources at the University level (Fig. 5) reveals

that personal items (UNIL IT equipment and students IT equipment) represent a major share of emissions, mostly owing to the production of such items. Local Data centers and Clouds are also large emitters, followed by the network usage, mostly due to utilization. The impact of AI usage, both from employees and students, has been estimated, but the uncertainty on it remains extremely large. A close-up on the emissions linked to cluster computing in DMF (Fig. 6) shows that up to 40% savings could be achieved simply by optimizing job submission (avoiding overrequesting memory and testing the code before running it on large datasets).

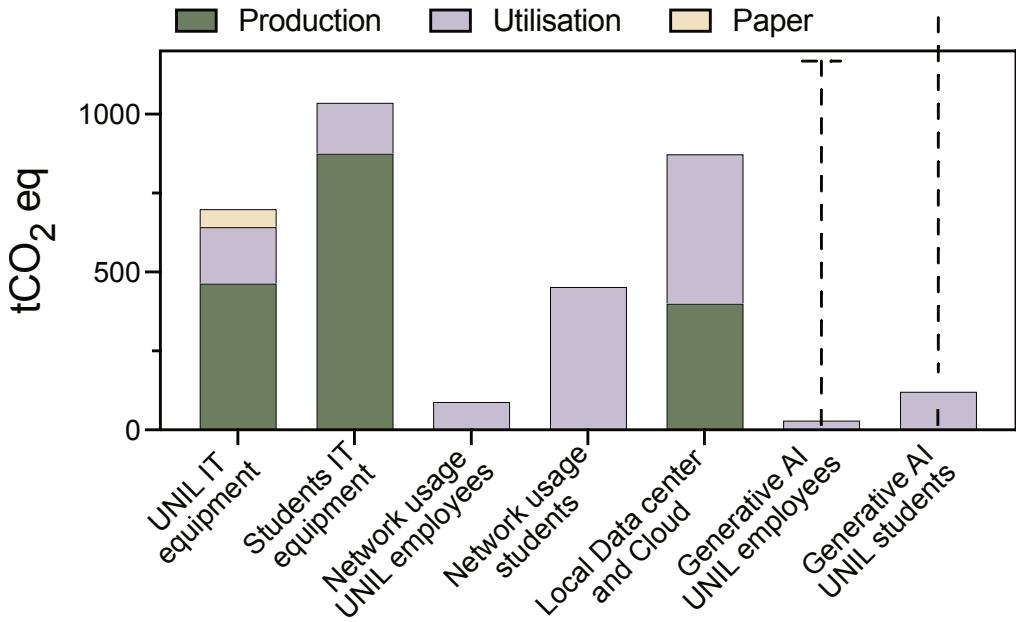


Figure 5: Digital carbon footprint at UNIL (2023)

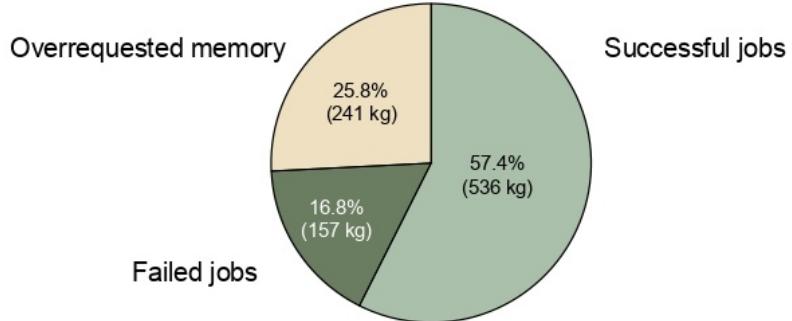


Figure 6: CO₂ eq emissions due to usage of the cluster “Curnagl” (DMF, 2024)

Energy for heating and cooling, together with electricity for regular usage and for research practices, together represent almost 60% of Biophore’s footprint. Historic data on electricity consumption in Biophore during the last 15 years (Fig. 7) show a marked reduction compared to a high in 2015, probably attributable to bottom-up initiatives such as Mission Biophore, technical intervention from the University, and other factors. The largest drop in electricity consumption was achieved during the implementation of the Ostral plan, but the first months of 2025 show a marked rise, which risks nullifying the efforts of the plan. Consumption of electricity, heating and cooling is directly linked to the attribution of spaces within a building. In DMF (Fig. 8), more than half of the surface is dedicated to laboratories and approximately one third is occupied by offices. The per capita surface allocated for professors’ offices is significantly larger than the average for the DMF.

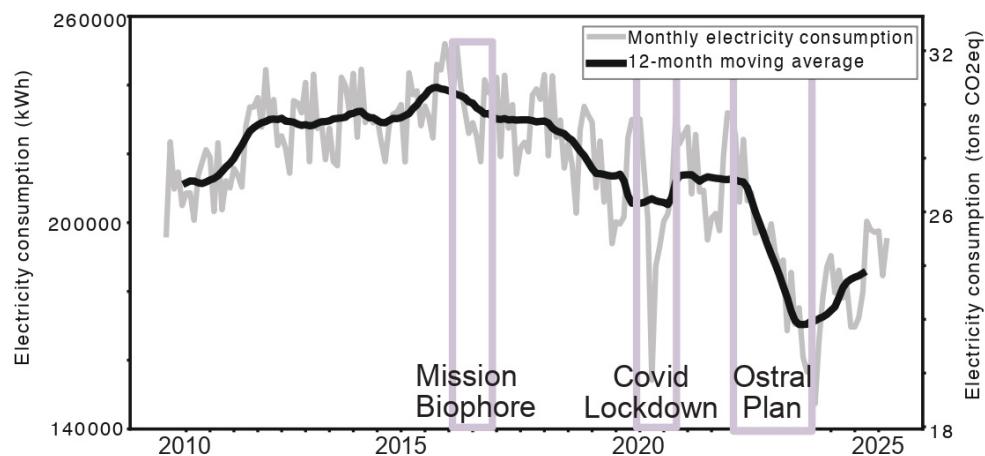


Figure 7: Biophore electricity consumption (2010 to 2025)

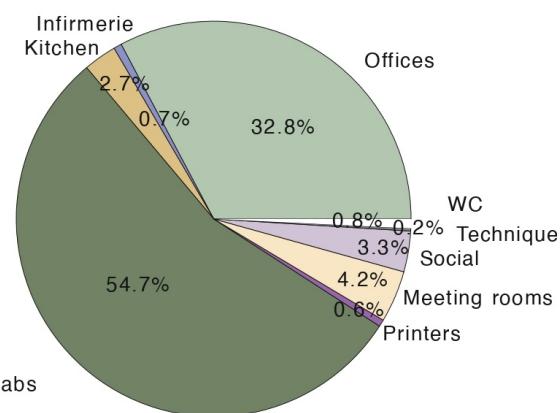


Figure 8: Space usage in DMF.

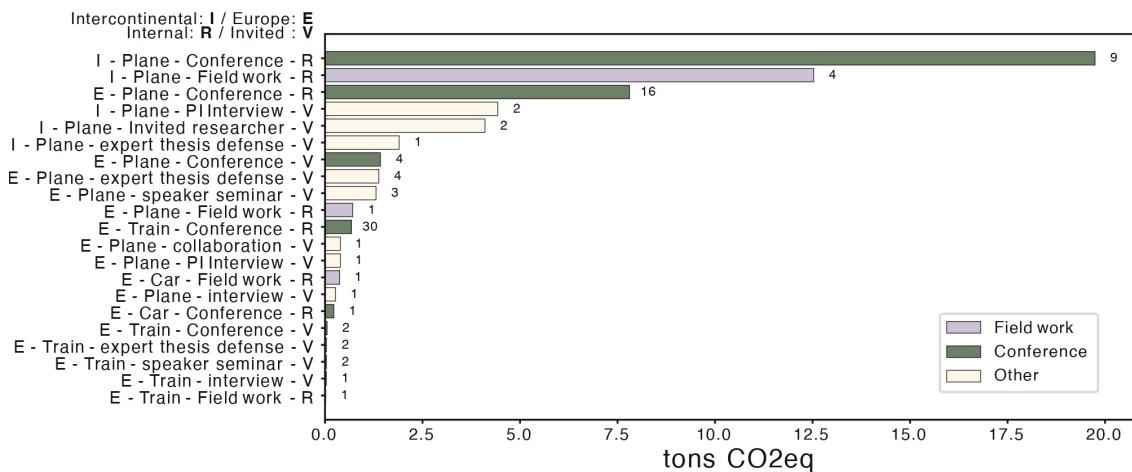


Figure 9: CO₂ eq emissions linked to professional mobility (DMF, 2023)

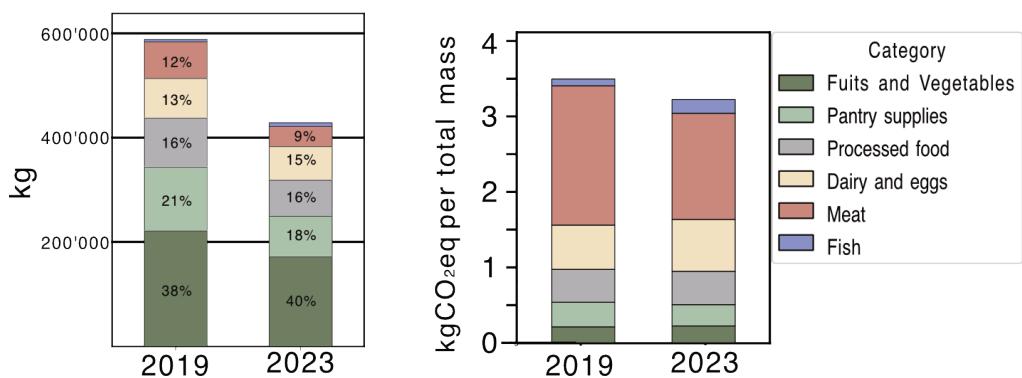


Figure 10: Proportion of food consumed (kg) in UNIL cafeterias and corresponding emissions (kgCO₂ eq)

Impact of Professional mobility is almost entirely attributable to flights. Overall, it represents roughly 10% of the Biophore's footprint, but this is likely an underestimation. Data from DMF in 2023 (Fig. 9) suggest that trips by train, despite being much larger in number, generate negligible emissions compared to trips by plane. In agreement with observation at the University level, a small number of very long trips represents the largest share of emissions. In this case, 13 intercontinental flights accounted for more than half of the emissions. Importantly, trips to conferences greatly outweighed trips for field work in terms of footprint, due to their large number.

Data from consumption of food suggest that food purchased from the UNIL cafeterias represent 3% of the University footprint. This improvement compared to 2019 is probably due to the marked decrease in the number of meals purchased on campus in recent years (-30% in total mass). While the offer of food in the canteen (Fig. 10) is largely plant-based, with 40% of food mass being fruits and vegetables, the relatively small amounts of meat (9%) and dairy products and eggs (15%) contribute disproportionately to the total food emissions, representing roughly $\frac{2}{3}$ of the total. A similar picture emerges from commuting, responsible for 15% of the University footprint. While more than half of the community travels daily by public transport (Fig. 11), this means accounts for only 40% of the emissions. The largest share (56%) is attributable to cars, which represent the commuting means for approximately 10% of the UNIL community.

While the top-down and bottom-up methodologies were generally consistent with each other and with UNIL-level data (when comparison was appropriate), we identified two key discrepancies:

- Aviation emissions: we identified a possible discrepancy between the UNIL-level

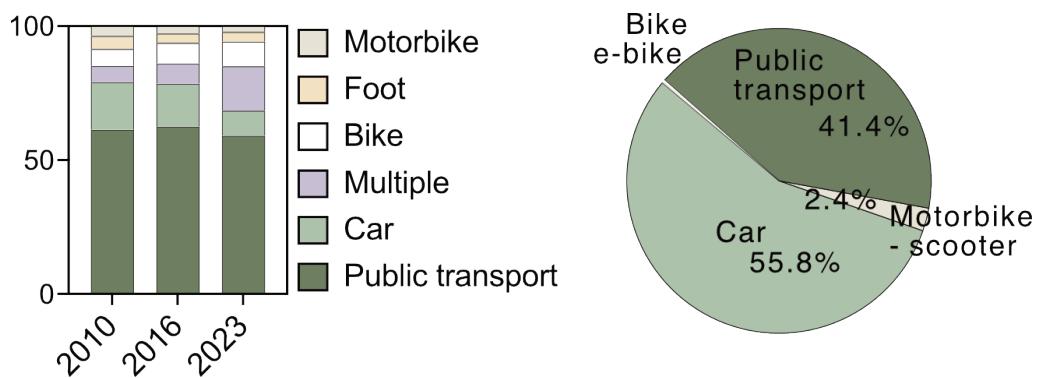


Figure 11: Proportion of means of commuting (%) among UNIL members and corresponding emissions (%)

impact on aviation and Biophore's impact, which appears to be 3-fold lower. The possible discrepancy might be due to different methodologies used to estimate the impact of aviation at UNIL and Biophore level. For UNIL, the aggregated data on flight ticket purchases were indirectly converted into emissions, while for Biophore, the exact trips extracted from available reimbursement forms were used.

- Plastic: the top-down approach estimated by CDD identified that CO₂ emissions due to plastic used at Biophore are 105t. Assuming that the three Biophore departments use the same amount of plastic, that would attribute 35t of emissions per department. However, the bottom-up estimate for DMF indicated that 16t were due to plastic, which is less than half of what was estimated by the top-down approach. More precise measures would be needed to improve our estimates and guide efficient impact reduction.

The data collection effort also allowed us to identify key areas where quantifying impact is challenging, which include:

- Outsourced services, such as sequencing and DNA synthesis, including challenges in classifying outsourced resources.
- Purchases: the catalogue of purchases was not easily exportable to a datasheet, and often multiple purchases of different kinds were aggregated into a single order which made it difficult to estimate its impact.
- Impact of AI: it is still unclear to what extent the use of AI in research affects the environment, due to the lack of transparency from the service providers and the lack of data about which tasks are used for daily research practices, and how frequently.

The results of this coordinated data collection effort informed the development of five technical fliers (Annex 1), which served as the foundation for discussions during the Afternoon Workshop. Further details on the data collection process and the available data are illustrated in the “Fact checking document” (Annex 2). The raw data and the processed data is available in Annex 3.

04 Organization of the Greener Biophore event

Timeline

We conceived the idea of a participatory event in September 2024, shortly after the CAP2037 objectives were disclosed by the Rector during the Dies academicus. In January 2025, having received positive feedback, we undertook the organization of the event. Between February and April we applied for funding, invited speakers and agreed on an advertisement strategy. Between April and June we took care of data collection, analysis and visualization, conceptualization of the afternoon workshop and facilitation. The event was held on the 5th of June 2025 in the Biophore Amphitheater, and was composed of two parts: a series of talks in the morning, and a collaborative workshop in the afternoon. Participants could choose to sign up to one or both parts, but we encouraged them to participate in the whole day.

Event funding

The financial support of the event was secured by the Transition Acceleration Fund, a UNIL fund that supports projects aimed at integrating the ecological transition into the University's activities. To access the fund, the steps given at UNIL's Transition Acceleration Fund website were followed. The request form was signed by two members of the Greener Biophore committee and the three Department Directors hosted in the Biophore, before submitting it to the Dicastère Transition & Campus with a detailed budget (Annex 4). The funding allowed us to pay for advertisement posters, workshop material, catering services and lunch for the speakers. Once the event was held, copies of the bills and the detailed real expenses were sent to the Dicastère.

Advertisement strategy

In order to promote the event to the Biophore community, the advertisement strategy was simple and targeted. We sent a registration email to each department 2 months before the event, then a reminder 1 month later and a final reminder during the week of the event. We also briefly presented Greener Biophore in person at the three department weekly seminars. The Department Directors supported us in advertising the initiative, either by endorsing it via email, encouraging people to sign up, or having it added to the departmental calendar. We also printed and distributed in key locations of the building A5 fliers and A4 posters with the details of the event, including the list of speakers and the topics of the workshop. The invitation was extended to the CIG department, by virtue of the physical closeness and closeness in research practices with our 3 departments. Finally, The Dicastère Transition & Campus kindly agreed to display the CAP2037 posters in the Biophore hall during the two weeks prior to the event, in order to stimulate curiosity about the Transition. The posters contained key information about the environmental footprint of UNIL's activities and the Transition objectives to be met by 2037, that were at the very heart of Greener Biophore's *raison d'être*.

Morning talks

The morning talks were organised with the aim of providing Greener Biophore participants with an overview of what is currently happening at UNIL around sustainability, both from the bigger UNIL wide strategies to the more everyday efforts happening at the Biophore.

The talks began with **Vice-Dean Nicolas Senn**, who set the tone of the morning by asking if sustainability should be a defining trait of high-quality research. He challenged the audience to imagine how UNIL and the broader academic ecosystem could lead in rethinking research values collaboratively. This set the stage for deeper conversations on system-wide transformation. **Cecilia Matasci** and **Delphine Douçot** from UNIL's Centre de Compétences en Durabilité and the Dicastère Transition et Campus introduced the University's CAP2037 strategy, the targets set to drastically reduce UNIL's environmental impact by its 500th anniversary. They also gave data from the Donut framework and report, and outlined the Biophore's footprint estimates. This sparked practical questions about how departments could contribute to collect bottom-up data, track progress, and coordinate efforts. Relatedly, they also presented briefly on the LEAF program and how this can help labs to become more sustainable. **Paul Majcherczyk**'s (FBM Décanat) talk on energy-saving during the Ostral plan restrictions illustrated how crises can fast-track institutional adaptation and change. His examples of collective action prompted questions about how such efforts might translate into long-term culture shifts or crisis preparedness models for other resources.

The second part of the morning was more local and relatable, with speakers from the Biophore community sharing what they have been doing to make their labs, departments and research more environmentally sustainable. **Prof. Serge Pelet** (DMF) detailed how the DMF has tackled single-use plastics and energy usage. Questions from audience members examined the structure of their Sustainability Task Force and how easily other departments might replicate this success. **Florent Mazel** (DMF) raised the often-overlooked environmental cost of computing, while showing its relatively lower but still significant impact compared to air travel. He was met with questions about generative AI and strategies for reducing server-related emissions. **Professors Antoine Guisan and Erica van de Waal** (DEE) introduced their department's ambitious flight reduction targets and rules they have tried to set in place. This provoked a flurry of questions about fairness for early-career researchers and how "essential travel" gets defined, as well as more controversial questions such as hiring practices. Finally, **Prof. Sara Mitri** presented her experience organizing MEEhubs 2024, a distributed multi-hub conference which limits the need of flying to attend a conference. Her talk stood out for addressing both climate and equity in academic exchange. The audience raised practical concerns about the scalability of such formats and their impact on networking and perceived prestige. These bottom-up efforts showed that there is already a lot of initiative and creativity on the ground, we just need to keep supporting and adding to it.

What really stood out across both parts was how engaged the audience was. The questions raised were thoughtful and honest, digging into issues like how to balance sustainability with research quality (a heated discussion did arise here), how to make cultural shifts (like normalising home office), and whether top-down incentives are needed. Though indeed a couple times, the exchanges bordered on becoming too heated. Nevertheless, these dialogues made for a great lead-in to the afternoon workshop as it meant people walked in not just informed, but already thinking critically about making sustainable change.

The slides of Greener Biophore morning talks are available in Annex 5.

Afternoon workshop

The afternoon workshop was conceived to give participants the chance to reflect and express their feelings about UNIL's ecological transition, and propose feasible ideas to tend towards the CAP2037 objectives. We proposed two separate moments: a personal

part, to share emotions, hopes and fears linked to the Transition, and a technical part, to focus on the impact of research activities and collectively brainstorm on how to reduce it. Each part comprised some individual moments and some discussions in small and large groups, and they were all guided by supporting material and facilitators. The workshop lasted approximately 4 hours and was followed by an apéro.

In order to ensure that all discussions could take place in a relaxed and constructive atmosphere, we proposed a safety framework at the beginning of the workshop. The key principles were - sovereignty and responsibility, kindness, respect, no blame, privacy, beware of hierarchy. We gave participants the chance to add to the framework where needed. Throughout the afternoon, and especially in the group sessions, facilitators were guarantors of the safety framework, ensured that discussions were respectful and efficient and guided participants throughout the different phases. The facilitators were 7 members of the UNIL community, mostly students and researchers, who received a 3-hour facilitation training from Nina Suckow (CCD) and a specific briefing ([Annex 6](#)) from the us organizers. The facilitators' role was to support discussion while remaining neutral, ensuring that different opinions were expressed and heard, and helping participants explore problems from different angles.

During the first part of the workshop, the personal part, participants had 8 min to fill out a small flier, then 8 min to discuss it with their neighbours in pairs or small groups. The flier contained the following open questions about the sustainable transition at UNIL:

- How do you feel about it?
- Do you have concerns? Which are its downsides or weaknesses?
- Which obstacles do you see for you and your group on this path?
- Which are its positive sides (besides footprint reduction)?

And finally a multiple choice question to survey the participants' openness to change and their willingness to go beyond provided guidelines. We collected the fliers filled anonymously by the participants and summarized the most recurrent and most interesting responses in the present report. An example of personal flier is included in the annexes ([Annex 7](#)).

During the second part of the workshop, the technical part, each participant chose one topic to work on. Based on the data we were able to collect, we proposed 5 topics - Experimental research resources, Computational research resources, Energy and spaces, Professional mobility, Beyond research: food and commuting. We recognized there was partial overlap among some of these areas, and that some potential solutions could address more than one area, but decided to streamline the discussion by asking participants to focus only on a subset of the problem. Each group was assigned to one (or two) facilitator(s) and received some supporting material. In case of uncertainty about the contents, conflicting information or missing data, participants could ask for clarification at the factchecking table, composed by Alessia Del Panta, Emanuele Boni, Cecilia Matasci and Delphine Douçot.

The technical part was structured in 3 separate moments. First, during the individual reflection, each participant had 30 minutes to work individually on a technical flier. The flier contained all the data we were able to collect about that specific topic, and an empty diagram called the iceberg template ([Annex 8](#)). The purpose of the iceberg template is to prompt the user to elaborate a challenge in depth, considering not only the visible problem (the tip of the iceberg) but also the set of behaviours, physical and hierarchical structures, values and beliefs that underlie such problem (the submerged body of the iceberg). In our iceberg template we included the following levels:

- Visible problem: data, facts, evidences
- Behaviours and activities: human behaviours and choices

- Infrastructure and rules: policies, organizational structures, resource allocation
- Culture and values: culture, beliefs, assumptions and values

We suggested participants take 10 minutes to read the flier and familiarize with the data, 10 minutes to identify a problem they wanted to tackle and break it down in the various levels of the iceberg, and finally 10 minutes to propose solutions at the various levels.

In the second moment, we formed 6 focus groups (4-6 participants per group). Participants took turns to share the thoughts and ideas they had during the individual reflection, then the discussion continued. Each group had 50 min to fill a new iceberg template and to further elaborate their propositions. In the third moment, small groups were fusioned in big groups: in one case (Experimental research resources) both sub-groups had worked on the same topic, while in the other two cases the big group embraced two different topics (Computational research resources + Energy and spaces ; Professional mobility + Beyond research: food and commuting). Each group had time to share the contents of the previous discussion, then the discussion continued in order to identify new problems and refine propositions. In this last phase, which lasted 40 minutes, the groups filled a collaborative poster for each of the 5 topics. We concluded the workshop with a brief wrap-up, where each group shared the key highlights of the discussions, and a celebratory apéro, to allow conversation to continue in a more relaxed and informal setting.

The deliverables of the workshop, the 5 collaborative posters, were made available in the Biophore hall for 2 weeks following Greener Biophore, alongside the fliers with the data, some instructions and material, allowing for further spontaneous contributions for people that could not participate in the event. Subsequently, we organizers, with the support of the facilitators, collected all the material and summarized the outcomes of the workshop in the present report.



05 Demographic data on participants

The primary target audience for this event comprised employees working at the Biophore. Efforts were made to ensure diversity across departments, job roles, age groups, and gender (Fig. 12). Of the 73 individuals who registered, 54.3% (40 participants) signed up for the full-day program, 42% (31 participants) registered for the morning session (talks only), and 2.7% (2 participants) signed up for the workshop only. During the day, the morning session was indeed attended by approximately 70-80 people, while the afternoon workshop was only attended by 20-25 people. Representation across departments showed a slight overrepresentation from the DMF and an underrepresentation from the DEE, relative to their respective department sizes. In terms of job positions, the event attracted a broad range of participants, predominantly PhD students and postdoctoral researchers, but also included professors and PAT staff. Gender distribution was nearly balanced at 50:50. The age distribution skewed toward the 26–35 age group, which likely reflects the general age profile within the Biophore.

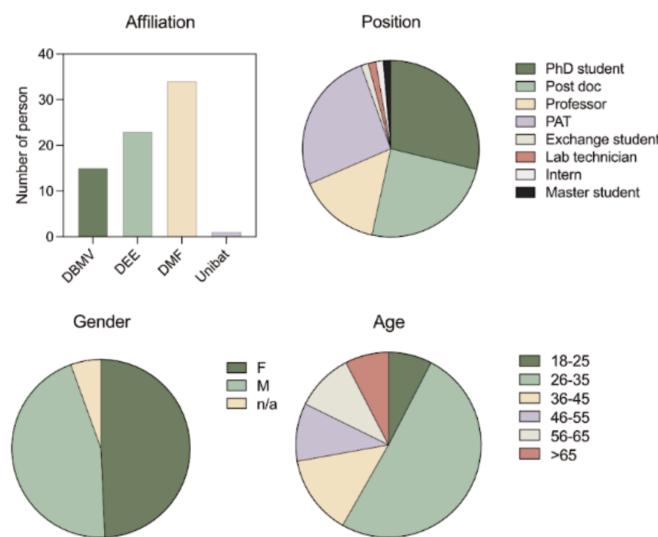


Figure 12: Demographic data of individuals participating in the Greener Biophore event.

Overall, the event was broadly representative of the Biophore community, encompassing a wide range of ages, positions, and departmental affiliations. However, we observed a potential bias in participants' values: the event, especially the afternoon workshop, likely attracted individuals already highly engaged with or concerned about sustainability. While this aligns well with the event's goals, it may have limited the inclusion of perspectives from those who are less engaged with the topic. Including a more diverse range of attitudes toward sustainability could offer valuable insights and foster more balanced discussions in future events.

06 Outcomes of the afternoon workshop

Personal part

The discussion about feelings, concerns and hopes regarding the sustainable transition at UNIL raised many interesting points.

As reflected by the word cloud (Fig. 13), participants expressed mixed feelings about the transition. One word clearly stands out: hopeful. Many other positive emotions were expressed: optimistic, positive, motivated, happy. On the other hand, some participants shared negative feelings: skeptical, anxious, frustrated. Many people emphasized that the transition is necessary, but also that it is very slow. In general, the attitude of participants was more positive than negative.

The main concerns revolved around the transition not progressing at a sufficiently quick pace. Interestingly, the most frequent worry was that ‘others’ will not be on board and will not fully commit to change. This mental barrier, well captured in game theory examples, is a key element of social inertia: if everyone believes that others are unwilling to change, no one wants to take the first step. Many people expressed problems related to the way transition is managed, such as lack of guidance from the institution, lack of coordination between initiatives, and lack of hands-on knowledge from the governance when it comes to changing specific research practices. Some participants raised concerns about the difficulty of implementing significant changes in everyone’s routine, about the internal conflicts and tensions that can arise when committing to sustainability (e.g., travelling by plane, clashes with career development...) and about the risk of polarization and conflict among groups of people that have different opinions. A few people stated their fear of not reaching the CAP2037 objectives, or that they might be unrealistic considering the slowness in the progress. Only a few participants were worried that the sustainable transition might cause reduction of research quality or shift in research topics towards less impactful but also less interesting topics. Someone mentioned the risks of monetary cost and inequalities.

When asked to reflect specifically about the obstacles that prevented them and their colleagues from taking concrete actions, participants independently mentioned a long list of mental barriers and mindset challenges (lack of incentives, polarization, self-importance, preference for comfort, individualism, capitalistic principles...). These contribute to the perceived inertia, both in convincing people and in changing practices: many people recognized that renouncing to the autopilot mode to do things differently requires some nudging. One comment that stuck with us was ‘Researchers are already overwhelmed and tired. We need to make the change easy for them’. To overcome this, participants expressed the importance of guidance, guidelines and coordinated efforts from the University and the Faculty. In this section many specific elements were highlighted (international conference attendance, electronic equipment consumption, office spaces occupation), reflecting which are, according to participants, the most challenging areas of change. Once again, the concern that change could reduce the productivity or the quality of research was expressed, alongside with the risk of creating tensions and conflicts, both within and between individuals (how to choose who attends international conferences? how to keep networking and collaborating internationally without flying?). Only a small group of people identified the lack of resources, money, time or data as an obstacle for the transition.

We then focused on the hopes and positive sides of the transition. The most frequent argument was that taking steps on the work place would generate an increase in awareness

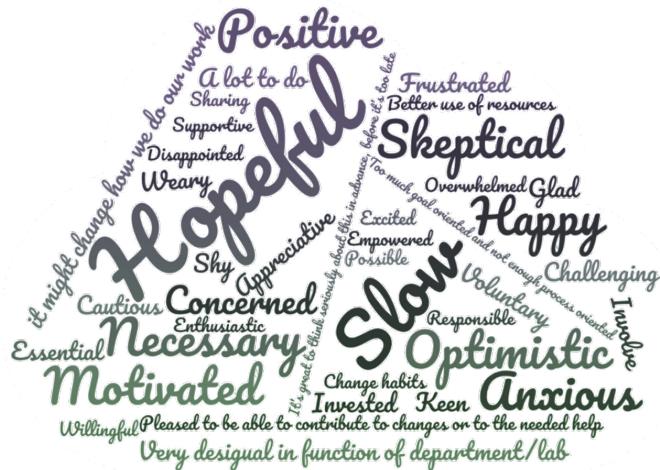


Figure 13: Word cloud with the emotions and feelings that the Ecological Transition at UNIL evoked in participants. The size of the words reflects their frequency.

and consciousness, resulting in positive changes also in people's private life. It seems clear that participants recognized and valued the indirect impact that changes in UNIL can have on its community: such additional benefit could complement the direct measures and contribute to bringing the impact of UNIL's activities back into planetary boundaries. Many people consider the transition as a stimulating challenge to do science differently, to be more creative and to take more time to think about which research questions we really want to answer and how. There is also a widespread perception that the transition would increase internal scientific collaborations at various levels, as well as strengthen the sense of community, thanks to better communication, better sharing of resources and information, and the feeling of contributing to a common objective. Participants also expressed the importance of empowerment and responsibility that comes with contributing to the institutional decision, the gratification and sense of reward of seeing the positive impact of changes. A few people mentioned various kinds of savings (financial, time and resources) and a positive impact on the local space and community (better management of space inside and in the proximity of campus, support to the local food economy, positive image of UNIL...).

When asked about their attitude and proactiveness towards change, the participants expressed a very high willingness to contribute. A minority of people (5/24) would prefer to receive precise guidelines and indications about what to change and how. The majority of people would be willing to go beyond provided guidelines and come up with their own changes (9/24) or even invest additional time and energies to go beyond changes in their own routine and contribute actively to the Transition (10/24). We are aware that such a high level of commitment is influenced by the overrepresentation of environmentally-aware people in our group of participants. Nevertheless, we believe these numbers are encouraging and can show to the UNIL governance that at least part of the community is willing to change, and to support bold changes. The full summary of the personal part is available in Annex 9.

Technical part

Following the event, we collected the contents of the collaborative posters, and with the help of the facilitators we compiled a **table with the problems, propositions and tensions** identified by the Greener Biophore participants, without any changes on our part (Annex 10). Building on this material, we have combined, reorganized and refined the propositions in order to make them more actionable, trying to identify the potential actors that could implement them. We also highlighted the key problems, missing data

and open questions for each topic, as well as a series of transversal propositions. This effort resulted in a **broad collection of propositions and points of interest** (Annex 11). From the complete list, we have made a selection and compiled 3 summaries:

- **Summary for Department Directors** (Annex 12), which we addressed to the FBM Vice-Dean for Sustainability and Infrastructures and the 3 Department Directors.
- **Summary for Department Members** (Annex 13), which we shared with the 3 Biophore Departments, and particularly with the Department Sustainability Task Forces.
- **Summary for the Dicastère Transition Ecologique & Campus and for the Centre de Compétence en Durabilité** (Annex 14)

Below we summarize the key highlights and a small selection of propositions that emerged from each of the 5 focus groups, as well as some of the transversal propositions.

Experimental research resources

This session addressed the everyday use of experimental resources within research activities at the Biophore. Key concerns included the overconsumption of single-use plastics, the need to improve equipment sharing across labs and departments to reduce unnecessary purchases, and, more broadly, a reflection on the prevailing mindset regarding resource use. Participants discussed the tendency to take for granted the accessibility to research materials and equipment, overlooking their financial and environmental costs, as well as the human effort involved in making these resources available. Several practical recommendations were proposed to improve sustainability in daily lab practices at the Biophore:

- **Promote the use of glassware:** Department Sustainability Task Forces encourage a shift from single-use plastics to reusable glassware by making plastic items less readily available in ordering systems, for example, by modifying ordering item lists.
- **Facilitate equipment sharing:** Department Sustainability Task Forces request to implement a shared calendar for lab equipment at the building level to optimise usage and reduce the need for additional purchases.
- **Track resource consumption:** Department Directors request to establish systems to monitor and analyze resource usage, ideally integrated with existing ordering software.
- **Address year-end budget pressures:** Department Directors negotiate with the Faculty/University to modify budget policies that currently incentivise year-end spending, allowing unspent funds to be carried over. This would help reduce unnecessary purchases and overconsumption.
- **Raise awareness among newcomers:** The Sustainability Task Force of each department regularly organizes a sustainability training for new staff and students, including guidance on sustainable lab practices and proper use and cleaning of glassware.
- **Appoint a lab sustainability officer:** Department Directors designate a permanent staff member to serve as a sustainability officer. This person would deliver sustainability training, track sustainability metrics, and liaise with departmental representatives to coordinate initiatives.

Computational research resources

This group discussed the overconsumption of computational resources, which include cluster usage, data storage and the purchase of IT equipment. Participants highlighted a general lack of knowledge about the impact of computational research resources, especially about the impact of AI, and lack of support or training to use computational resources efficiently. They also discussed a general pressure for obtaining results fast, which leads researchers to run simulations or store data in inefficient ways.

Key propositions formulated by this group include:

- **Improve tracking and monitoring:** The impact of AI usage is not yet transparent. Similarly, the purchases of IT equipment are not properly tracked. Having a proper quantification is the first step for proposing efficient measures. The Department Sustainability Task Force designates a member to improve data collection and monitoring in these areas.
- **Raise awareness and promote good practices:** PIs encourage researchers to test their code before running it, and to specifically take care not to over-request memory. The DCSR organizes training programs to teach the community how to use computational resources efficiently.
- **Reduce purchases of IT equipment:** Department Directors and PIs promote the use of fixed (potentially shared) desktops and not buying laptops for new employees. Researchers could connect to the fixed desktops via their personally purchased laptops.
- **Improve data storage and management:** UNIL encourages sharing data between groups or even at the University level, which could reduce the amount of data that is produced overall. Moreover, UNIL could implement a policy that, under circumstances to be specified, enforces data deletion after a certain amount of time.

Many of the problems related to the ecological impact of computational research were attributed to a general sense that science needs to progress fast, which might be even more true for computational research given the common perception that it is faster at producing results than experimental research. Group members raised the question of whether this pressure for speed is actually beneficial for research. More broadly, could research projects be chosen based on a cost-benefit analysis that also includes the ecological dimension?

Energy and Spaces

Discussions in this group focused on how energy usage and the organisation of workspaces impact both sustainability and daily life in the Biophore. Several key issues were raised, such as the unequal distribution of office and lab space, with professors often occupying private, spacious rooms, while students and technical staff are crowded into shared areas. The infrastructure of the building itself was also seen as limiting, often unable to meet the comfort needs of its users due to overcapacity. Participants also pointed to outdated attitudes towards remote work, where home office is still sometimes perceived as lazy or unproductive. It was discussed that this stigma discourages more flexible, potentially lower-impact ways of working. Lastly, participants identified a tendency towards reduction of energy use rather than rethinking or upgrading systems, and a sense of pessimism around the impact of small actions, which risks stalling individual and collective efforts. From this, a number of concrete proposals emerged:

- **Encourage energy-saving habits:** PIs remind lab members to turn off appliances and lights in labs and offices when not needed.

- **Support remote work:** PIs build trust and normalise home office policies within research groups.
- **Promote shared use of lab equipment and storage:** PIs avoid duplication of high-energy devices - along with clearer protocols for maintenance and cost-sharing.
- **Move toward need-based space allocation:** Rather than assigning rooms based on hierarchy, Department Directors promote bookable shared spaces regardless of the employee hierarchy.
- **Increase transparency:** Department Sustainability Task Forces publish departmental energy usage data, encouraging accountability and friendly competition.
- **Cut down unnecessary electricity use:** Department Directors mandate the installation of more motion sensors in shared spaces.
- **Use greener energy sources:** The University relies more on solar and wind energy or district heating.

In parallel, the group raised some bigger, open-ended questions worth taking further: Who should be responsible for the maintenance and cost of shared equipment? How can we balance people's need for personal space with the push toward shared infrastructure? How do we shift cultural mindsets - especially when it comes to home office and the belief that small actions do not matter? Addressing these questions could be key to unlocking wider, longer-term change.

Professional mobility

Discussions in this group mostly revolved around the widespread use of **planes** as a means of transport, focusing on the **practical reasons** and the **implicit beliefs** that push academics to fly frequently. Besides the convenience of choosing the plane over the train (cost, time and ease of organization), the group highlighted how travelling to international conferences is key for networking and collaborations, for career development, and for recognition in the field. Even when researchers feel **internal conflict** between the need to travel and their values, they do not have the tools to find alternatives. When they decline an invitation, often their reasons remain unheard or not taken seriously. The group discussion focused mostly on **trips to conferences**, as opposed to trips for field work, due to their overall higher impact on emissions (See Annex 2).

A series of measures and recommendations were proposed to reduce the impact of air travel in the context of academic travelling:

- **Collect better data on air travel:** The data currently available is clear, but potentially incomplete, thereby it could lead to underestimate the magnitude of the problem. The Department Sustainability Task Force designates a member to improve data collection and monitoring in this area.
- **Prioritize local experts to form thesis committee:** PIs encourage choosing local professors as experts for a PhD committee, otherwise encourage virtual participation to the thesis milestones.
- **Apply DEE's air travel policy in all departments:** Department Directors implement the DEE's air travel policy, which includes guidelines for low-emission trips, a carbon tax and a carbon budget per group.
- **Promote virtual and hub-based conferences:** When organizing conferences, PIs propose and improve alternative conference formats.

- **Raise awareness about the environmental impact of air travel:** All researchers use their visibility (e.g. after a talk, or at a conference) to raise awareness about the impact of air travel and the importance of finding alternatives.
- **Promote longer academic visits:** Instead of flying for a very short stay, PIs encourage longer and more meaningful trips (e.g. series of talks, longer field work period or a 3-6 month research period abroad).

Beyond Research: Food and Commuting

Discussions in this group focused on the main factors contributing to the ecological impact of food and commuting, namely meat consumption and car usage. Participants noticed how the introduction of a vegetarian day in the week only marginally improved the sustainability of meals offered in the canteen, because an increase in dairy products compensated for meat decrease. They also highlighted how the minority of the UNIL community uses the car, but that the car is nevertheless the major responsible for carbon emissions associated with commuting.

Key propositions related to Food included:

- **Vegetarian catering and waste reduction at Biophore:** Department Directors mandate that all events organized within Biophore offer exclusively vegetarian catering. To reduce food waste, organizers order only 80% of the total estimated amount of food, or invite participants to bring a container to take home leftovers.
- **Improve vegetarian offer in canteens:** UNIL negotiates with canteens the improvement of the quality of vegetarian meals. At the same time, the ecological impact of vegetarian meals should be truly lower than the non-vegetarian ones. More sustainable diets among UNIL members could be promoted by sharing vegetarian recipes. The number of vegetarian days per week could be increased, alternatively a “CAP2037” meal could be served every day. This meal should have an ecological impact below a certain threshold.

The group identified a strong tension regarding different dietary choices, which inevitably leads to people feeling discomfort and judgment from others.

Concerning Commuting, the main propositions were:

- **Collect better data:** UNIL needs to collect data to understand why certain people choose to commute by car, in order to develop informed and targeted policies.
- **Give incentives:** UNIL promotes more sustainable commuting by contributing financially to the public transport half fare card, the GA travel card, or the purchase of electric bikes. Moreover, it could implement shuttles between the train station and the University, as well as creating a UNIL-wide car sharing app.

Transversal propositions

During group discussions, several ideas emerged that transcended the specific topic of the discussion. The iceberg template is in fact designed to progressively lead the conversation to the more systemic structures causing a specific problem (overconsumption of energy, resources, etc.). When discussions reached this point, the proposed measures were often transversal.

Here we report some of the most relevant ideas, reworked by us into propositions:

- **Biophore sustainability task force:** Each one of the three departments within Biophore has working groups dedicated to sustainability: the DMF and DBMV sustainability task forces focused mainly on sustainability of experimental practices,

and the DEE's on air travel commission. We propose that the Department Directors create a Biophore-level sustainability task force with representatives from the task forces of the 3 departments if they exist, or with 1 person per group from all groups. This task force would have the mandate to propose and coordinate sustainability efforts at the building level and potentially organise yearly/biyearly a Greener Biophore event.

- **Department-level sustainability representative:** Department Directors appoint one sustainability representative (e.g., vice-director sustainability, the equivalent of the vice-rector at UNIL level and vice-dean in each Faculty) for their department, with the mandate to call a sustainability task force meeting twice per year, supervise its initiatives and coordinate with the representatives of the other departments.
- **Sustainability as part of the PhD education:** PIs officially allow PhD students to devote part of their working time to sustainability either through extracurricular activities (e.g. organizing initiatives, volunteering, science communication, art&science) or research-related activities (e.g. collecting and analyzing data to make specific protocols or research practices more sustainable) and writing a chapter of their thesis or a publication on the topic. UNIL should negotiate with the doctoral school the possibility of giving credits for such initiatives.
- **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.

Values

Reasoning about how to drive the ecological transition of our building inevitably challenged core values, assumptions and beliefs on which our current academic system is built. This led to two different kinds of outcomes: in some cases it led to **tension points** and disagreement between participants. In others, participants agreed on **common values**, but felt that these were not the ones at the foundation of **how Academia works nowadays**.

During question time of the morning talks it became clear that there is a concern about possible conflicts between sustainability and **productivity**. As organizers, we add that the concern might be extended to other values such as **scientific rigour**. These discussions made it evident that we are in strong need for a new definition of what we identify as successful scientific investigation. Following the talk by Antoine Guisan and Erica van de Waal, participants raised the problem of balancing **internationality** and the need to reduce aviation. Specifically, can cuts on aviation lead to not hiring people whose nationalities require taking an air plane to visit their country of origin? How to balance sustainability and giving **equal opportunities** to everyone, no matter their country of origin? Moreover, an attendee raised the opinion that restricting business flights seems inconsistent if **leisure travel** continues unrestricted.

The afternoon workshop was also rich in discussions on core values underlying the environmental footprint of research. Here, participants seemed to agree on values that are responsible for the environmental footprint, as well as which values should replace them. Participants agreed that, as researchers in Switzerland, we are **extremely privileged**. However, they questioned whether this privilege can, besides being an opportunity, result in using resources without care and ultimately wasting or overusing them. Participants also agreed that privilege should come with **responsibility** and not with excess. It is therefore our duty, as researchers in one of the richest countries in the world, to engage in pressing global issues. Importantly, **research quality** and research objectives **need to be redefined** in a way that includes the need for sustainability. It was widely recognized that the academic system is based on **pressure to produce fast results**, and also that

speed is not necessarily synonymous with quality. Participants also reasoned that there is widespread perception of a strong **resistance to change** and asked themselves how one can counteract pessimism and promote the value of incremental, collective change. At the same time, they reasoned that it is important to protect those who care for sustainability from the fear, and the possibility, of **being judged** by others.

Several interesting points were raised concerning specific areas of impact. For example, concerning experimental research resources, participants suggested that **low tech and sufficiency** should be encouraged, although they were not sure as to how to implement such paradigms. They also recognized that the work of **staff in the kitchen is undervalued**. Most sustainable solutions require increasing the workload of kitchen staff, and it is therefore indispensable to raise awareness on the importance of their job. This would avoid overloading kitchen staff with work and rather encourage the hiring of new staff. Sharing machines and equipment was proposed as a practical proposition to reduce energy consumption, but participants noticed that, for this to work, it is important to clarify **who is responsible** for the cost and maintenance **of shared machines, resources, and spaces**. Concerning aviation, participants asked themselves whether the University's footprint should take into account, at least partially, the **emissions linked to personal travels**. On the topic of alimentation, participants highlighted the difficulty of **disentangling dietary choices from the culture and values**, especially in a country where cows are so iconic. Moreover, they identified a widespread erroneous perception of meat being the only "good" or practical source of proteins. On top of this, they also stressed the fact that **local food** might not necessarily be the best choice for the environment, if it is **high emission** food (e.g. local beef).



07 Conclusion

Given the complexity of environmental challenges and the long time it takes for initiatives to promote change, and for change to have a positive impact, it is not possible for us to tell to what extent the Greener Biophore project contributed to accelerating the ecological transition at UNIL. As we organizers have no direct power to implement all the propositions we collected, our mission is now to relay them to the appropriate stakeholders: the FBM Vice-Dean for Sustainability and Infrastructures, the Dicastère Transition & Campus, the 3 Biophore Departments and Department Directors, the Centre de Compétence en Durabilité. The DMF Sustainability Task Force already took up the baton to discuss which of the measures can be implemented at the Department level.

Looking back at the months of organization, the excitement of the event, and then the various conversations that the initiative sparked, we can pinpoint some impressions and signals that highlight its positive influence on the Biophore community.

When we presented our idea, even in a primordial form, we were welcomed with a lot of enthusiasm by several people. During the event, we realized that there is a general interest and willingness to engage in sustainability, that a lot of people do care and want to change society for the better. We were delighted to see a wide diversity among the participants, and the respect and empathy that underlined the workshop discussions. Our impression was that many people were waiting for a similar initiative to happen, but no one had had the opportunity to turn the idea into reality, until we gave a physical form to this collective sentiment. We believe this is a key indicator for our governance that the community is ready to change, it wants to see transformation happen and to be part of it, it just needs the right tools, guidelines and resources (above all, time).

We recognise that there is still much to be done, and we hope that Greener Biophore helped identify some levers and some areas in which it is worth investing effort. First, we demonstrated it is possible to quantify the environmental impact at the building level, which is more relatable for individuals, compared to the entire University. Indeed, the quantitative approach has been positively received by participants, which could make data-driven propositions. Second, we showed that top-down and bottom-up approaches can be complementary in estimating the footprint of research activities. The event highlighted the importance of automatizing bottom-up data collection and starting collecting data for areas that were so far mostly overlooked (outsourced services, data storage and computational resources, AI usage). Besides the absence of some key data, we identified other challenges that hinder change within our building: the absence of well-defined roles with the mandate to implement and monitor changes, the lack of coordination between departments, the natural disagreement on priorities. One dilemma is whether encouraging a collection of small changes is preferable over focusing on a few high-impact measures. The second is the conflict between sustainability and other values, such as research quality and productivity, and the exact definition of these other values.

Despite clear challenges and problems to overcome, the Greener Biophore event filled us with hope for the future and trust in the creativity of our community and in its attitude towards change. We were excited to see that new realistic solutions were proposed during the workshops, and we really hope to see some of them applied soon. We can proudly say that Greener Biophore was one of our most valuable contributions during our years at UNIL: we have approached the topic with scientific rigour and the curiosity and determination that we have developed in several years of PhD, and we have certainly learnt a lot. We hope to see more bottom-up initiatives and that researchers can dedicate part of their working time to investigate and work on topics that are truly meaningful

for them and relevant to our community. Finally, we have learnt that ‘the people in the room are the people you need’. If we want change to happen, we cannot hope or wait that everybody is on board. We were initially frustrated by the limited number of people that participated in the collaborative workshop, but rapidly realized this made discussions smoother and more constructive. Participants were mindful enough to take into account counterarguments and opposing positions, that is, they were inclusive towards people that were not even there. This showed us that the people that care, that are willing to invest time and energies, the people that show up, those are the people we need for change to happen.

08 Acknowledgements

The Greener Biophore event would have not been possible without the invaluable help of many members of the UNIL community.

First of all, we want to thank J. Meillard and the Dicastère Transition & Campus, for the support provided throughout this journey, from the conceptualization of the idea, to its implementation, passing through the financial support (the Transition Acceleration Fund) and the contacts that helped us turn our project into reality.

We express our gratitude to the Directors of the 3 Departments, J.W. Veening for DMF, M. Robinson-Rechavi for DEE and P. Reymond for DBMV, for their endorsement and support in advertising the event and making it tailored for the Biophore community.

A special appreciation goes to N. Senn, vice-Dean Sustainability and Infrastructure at FBM, for his enthusiasm and encouragement, which really convinced us of the importance and usefulness of our bottom-up initiative. We are grateful to our speakers for accepting the invitation and contributing with insightful and thought provoking presentations: N. Senn, C. Matasci, D. Douçot, P. Majcherczyk, S. Michel, S. Pelet, F. Mazel, A. Guisan, E. van de Waal, S. Mitri.

A huge thank you to all the people that participated, in various ways, in the data collection, analysis and visualization: V. Teixeira, A. Janssen, F. Mazel, S. Pelet, V. Vincenzetti, R.A. Evard, C. Jeanmonod, A.L. Roulin, C. Beck and the DEE air travel committee, T. Sauteur, N. Chesaux and the HEC air travel working group, J. Recordon and the CCD.

The day would have not been as rich and structured without the incredible support of 3 people that endured tens of emails and long hours of meeting to make Greener Biophore happen. We are grateful to N. Suckow for the facilitation training and the conceptualization of the afternoon workshop, to C. Matasci and D. Douçot for sharing the footprint data available at UNIL, to Cecilia in particular for calculating the Biophore emissions specifically for our event. They were so inspiring and supportive throughout this journey, working side by side with them has been a pleasure and we have learnt so much.

Last but not least, we express our deepest appreciation to the 6 facilitators that made the afternoon conversations smooth, efficient and enjoyable. N. Chesaux, L. Uribe Ramirez, B. Bentvelsen, S. Yersin, T. Steiner, it was extraordinary to see them taking the reins of the event and putting themselves into it. Having them on board and seeing their commitment was one of Greener Biophore's greatest successes.

09 List of annexes

- **Annex 1 - Technical fliers.** The document contains the key data to understand the impact of the various research activities in Biophore, as well as the corresponding CAP2037 objectives.
- **Annex 2 - Fact checking document.** The document contains all the data we managed to collect and analyze. It complemented the technical fliers whenever information was missing or unclear.
- **Annex 3 - Raw data and processed data.** The excel tables contain the raw data we collected, alongside with metadata (source, date of collection, data period, approximations and assumptions, processing), and the results of the data processing.
- **Annex 4 - Transition Acceleration Fund request.** The document contains the Transition Acceleration Fund form filled in and signed, jointly with the budget estimate.
- **Annex 5 - Slides from invited speakers.** The document contains the slides of the presentations given by the invited speakers in the morning.
- **Annex 6 - Briefing for facilitators.** The document contains all the information and instructions that helped facilitators guide the afternoon workshop (objectives, useful vocabulary and resources, minute-by-minute development, reminders of facilitator posture and recommendations to face challenging situations).
- **Annex 7 - Personal flier.** The questionnaire that participants were asked to fill out during the workshop personal part.
- **Annex 8 - Iceberg template.** The framework that guided brainstorming and discussion during the workshop technical part. The model was adapted from templates available online.
- **Annex 9 - Outcomes of the workshop personal part.** The document contains the list of answers to the personal questionnaire. Answers were simply reorganized by subject, not edited.
- **Annex 10 - Outcomes of the workshop technical part.** The document contains the transcription of the 5 collaborative posters. The facilitator of each group took care of copying exactly what was written in the poster, and only added a few words when clarification was needed (in which case, they reported some elements they could recall from the oral discussion).
- **Annex 11 - Collection of revised propositions.** The document contains the complete list of all identified problems, missing data and propositions, reworked by Greener Biophore organizers.
- **Annex 12 - Summary for Department Directors**
- **Annex 13 - Summary for Department Members**
- **Annex 14 - Summary for the Dicastery Transition Ecologique & Campus and for the Centre de Compétence en Durabilité**