

**Professional Services at the forefront
of carbon reduction**

*Carbon literacy training as an agent
for developing an action plan*

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Summary of findings

During the Spring of 2023, employees of the Professional Services department of a medium-sized Business School followed a carbon literacy training course. We found that the training had a limited impact on knowledge advancement and understanding of work-related decisions on CO₂ emissions, due to the School's existing sustainability concerns and practices. However, we found that the course with its guided activities 1) allowed the participants to focus on the problem, 2) created a safe environment for discussion and collaboratively identifying areas of the work environment that have a high impact on CO₂ emissions, and 3) facilitated the collaborative development of potential solutions to minimise it.

Practical recommendations to reduce carbon emissions

The course resulted in the following recommendations to reduce carbon emissions within a Business School Professional Services domain.

- Turn off monitors and computers at the end of the working day (the standby mode still requires electricity).
- Reduce the volume and size of emails through more considerate copying people, using online forms to collect responses, links to online storage instead of attachments, etc.
- Proactive communication to students to reduce the volume of emails with often similar questions.
- Academics uploading documents to Box/OneDrive rather than emailing them to the Professional Services team with often multiple people copied on the email.
- Reduce the amount of printing by providing electronic versions of, for example, results arrays, exams, and reports.
- Periodic digital decluttering, deleting duplicate, out-of-date or unused files on online storage facilities such as Box and One Drive.
- Collate online orders (e.g. with Amazon) to reduce the number of deliveries.
- Increase the amount of vegetarian/vegan food and reduce food waste for meetings, events, and conferences.
- Add carbon literacy training to the induction programme for new staff.



Professional Services staff in carbon literacy training

Background

All over the world people are facing an unprecedented challenge because of climate change. Caused by the imbalance between the increasing output of human-made Greenhouse Gasses (GHGs) such as carbon dioxide and methane, and the earth's ability to store these, global temperatures are rising. The consequences are a multitude of challenges and threatening the livelihoods of millions of people, young and old, rich and poor, individuals and organisations.

In an effort to mitigate the most serious consequences of climate change, the world is seeking to limit global warming to 1.5 degrees Celsius compared to pre-industrial levels (late 1900s) through the Paris Agreement (2016). Whilst this is increasingly seen as no longer realistic, mainly as a result of the continued use of fossil fuels, the slow response from many governments around the world to make the necessary changes and the reliance on unproven technologies, at individual and organisational levels, we must do everything we can to reduce our emissions of GHGs.

Despite recent backtracking on important goals to reduce GHG emissions by the UK Government, universities should not waver and continue their efforts to increase the awareness of the challenge, improve

our understanding of the problem and encourage staff and students to change our behaviour and adopt actions to reduce our impact. Leading this from the front is particularly relevant to the University of Sussex Business School given its prominent status in sustainability research and the University of Sussex eighth place ranking in the UK QS Sustainability Rankings (2024).

The authors believe that grass-roots action can make a difference. They are also acutely aware of the critical role they can play in helping their Business School in its mission to raise awareness, stimulate action and affect change. They completed the Climate Literacy Training as provided by the University of Nottingham under the auspices of PRiME during the Autumn of 2022 and devised a plan to provide the same training to their Professional Services colleagues at the University of Sussex Business School.

This study



Business School faculty and staff supporting the UN SDGs Flag Campaign 2023

The University of Sussex Business School has ranked for several years in the top three for research income and is part of a research-intensive university. Their Professional Services department is grouped into teams covering course administration, curriculum and assessment, student experience, marketing communications and reception. The Head of Professional Services is part of the Senior Management Team and mandated that all professional services staff should follow the training.

Whilst many academics and professional services staff from around the world have attended the online PRiME Carbon Literacy Training, the authors believe that a tailor-made programme for the Professional Services team at Business School would have a greater impact.

They created a bespoke version of the training programme that was provided through four workshops preceded by an introductory session, starting in March 2023 and finishing in June of that year. Important to note that the focus of the training was on carbon emissions and no other GHGs such as methane and CFCs.

They added a brainstorming session in the introductory session (**session 1**) to explore where the emissions are coming from within the professional services. To prepare for the brainstorming session, participants first completed a simple carbon calculation of different areas of activities of the professional services, including energy and IT, equipment, transportation and diet and consumption.

The design included a short session on creating mind maps so that the information could be collected and collated into one main mind map encompassing all the ideas.

This encouraged the teams to think about the areas of emission, from communication and events to buildings and estates as well as equipment and IT. These ideas stemmed from a short activity to calculate the carbon emissions in the different areas of professional services.

In **session 2**, the design covered a deeper understanding of carbon emissions and carbon sinks, introducing scientific measurements to underpin the academic rigour behind the reality of climate change. This included a more comprehensive coverage of carbon dioxide equivalents and the purpose of the equivalence in measuring greenhouse gas emissions.

Session 3 included an activity focused on individual carbon footprints, encouraging all participants to calculate their carbon footprint and share it with others in the room. This allowed individuals to reflect on their habits and their consequences.

In **session 4**, the cohort was encouraged to reflect on the earlier mind mapping session and to calculate the carbon footprint of the different areas of activity, including transportation, IT, estates and stationery and equipment. This then led to a final discussion of areas for action, individual, team and department. This study investigates the participants' understanding of climate change, the role of the school and the individuals themselves in reducing carbon emissions. The University of Sussex Business School supported this training by allowing the participants to follow the training during office hours.

Study design

Carbon literacy training was provided to 40 Professional Services employees of the University of Sussex Business School between March and June 2023. This study uses a mixed method (quantitative and qualitative) approach to evaluate the impact of the training programme.

Two surveys were conducted in total. The first survey was completed before the training programme and covered their academic qualification and subject area, when they believe climate change will harm people, how much impact mitigating their actions can have, the impact of their work and daily-life decisions on carbon emissions, factors that inform training experience, and ranking of activities on severity of influence on climate change.

The second survey was completed after the training and covered their interest and expectations before the training, their affective response to the training (pleasant activating, unpleasant activating, pleasant deactivating and unpleasant deactivating), the cause of climate change, timing of impact, impact on themselves, level of own contribution to reducing climate change, impact of their work and daily-life decisions on carbon emissions, and ranking of activities on severity of influence on climate change.

At the end of the first training session, six groups were formed and asked to brainstorm possible areas of carbon emissions with a focus on Professional Services. These ideas were captured in mind map form. At the end of the last session, the participants were also put into the same six groups and asked to consider the mind maps created in the first session and generate ideas to mitigate carbon emissions.

Findings

This section first presents the findings of the two surveys and then the findings of the activities the participants were asked to complete during the first and fourth training sessions, followed by a synoptic description of the mind map and action plans developed by the training participants.

Results from pre- and post-training survey

The survey was designed to collect anonymous responses; we used a three-digit code to match pre- and post-training responses from each respondent. In broad terms, the objective of the survey was to understand the participants' knowledge level of the subject matter. Therefore, we had a range of questions that were common in both surveys. This repetition was particularly important in creating an opportunity to test the asymmetric relations of climate change awareness and willingness to act.

Demographics of the participants

46% of participants have obtained either an Undergraduate or Postgraduate or equivalent degree, and 89% of which are in arts, business/management, or social sciences discipline. The participants are well balanced in representing generational diversity; 27% were below the age of 25, 26% were above 40 years, and the rest were in between. 60% of participants have a household income between £25,000 to £50,000, and only 14% had a household income higher than £75,000.

Understanding climate change

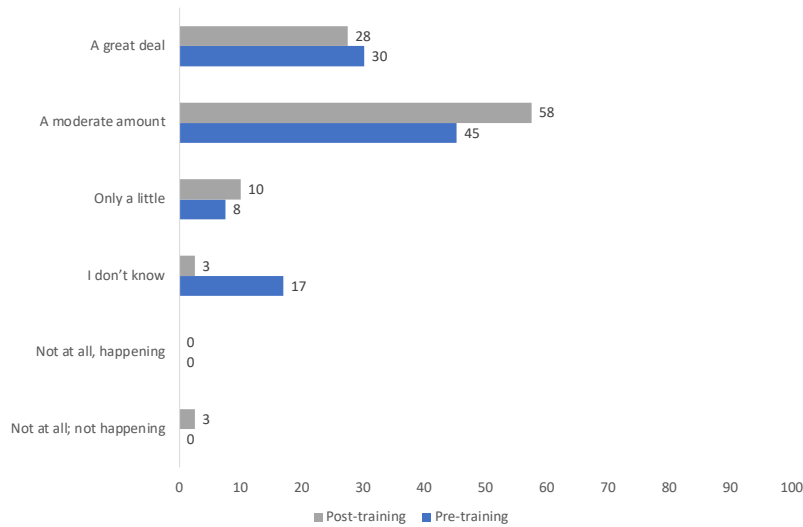


Figure 1: How much climate change will harm you personally?

Asked when climate change will start to harm people, 86% of respondents answered ‘now’, and that remained consistent between both surveys.

First, it is interesting to check participants' understanding of the impact of climate change on their individual lives. Figure 1 shows a small shift in the “I don’t know” percentage, but the understanding of moderate to high impact on individual lives remained mostly consistent.

Subsequently, participants were asked about how much their actions can help reduce climate change. Figure 2 shows that 75% believed only a little or moderate amount before the training; this increased to 83% after the training. The participants who indicated “I don’t know” reduced after the training. This is

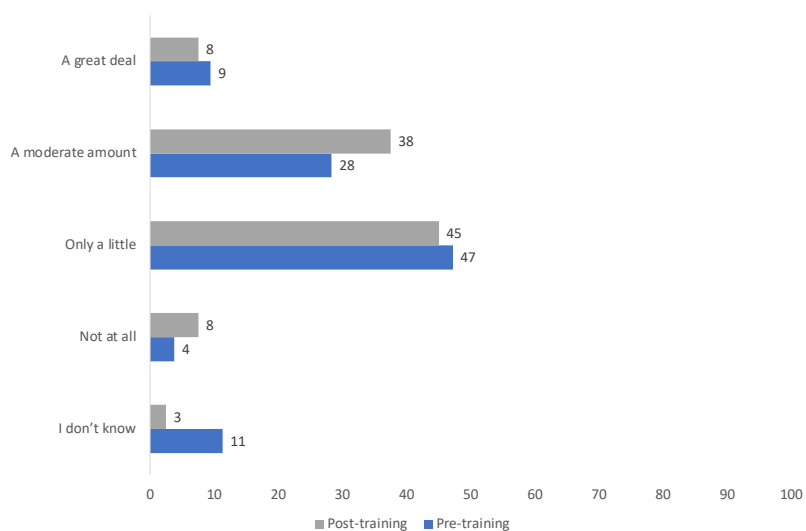


Figure 2: Individual action helping in reducing the impact of climate change.

an indication that the training at least helped in creating knowledge/understanding among unaware participants.

When asked about the impact on carbon emissions caused by their functional role and work-related decisions, there are clear indications of awareness. In the pre-training survey, 72% of participants indicated moderate to high impacts of their work-related decisions on carbon emission, which shifted to 78% in the post-training survey. Regardless of this slight shift in responses, Figure 3 indicates consistent awareness.

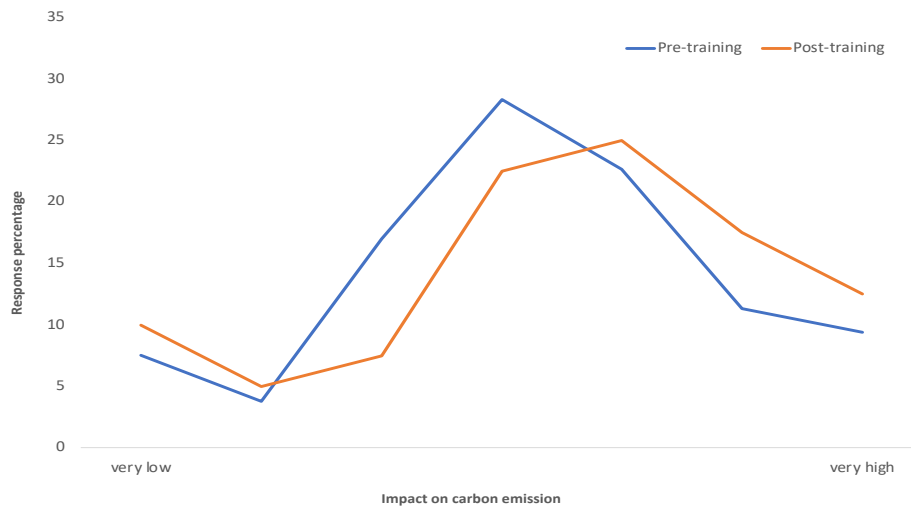


Figure 3: understanding of work-related decisions causing carbon emission.

Overall, the comparison between pre- and post-training surveys indicates that we had participants with good background knowledge and understanding of the cause and effect of carbon emissions. That brings us to two major questions. First, is climate literacy training like this meaningful and appropriate for knowledgeable participants?

The University of Sussex is like many other institutions that keep sustainability and SDGs at the core of its operations and objectives. Thus, it is not a surprise that the Professional Services team is, to some extent, knowledgeable and aware of the context of climate change. Second, how to ensure the most appropriate use of resources when knowledge transfer is not the main objective of the training design? We kept these two questions in consideration for designing and developing this training.

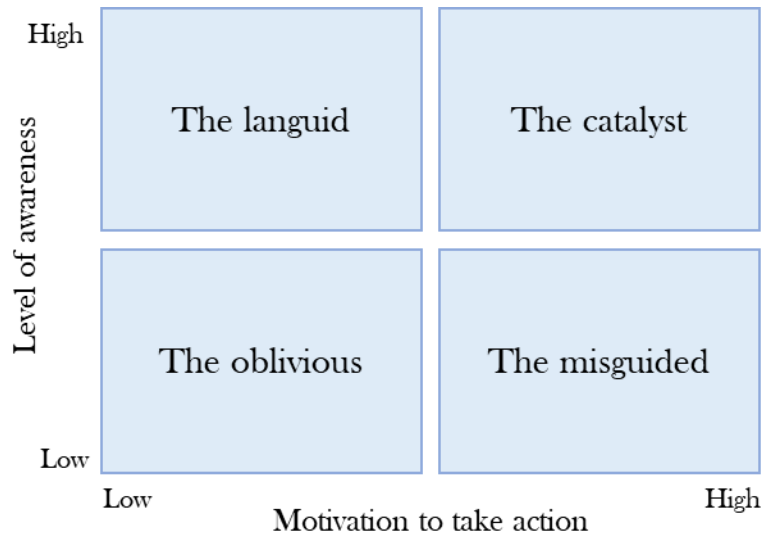


Figure 4: The interaction of knowledge and action against climate

In line with Figure 4, our primary and most important objective was to facilitate ‘The catalysts’ in the professional services. Although we had some outlier participants from ‘The oblivious’ and ‘The misguided’ clusters, most of the participants represented ‘The languid’. With the refresher on the impact of climate change and the underlying science (sessions 1 and 2), we aimed to bring ‘The oblivious’ and ‘The misguided’ into the cluster of ‘The languid’ (the subtle changes in the post-training survey hint at that shift). Next, we focused on discussing measurable and meaningful actions both at individual and organisation levels (sessions 3 and 4) to confirm the fundamental need to be the catalyst. That brings us to the very last task, where professional service teams reflect on the carbon emissions of their functions and develop action plans.

Areas of professional services that generate carbon emissions

The first workshop introduced the problems caused by the build-up of CO₂ in the earth's atmosphere. Near the end, participants were asked to discuss and identify in their groups areas where CO₂ is emitted within the domain of professional services. This resulted in six mind maps with varying topics and details. A thematic analysis of these maps is presented in figure 5 below with the items in the largest font mentioned most frequently and the smallest font least frequently. Unsurprisingly, computer equipment, printers/scanners and the work performed on them came out strongly. Interestingly, the ‘modern-day’ way of working which often includes dual/multiple screens, hybrid working and laptops/tablets in meetings was considered to have increased the CO₂ emitted.

For the work environment, kitchen equipment and facilities, and waste and waste disposal features significantly. Regularly commuting to and from the office is also considered to have a significant impact on CO₂ emissions. Catering and travel for meetings, events and conferences stood out as a significant contributor to CO₂ emissions.

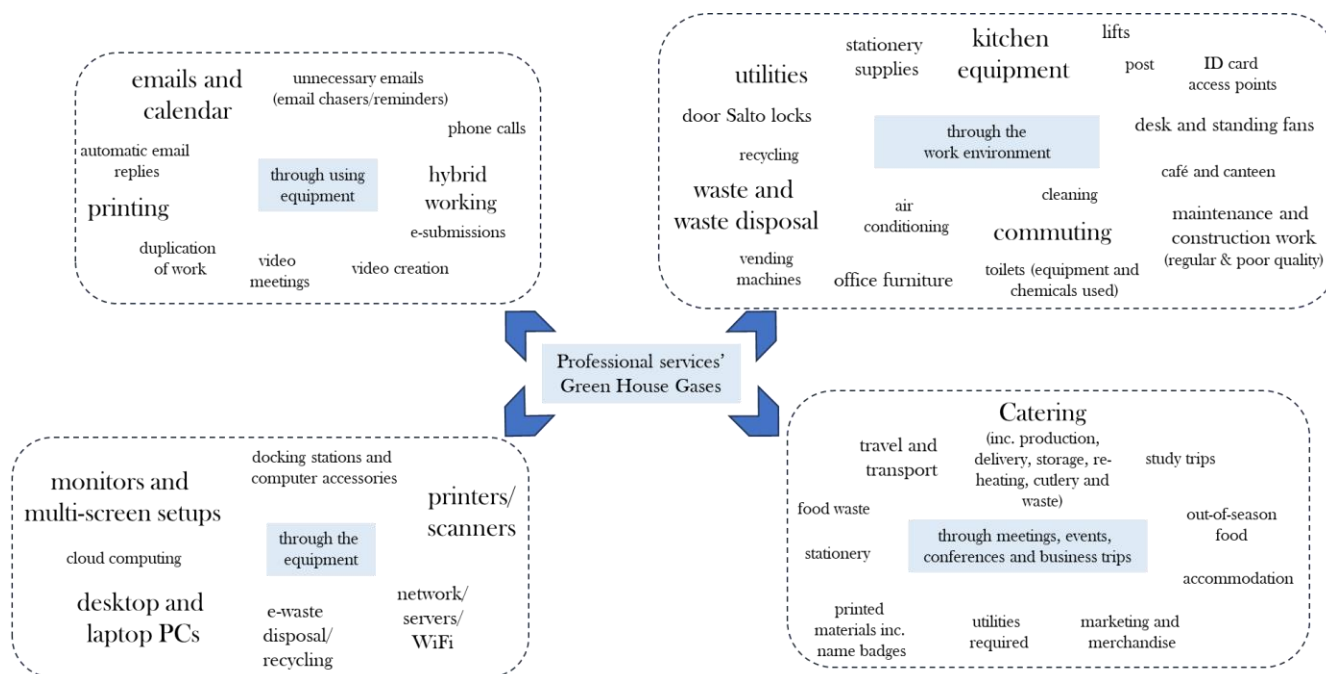


Figure 5, thematic analysis of areas in professional services that generate CO₂

At the end of the last training session, the participants were asked to develop action plans to reduce the CO₂ emissions from the sources they had identified based on the knowledge they had gained. The results from the six groups are presented below. Interestingly no ideas were presented for the equipment that is prevalent in the work environment. The authors believe that that is most likely because such equipment is needed to do their jobs and as such provides limited opportunity to reduce emissions. However, for the other categories, many ideas were generated.

Reducing carbon emissions through a change in the use of the equipment

Table 1 in the Appendix shows the ideas generated for how carbon emissions can be reduced through a change in the use of the equipment with the corresponding number of times it was recorded by the different teams. The ‘low-hanging fruit’ is turning off computers and screens, rather than leaving them on, or letting them go to standby, which was mentioned most frequently. This is an initiative that can be implemented immediately and does not require an investment or a change in school policy (in fact it reduces the cost of electricity).

The second-most cited category included ideas to reduce the volume and size of emails. Suggestions included the use of online forms to collect responses, reducing email chains, more considered copying colleagues and providing links to documents that are stored on Box or OneDrive rather than attaching them to emails. Furthermore, item #17 in the list recognises the impact on emissions of including an organisational logo or photo in the email footer. Equally, item #11 academics uploading documents directly to Box/OneDrive rather than emailing them to be uploaded by professional services also leads to

a reduction of emails. Furthermore, proactive communication with students can also lead to a reduction in emails with often the same questions (#8).

The third item in this category was reducing emissions by regularly deleting duplicate, unused or out-of-date documents from Box or OneDrive (#4). This is linked to item #18 in the list, which refers to ‘digital decluttering’, whilst only mentioned once it is obvious that this is a practice that is becoming more and more important with the increase in the use of digital technology and the environmental impact of the increasing need for file storage at cloud facilities.

Another interesting suggestion was the considered use of online meetings. On the one hand, to reduce them if all participants are in the office (#6) or improvement in meeting room technology to reduce the number of people dialling individually into an online meeting (#9). Finally, ideas were generated to reduce the amount of printing (#5, #14 and #15).

Reducing carbon emissions through a change in the work environment

Table 2 in the Appendix shows the ideas generated to reduce emissions through a change in the work environment. The two most frequent ideas mentioned were car-sharing for the daily commute (#1) planting additional trees and dedicating more campus areas for wild growing (#2). In respect of the first item, it was suggested that the chat in MS Teams could be used to coordinate this. Whilst this might be challenging to organise, the potential impact is significant in comparison to the other ideas suggested.

Other noteworthy ideas that are relatively easy to implement are bringing in packed lunch rather than buying lunch on campus (#6), boiling the kettle with only the amount of water needed (#8), only running the dishwasher when full (#9) and collating Amazon/stationery orders to reduce the number of deliveries (#19).

Finally, it was suggested to make a summary version of this carbon literacy training a mandatory part of the induction process for new staff (#14). This ensures that carbon literacy is maintained in professional services and will likely lead to new fresh ideas previously not considered.

Reducing emissions through a change in meetings, events, and business trips

Table 3 in the Appendix shows the ideas generated for reducing emissions as a result of meetings, events, conferences and business trips. Whilst all ideas had a frequency of 1, the following ideas are noteworthy because they are relatively easy to implement. Encourage more train travel for journeys of less than 8 hours (#1), ordering only vegetarian food for meetings and events (#2), moving meetings or events online if it reduces travel (#3) or alternate between in-person and online (#7). And finally, reduce food waste through better management of the catering orders (#8).



Cherry blossom in bloom outside the Business School

Key takeaways

The objective of most employee training courses is knowledge advancement (moving ‘The oblivious’ and ‘The misguided’ up to the top of the matrix in Figure 4). Judged against this criterion, the carbon literacy training had a modest impact since most participants had a good awareness and adequate understanding of climate change, and the resultant impact on society, before attending the course. Furthermore, they also understood that work-related decisions had an impact on CO₂ and other greenhouse gases. It is not unreasonable to assume that this higher level of understanding can be attributed to the sustainability mission of the Business School permeating in recruitment policy, sharing of knowledge and experiences amongst colleagues and other activities that support this.

However, we found that by management allowing time for the training course and encouraging participation, together with the expertise and experience of the course tutors, we created a positive and collaborative environment for focussed discussion and action planning. We found that by delivering five training sessions (including the introductory session) with guided activities, we created a safe environment for sharing concerns, exploring, and identifying sources of greenhouse gases in the workplace and collectively brainstorming ideas to address these (moving ‘The Languid’ to the right of the matrix in Figure 4).

This means that for settings like these where the participants have a good general understanding of the cause of climate change and the impact of work-related decisions, a carbon literacy training course with associated activities can be an important agent for collectively identifying specific sources of greenhouse gases in the workplace, and collectively and constructively developing a plan of action. We suggest that this is an important consideration for rolling out carbon literacy training in Professional Services departments, aside from knowledge advancement in situations where prior knowledge about climate change is lower.

The practical, outcome- and action-orientated, nature of this training programme links with the cognitive and motivational effects of small group problem-based learning (Dolmans & Schmidt, 2006). The cognitive element includes the recall of prior knowledge and causal reasoning. In our case the course participants utilised their prior knowledge on climate change which enabled them to quickly explore the sources of carbon emissions in their workplace. The motivational element includes an increase in interest in the subject matter through group discussions. In our case, this was evident in the constructive and collaborative discussions during the group activities and the development of a list of potential initiatives to reduce greenhouse gas emissions.

Our study also highlights the significant role of training in stimulating intention for behavioural change towards carbon reduction in professional services. Ajzen's Theory of Planned Behaviour (Ajzen, 1991) states that behaviour is directly influenced by intention, which is in turn shaped by attitudes, subjective norms, and perceived behavioural control. Our findings suggest that carbon literacy effectively alters attitudes towards sustainability and enhances the perceived social pressure (subjective norms) to engage in environmentally friendly practices. It also increases individuals' confidence in their ability to contribute to carbon reduction (perceived behavioural control). Consequently, this training programme fostered a stronger intention among the participants to engage in sustainable practices, thereby catalysing meaningful behavioural changes within the organisation. This underscores the importance of targeted educational interventions, not just for knowledge advancement but also for critically analysing a problem, action planning and cultivating a workforce committed to environmental sustainability and proactive in carbon and greenhouse gas reduction efforts.

Study Limitations

The authors completed the original carbon literacy training in their own time. Furthermore, they also developed and provided the training, and conducted this study in their own time. These limitations resulted in a focus on the Professional Services department of the University of Sussex Business School, creating a foundation for further studies involving academics, students and other schools and universities. Furthermore, the authors suggest that investigating which solutions have been implemented, which have not, and any potential barriers encountered, is worth studying too.

The authors acknowledge that without the invaluable contribution of the participants in this training course this report would not have been possible.

Appendices

Table 1, ideas generated to reduce CO₂ through changes in the use of the equipment

Reducing carbon emissions through changes in the use of the equipment		Frequency
1	Turn computers and screens off at the end of the day / not leave them on standby	4
2	Reduce volume of emails (move e-submissions error process to online, email chains, unnecessary colleagues CC-ed, thank you emails, considered use of email lists, periodic review of email lists)	4
3	Use Box/OneDrive with a link to it instead of email attachments (meeting notes, etc.)	3
4	Digital decluttering: regularly delete duplicate, unused and out-of-date documents on Box [and OneDrive] and delete emails from the Deleted Items folder	3
5	Reduce printing and maintain electronic copies (arrays, reports, etc.)	2
6	Face-to-face meetings instead of online meetings, particularly when everybody is in the office + sharing information in person	2
7	More efficient use of databases for cutting down task time	1
8	Pro-active explanatory communication to reduce the volume of emails and calls from students	1
9	Improve technology in meeting rooms to encourage in-person group attendance in hybrid meetings	1
10	Consider the use of AI to improve processes	1
11	Faculty upload curriculum changes to Box directly	1
12	Maintain electronic base rooms (with links to them)	1
13	Turn radiators off promptly when not required	1
14	Reduce paper-based exams / mainly online exams/assessments	1
15	Invest in whiteboards to reduce paper	1
16	Pagers for concise messages	1
17	Ban images in email signatories (50g CO ₂ per email with photo)	1
19	Reduce the amount of [browser] tabs open / have tabs open all day rather than always reopening	1
20	Use Canvas Year Groups for messages rather than emails	1
21	Reduce the use of paper, and if used ensure it is recycled/re-used paper and goes into the recycled bag rather than general waste	1
22	Use Teams instead of Zoom	1

Table 2, ideas generated to reduce CO₂ through changes in the work environment

Reducing carbon emissions through changes in the work environment		Frequency
1	Car-sharing where possible (use Chat in Teams to coordinate)	3
2	Plant some trees and do wild growing [parts of campus]	3
3	More efficient AC/heating	1
4	Reusable coffee cups if buying Starbucks	1
5	Bring in a packed lunch (in reusable packaging)	1
6	Fix hot/cold tap	1
7	Cautious when filling kettle [only boil water needed]	1
8	Run the dishwasher when full	1
9	Compost bin	1
10	More efficient hand dryers	1
11	Consider solar panels	1
12	Shorter working week	1
13	Mandatory carbon literacy training as part of the induction	1
14	Pedaling to generate energy for fans etc.	1
15	Bus share scheme	1
16	Living walls in buildings	1
17	Sustainable crafts	1
18	Reduce ad-hoc Amazon orders (collate orders fortnightly)	1
19	Learn about energy providers [provision of renewable energy] through FOI request	1
20	Reduce the time that motion-sensitive lights are on in the building	1
21	Ask SEF about [energy efficiency] of light bulbs around the building	1

Table 3, ideas generated to reduce CO₂ through changes in meetings, events, and business trips

Reducing carbon emissions through changes in meetings, events, conferences, and business trips		Frequency
1	More train travel to destinations in an 8-hour travel radius	1
2	Meat-free [food] for catering [for] meetings and events	1
3	Move more meetings/events to hybrid/online to reduce travel	1
4	Community café: reduce disposable cutlery and bring your own cup	1
5	Online training	1
6	[Electronic] Booking system for SSPC	1
7	Explore more virtual conferences (every other year in person)	1
8	Reduce food waste / manage [better] orders	1

References

- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behaviour and Human Decision Processes*.
- Dolmans, D. H. J. M., & Schmidt, H. G. (2006). What do we know about the cognitive and motivational effects of small group tutorials in problem-based learning? In *Advances in Health Sciences Education* (Vol. 11, Issue 4, pp. 321–336). <https://doi.org/10.1007/s10459-006-9012-8>

Resources used in training

Books:

- The Handbook of Carbon Management, Molthan-Hill et al. 2023, Routledge
- The Climate Book, Greta Thunberg, 2022, Penguin Random House
- How Bad are Bananas, Mike Berners-Lee, 2020, Profile Books
- Drawdown, Paul Hawken, 2018, Penguin Random House

Websites:

- Temperature Anomalies by Country: [youtube.com/watch?v=PhbdyNnUliM](https://www.youtube.com/watch?v=PhbdyNnUliM)
- EN-ROADS émissions simulation : en-roads.climateinteractive.org
- CNN knowledge quiz: edition.cnn.com/interactive/2019/04/specials/climate-change-solutions-quiz/
- Calculating carbon footprint: footprint.wwf.org.uk and carbonfootprint.com/calculator.aspx
- Emissions per capita: worldometers.info/co2-emissions/co2-emissions-per-capita/
- Climate impact of food: plate-up-for-the-planet-2021.webflow.io/



Students on campus