

DBFL's Strategic Approach to Reaching Net Zero Carbon Emissions





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1 INTRODUCTION

DBFL Consulting Engineers is one of Ireland's leading civil, structural and transportation engineering consultancies. For over 35 years, DBFL has been providing technical consultancy services across residential, commercial, retail, hotels, education, infrastructure, transportation, and industrial/logistics sectors. DBFL provide a high level of personal service to both public and private clients in each of the three disciplines across Ireland, UK, and Europe. DBFL have a workforce of approximately 190 dedicated staff across offices in Dublin, Waterford, Cork, and Galway.

1.1 DBFL's Pledge to Net Zero

In November 2021, DBFL committed to the Association of Consulting Engineers of Ireland's Pledge to Net Zero, a partner to the United Nations' Race to Zero Campaign. By registering for this commitment, DBFL joined the group of leaders in the built environment sector taking strong actions to mitigate the most significant impacts of climate change and agreeing to deliver upon three commitments as set out in Figure 1.1 below.

With ACEI support, DBFL's aim is to achieve Net Zero in operational GHG emissions by 2030. DBFL, working with the ACEI, will establish the route to reducing operational emissions and ultimately achieving Net Zero.

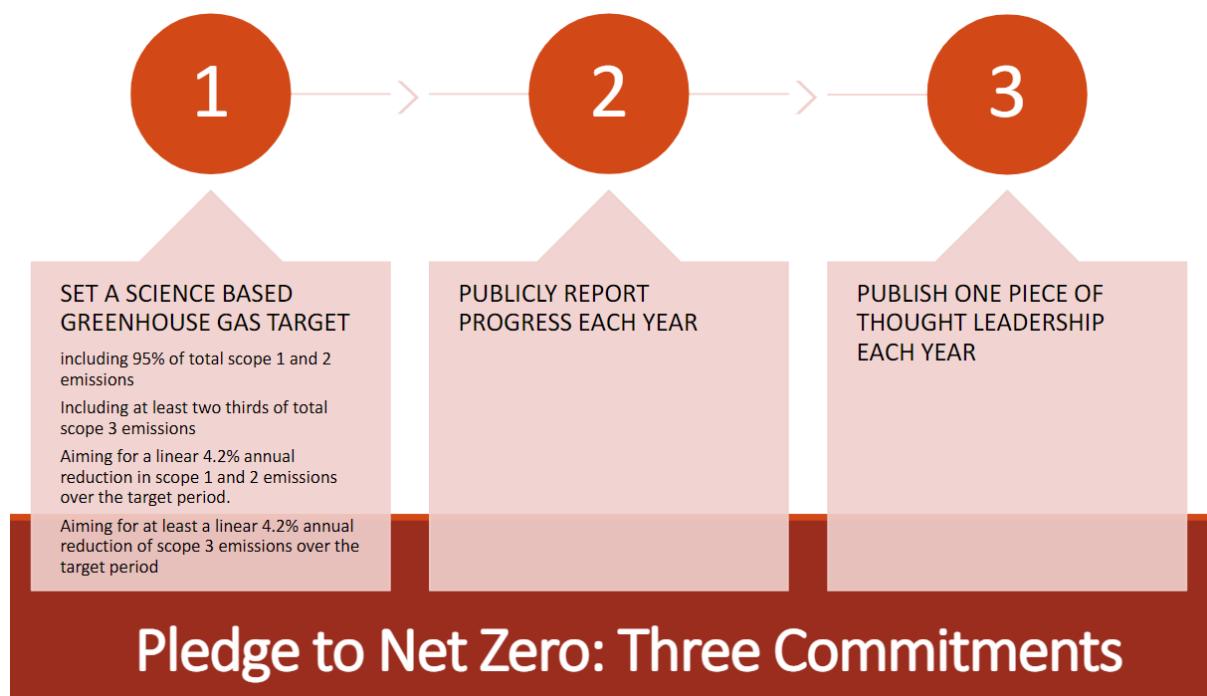


Figure 1.1 – PTNZ Commitments



1.2 DBFL's Strategy for achieving Net Zero and beyond

As part of DBFL's wider 5-year strategy to take the business forward into the future, sustainability and green initiatives have been identified as a cornerstone of the business plan. The aim is to effect meaningful change to the benefit of the environment and to play our part in the fight to mitigate the cause and effects of the global climate crisis. DBFL's ambition is to be a leader in this sector promoting green initiatives and actions by adjusting our own business operations to run with zero impact on global warming. By leading the change to our own operations, we hope to further influence positive change in the industry where the impact on the embodied energy of construction has massive potential to influence carbon emissions on a national scale. The IGBC's roadmap to Building a Zero Carbon Ireland reports that the built environment accounts for 37% of national emissions, equal to agriculture. Of this two-thirds comes from operations and one third from the construction of buildings including the manufacture of construction materials i.e., embodied carbon.

Through this pledge and publishing our own approach to reducing our carbon footprint, DBFL hope to be a positive influence for change by sharing the knowledge we've gained enacting that change. As set out by the ACEI in Figure 1.2 below the published piece should fulfil the goal of advancing the field by illustrating how a large consultancy such as DBFL approached our pledge to net zero which may assist other companies to achieve the same end because it will take everybody pulling their weight with respect to carbon emission reductions to achieve the end goal of slowing climate breakdown.

Step 6: Advancing the field

In order to support the transition to a net zero carbon economy signatories are required to carry out one of the following

Publish research around thought-leadership

- publish one piece per year
- related to the practical steps necessary for delivering science-based targets
- intended to support the organisation's own thinking in this area and be an opportunity for active engagement with stakeholders to encourage a broader uptake of science-based targets

Support smaller consultancies

- this assistance can be related to target setting, carbon reporting and research development



Figure 1.2 – ACEI PTNZ Guidance for Signatories Step 6

2 What did DBFL do to quantify our emissions and then set targets?

2.1 Setting the Science Based Targets

DBFL already had a dedicated taskforce for dealing with all sustainability issues represented by staff of varying experience, from various office locations, engineering disciplines, and administrative functions within the company. The committee is made up of 10 – 15 staff members with a director responsible for leading and reporting to senior management. We reviewed all possible sources of emissions according to their emissions classification i.e., Scope 1, 2 or 3. We compiled the list of actual emissions usages specific to DBFL's operations from 2019 as shown in Figure 2.1 below. Further details on how these figures were compiled is detailed in section 2.3.2 below

Scope	Source	t CO ² e	t CO ² e
1	Gas & Oil	12.654	53.53
	HFC & CFC	N/A	
	Company Fleet	40.876	
2	Electricity	89.080	89.08
	Heating	N/A	
	Cooling	N/A	
3	Business Travel Air	12.890	110.56
	Business Travel Cars	24.355	
	Commuting	59.972	
	Homeworking	N/A in 2019	
	Purchased Goods & Services	In Progress	
	Water Usage	0.585	
	Transmission & Distribution Losses	7.928	
	Waste	In Progress	
	Printing	4.833	
TOTAL			253.17

Figure 2.1 – DBFL 2019 CO₂ emissions record by Scope

We accounted for the usage data through billing and accounts records for the baseline year of 2019 which was the last normal year of operations prior to COVID interruptions. We reviewed these figures first with a smaller working group and then presented it to our green committee. Once all these comments were taken account of and we believed realistically that we could reduce these scope 3 emissions in line with the SBTi tool set target of 46.2% to achieve 1.5°C of global warming, approximately 6% per year to 2030, we presented our findings and plans to senior management to ensure the companies full commitment to this goal regardless of staffing changes.



We also acknowledged that critically this target is an absolute target so if the companies staffing level and activities grow in the interim, we must still achieve the same actual tonne of CO₂ equivalent reductions.

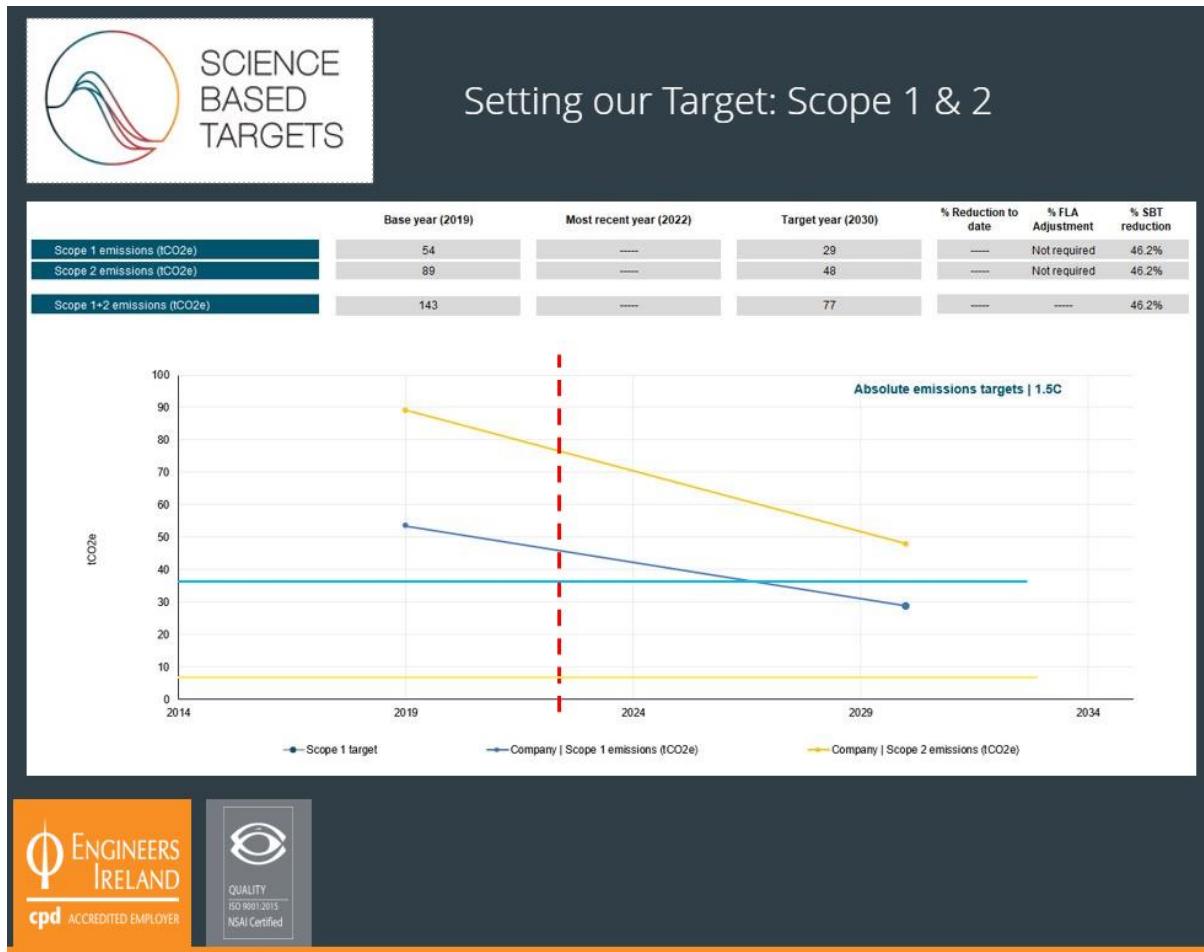


Figure 2.2 – SBTi Target Setting for DBFL's Scope 1 & 2 reduction



The Science Based Targets logo, which includes a circular graphic of wavy lines in red, green, and blue, and the text "SCIENCE BASED TARGETS".

Setting our Target: Scope 3

Section 1. Input data

Target setting method	Absolute Contraction Approach	Please review the latest version of the SBTi Guidance and Criteria	
Base year	2019	Dropdown	
Target year	2030	Dropdown	
Base year output			
Target year output			
Scope 3 emissions (total or specific categories)	111	tCO2e	

Section 2. Absolute Contraction Approach

	Base year (2019)	Target year (2030)	% SBT reduction
Company Scope 3 emissions - WB2C (tCO2e)	110.6	80.2	27.5%
Company Scope 3 emissions - 1.5C (tCO2e)	110.6	59.5	46.2%

The logo for Engineers Ireland, featuring a stylized 'Φ' symbol and the text "ENGINEERS IRELAND cpd ACCREDITED EMPLOYER".

The logo for NSAI, indicating quality certification under ISO 9001:2015.

Figure 2.3 – SBTi Target Setting for DBFL's Scope 3 reduction

2.2 Emissions Scopes

Let's first set out our understanding of the GHG emissions scopes. The definition of scopes comes from the GHG Protocol Corporate Accounting and Reporting Standard document which separates direct and indirect emissions into clearly defined sources for Scopes 1 and 2 to avoid double counting in GHG programs. Scopes 1 and 2 must be separately reported on by companies at a minimum. The three scopes are as follows:

1. Scope 1 emissions are those occurring from sources owned or controlled by DBFL e.g., company vehicles, boilers, etc.,
2. Scope 2 emissions are indirect from the generation of purchased electricity,
3. Scope 3 emissions are other indirect emissions from sources not owned by DBFL but occur due to company activities.

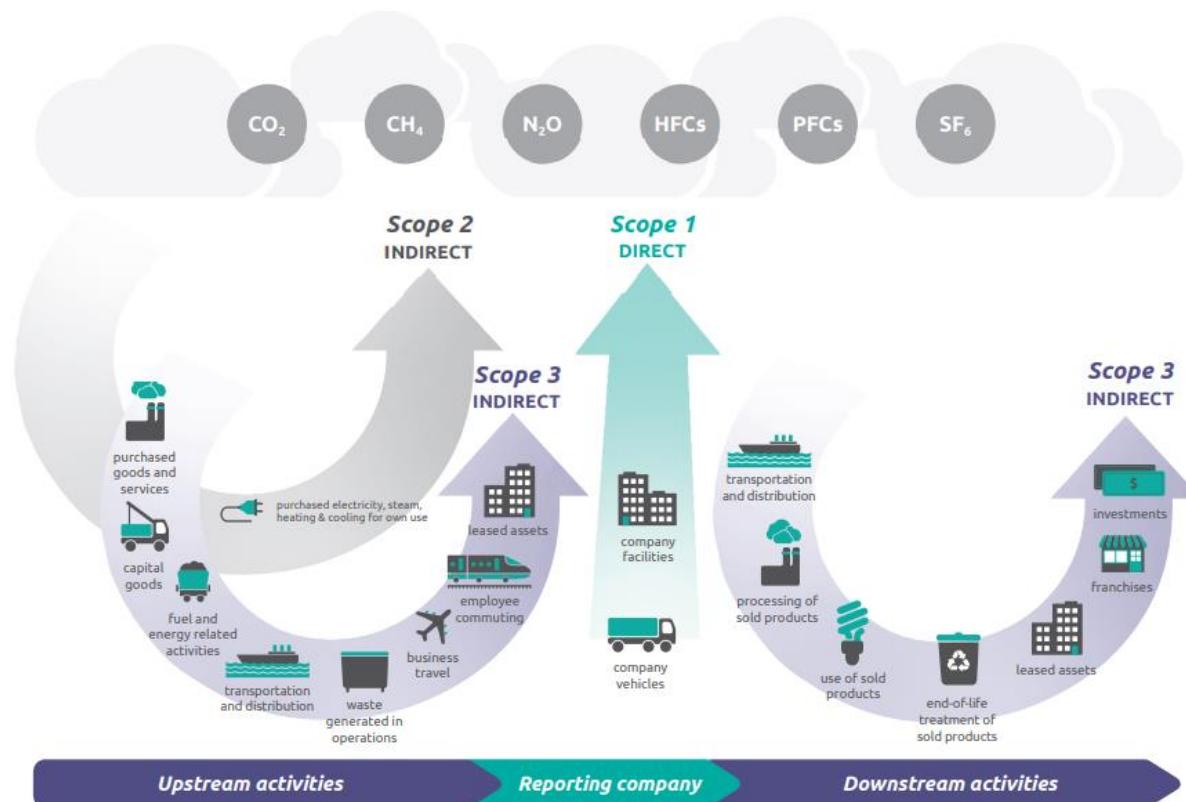


Figure 2.4 Overview of GHG Protocol scopes & emissions across the value chain

The main items contributing to GHG emissions in Scope 3 for DBFL are travel related. These items are Business travel and commuting which make up almost 90% of our Scope 3 emissions. When taken together with company fleet in Scope 1, travel related business operation make up 55% of total DBFL's emissions. Purchased electricity is 35% of total DBFL emissions and Gas & Oil 5% making up 95% of DBFL's usage. Therefore, reductions will largely focus on two broad areas i.e., travel and energy consumption.

2.3 Were there any challenges in setting the targets and gathering data?

2.3.1 Setting the targets

Target setting was very much led by the SBTi guidelines and the requirement to achieve 1.5°C of warming. However, hitting the reductions in Scope 3 emissions was debated and agreed with senior management so that we were not merely paying lip service to this goal. Some usages are not simple to reduce, such as employee commuting as it is in the hands of employees to make personal choices and commitments. DBFL do however have an accredited policy in the Cycle Friendly employer initiative and are a Smarter Travel Employer. Each of our offices are within City Centre locations which are well connected with cycling infrastructure as well as public transport. In terms of business travel many meetings since COVID have moved online which is helping reduce the need to attend in person each and every meeting. It is essential for DBFL to attend sites for inspections but with a transport policy in place for business travel on a sliding scale of distance favouring pedestrian, cycling and public transport at closer distance and the option to drive one of our new EV fleet vehicles it's envisaged that this target can be reached. We have made requests for EV rental vehicles too which is a situation that should improve as their popularity and availability grows. All of the above forms part of the company's Travel Plan which contains a variety of mobility management measures to encourage the use of sustainable travel.

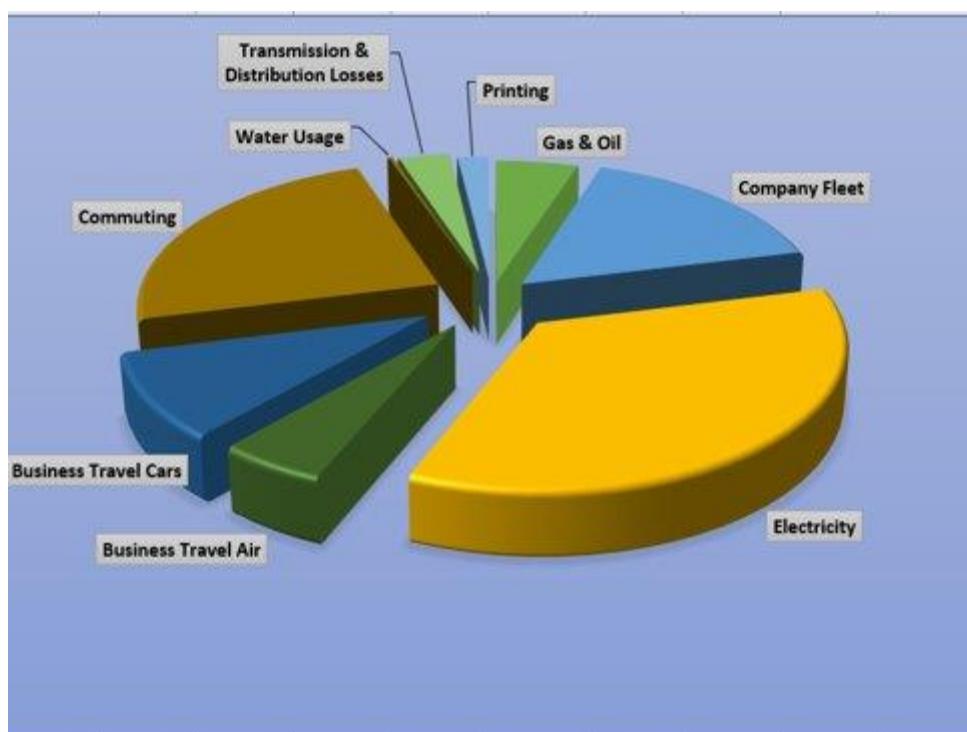


Figure 2.5 – DBFL 2019 CO₂ emissions breakdown chart

2.3.2 Gathering Data

Scope 3 - Transportation

In terms of transportation, actual CO₂ emissions usages specific to DBFL's operations for the baseline year 2019 (pre COVID) was calculated using the following:

1. A workplace travel survey that was undertaken in September 2019, as part of the NTA Smarter Travel initiative; and
2. Usage data through billing and accounts records. The methodology and information obtained in terms of staff commuting and business travel is outlined below.

To get a better understanding of the CO₂ emissions usages an updated workplace travel survey was undertaken in 2022, which was designed to calculate CO₂ emissions and mobility trends and new working trends/habits.

Commuting

The National Transport Authority (NTA) conducted a travel survey as part of Smarter Travel Workplace initiative in 2019. The survey provided data on the transport mode used to commute to and from work, the distance travelled, and the time taken. Using the following information and some assumptions it was possible to calculate the CO₂ emissions from staff commuting to the DBFL Dublin office. Emission factors used to calculate the t CO₂ e (tonnage of embodied carbon) were obtained from Table 5.4 in the research report "*Greening Transport: Final Report, Report No.338, EPA Research*".

Figure 2.6 below illustrates that, in 2019, 85% of staff commuted by sustainable modes of transport. While 34% commuted via active transport modes.

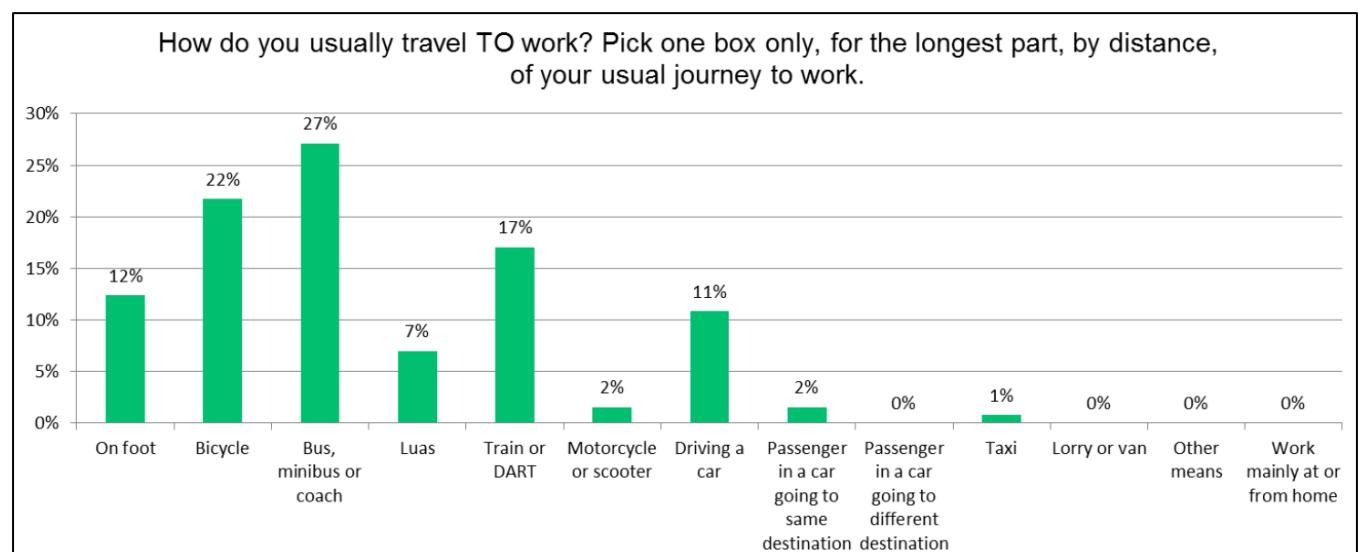


Figure 2.6 – Staff commuting mode share (2019 Workplace Traffic Survey)

Figure 2.7 and Figure 2.8 below illustrate that more than half of staff, 54%, lived within 10km of their office. This is considered a feasible distance for cycling to work. While, the majority of staff, 75%, travelled less than 1 hour to get to the office from home.

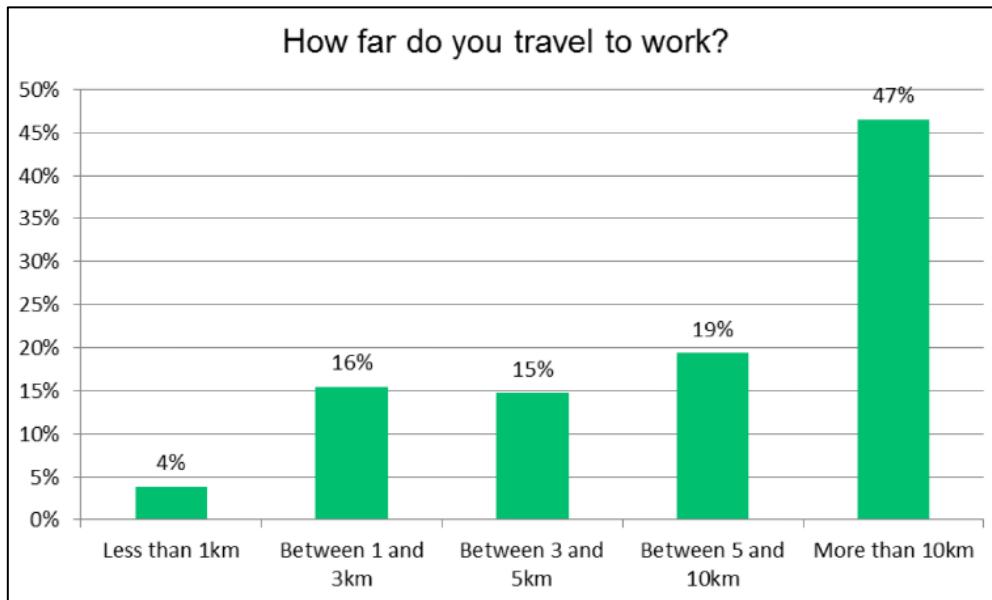


Figure 2.7 - Distance to commute to work (2019 Workplace Traffic Survey)

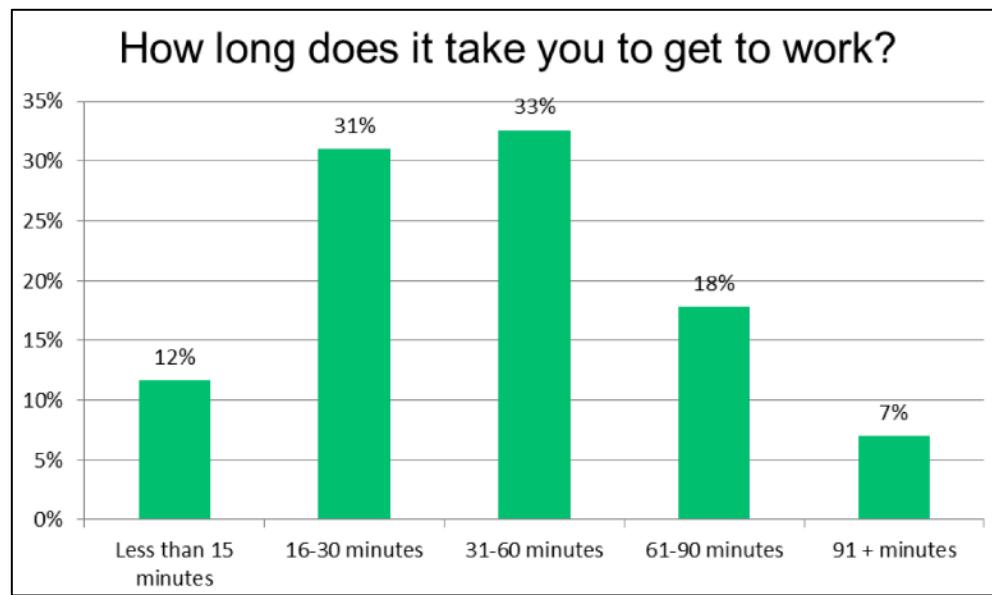


Figure 2.8 - Time taken to commute to work (2019 Workplace Traffic Survey)

As per Figure 2.1 in Section 2.1, commuting represents 24% of the overall baseline 2019 CO2 emissions from the office.

Business Travel by Car

In 2019, DBFL had a fleet of 4 DBFL cars and used a fleet rental service for additional usage above and beyond the company fleet availability. The CO₂ emissions were calculated from the refuelling charges for both the DBFL and rental fleet. Staff fuelling of their own cars when occasionally used can be tracked by expenses receipts. Sometimes fuel cards may be used by staff for their own cars which would include it under company fleet, but this is uncommon practice.

According to the workplace travel survey (2019), the most popular mode of travel on business was driving a car, with 60% of staff travelling by car. Travelling on foot and by the Luas were the next most popular at 30% and 27% respectively.

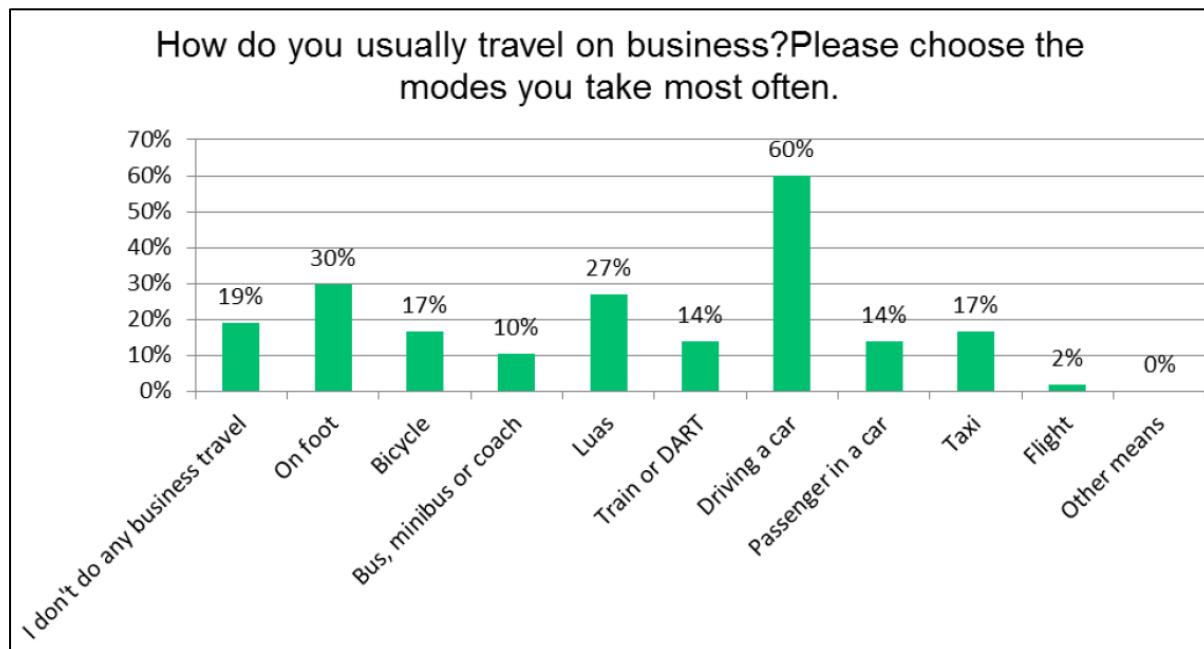


Figure 2.9 - How do employees usually travel on business (2019 Workplace Traffic Survey)

According to the travel survey undertaken in 2019, only 3% of staff believed they could host all of their Irish meetings online and only 20% had used video technology for meetings.

As per Figure 2.1 in Section 2.1, Business Travel by car represented 10% of the overall baseline 2019 CO₂ emissions from the office. The DBFL Company Fleet represents 16% of the overall baseline 2019 CO₂ emissions.



Business Travel by Air

From our accounts records it was possible to quantify business travel by air. The number of business trips by air was quite low, therefore, it was possible to calculate the CO2 emissions quite easily using the distance travelled and emission factors from the aforementioned research report for the EPA.

As per Figure 2.1 in Section 2.1, Business Travel by air represents 5% of the overall baseline 2019 CO2 emissions from the office.

Homeworking

Homeworking was not a feature of company activities during the baseline year (2019) for target setting.

Purchased Goods & Services

Whilst accounting records are available for spending on purchased goods and services it is far more difficult to accurately account for the emissions associated with these items in any meaningful way.

Water Usage

Whilst water usage is a tiny fraction of DBFL's Scope 3 emissions we know from costs that approximately 50% of water usage onsite is a landlord provided service. We have our own water meter records but no access to the landlord meters. The landlord provides bathrooms, toilets, and shower facilities and the rest is canteens which is under company's own metered usage. So, it is possible to estimate the total usage from the charges for both.

Waste

Waste is a fully landlord provided service. As such we have no access to these records. And could not account for these emissions at all.



Printing

We have good records for printing which are recorded on a monthly basis by our office staff with responsibility for maintaining the printing resources. These records are kept according to the stocks maintained in separate locations on each of 4 floors in the Dublin Office and for each of our regional offices. The records are further broken down into A4, A3, A0 and A1 sheets as appropriate. Using our annual totals for 2019 we applied industry conversion factors for the total weight of paper consumed by DBFL's activities and applied the appropriate industry conversion factor to derive the tCO₂e figure which we published.

3 What actions will DBFL take to reduce GHG emissions?

3.1.1 Travel Survey

As mentioned in Section 2.3, DBFL conducted another similar workplace Travel Survey in November 2022, to update our previous dataset (2019) with accurate raw data, review mobility trends and check on progress towards emissions reductions if any. An updated workplace travel survey will be undertaken yearly to measure progress. Incentives are offered to employees to complete these surveys so a good sample rate is obtained.

Commuting

In 2022, 39% of DBFL staff used public transport commuting to/from work. An additional 33% cycled to the office regularly while 13% chose to walk. Overall, 85% of staff choose sustainable modes for their daily commute.

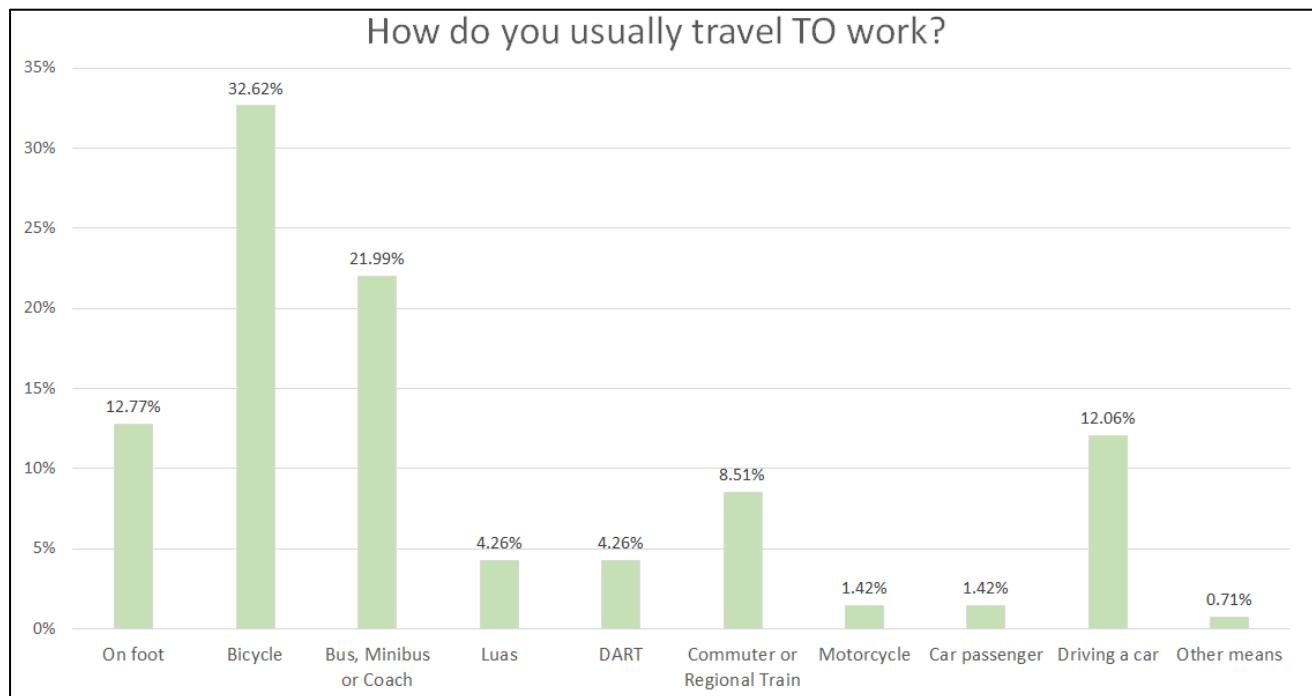


Figure 3.1 - Staff commuting mode share (2022 Workplace Traffic Survey)

Cycling has seen the largest increase since the last travel survey in 2019, with an additional 11% of staff now cycling to work (see Figure 3.2).

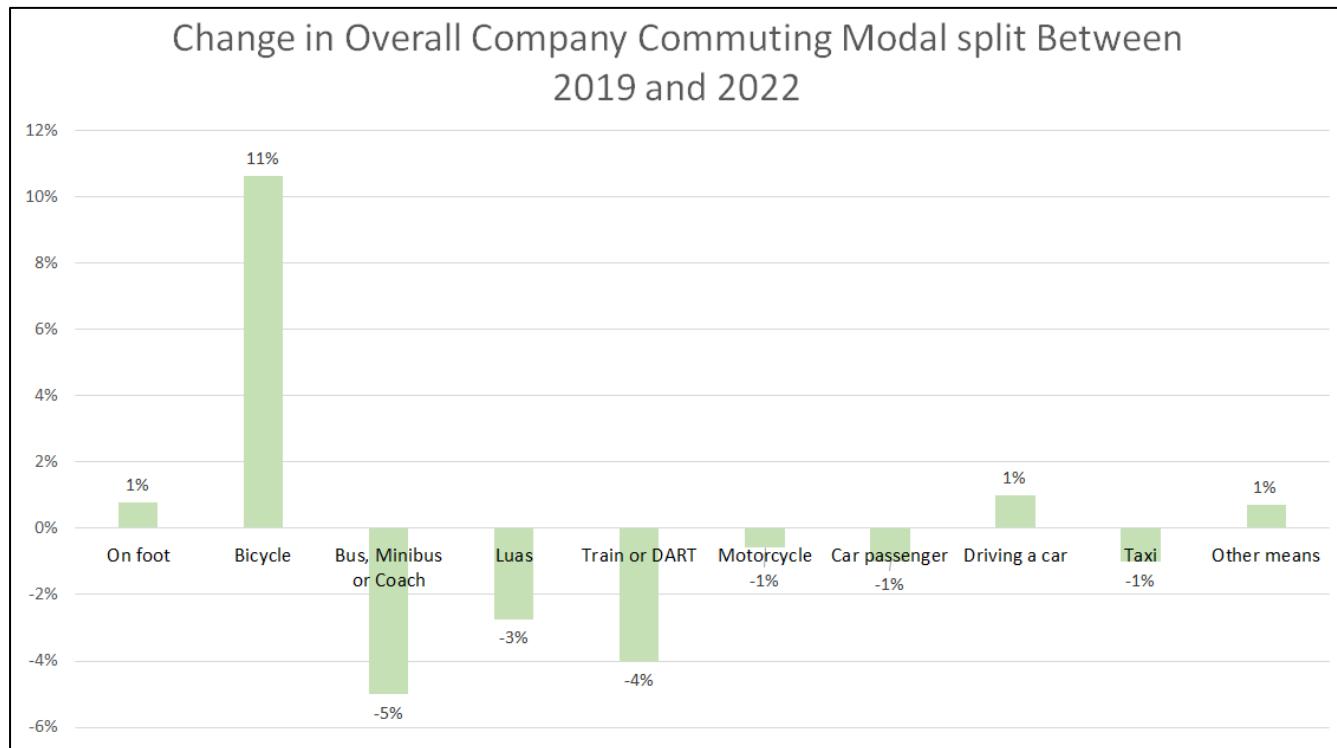


Figure 3.2 - Change in Overall Company Commuting Modal Split Between 2019 and 2022

Business Travel by Car

Due to Covid19 and the adapted new working habits, according to the 2022 survey and despite the easing of pandemic restrictions, the majority of Irish meetings are still being hosted and attended online. For the majority of employees 75%-100% of their meetings were attended online/virtually in 2022. This new trend has a significant impact on reducing business travel by car and reducing CO₂ emissions.

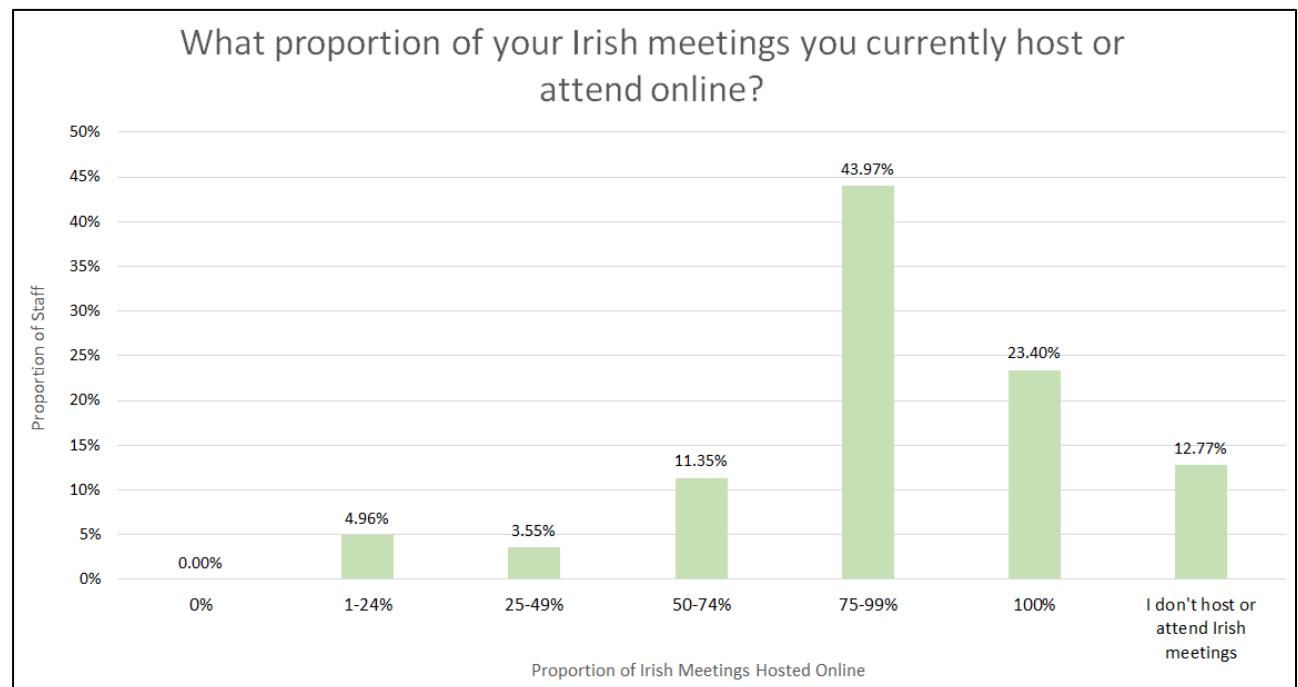


Figure 3.3 – What proportion of DBFL's Irish meetings are hosted / attended online?

Of those smaller number of meetings that must be attended in person, according to the survey, the most popular mode of travel to meetings is driving a car, with 73.97% of staff travelling to the majority of their in-person meetings this way.

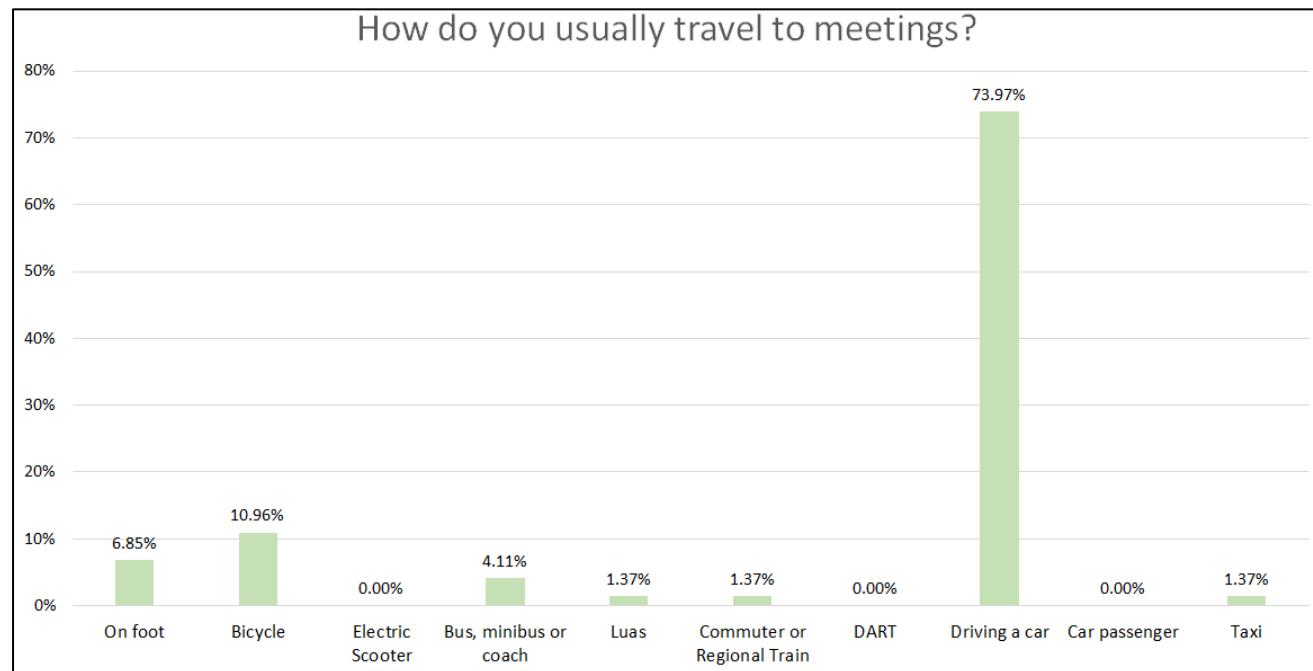


Figure 3.4 – DBFL staff mode of travel to meetings

The car is also the most popular mode for travel to site, with 78.50% of staff choosing the car to travel to their site visits.

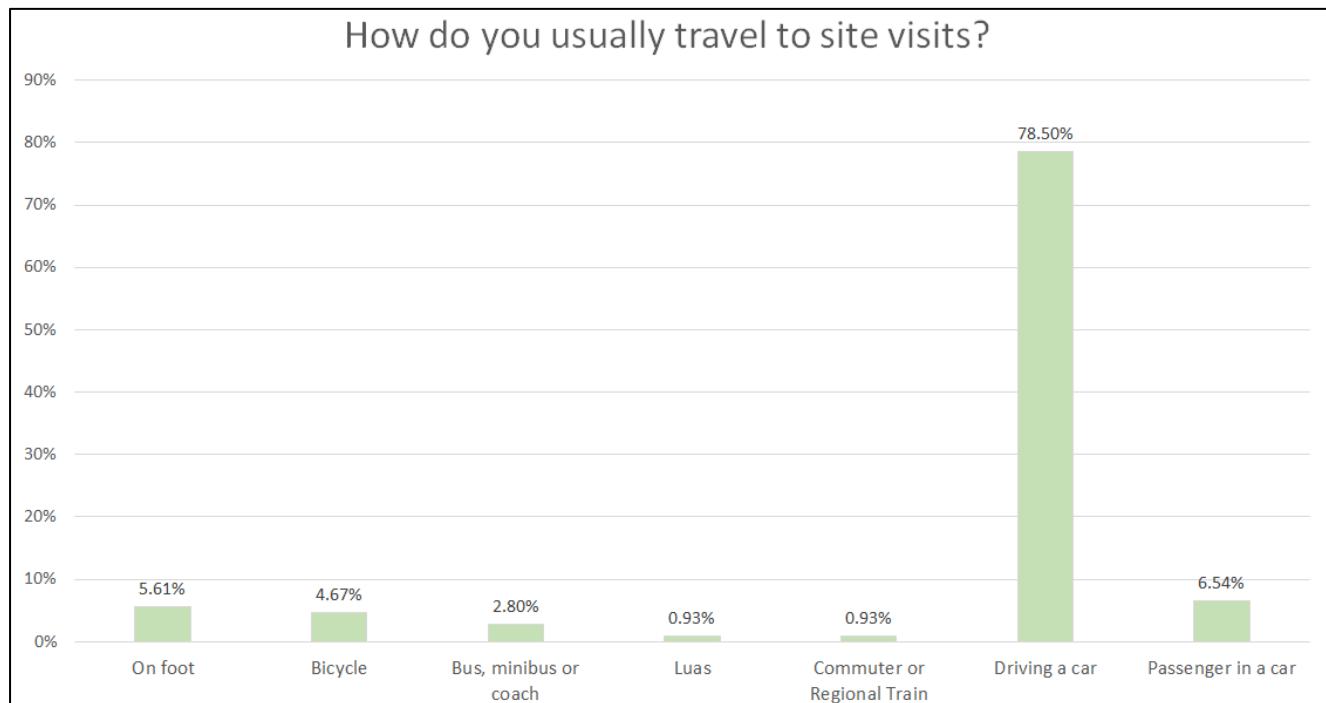


Figure 3.5 – DBFL staff mode of travel to site visits

Business Travel by Air

From our accounts records it was possible to quantify business travel by air. The number of business trips by air was quite low, therefore, it was possible to calculate the CO2 emissions quite easily using the distance travelled and emission factors from the aforementioned research report for the EPA. Business Travel by Air has reduced from 120,624km distance travelled in 2019 to 109,611km distance travel in 2022. This equates to a reduction of 2.723 tonnes of CO2 emissions.

Homeworking

As a result of the Covid 19 pandemic, remote working has been introduced to the DBFL office. An arrangement has been made between DBFL and certain Employees allowing them the flexibility to split their working time between home and office. Typically, these employees will work a maximum two days a week from home.



3.1.2 Electric vehicle fleet & rentals

DBFL switched 4 of our existing fleet cars to EV's in two stages during 2022. EV charge ports were installed in the basement carpark of the main Dublin office servicing each vehicle. This will help reduce our Scope 1 emissions from our own fleet moving some of it across to Scope 2 purchased electricity. We also use fleet rentals when demand for travel is higher, however these are unavailable as EV's still despite repeated requests. DBFL continue to explore rental fleet options to help reduce our Scope 3 emissions. In time and with increasing customer requests EV rental availability should increase to help with our Scope 3 emissions targets.

In our regional offices we currently have only one diesel fleet car and the rest of our regional car travel is facilitated by fleet rentals.

3.1.3 Cycle to work scheme and Cycle Friendly Employer accreditation

DBFL achieved gold accreditation as a Cycle Friendly Employer in 2022 which is an EU-wide scheme. DBFL provide cycling facilities in their Dublin office including secure and sheltered lock-up area, showers, social events, etc. Plans are proposed to upgrade the changing, drying, and showering facilities to encourage additional cyclists. Approximately 33% of DBFL's 190 employees currently cycle to work, while approximately 11% of employees currently cycle to meetings and 5% cycle to site visits.

3.1.4 Public transport cards

DBFL have shared leap cards available for staff who choose to take public transport to their meetings and site inspections.

3.1.5 City bike cards for employees

DBFL employees that travel by bicycle typically tend to use their own bicycles for convenience and availability reasons. Previously DBFL maintained subscriptions to city bikes for staff upon request however they went unused by and large. Our travel survey highlighted the opportunity to encourage more active travel to meetings so this scheme will be kept as an option ready to reopen should a further drive by updating and recirculating a DBFL travel policy update generate the desired increase in employee demand for it.



3.1.6 Encourage hybrid working to reduce commuting emissions

DBFL have a policy in place since COVID whereby the majority of staff can work 2 days from home each week with three days in the office for collaboration and mentoring of junior staff. This should of course save on commuting emissions with the trade-off that staff must heat their own homes during the colder months rather than all occupying the same heated space. Whether the benefit of one outweighs the other needs further research.

3.1.7 Encouraging more virtual meetings

DBFL have rolled out the Microsoft Teams app across all staff which is excellent for intraoffice and interoffice communications as well as hosting online meetings whether fully virtual or hybrid. Selecting this virtual meeting option is encouraged as a way of saving large and frequent commutes.

3.1.8 Switch to renewable energy suppliers

We have selected green energy suppliers where feasible to encourage investment in renewable energy schemes throughout Ireland. Whilst we acknowledge that backup generators and the national electricity grid determine the quantity of emissions associated with each kWh of electricity consumed, we have recorded the requisite Transmission & Distribution Losses to account for this element of our electricity usage. We intend exploring additional options to reduce energy consumption and our carbon emissions in this area by looking at the following:

- Smart metering to help us better understand our usage and so manage changes more dynamically to reduce consumption and therefore emissions.
- Opt into demand response schemes which aggregate usage changes in medium to large electricity users to reduce peak demand and offset it to more favourable times when there is more wind available on the grid or offsetting peak demand where the dirtiest generation sources are required to boost the grid over and above renewable generation troughs.
- Upgrading lighting to LEDs, space insulation, water / space heating efficiencies, reducing temperatures by 1°C or 2°C.
- On site generation and storage in the form of PV panels, battery back-up, solar thermal etc.



- Apply pressure to our landlords to improve energy usage in their controlled spaces by getting PIR sensors installed, improving light fittings, etc as we would our own areas.

3.1.9 Office waste separation

We have implemented waste separation across all our office locations and set up Green Office Teams with Green Officers who keep an eye on what is going into the bins making sure people understand the importance of vigilance and minimising our contributions to landfill.

Our landlord won't currently grant us access to our raw data numbers to monitor our progress in this area. We are striving to redress this gap in knowledge so we can measure our progress and encourage best in class behaviour thereafter.

3.1.10 Paperless office

DBFL have aspired to paperless operations. This is challenging in an engineering office where reports, drawings and calculations can be hand. However, with hybrid working in place in DBFL it is intended to establish consistent digital workflows in the coming years.

DBFL have aspirations to become a paperless office and has made strides internally but cannot control statutory requirements.

Most Local Authorities only accept hard copy planning documentation, so this has prevented DBFL moving to paperless just yet. There are several Local Authorities who now accept digital submissions and it is expected that this trend will continue across the country in the coming years.



4 Conclusion

The process of accounting for DBFL’s emissions has been a very worthwhile and revealing exercise. We now know where we stand as a business with respect to our broad energy consumption. This enables us to determine how and where to target resources and investment to maximise our impact on staff behaviour and on energy efficiency improvements which will not only reduce our carbon emission but should also reduce our energy spend. This gives us great confidence that the goal of achieving the annual reductions in line with the 1.5°C target is very much now an achievable SMART goal. We have a clear path going forward and many ideas on how to continually improve our reductions as well as setting up the templates for recording and tracking ongoing energy usage to measure progress and the ability to respond quickly and adjust if usage strays off target. At the time of writing DBFL is preparing for an audit for the Environmental Management Standard (ISO 14001) accreditation which when obtained will reinforce our environmental credentials.



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