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Climate Action in On-Site Study Abroad in Europe

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Abstract in English

Study abroad travel by plane forms the largest component of a programme's carbon footprint. This paper stresses the importance of embedding climate action into study abroad and outlines climate action steps for on-site programmes in Europe to become more sustainable, including 1) calculating carbon footprints, 2) reducing emissions, 3) offsetting remaining emissions, and 4) embedding climate and sustainability education into our programmes. Practitioner survey results show that many programmes have already implemented some actions, but more could be done with targeted effort. Student survey results show that while they favour climate action outcomes in their programme, most students view their abroad semester as an opportunity to be hypermobile without consideration to climate. We view climate action and sustainability education within our programmes as being critical to the future of study abroad in Europe.

Abstract in Italian

Le emissioni di carbonio di un programma di studio all'estero sono causate principalmente dal fatto che si viaggi in aereo. Questo articolo sottolinea l'importanza di includere un piano di contrasto al cambiamento climatico nei programmi di studio all'estero e suggerisce delle azioni concrete per rendere più sostenibili i programmi in Europa, tra cui: 1) calcolare le emissioni relative al programma 2) ridurle 3) compensare le residue 4) incorporare nei programmi la formazione sulla sostenibilità ambientale. I risultati di un sondaggio fatto tra

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operatori del settore in Europa mostrano che molti programmi hanno già implementato alcune misure, ma che con uno sforzo mirato si potrebbe fare di più. I risultati di un sondaggio tra gli studenti rivelano invece che, sebbene essi ritengano importante il tema del cambiamento climatico, tendono a considerare il semestre all'estero come un'opportunità irripetibile per viaggiare senza doversi preoccupare delle conseguenze che la loro ipermobilità ha sull'ambiente e sul cambiamento climatico. Crediamo dunque che la lotta al cambiamento climatico e l'educazione alla sostenibilità nei nostri programmi siano elementi fondamentali per il futuro dello studio all'estero in Europa.

Abstract in Irish

Formaíonn staidéar thar lear le eitleán an comhpháirt is mó de clár lorg carbóin. Cuireann an paipéar seo béim ar an tábhacht a bhaineann le daingniú gniomhaíochta aeráide in staidéar thar lear agus míniú gníomhú aeráide le haghaidh clár ar an láthair san Eoraip chun a bheith níos inbhuanaithe, lena n-áirítear 1) ag áiriú lorg carbóin, 2) ag laghdú astaíochtaí, 3) cúiteamh a dheanamh ar astaíochtaí atá fágtha, agus 4) ag daigniú oideachas aeráide agus inbhuanaitheacht isteach inár gcláracha. Mínítear gníomhaíochtaí a bhaineann le staidear thar lear ar an láthair le haghaidh na céimeanna seo. Taispeánann suirbhé na gcleachtóirí líon móir cláracha i mbun cuid de na ghníomhaíochtaí cheana féin, ach is féidir níos mó a dhéanamh le hiarracht dírithe. De réir torthaí suirbhé na ndaltaí, cé go bhfuil siad i bhfabhar torthaí gníomhaíochtaí aeráide in a gcláracha, tá dearcadh acu ar a dtéarma thar lear mar deis chun a bheith níos soghluaistí gan machnamh a dhéanamh ar an aeráid. Tá léargas againn ar oideachas athrú aeráide agus inbhuanaitheacht i measc ár gcláracha mar a bheith criticiúil de todhcaí staidéar thar lear san Eoraip.

Keywords

Climate action; Europe; study abroad; sustainability

1. Introduction

> Study Abroad is the single most important kind of travel that people can be doing… If people don't come home changed, then it was a waste of money and a waste of carbon - Bill McKibben

The U.S. study abroad sector has many educational, cultural, and social benefits, but there is no denying that it substantially contributes to climate change, primarily through its reliance on air travel. Robinson et al. (2023b) estimated that, as a low-end value, U.S. study abroad students fly over 5.5 billion kilometres annually (using 2018-19 data) to and from their study abroad sites, resulting in carbon emission from flights of over 1.1 million metric tonnes of carbon dioxide equivalent (CO_2eq) or the equivalent of the annual energy consumption of 132,000 U.S. homes (using the EPA carbon equivalencies

calculator, EPA, 2024). When we consider only U.S. students studying abroad in Europe, their emissions contribute to approximately 560,000 metric tonnes of CO_2eq, or the equivalent of the annual energy consumption of 67,000 U.S. homes, again using 2018-19 data. It is important to note that as well as receiving visiting family and friends while at their host site, U.S. study abroad students in Europe regularly use their time abroad for independent travel, often by air, which further contributes to their climate impact.

The combustion of aviation fuel at high altitudes has climate impacts beyond just the production of CO_2 (Brazzola et al., 2022), contributing to air travel being the most climate-damaging mode of mass transportation (European Environment Agency, 2020). Air travel is also the fastest-growing form of mass transportation (Creutzig et al., 2015). Currently, there are no viable short-term solutions to the emissions from air travel, potentially making it the most challenging mode of transportation to decarbonise.

Scientists agree that the way forward for society to avoid warming in excess of 1.5°C is to drastically reduce emissions and consumption of fossil fuels (IPCC, 2022; Fletcher et al., 2024). For our sector, predicated on long-distance travel, this could drastically reduce study abroad. While we are not suggesting the stoppage of study abroad activities, there are ways to make our sector more environmentally friendly, substantially reduce emissions, become more efficient, and instil a culture of climate awareness, carbon consciousness, action, and sustainability within our programmes and our students. We cannot simply offset our way to neutrality as a long-term strategy. Instead, we must use a combination of methods that include (Robinson et al., 2023a):

1) Calculating and tracking our programme's carbon emissions to set a baseline for reductions and mitigation compensations,

2) Seeking and implementing emissions reductions (insetting) in our programmes, primarily through energy savings and reduced or more efficient travel,

3) Recognizing that offsetting our programmes' emissions (including our students' return flights) has a valuable place in our mix of activities to tackle our environmental impact, and implementing robust offsetting measures,

4) And intentionally embedding education in our on-site programmes as a form of onsetting to approach something that is a much more climate-friendly version of the study abroad landscape we currently inhabit.

The four-step process towards climate action in on-site programmes as outlined by Robinson et al. (2023a) in their Climate Conscious Study Abroad Guide is expanded upon in this paper. This paper also provides a structure and

examples for making European-based U.S. study abroad more climate-conscious and sustainable. Included are survey responses from on-site staff on meaningful approaches to climate action and sustainability that can realistically be embedded in their programmes, as well as the results of a student survey on independent travel habits while on semester-length programmes abroad. While many of the examples are from Europe, they could serve as templates to be implemented globally within our sector.

2. Literature Review

U.S. study abroad has been in operation for over 100 years (Hoffa, 2007), and has grown tremendously with over 347,000 students studying abroad during the pre-pandemic peak of the 2018-19 academic year (IIE, 2024a). The conversation surrounding the environmental impact of U.S. study abroad is much more recent. Early work was focused on sustainability as a whole (e.g., environmental, community, economic, and sociocultural impacts), while more recently studies related specifically to climate and carbon emissions owing to study abroad mobility have been increasing.

The American College & University Presidents' Climate Commitment (ACUPCC) was launched in 2007 and soon attracted several hundred signatories. Second Nature built upon the ACUPCC and links to the SIMAP (2024) (Sustainability Indicator Management and Analysis Platform) from the University of New Hampshire to allow institutions to report and track campus-wide carbon emissions. Study abroad flight emissions are an included part of this tracking but are optional and only a minority of institutions report this component (Robinson et al., 2023b).

In proposing a new rubric for study abroad that they called Critical Study Abroad, Reilly and Senders (2009, p. 248) stated that they "believe that study abroad needs to become an active participant in the analysis of our behaviour and its effects on climate, and in the search for responses to our environmental crisis." Dvorak et al. (2011) represents an early article to question the contradictions and tensions between an increased emphasis on internationalisation and sustainability, especially when the carbon emissions related to study abroad are considered. They discuss that one of the main aims of study abroad is to gain cultural awareness and understand global social inequities, but also indicate that institutions need to accept some responsibility for contributing to climate change and negatively impacting the host destinations. They make a clear case that the value of study abroad is such that it warrants the burning of some fossil fuels, but that programmes need to be justified, their impact minimised, and that the sector becomes accountable for its environmental impact (Dvorak et al., 2011).

Leggett (2012) was also an early proponent of education abroad being more environmentally, economically, and culturally sustainable, suggesting that if done properly students can develop (and bring home) a more sustainable ethos while abroad if these ideals and outcomes are embedded into the programme. Long et al. (2013) and Hale (2019), while recognizing the benefits of educational travel, suggest the incorporation of sustainability into the mission statements of educational travel programmes, the training of programme leaders in sustainability issues, and the incorporation of sustainability-related assessment measures. Sustainable practices learned during education abroad are likely to influence the students' future sustainability outlook (Hale et al., 2013).

More recently, attention has been paid to quantifying the carbon emissions related to international student mobility and study abroad. Shields (2019) calculated that global student mobility, which includes degree-seeking international students, Erasmus, and U.S. study abroad, was estimated to be between 14 and 38.5 megatons of CO_2eq per year using 2014 data. At the lower end, this is roughly equivalent to the national annual emissions of Latvia or Jamaica, and at the higher end those of Croatia or Tunisia. Arsenault et al. (2019) calculated the annual environmental footprint of academic travel at the Université de Montréal and found that international and study abroad students emitted 3.85 metric tonnes CO_2eq, yet professors contributed 10.76 metric tonnes CO_2eq through travel, primarily by air. Robinson et al. (2023b) estimated that on average each U.S. study abroad student emitted 3.18 metric tonnes CO_2eq just from flights to and from their study abroad site, not including any independent travel they may undertake while abroad. Thus, our sector could be called 'hypermobile' or 'highly aeromobile' as almost all participants travel significant distances in order to take part. Higham and Font (2020) frame excessive academic air travel as a form of 'climate hypocrisy', pointing out the global inequalities of air travel, and there have been recent calls for the international education sector to confront and cut its carbon emissions (de Wit & Altbach, 2020). Merle (2024) notes that study abroad students in Florence place a greater priority on travel than academics.

In a snapshot of the state of the field in Spring 2024, the Institute for International Education (IIE, 2024b) noted that U.S. study abroad has taken incremental steps towards sustainability, with 45% of institutions (n=662) reporting implementing study abroad sustainability initiatives. The top actions include expanding virtual exchange initiatives (17%), creating a sustainability plan or commitment for the education abroad office (17%), or prioritising lower carbon emission transportation while abroad (15%). Notably, 55% of institutions had not taken any steps towards sustainability or climate action in study abroad.

Also, only 4% of responding institutions indicated that they were members of the Climate Action Network for International Educators (CANIE).

3. Existing Resources and Frameworks

While a real need exists to embed climate-conscious action in on-site programmes, a common feeling among study-abroad professionals is that they do not know how to get started. Very few have received training in how to embed sustainable practices into an on-site programme, and there are certainly competing priorities in the multi-faceted programme components on which on-site study abroad programmes must focus (e.g., student health and safety, DEI initiatives, academics, mental health, housing, etc.), on top of competing institutional internationalisation strategies. Yet, several publications exist to help practitioners, including on-site study abroad professionals, to map out and plan their climate action and sustainability programmes.

In 2022, the Climate Action Network for International Educators (CANIE) released the CANIE Accord, a practical climate action roadmap and series of pledges for the global international higher education community (CANIE, 2022). The CANIE Accord offers a series of 70 possible action items classified into five sections (Leadership and Influencing / Emissions Accounting and Reduction / Travel / Facilities, Operations, and Procurement / Climate Education) that can provide international education organisations with practical steps to put in place or implement, depending on the stage and scope of their climate action journey. CANIE is a global volunteer grassroots initiative formed by international education practitioners who see the need for our sector to step up and act on climate (Nikula et al., 2023).

Similarly, The UN Sustainable Development Goals (SDGs)(United Nations, 2015), embraced unanimously by all United Nations Member States in 2015, offers a collective roadmap for fostering peace and prosperity for both humanity and the environment, both presently and in the years to come. The UN SDGs are a global canvas for international education institutions and professionals to collectively work towards embedding sustainability in their curricula and help achieve the 17 key goals. The 2030 Agenda for Sustainable Development distinctly embodies the significance of an effective educational approach, and education is explicitly delineated as a stand-alone objective – Sustainable Development Goal 4.

The Forum on Education Abroad's (2021) *Guidelines for Advancing the United Nations Sustainable Development Goals Through Education Abroad* were developed as a tool to direct the education abroad sector toward social, economic, and environmental sustainability by connecting the UN SDGs and the Forum's (2020) *Standards of Good Practice for Education Abroad*. The main goal

of aligning education abroad with the SDGs is to ensure education abroad can be carried out in a way that not only benefits people but also enriches the planet. The guidelines can be used as a resource to advocate for change within organisations, to guide programme design, development, and review; as a resource to promote incorporating the SDGs into education abroad curricula; to aid in the establishment and review of institutional and community partnerships; or as a benchmarking tool to map institutional and organisational progress.

The *Climate Conscious Study Abroad Guide* (Robinson et al., 2023a) is a practical tool to understand the steps needed to be taken to develop a climate action plan for on-site study abroad programmes in Europe. The Guide presents a four-step process of 1) calculate, 2) reduce, 3) offset what we cannot eliminate, and 4) onset and educate. The guide identifies air travel as constituting the largest source of emissions as part of study abroad programmes and shares recommendations on how best to calculate the overall emissions of the programme through a spreadsheet calculation tool. The Guide also gives tips on how to reduce emissions, explains the difference between onsetting, insetting and offsetting, and focuses on the educational component as the solution to transform our approach and mindset toward the climate crisis.

4. The Four Step Process for Climate Action in On-Site Programmes

The four-step process towards climate action in on-site programmes as outlined by Robinson et al. (2023a) in their *Climate Conscious Study Abroad Guide* is expanded upon here.

4.1. Carbon Footprinting of Programmes

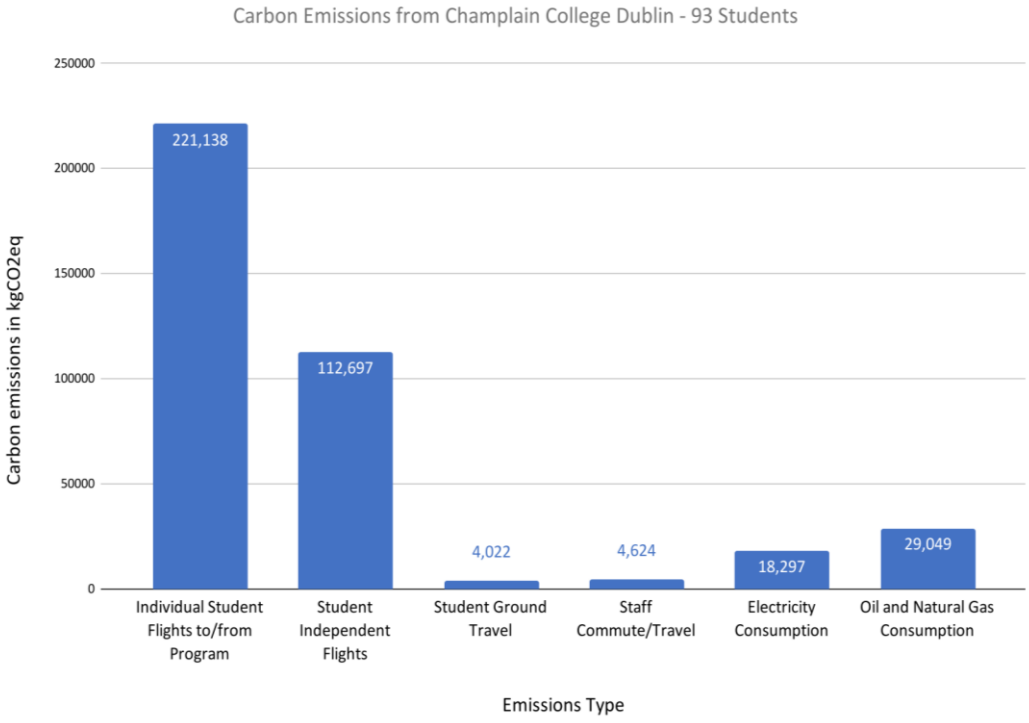
For any professional or programme in the sector wishing to make a meaningful difference to the carbon output of their programme, it is essential to measure where emissions are being generated. This also allows for the calculation of a baseline from which to track reductions. In the case of study abroad, the greatest contributor to emissions is travel, and more specifically air travel. Robinson et al. (2023a) recommend the use of Atmosfair's (2024) calculator for flight emission calculations and the Travel & Climate (2024) calculator for ground transportation. The *Climate Conscious Study Abroad Guide* also provides a spreadsheet tool with embedded calculations for programmes to track their emissions.

Figure (1) shows the estimated carbon footprint for Champlain College's Dublin, Ireland operations during the 2018-19 academic year, in which 93 students were hosted on semester-length programmes. Note that over 85% of

the programme's total carbon footprint of almost 390,000 $kgCO_2eq$ (390 metric tonnes) was from flights to and/from the programme as well as student independent flights over weekends and semester breaks. Other important emissions were from electricity and natural gas usage at the academic centre and in student housing. Data sources include travel registered with the programme for arrival information, student independent travel that must be reported for safety reasons, faculty and staff travel and commuting habits, as well as utility bills from property utilised by the programme (academic centre and student housing). It must be noted, however, that there is a need to avoid the 'double counting' that can occur if both the sending and receiving institution count the flight carbon emissions of the same students. Careful coordination as to 'who counts what' is required in these cases since no global standards and international agreements are currently in place.

FIGURE (1)

THE CARBON FOOTPRINT OF CHAMPLAIN COLLEGE'S DUBLIN, IRELAND PROGRAMME FOR THE 2018-19 ACADEMIC YEAR, CALCULATED USING THE SPREADSHEET TOOL AVAILABLE IN ROBINSON ET AL. (2023A).



Using the U.S. EPAs Greenhouse Gas Equivalencies calculator (EPA, 2024), this 390 metric tonnes of CO_2eq is the equivalent of driving 93 gasoline-powered vehicles for a year (one per student on the programme!), the electricity consumption of 77 average U.S. homes in a year, or the equivalent of the amount of greenhouse gas emissions avoided by running a wind turbine for 38 days. And considering that there are (pre-Covid) as many as 193,000 U.S. study abroad

students per year in Europe (2018-19 data from IIE, 2024a), the total impact is significant.

Flights clearly make up the greatest output of carbon in a programme's total. In no way are we suggesting that study abroad should cease. Instead we are advocating for an urgent need to acknowledge and account for the climate impact of our sector, primarily caused by the significant amount of air travel, and a transition to a more climate and sustainability-conscious version of study abroad.

The following sections give examples of ways that we can reduce our emissions (insetting), compensate for our remaining emissions (offsetting), and add an educational component to our programmes that may not have a direct carbon equivalency, but still contribute to environmental sustainability (onsetting).

4.2. Reducing Emissions (Insetting)

Insetting occurs by making changes to the operating activities internal to one's programme or operations that result in an avoidance, or reduction, of carbon emissions. Reductions through insetting should be the ultimate goal of any climate-conscious practitioner. There are several insetting actions study abroad programmes can take (Table 1), but insetting alone will not bring the totality of a programme's emissions to zero. The fact is, carbon emissions from student flights will always be such a large part of a programme's grand total that compensating (offsetting) and education (onsetting) will need to play a large part as well.

TABLE (1)

POTENTIAL CARBON REDUCTION (INSETTING) OPTIONS FOR AN ON-SITE STUDY ABROAD PROGRAMME

Activity & Description	Environmental Impact	Educational Impact	Social (local community) Impact	Implementation difficulty level
Site energy provision				
Switch to a renewable electricity supplier	High	Low	Low	Medium
Install Solar panels	High	Medium	Low	High
In-programme travel				
Encourage or incentivise low carbon modes of travel (i.e., train). Encourage direct flights where possible.	High	High	High	Low
Staff travel				

Hybrid working to reduce staff commuting emissions. Encourage a carbon-light working environment, promote a culture of reduced travel, using public transport and when you can, incentivise it by issuing subsidised travel cards.	High	Medium	High	High
Facilities				
Turn down thermostats, reduce AC, install LED lighting, turn off computers, lights and other equipment when they're not in use.	Medium	Low	Low	Low
Suppliers				
Look at what you are buying and from whom. Buy refurbished items instead of brand new.	Medium	Low	Low	Low

4.2.1. Change to a Renewable Electricity Supplier

Changing to a renewable energy supplier may result in large carbon savings in countries where a large proportion of electricity is generated through the burning of fossil fuels, such as Poland, Germany, and Ireland, but there will be minimal savings in countries where the national grid is already fed primarily from renewable or nuclear energy, such as in France, Switzerland, Austria, and Sweden (see Electricity Maps, 2024). Even though energy generated from all sources is mixed in the regional electricity grid, financially supporting the generation from renewable sources counts as a carbon savings and an insetting option.

Changing to a renewable electricity supplier for academic and residence facilities should be relatively straightforward in an area that allows multiple competing energy suppliers. As an example of carbon savings, Champlain College's Dublin, Ireland campus, which welcomes approximately 50 students each semester, switched from Bord Gáis Energy to Energia in 2020 for electricity in their Irish Academic Centre. Bord Gáis Energy generates >60% of its electricity from the burning of natural gas, while Energia produces 100% of its energy from wind power. Energy supply costs remained approximately the same, but the carbon savings amounted to approximately seven metric tonnes of CO_2 per year, or the equivalent of about three transatlantic round-trip student flights.

4.2.2. Promoting (More) Sustainable Travel

Flying is not a sustainable mode of travel, but there are changes that can be made to encourage students to minimise the carbon emissions produced by

their return flights. Staff and administrators also fly for business purposes, and these suggestions can also apply. Of course, avoiding or reducing flying altogether is the best insetting option of all.

Study abroad programmes can promote the direct flights, travel with lower-carbon airlines and aircraft, and economy-class travel:

1. Direct flights to and from the study abroad site help to minimise total air travel distance and the number of take-offs and landings, where fuel consumption is at its highest. Programmes can encourage students to take public ground transportation to the nearest airport with a direct flight where possible, instead of connecting flights from smaller regional airports. Carbon savings can be estimated using the calculators from either Atmosfair (2024) for air travel or Travel & Climate (2024) for ground travel.
2. The Atmosfair (2024) flight carbon calculator returns flight emissions comparisons for several airlines that fly on popular routes. Some airlines may fly more efficient aircraft and engine types on certain routes. Having this information before booking can help make a more informed and sustainable choice. For example, the total emissions from Delta Airlines from New York (JFK) to Paris (CDG) are about 20% lower than the average airline for that route.
3. Economy class seats take up less room on a flight and tend to have higher occupancy rates than business or first class seats. Thus, these business and first class seats receive a greater allocation of the per passenger CO_2 emissions than economy class seats. The World Bank (2013) calculates that the carbon emissions for business class passengers are approximately three times that of an economy class passenger on the same flight.

Students on European study abroad programmes often travel independently during weekends and semester breaks (Merle, 2024). Many of these trips include flying to another European city for a short period, before flying back to their home programme (Robinson et al., 2023b). Many American students are conditioned to believe that air travel is the best way to get around as the U.S. does not have as well-developed a passenger train network as that found in Europe. The promotion of student independent travel by train should become a cornerstone of any climate-conscious study abroad programme.

4.2.3. A Snapshot of Students' Independent Travel Habits

It is debatable whether or not the study abroad programme should be responsible for the climate impact of student independent flights. But they would not be taking those flights if it were not for their participation in that programme. So, we suggest adding them to your calculations, and taking steps

to get students to understand, and hopefully reduce, the climate impact of such hypermobility. We know anecdotally that many students use the abroad semester as a reason to embark upon a significant amount of travel, but the real question is 'how much do they travel?'

A survey was distributed around Europe to examine the independent travel habits of semester-length U.S. study abroad students and received 354 responses from students in Belgium, Czech Republic, France, Germany, Greece, Ireland, Italy, Norway, Poland, Spain, Switzerland, and the UK. Students reported that, on average, they took 3.7 independent overnight trips by air travel (Table 2). Only 10% of students reported that they did not take any additional flights once they were in Europe. Students also took an average of 2.7 independent overnight trips by train, and 1.4 trips by bus. Twenty percent of students took no overnight trips by train, and 45% took no overnight trips traveling by bus. The top 10 destinations for such travel were, in order, London, Paris, Barcelona, Amsterdam, Nice, Rome, Lisbon, Florence, Vienna, and Venice. On average, students spent US$1,993 on independent travel during their semester abroad.

In addition to this significant amount of travel during the semester, studying abroad in Europe also appears to have a 'pull-factor;' that is, a student studying abroad attracts friends and family to visit. The average student had 2.5 people travel internationally to visit them while they were abroad (Table 2), further adding to the climate impact of our sector.

TABLE (2)

RESULTS FROM A CROSS-EUROPE SURVEY OF SEMESTER-LENGTH U.S. STUDY ABROAD STUDENTS (N-354) ON INDEPENDENT OVERNIGHT TRAVEL HABITS

	Independent overnight trips taken by air travel	Independent overnight trips taken by train travel	Independent overnight trips taken by bus travel	Number visitors who travelled internationally to visit the student
Mean (*n* = 354)	3.7	2.7	1.4	2.5
% of students who reported '0'	10	20	45	26

That is a significant amount of opportunistic travel, amounting to almost eight overnight trips per semester-length study abroad student. Much of this likely occurs over weekends, where time to the destination is of key concern. Smart study abroad programming, both on-site and during the pre-departure phase, can inform and influence student travel patterns, through information, practice, and perhaps incentives.

Study abroad programmes can follow two courses of action here. The first is to build travel climate awareness into both pre-departure and on-site orientation sessions and continue to revisit these themes throughout the semester. Programmes can discuss the ethical implications of studying abroad, the climate impact of flying and 'fast tourism', and 'slow travel' mode comparisons using the Travel & Climate calculator website. Our survey data indicates that 82% of students did not book any additional travel until they arrived in Europe, so there is ample opportunity to impact their travel habits if this is discussed at the pre-departure and on-site orientation stages. Programmes should encourage or incentivize students to either reduce travel, travel by train or other ground-based public transportation or combine trips into longer periods. However, students traveling to or from an island such as the UK or Ireland, are particularly challenged in this regard. As a priority, programmes should encourage students to explore their host country before considering taking a flight. If they do intend to fly, programmes can encourage students to restrict this travel to their week-long semester break, or to fly to one centrally-located base city, and use trains for subsequent travel to other destinations. Giving students a longer break in the semester (i.e., two weeks, instead of the traditional one week) could also result in using weekends for local exploration, and the break for extended, more distant excursions.

The second course of action that study abroad programmes can follow is to incentivise low-carbon travel or staying local. Programmes can subsidize the travel of students opting for low-carbon transportation or run a contest for the greatest travel carbon savings. Equally a programme can promote local weekends to curtail independent travel during a programme. For example, DIS Study Abroad undertakes a Slow Travel Initiative and Penn State's and Temple University's 'Stay Local' (Stay Local Abroad) initiative incentivises study abroad students to remain close to their host city on specific weekends.

4.3. Compensate (Offsetting) for Those Emissions That We Cannot Reduce or Eliminate

While some reductions (insetting) can take place and should be prioritised, it is unlikely that insetting alone will have a significant and immediate impact. However, this can, to an extent and with caution, be compensated for by a programme taking mitigating measures, otherwise known as 'carbon offsetting.'

Offsetting is a measure taken to capture carbon that has been emitted into the atmosphere by another action, in our case flights and programme operations. Individuals, organisations and companies can buy and trade carbon offsets as a means of neutralising their own carbon footprint. However, this

activity is rife with issues, and offsetting should in no way be viewed as an excuse to continue emitting carbon in a business-as-usual manner. Instead, international education should only consider carbon offsetting as a part of a mixed approach to dealing with carbon emissions, with reduction (insetting) always being the primary goal. As most study abroad programmes will find, student flights make up the majority of their carbon footprint, and there is unlikely to be enough potential 'insetting' savings within a study abroad programme to account for this. Thus, while exercising caution, international education programmes may need to consider offsetting some of their footprint, albeit in a very intentional manner, if they want to tackle their footprint.

4.3.1. Supporting Carbon Offsetting Projects (Passive Offsetting)

Many offsetting companies or charities, or the emitters themselves, such as airlines, allow individuals or organisations to pay money to support a project somewhere in the world that offsets, or compensates for, the carbon emitted from a particular action, such as taking a flight. Passive offsetting projects exclude the person whose action caused the carbon emission in the activity itself, leaving the exercise vulnerable to a lack of oversight. This also means that the offsetting activity has very little potential educational impact on the person or organisation whose action caused the emission. Projects usually have as a primary goal the removal of carbon from the atmosphere, while some may also enumerate the social benefits of the project.

This type of offsetting tends to be a popular method of dealing with organisational and personal emissions. These projects commonly include forest planting or preservation, the provision of fuel-efficient cook stoves (often in Africa or southeast Asia), and solar, wind or biomass energy projects.

Some believe that the practice of paying for offsets is essentially a means of greenwashing or guilt-stripping as it still allows polluters to pollute, and does not lead to a change in behaviour. Leaving these more philosophical arguments aside, there are also concerns around the actual validity of the claims being made by the offsetting projects themselves. Concerns around additionality (would the offsetting activity have happened regardless of the payment?), project certification and carbon accounting, negative impacts the offsetting activity may have on the local community, and the quality and longevity of carbon offset projects are rife. For instance, an investigation into Verra, the world's leading carbon standard for the rapidly growing $2bn (£1.6bn) voluntary offsets market, found that over 90% of their rainforest offsetting programmes were essentially worthless when it came to actual carbon reduction (Greenfield, 2023). This begs the question of whether passive offsetting should be considered as a viable option within the scope of making international education a more climate conscious field?

4.3.2. Embedding Carbon Offsetting into a Programme (Active Offsetting)

While passive offsetting is one approach, direct and personal involvement in the carbon sequestering activity can be a much more beneficial and impactful way forward. Active offsetting takes place when the organisation or individual responsible for the emission is directly involved in the offsetting activity. This allows for the experiential activity to take place in a local setting which allows for oversight and ongoing monitoring, and multiplies the educational impact several-fold if students, faculty, and staff are directly involved in the offsetting activity.

Many study abroad programmes have opportunities to craft a local component into the experience, and with local staff knowledge there should be opportunities for active offsetting within reach of most on-site programmes and home universities (Table 3). Although there are a number of active offsetting options available, they can vary by location and do not always allow for a deep and meaningful interaction with staff or students beyond a simple site visit. But, programmes with robust active offsetting projects and excess capacity could link with other institutions to provide active offsetting projects for the sector, a sort of regional bank of offsetting options!

TABLE (3)

SOME SAMPLE ACTIVE AND PASSIVE OFFSETTING ACTIVITIES APPROPRIATE FOR ON-SITE STUDY ABROAD PROGRAMMES.

Activity & Description	Environmental Impact	Educational Impact	Social (local community) Impact	Implementation difficulty level
Tree planting or sustainable agriculture (where plant life has high carbon-absorption rating) with students (active)				
Planting trees with a local partner who has guaranteed future protection and stewardship of the rewilding site	High	High	High	Medium
Wetland restoration with students (active)				
Restoring degraded or drained wetlands to their original function can raise biodiversity, promote species recovery, maintain clean waterways, and resume the long-term storage of carbon for which wetlands are noted. Students can get involved by blocking drainage ditches, transplanting wetland species, monitoring wetland	High	High	High	High

recovery, or supporting the longer term restoration crew.				
Paying into a general offsetting fund - airline focused (passive)				
Many airlines offer this service. However, although air emissions are a major pollutant, you are here reliant on the airline making sound judgements about its offsetting partner.	Hard to truly measure	Low	Low	Low
Paying for targeted offsets in a non-local location, elsewhere in the world (passive)				
For example: specific projects such as supplying clean-burning cookstoves in sub–Saharan Africa. A very distant, non-visible option and likely to have very little educational value, and is fraught with questions around middlemen and carbon sequestration value.	Hard to truly measure	Low	Low	Low
Paying for targeted offsets in a local location (passive)				
Whether it be tree planting, wetland restoration, or other community projects, this has great value if the organization you support is vetted. However, educational value is not high, since students are not involved.	(Should be) High (if vetted properly)	Low-Middle	(Should be) High (if vetted properly)	Low

4.3.3. The Virtue of Tree Planting as an Active Offsetting Option

Tree planting tends to offer the most potential as an active offsetting project. Tree planting can be conducted at the majority of popular study abroad locations, allows students and staff the opportunity to get directly involved, and affords an educational opportunity to those who have created the emission in the first place.

While the carbon capture from planting trees often takes 10 or more years to reach a significant amount, there are also long-term biodiversity and rewilding benefits to the activity if done correctly. There are also some significant potential pitfalls to relying on tree planting, such as choosing the wrong species, planting on inappropriate land, and poor long-term care for the trees.

Just like the potential pitfalls of passive offsetting, active offsetting needs to be carefully considered before committing to a project if it is to have the impact needed both environmentally and educationally. Before choosing a tree planting partner for example, an organisation or individual should ensure that:

- A mixture of native species is being planted in suitable habitats for survival to promote a functioning forest ecosystem,
- The offsetting organisation owns the land and is committed to its long-term care,
- More trees than the number estimated to offset your individual or organisational activities are planted, given saplings regularly die before maturity, and in recognition that the carbon capture amount is not an exact science,
- The tree planting exercise is accompanied by an educational component, explaining why we are planting trees, the climate impact of our carbon emitting actions, and the ecology of forest regeneration and rewilding.

4.4. Embedding Climate Conscious Education and Activities into a Programme (Carbon Onsetting)

The final part of the mixed approach professionals in the sector can take to tackle their programme's emissions is carbon onsetting. Not all positive environmental or sustainability action has a defined or calculable carbon saving (Earthdeeds, 2017; Greenberg, 2023). Instead, the onsetting action may result in a cleaner city or waterway, enhanced biodiversity, the promotion of locally grown food, enhanced educational programmes, or other impacts that contribute to overall environmental sustainability. We should not be overly concerned with purely counting carbon, as we can take actions in other ways that are also environmentally beneficial. Carbon onsetting is also a reaction to the notion that offsetting gets us off the hook for our actions, when in fact it just allows us to emit carbon, as long as we store it elsewhere.

A study abroad programme is an ideal opportunity to help students turn towards a more sustainable lifestyle through measures we can take to intentionally educate our students while they are on their programme abroad (Table 4). The average European has a carbon footprint of less than half that of the average American for example, which if leveraged properly and understood, should give a U.S. study abroad student pause for thought. Building a sustainable educational component into international education programmes and curricula can help students shift to a more sustainable lifestyle, while also positively infusing debate on their home campus when they return with broadened horizons.

TABLE (4)

POTENTIAL OPTIONS FOR ONSETTING ACTIVITIES ON STUDY ABROAD PROGRAMMES IN EUROPE

Activity & Description	Environmental Impact	Educational Impact	Social (local community) Impact	Implementation difficulty level
Community cleanup opportunities				
Students/Staff engage in a local area cleanup, e.g., beach, park, watercourse	Medium	High	Medium	Low
Student material recycling				
Organising donation drives at the end of programmes, donating some items to local charity and storing some items for redistribution to newly arrived students	Low	Medium	Medium	Low
Encouraging students to shop locally for local products				
Introducing newly arrived students to the local shopkeepers/farmer markets that trade in locally grown, seasonal produce	Medium	High	Medium	Low
Growing your own food				
Installing and managing growing patches/polytunnel to produce programme-grown food	Low	High	Low	High
Promoting homestays				
Promoting homestays, or home visits for a weekend during a programme, allows students to experience how locals live, often with a lower carbon impact than student is accustomed to	Low	High	Medium	High
Visiting local sustainable sites and organizations				
Field trips to local sites promoting sustainability and organisations and social enterprises operating in the sustainability sector or committed to sustainable business practices	Low	High	Low	Low

Guest speakers on environmental topics				
Utilizing local community speakers to talk with students about their relationship with environmental, societal, and economic sustainability	Low	High	Low	Low
Stay local weekends (see Stay Local Abroad)				
A period during which students and staff pledge to stay local instead of traveling internationally by plane	High	Medium	Low	Medium

While the insetting, offsetting and onsetting options in Tables (1), (3), and (4) all have different levels of merit depending on a programme's objectives, the classroom remains the strongest tool at the disposal of international educators. A student's abroad experience is an ideal time to embed climate action and sustainability into the curriculum as well as co-curricular activities (Table 5). While focusing on reducing our carbon footprint and realizing that net zero is an aspirational goal, the privileged agency we have as international educators to inspire behavioural change in our students through our programming can sometimes get overlooked.

On-site international educators have the enviable opportunity to create a holistic living-learning laboratory for a uniquely captive audience of students. Curriculum, institutional culture, experiential activities, local communities and living arrangements can all be utilised, designed or chosen with sustainability and climate education in mind. Every academic lesson can be complemented with practical experience and cultural immersion outside the classroom.

TABLE (5)

OPTIONS FOR EMBEDDING CLIMATE LITERATE EDUCATION WITHIN ON-SITE STUDY ABROAD PROGRAMMES (ONSETTING)

Activity & Description	Environmental Impact	Educational Impact	Social (local community) Impact	Implementation difficulty level
Provide carbon literacy training for students and staff				
A training module for all students (and where possible, staff) that covers climate literacy, positive action and personal responsibility, whether during orientation or within the semester	Low	High	Low	Medium

Conduct carbon footprinting exercises with students				
A comparative analysis of a student's footprint while abroad against their footprint while at home, with an associated climate action pledge for students	Low	High	Low	Low
Incorporating sustainability into programme level learning outcomes				
Review and update all programme level learning outcomes to include sustainability, ideally through faculty the UN SDGs could be used as a guiding resource	Low	High	High	High
Develop an eco-rep programme among students				
Help achieve buy-in from students by normalising climate friendly behaviour through their peer group	Low	High	Medium	Medium

Table (5) outlines some of the examples available to institutions hosting study abroad students to embed sustainability, carbon and eco-literacy, and climate education into their programmes. The key message here is that reducing our carbon emissions and reaching net zero or beyond is of course necessary, however, doing so alone does not take advantage of our key skills as international educators. Embedding climate education inside and outside the classroom can influence students and staff to adopt more sustainable lifestyle choices, with benefits extending beyond the study abroad experience.

4.4.1. The Case For a Mixed Approach to Tackle The Sector's Carbon Emissions

Carbon conscious education abroad necessitates smart planning within a programme's operations and programming. An approach which recognises the complementary benefits of reduction (insetting), compensation (offsetting) and education (onsetting) is the goal for any professional in the field of environmentally cognisant education.

For practitioners, there is much that can be achieved in the short term through reducing a programme's consumption (and therefore emission) of carbon. This has value in itself, but it serves to demonstrate to students that representatives of an older generation are not expecting the step changes required to fall squarely on the younger generation. Rather, couching our activities as signifying partnership between 'them and us' is more likely to bring

the behavioural changes the field is aiming for, underpinned by the 'Climate Education' provision (onsetting) that smart programming must include.

The reduction and educational components of carbon conscious programming must be reinforced by intentionally embedded compensation (offsetting). Whether this is through tree planting or measures such as wetland restoration, integrated efforts to compensate for the large percentage of a programme's emissions to flights are crucial. These measures are active, and make an individual student's impact tangible to them. They serve a local community purpose and, while not ideal, have a role to play in the sector's battle against our impact on the environment.

4.4.2. What Do On-site Programme Leaders Think Is Possible for Their Programmes?

While we are promoting action within the European study abroad community, the question of implementation remains. How many programmes have already undertaken some of these actions, and how feasible is it for them to embed some additional initiatives?

The European Institute, a conference co-organised by the Forum on Education Abroad and the European Association of Study Abroad (EUASA) and held in Strasbourg, France in November 2023, brought together on-site staff working within the U.S. study abroad sector in Europe. Strasbourg was intentionally chosen for this Institute because of its central location with good rail links to the rest of Europe. Sixty-nine percent of the participants (n=90) used rail as their primary mode of transportation to the Institute, and 58% of participants (n=91) felt that sustainable travel and conference location were either somewhat important or very important to them when deciding to attend.

During a climate action session presented at the European Institute in Strasbourg, France by two of the authors, attendees were given a listing of potential climate and sustainability-friendly actions to incorporate into their on-site programmes, and asked if 1) they already do this, 2) they could easily do this, 3) they could do this with some effort, or 4) it was not possible for their programme. The results are presented in Table (6).

TABLE (6)

RESPONSES (IN % RESPONSES, N=77) TO A SURVEY OF ON-SITE STUDY ABROAD PROFESSIONALS IN EUROPE, ASKING WHAT CLIMATE- AND SUSTAINABILITY-FRIENDLY ACTIONS ARE: 1) ALREADY DONE ON THEIR PROGRAMME, 2) COULD EASILY BE DONE, 3) COULD BE DONE WITH SOME EFFORT, OR 4) ARE NOT POSSIBLE FOR THEIR PROGRAMME.

Climate or Sustainability-Friendly Action	Already Do This	Could Easily Do This	Could Do This With Some Effort	Not Possible For Our Programme
	% respondents			
Carbon Insetting Actions (Reduction)				
Turning down thermostats and reduce AC	57	16	18	9
Hybrid working to reduce staff commuting emissions	49	13	15	22
Encourage 'staying local' and reduced student independent travel.	42	32	23	3
Encourage or incentivise low carbon modes of travel (i.e., train)	38	39	20	3
Encourage direct flights where possible	27	44	24	5
Switch to a renewable energy supplier	18	12	38	32
Carbon Offsetting Actions (Mitigation)				
Paying airline or a general fund for offsets (passive)	1	29	43	27
Paying for targeted global offsets (passive)	1	27	51	21

Paying for targeted local carbon offsets (passive)	0	25	55	20
Sustainable agriculture projects (active)	4	12	67	17
Tree planting with students (active)	1	11	74	14
Wetland restoration with students (active)	0	0	59	41
Carbon Onsetting Actions (Education)				
Prioritise longer term programmes over shorter term programmes	47	1	21	31
Encourage students to shop locally for local products	41	38	21	0
Introduce climate action topics during orientation	39	46	15	0
Invite guest speakers on environmental topics	20	47	29	4
Provide community clean-up opportunities	17	33	46	4
Encourage faculty to find sustainability and climate action themes within their courses	17	31	40	12
Provide carbon literacy training for students	13	39	47	1
Work with your campus sustainability	10	32	39	19

office for ideas and actions				
Provide carbon literacy training for staff	13	36	47	4
Develop an Eco-Rep programme among students	4	33	55	8
Conduct carbon footprinting exercises with students	3	40	54	3
Develop a climate action pledge for students	0	48	51	1

The survey results presented in Table (6) show that a good number of on-site programmes already have some emission reduction (insetting) measures in place, including reducing energy use, hybrid working, and encouraging staying local and reducing independent student travel. Many other programmes state that they could put these measures into place easily or with some effort, while hybrid working and switching energy suppliers are reported as not possible for a significant minority of programmes.

Less attention appears to have been paid to offsetting measures for on-site programmes, but the good news is that many programmes indicate that with effort, these could be implemented.

In terms of onsetting activities, a strong number of programmes already prioritise longer-term programmes over shorter-term ones, encourage students to shop locally for local products, and introduce topics related to climate action during orientation. While all of the other listed actions show less current adoption, many programmes report that these would be easy to implement or could be implemented with some effort. Significantly, 31% of professionals reported that they could not prioritise longer-term programmes, and 19% said they could not work with campus sustainability offices for ideas.

But overall, we are heartened by the number of programmes already employing some of these actions, and the ease with which they feel others could be implemented.

4.4.3. What Do the Students Think About Travel and Their Climate Impact While Abroad?

U.S. students studying abroad in Europe form the cohort that we are educating, and they must be willing and informed partners on our path to a more climate-conscious study abroad world. Anecdotally, we know that many students view their time abroad as their time to travel and experience Europe (Merle, 2024), and many do so extensively (Table 2).

In our survey of semester-length student independent (i.e., not as part of their programme) travel habits while abroad in Europe (n = 354), we asked what criteria were used when deciding to travel by plane, train, or bus. Over 80% of respondents mentioned cost as being a key criterion, followed by time (53.3%), convenience (30.2%), distance (25.2%), with carbon footprint at 7.1% (Figure 2).

Many students commented that for weekend trips it just did not make sense to travel by train or bus, as getting to the destination as fast and cheaply as possible was a priority. The presence of numerous budget airlines in Europe often resulted in flights being cheaper than travel by train, according to many students.

> Cost was the primary concern, as I wanted to travel as much as possible on a student budget. After that, I considered convenience and time, as most of these trips were on weekends. (student in France)

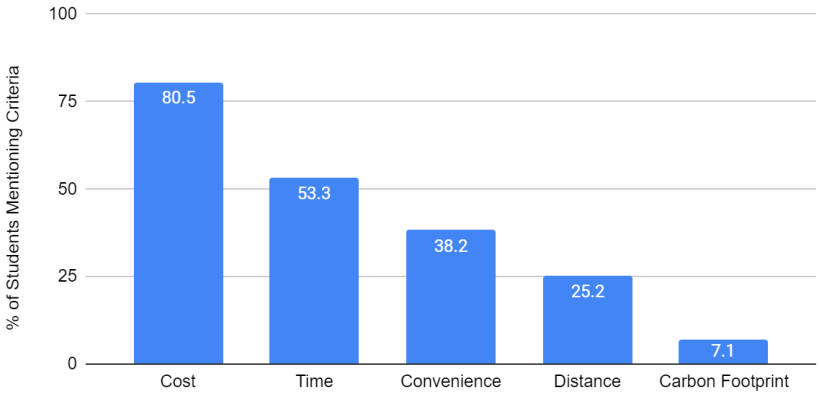
> First was always cost as I am not super wealthy, then was time as we wanted to optimise our visits in each city, and carbon footprint is always on the back of my mind though with expenses it is difficult to be as carbon friendly as I would like to. (student in France)

> While traveling, the most ideal mode of transportation was by plane for most countries. Traveling by plane allows you to get to the country fastest and helps ensure that you arrive with enough time to see as much of the city/country you go to in the small-time constraint of the weekend. Flights were also often cheaper than train tickets on budget airlines. (student in Switzerland)

> To a certain extent, choosing sustainability in travel is a privilege -- taking buses is usually the cheapest, but you are giving up time because they take longer. To be able to choose sustainably, time and money are necessary. (student in France)

FIGURE (2)

STUDENT RESPONSES TO THE QUESTION "WHAT CRITERIA DID YOU USE WHEN DECIDING TO TRAVEL BY PLAN, TRAIN, OR BUS? (E.G., CONVENIENCE, DISTANCE, TIME, COST, CARBON FOOTPRINT, ETC)" (*N* = 354)



When asked if any of their pre-departure or on-site orientation programmes contained information related to climate action, sustainability, or carbon footprints, only 37.6% of students said 'yes'.

When asked directly about their level of concern for the carbon footprint of their study abroad experience, we found that the level of concern was not really significant, with the greatest number of responses choosing "neither concerned nor unconcerned" (Figure 3) and only 30.5% being somewhat concerned or very concerned. In addition, students who reported to be either "somewhat concerned or very concerned" followed very similar independent travel patterns to those of their colleagues who reported to be "completely unconcerned or somewhat unconcerned" (Figure 4). This indicates that even those students concerned about their carbon footprint did not let it stop them from engaging in hypermobility.

FIGURE (3)

LEVEL OF STUDENT CONCERN ABOUT THE CARBON FOOTPRINT CREATED DURING THEIR STUDY ABROAD EXPERIENCE, AS OBSERVED IN THEIR RESPONSES TO THE QUESTION "ARE YOU CONCERNED ABOUT THE CARBON FOOTPRINT CREATED DURING YOUR STUDY ABROAD EXPERIENCE?" (*N* = 354)

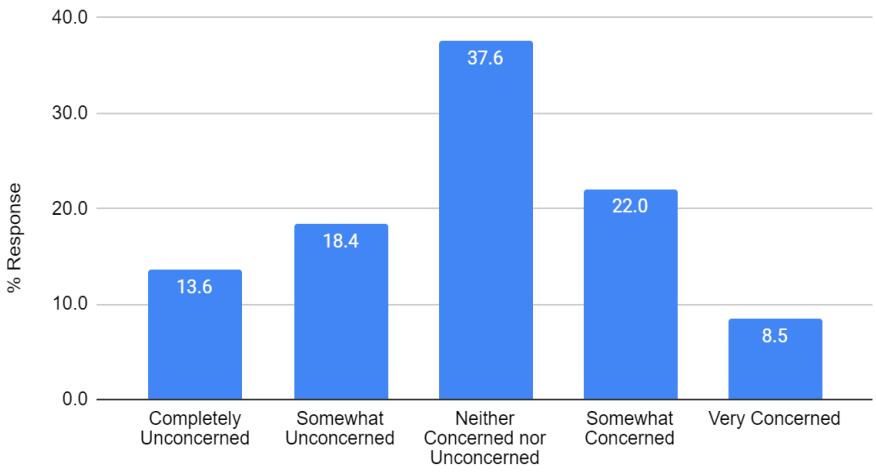
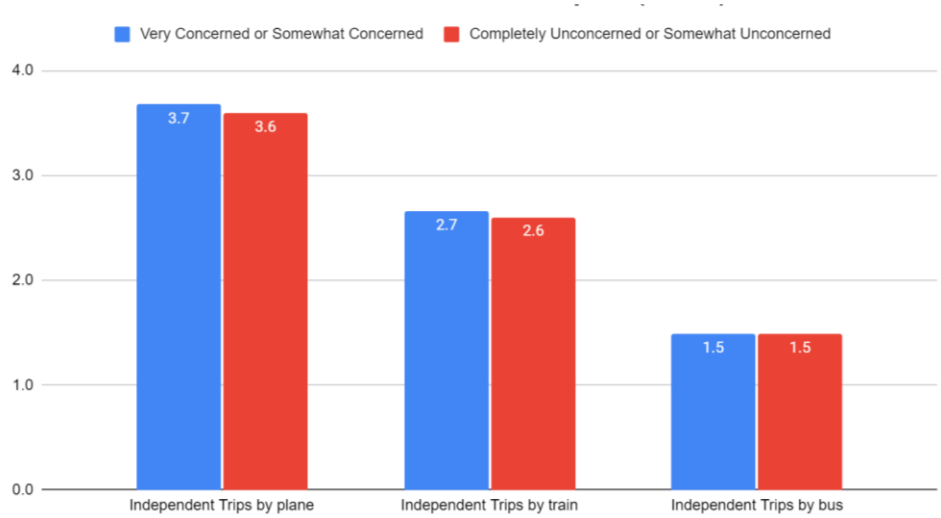


FIGURE (4)

NUMBER OF OVERNIGHT INDEPENDENT TRIPS BY STUDENTS USING DIFFERENT MODES OF TRAVEL, COMPARED TO THEIR LEVEL OF CONCERN ABOUT THEIR CARBON FOOTPRINT (*N* = 354)



We also asked students if they "would encourage their university to offset the carbon created by their study abroad experience." Over 70% of students reported that this would be a good idea (Figure 5), yet many expressed reservations over the cost being added to their programme, and the mechanics of such offsetting. A significant number of students also commented that their university should not be responsible for independent travel undertaken by the student. This is illustrated in the following four quotes:

> Yes.... but also, I feel that my university has other ways it could be more environmentally friendly/sustainable on its main campus that would probably be easier/more realistic in achieving. I'm not really sure what there is to be done on their end to help or incentivize students to study abroad in a more carbon-neutral way, students often study abroad specifically TO TRAVEL while they are abroad. (student in France)

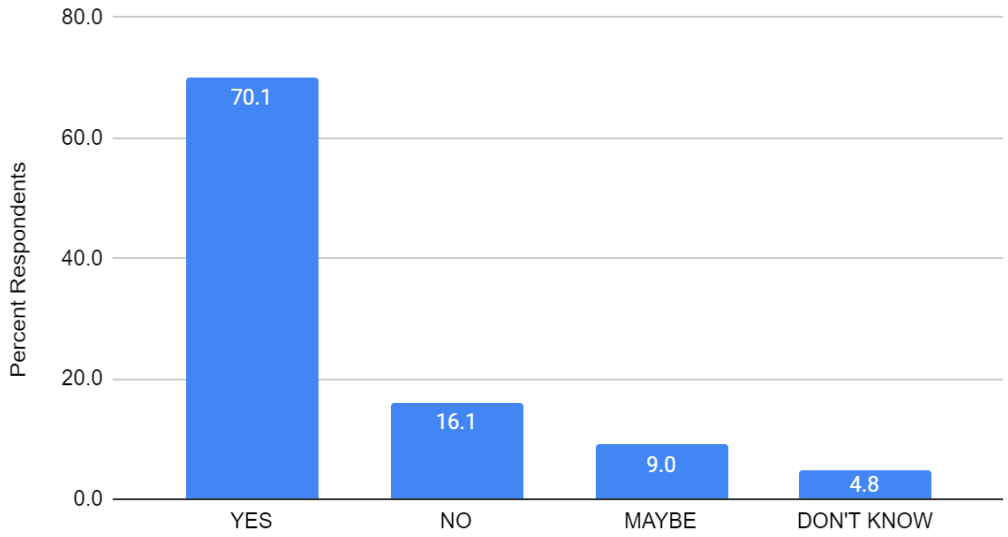
> I would definitely encourage my university to offset the carbon created by my study abroad, because my programme is run by my home institution and the university could have done more to create a more sustainable orientation process. However, I don't think they are responsible for offsetting the carbon generated through my independent travel. (student in France)

> No because a few people choosing to travel during an already expensive study abroad experience shouldn't be their problem, especially when it's proven that big corporations are the issue, not consumers. (student in Greece)

> Absolutely—but as a fee charged to students for the semester. If students can afford to travel as much as they do—well—they can take a small hit for paying for carbon-offsetting. I feel strongly about this. (student in Spain)

FIGURE (5)

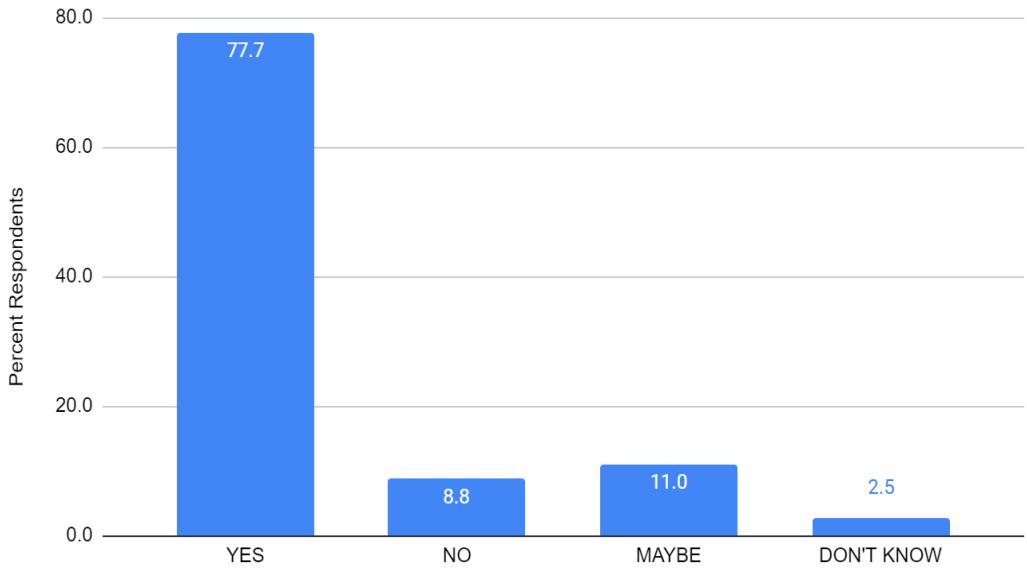
RESPONSES TO THE QUESTION 'WOULD YOU ENCOURAGE YOUR UNIVERSITY TO OFFSET THE CARBON CREATED BY YOUR STUDY ABROAD EXPERIENCE?' (*N* = 354)



When asked if climate action and sustainability should be embedded in the learning outcomes of study abroad programmes, 77.7% of students said 'Yes' (Figure 6). Student comments indicated overall support for the idea, with many students indicating that these issues are important to understand and the study abroad semester is a good opportunity for that learning. However, the theme of not letting climate concerns stop individual travel was certainly present in the responses, as illustrated in the quotes following Figure (6) on the next page.

FIGURE (6)

RESPONSES TO THE QUESTION 'DO YOU THINK THAT CLIMATE ACTION AND SUSTAINABILITY SHOULD BE EMBEDDED IN THE LEARNING OUTCOMES OF STUDY ABROAD PROGRAMMES? (*N* = 354).



> YES! Study abroad is all about learning to be a global citizen, and climate action is a huge part of that. (student in France)
>
> Yes. Studying abroad is a great platform to learn the environmental effects of frequent traveling. (student in England)
>
> Yes, because climate action and sustainability are essential aspects of our modern world. (student in Switzerland)
>
> Obviously it's always important to be conscious of one's carbon footprint, but in the context of study abroad specifically, it would be a shame for that to get in the way of fully taking advantage of such a unique and transformative experience. (student in France)
>
> Based on my responses, you may believe I am someone who doesn't care about the environment. I want to clarify that this is certainly not the case, and I am very passionate about the environment. However, I believe that during a once-in-a-lifetime experience, such as study abroad, the environment has not and will not be top of mind for almost all students. (student in Spain)

5. Discussion

The U.S. study abroad sector in Europe has a substantial carbon footprint due to its reliance on air travel. Multiple changes need to be embedded in the sector in order to shift towards a more environmentally responsible and sustainable version of U.S. study abroad in Europe. Travel habits need to change, but the educational component of our programmes also shows great scope for influencing students while on-site, with lessons, actions, and lifestyle changes to be taken home with them. Many students pointed out in survey comments that there are individual actions to be taken, but change at larger scales, such as at their home universities as well as societal change, is absolutely required. There must be a sector-wide recognition that flights to and from the study site, as well as student independent travel, dominate our footprint and impact. Student flights to and from the study site are often unavoidable if study abroad is to continue in its current form, yet there are efficiencies to be gained in promoting direct flights and flights on more fuel-efficient airlines. Emissions reductions beyond that are not possible until the technology is available. Therefore, some form of compensation (offsetting) needs to be incorporated into programmes. There needs to be a proactive and critical assessment and ongoing review into selected offsetting options, and to always see offsetting as a part of the equation, rather than the ultimate solution. Active offsetting that includes a local and educational element is far preferable to passive offsetting.

In terms of independent student travel, we are left with an inconvenient(?) truth. Students are fairly concerned about climate change and wish for climate action and sustainability to be a part of their on-site

programmes, but they do not make the link, or care to make the link, between their own hypermobility and climate in their study abroad semester. Their time abroad is often considered as a care-free parentheses in their life, or a break from being concerned about the environment. This has a lot to do with the way we – practitioners and study abroad officers – talk about the experience, such as the way we market it, the way we recruit students, and how we set their expectations. This is why even amongst students concerned about the climate crisis, study abroad is still not the time to show travel restraint, and certainly not the time to shame students about their travel decisions. In many cases, students study abroad in Europe specifically to travel extensively. While we do not want to, and likely cannot, stop this independent travel, we must work with our students to make it more sustainable, thoughtful, and intentional. We need to start using a more climate-conscious language when we talk about study abroad, perhaps with a different iconography and imagery in our marketing. We need to address the privilege that goes with being on a flight (and to stop considering it a basic human right) and educate students around it instead of creating bucket lists of must-see places (in less than 24 hours). We need to design our programmes so that travel experiences and exploration can still happen, but it can go hand in hand with a care for the environment. This comes with an honest and critical revision of current programmes, ensuring they are designed to achieve the basic objectives of a study abroad experience, and not "just" serve as an opportunity to travel as much as possible.

Hypermobility is currently a key marketing vector for many programmes which has been woven into the narrative and the outcomes of the study abroad experience. This is especially prevalent among European programmes[1]. On the one hand, we need to educate students towards a more immersive and rich experience within their host community and support them with plans and, when possible, financial incentives for local exploration. On the other hand, the message that travel within Europe can be less carbon intensive, does not have to be done by air, and is often more interesting and immersive, needs to be robustly embedded within our programmes and promotional materials.

One thing that we did not consider in our surveys was the potential for shifting the academic calendar[2] to allow for more intentional and low-carbon travel. The majority of student independent travel occurs on weekends. What if

[1] Using image search on Google, the search term 'study abroad Europe' returns many images suggesting travel and hypermobility, while the term 'study abroad cultural immersion' instead mostly returns images indicative of deeper cultural immersion in other, non-European, parts of the world.

[2] This may be feasible for U.S. study centres operating in Europe, but much more difficult for programmes affiliated with host country academic institutions.

we as a sector occupied the students' weekends with academic and local cultural programming, and instead gave students several longer breaks during the semester in which travel could be optimised? If students had three week-long breaks, or a single two-week break, for example, then slower and more intentional travel could be more realistically promoted and supported.

Students strongly support embedding climate action and sustainability outcomes within study abroad programmes (Figure 6), with a minority expressing reservations. Pre-departure and on-site orientation are ideal times to emphasise the viability of low carbon travel, and this can be regularly revisited during the semester. Other educational components, such as carbon literacy training and associated personal action goals, or engaging students in active offsetting activities are also options for embedding sustainable lifestyle choices among students. Lessons can be learned by observation and learning from local behaviours and customs, with most Europeans having substantially lower carbon footprints than most Americans. Pointing this out, and showing how the average European lifestyle is less consumptive and more efficient, with sustainability values at its core, can have a lasting legacy on students. As a sector, we must be able to demonstrate to students the efforts that we are making in our programmes and within our operations, and push for students to follow our lead.

Our student survey only included semester-length students, and the majority of on-site staff answered the conference survey with semester students in mind. However, we are well aware of the trend in study abroad towards shorter-term programmes, often with as little as two weeks on-site. For the same flight carbon emissions (to/from the site only), semester programmes offer greater academic, community, and cultural immersion opportunities, and therefore should be prioritised, from a sustainability perspective—a bigger educational bang for your climate buck, if you will.

Some of the actions listed in Table (6) can be viewed as 'easy wins', relatively simple to implement and of some climate and sustainability value. Examples of these 'easy wins' include energy consumption reductions, hybrid working for staff, and encouraging students to shop locally for local products. But these alone will not solve our climate and sustainability challenges, and we must strive for deeper, more meaningful, and impactful solutions as a whole sector. Although driving our sector towards more sustainable approaches and actions is needed, we see this as a transitional stage towards making study abroad a field that embodies the values of all regenerative practices; a systemic transformation that aims to lead to benefits and reverse harms done in the past. Regenerative sustainability is a more holistic way of thinking and aligning with sustainability and the UN SDGs, integrating the "inner" and "outer" dimensions

of sustainability, allowing us to solve challenges with a systemic perspective and not from an anthropogenic viewpoint.

The more meaningful and impactful sector-level changes needed include:

1. Reduce our emissions wherever possible, including travel, energy usage, and other forms of consumption. Staff and faculty setting a good example for students will make the educational piece more impactful.

2. Embed some form of active offsetting within our programmes, to bring a hands-on, experiential, and educational element.

3. Using the time abroad as an opportunity to showcase and instil climate and sustainability education and action within our programmes. This starts with pre-departure and on-site orientation, but is also embedded in courses, activities, and community engagement. Carbon literacy training for staff and students is a good example of this. Assessing student sustainability literacy is another option, using a platform such as Sulitest's TASK.

4. A shift in the messaging, marketing, and mindset from hypermobility to immersion in place and environmentally responsible travel. Programmes need to set an example, and work with students towards this objective.

5. Ensure that sending institutions, home institutions, and host programmes view this as a priority, and provide the tools to allow for climate action to be a part of strategic plans, along with funds to implement.

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