

# EPA Carbon Emissions Report 2022



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## Executive Summary

This Carbon Report and associated Greenhouse Gas Inventory has been prepared using the Greenhouse Gas Protocol Corporate Standard - Revised Edition (GHG Protocol, 2015). The graphs and tables presented within the report summarise the 2022 carbon emissions under scopes 1, 2, and 3 for the Environmental Protection Agency (EPA). The total emissions generated by the EPA in 2022 were 1,142 Tonnes CO<sub>2</sub> equivalent (tCO<sub>2</sub>e). The activities included under each scope are as follows: **Scope 1** (Direct emissions from fixed and mobile combustion), **Scope 2** (indirect emissions - electricity) and **Scope 3** (indirect emissions – business travel, commuting, water and waste disposal).

The purpose of this report is to provide a comprehensive breakdown of the EPA's greenhouse gas emissions (hereinafter referred to as Carbon emissions) in 2022 arising from internal operations across 6 main locations; EPA Headquarters, Johnstown Castle, Co. Wexford and EPA Regional Inspectorates located in Dublin, Castlebar, Kilkenny, Monaghan and Cork.

All data is reported in tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e). The data is also provided in emissions per EPA location.

Relevant activity data on energy consumption, heating, transport, water usage, and waste management is collected across the EPA and converted using appropriate emission factors to Greenhouse Gas Emissions. These emissions are calculated by collecting activity data (e.g., kWhr of electricity, litres of fuel, km travelled) within the EPA's internal database and subsequently uploading this data to sustainability software which, in turn, uses emission conversion factors from the Sustainability Energy Authority of Ireland (SEAI) and the UK's Departments for Energy Security and Net Zero & the Department for Environment Food and Rural Affairs (DEFRA). This report has been prepared by reviewing and analysing the emissions data for 2022 generated by bespoke sustainability software.

All of Scope 1 and 2 emissions as well as some Scope 3 emissions (Business travel by road (including public transport) and air) for 2022 are submitted to the Sustainable Energy Authority of Ireland (SEAI) under annual reporting obligations. The remaining Scope 3 emissions (employee commuting, waste generated and water usage) which are reported internally are also presented in this report.

This report details the methodology used to quantify the carbon emissions attributable to the EPA and presents the results of the data tracking for 2022. From the total carbon emissions (1,142 tCO<sub>2</sub>e), the largest emissions were generated from Scope 3 activities accounting for 34% of the total with Scope 1 accounting for slightly less than a quarter (23%).

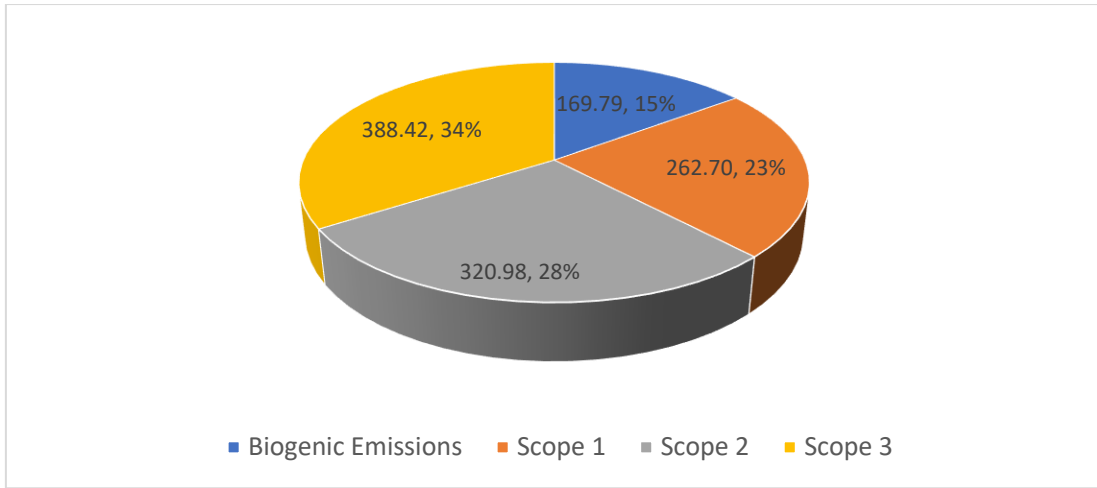


Figure 1: Total EPA carbon emissions (tCO<sub>2</sub>e) 2022

The report also analyses comparatively against performance in previous years dating back to the 2016 - 2018 base period. Data for the base period has been averaged as shown in Figure 2. The use of the averaged base period provides a benchmark for tracking our emissions in alignment with our Strategy to reduce total carbon emissions by at least 30 percent by 2026 on our transition to carbon neutrality.

All data collected and analysed within this report follows the Greenhouse Gas (GHG) Protocol principles of relevance, completeness, consistency, transparency and accuracy.

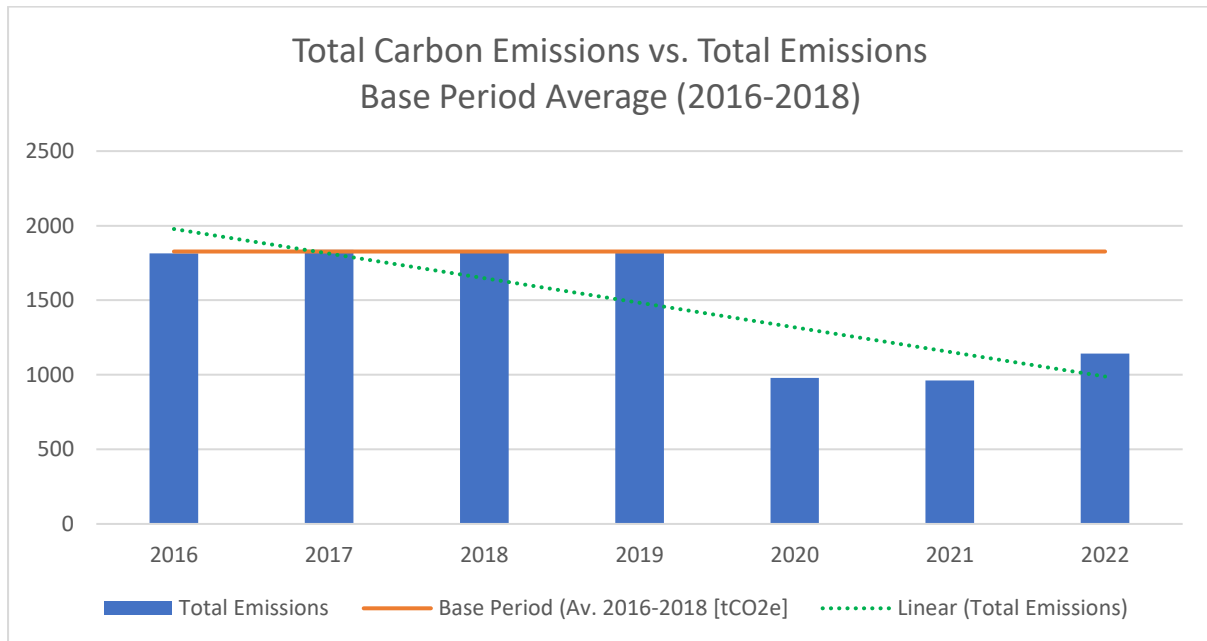


Figure 2: Total carbon emissions vs. total emissions base period average

Staffing levels have increased to 450 full-time-equivalent staff (increase of 32% since 2010) by the end of December 2022. This reflects a reduction in emissions by over 50% from the base period average (2016-2018), when comparing the total emissions generated in 2022 per FTE EPA staff member. See Figure 3 overleaf which illustrates this trend.

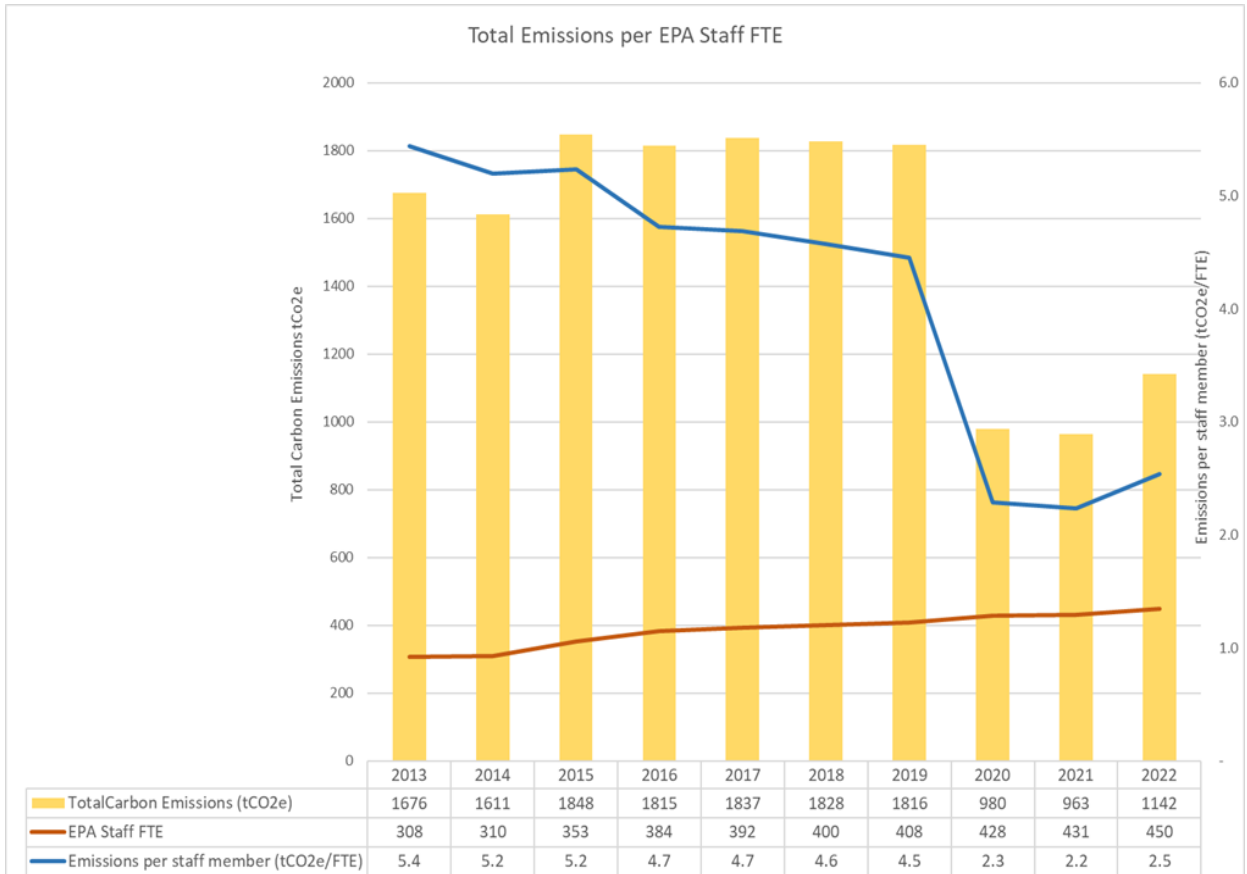


Figure 3: Total emissions per EPA FTE vs Total FTE staff numbers

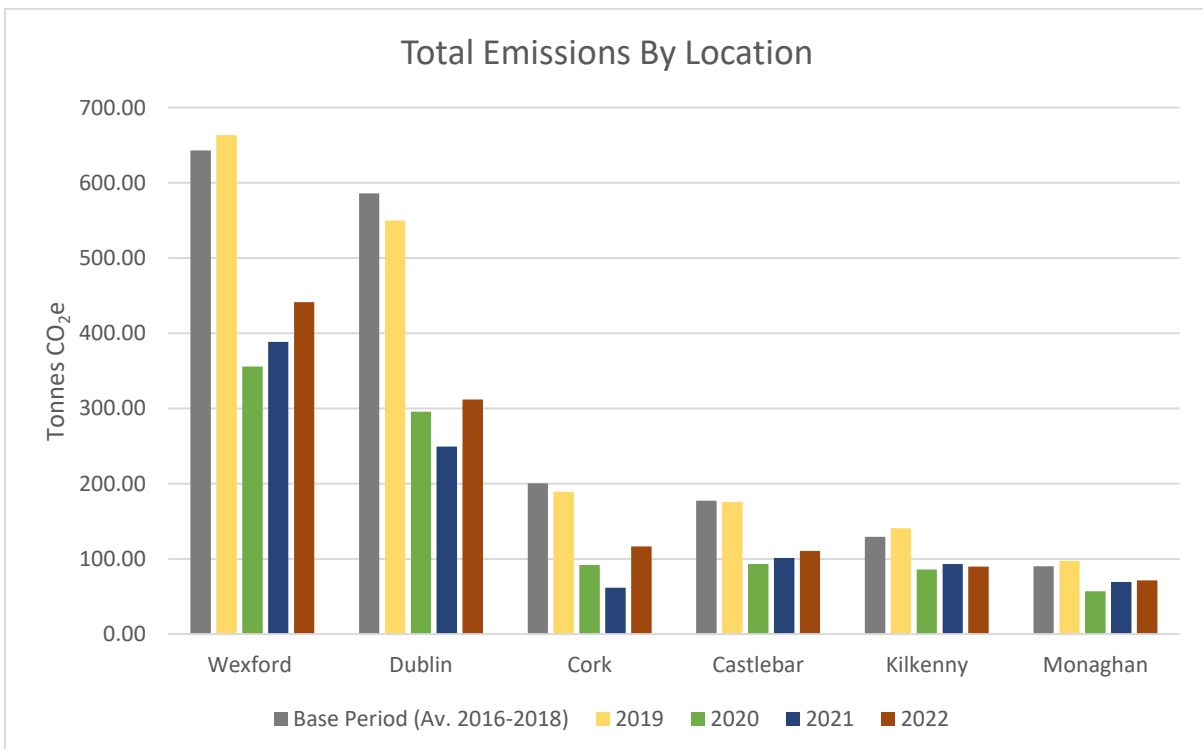


Figure 4: Total carbon emissions by EPA location

# 1 INTRODUCTION

## 1.1 Description of the EPA

The Environmental Protection Agency (hereinafter the 'EPA') is an independent regulatory body established in 1992. The purpose of the Environmental Protection Agency (EPA) is to protect, improve and restore Ireland's environment. We do this through regulation, scientific knowledge and working with others.

We have a broad environmental remit and play a key role in environmental regulation, provision of knowledge and advocacy for the environment. Our principal functions are set out in the EPA Acts 1992 to 2020 and the Radiological Protection Act 1991 to 2014 and other relevant legislation. Responsibilities include Regulation, Licensing and Enforcement, Monitoring and Reporting on the environment, Regulating and reporting Ireland Greenhouse Gas emissions, Research and development, Strategic Environmental Assessment, Guidance, Education and Public Access of environmental Information.

We have a responsibility to raise environmental awareness, influencing positive behavioural change by supporting businesses, communities, and the general population. Our vision for Ireland is ambitious and reflects the transformation needed so that we all live sustainably, that we have an environment which supports our health and well-being, and that is vibrant and healthy. We are committed to incorporating exemplary environmental management practices into our everyday activities. We aim to minimise the environmental impact of our own activities to achieve continual environmental improvement, to prevent pollution, to measure and reduce our Greenhouse Gas (GHG) emissions, adapt to climate change, and encourage environmental awareness within the EPA.

We achieved formal certification of our environmental management system to the enhanced international standard (ISO 14001:2015) in 2017, following many years of certification to the previous standard. We continue to maintain an Environmental Management System (EMS), to help us control our impact on the environment from our activities and facilities.

Through an Environmental Management Programme (EMP), we have identified several significant aspects of the EPA's operation that impact or have the potential to impact the environment. This report presents our carbon emissions for the period 2022.

In line with 2021 energy performance, we again surpassed the 2020 national energy efficiency target of 33% with an overall energy consumption reduction of 50% in 2022.

We are continuing our journey towards the next challenge ahead which will be to reduce our carbon emissions even further. Targets have been set under the 2020 Climate Action and Low Carbon Development (Amendment) Bill to set Ireland on the path to net- Zero emissions no later than 2050, and to a 51% reduction in emissions nationally by the end of this decade. The EPA is affecting and monitoring change across our organisation with a view to reducing emissions resulting from our activities over time.

This report demonstrates our continuing commitment to sustainable development and our ambition to persuade others of the changes required to reduce our collective impact on the environment.

## 1.2 Purpose of Report

We have reported Greenhouse Gas (*collectively referred hereinafter as 'carbon'*) emissions data since 2013 and summary carbon emissions have previously been presented as part of our Environmental Performance Reports. This data was also used to inform other reports including the EPA's Climate Action Roadmap 2022, EPA Annual Report, SEAI Public Sector reports and the Department of the Environment, Climate and Communications (DECC) Resource Efficiency Action Plans. This second formal carbon report is supported by consistent, timely and reliable data in accordance with the GHG Protocol.

This report presents the carbon emissions associated with the EPA's activities with the inclusion of all Scope 1 and 2 emissions together with certain activities falling within Scope 3. Reporting on Scopes 1 and 2 emissions are mandatory under the GHG Protocol while Scope 3 reporting is voluntary.

## 1.3 Methodology – The Greenhouse Gas Protocol

The calculation of our carbon emissions is based on the methodology and guidance of the Greenhouse Gas Protocol (*A Corporate Accounting and Reporting Standard (Revised Edition)*)<sup>1</sup> and the Greenhouse Gas Protocol Corporate Value Chain Scope 3 Accounting and Reporting standard (The GHG Protocol Scope 3 standard) (WBCSD and WRI, 2004, 2011).

The GHG Protocol Initiative is a unique multi-stakeholder collaboration of businesses, NGOs, and governments, led by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). The Protocol is science based, internationally renowned and widely used as a foundation for developing inventories and carbon reporting. The latest edition of the Standard was published in 2004 and updated with guidance on Scope 2 in 2015<sup>2</sup>.

This report establishes the activities undertaken by the EPA which fall within the respective scopes of the Greenhouse Gas Protocol and provides a comprehensive breakdown of our carbon emissions for 2022 arising from internal operations across six main locations; EPA Headquarters, Johnstown Castle, Wexford, and EPA Regional Inspectorates located in Dublin, Castlebar, Kilkenny, Monaghan, and Cork. This report also analyses comparatively against performance in previous years dating back to the chosen 2016-2018 base period.

### 1.3.1 Overview of Greenhouse Gases

The GHG Protocol covers the accounting and reporting of the six greenhouse gases covered by the Kyoto Protocol — carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF<sub>6</sub>). In line with the GHG Protocol, EPA emissions data are reported for all six GHGs separately in metric tonnes and in tonnes of CO<sub>2</sub> equivalent:

Carbon dioxide equivalent (CO<sub>2</sub>e) – a carbon dioxide equivalent or CO<sub>2</sub>eq is a metric measure used to compare the emissions from various greenhouse gases based on their global warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential over a 100 year time period.

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<sup>1</sup> <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

<sup>2</sup> (<http://www.ghgprotocol.org>)



- Carbon dioxide (CO<sub>2</sub>) – carbon dioxide enters the atmosphere through the burning of fossil fuels (coal, natural gas, and oil), solid waste, trees, and other biological materials.
- Methane (CH<sub>4</sub>) – methane is emitted during the production transport and combustion of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices, land use and by the decay of organic waste in municipal solid waste landfills.
- Nitrous oxide (N<sub>2</sub>O) – nitrous oxide is emitted during agricultural, land use, and industrial activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.
- Fluorinated gases (hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF<sub>6</sub>)) – these are synthetic, powerful greenhouse gases that are emitted from a variety of household, commercial, and industrial applications, and processes. Fluorinated gases are typically emitted in smaller quantities than other greenhouse gases, but they are potent greenhouse gases.

## 1.4 Persons Responsible for Data Verification

Since 2018, the EPA's Organisational Services team supported by the EPA Green Team, and Site Environmental Managers (SEM's) have worked towards building a process and system for the calculation and evaluation of the carbon footprint associated with EPA activities.

The 2022 emissions data generated from the EPA's operational activities has been reviewed by the EPA Green Team and verified as accurate and representative for the reporting period.

## 1.5 Selection of the Base Period

### 1.5.1 [Approach to Selecting the Base Year or Period](#)

In line with the GHG Protocol Methodology, we were required to choose and report a base year/period for which verifiable emissions data are available from the earliest relevant point in time for which they have reliable data. There are two methods of base year selection outlined under the GHG Protocol:

- A single year of historical data (**base year**) or
- An average of multiple years (**base period**).

The choice of base periods allows us to balance the effort of data gathering with the potential impacts of early action. Using multi-year base periods has the added advantage of smoothing out any unrepresentative data within years (e.g., increased heating needs due to extremely cold winters).

#### 1.5.1.1 *Previous Reporting Base Year*

Aligning with the Public Sector Climate Action Strategy and Public Sector Climate Action Mandate the base period of 2016 -2018 was selected as the base period applied for EPA emissions reporting. The timeframe was also more representative of the current situation with the EPA in terms of staffing numbers and provides an ambitious benchmark upon which to base future targets for reduction measures. The selection of the base period (2016-2018) defines the baseline that the EPA will use when reporting on the 2030 carbon reduction target of 51%.

The 2016-2018 base period has been applied for the 2022 Carbon report.

## 2 ORGANISATIONAL AND OPERATIONAL BOUNDARY

### 2.1 Organisational Boundary

The EPA's core functions include regulation, enforcement, and assessment. The current EPA Strategy - EPA Strategic Plan 2022–2026 sets out strategic outcomes that provide clear focus for the work of the EPA. The EPA has a full time Executive Board and is organised into five offices, each led by a Director with 13 programme areas managed by a Senior Management Network.

The organisational boundary defines the businesses and operations that establish the organisation for the purpose of accounting and reporting carbon emissions. For reporting, two distinct approaches can be used to consolidate the carbon emissions of an organisation: the equity share and the control approaches. Under the control approach, organisations can choose to report emissions from operations which they have financial or operational control over. Under the equity share approach, organisations can account for carbon emissions from operations according to their share of equity in the operation.

A financial control approach was used to set organisational boundaries for the EPA. The EPA directs financial and operating functions of 6 main locations; EPA HQ, Johnstown Castle, Wexford, and EPA Regional Inspectorates located in Dublin, Castlebar, Kilkenny, Monaghan, and Cork

In 2022 there were 450 EPA employees located across the 6 EPA sites. In 2022, post pandemic 350 EPA staff are in a blended working arrangement which facilitated working from home up to a maximum of 50% of the time.

### 2.2 Operational Boundary

Once an organisation has determined its organisational boundaries in terms of the operations it owns and controls, it then sets its operational boundaries. This involves identifying carbon emissions associated with its operations, categorising them as direct (Scope 1) and indirect (Scope 2 & 3) emissions, and choosing the scope of accounting and reporting for indirect emissions. All Scope 1 and Scope 2 emissions were quantified and reported as was mandated by the GHG Protocol standard.

Identified **Scope 1** emission sources are the stationary combustion of natural gas, kerosene, and bio-LPG for heat and energy generation, mobile combustion of diesel and petrol from the operation of EPA owned vehicles.

Indirect stationary combustion from purchased electricity is the only **Scope 2** emission source identified. These emissions are a result of stationary combustion at the site of electricity generation. The scope 2 emissions relate to lighting and heating of EPA buildings and mobile transport in EPA owned electric vehicles (EVs).

**Scope 3** emissions are optional to quantify and report under the GHG Protocol standard (WBCSD and WRI, 2004). Further assessment of the EPA's Scope 3 activities was carried out by the internal Green Team in 2021 to identify which additional activities merited inclusion in the carbon report. The feasibility of the inclusion of all Scope 3 activities in carbon reporting was assessed during the consultation process based on the quality of data currently recorded by the EPA, the level of effort required to gather

datasets, and their relevance to the overall carbon footprint. The aim was to identify the activities that were material to the EPA's carbon footprint (i.e., heavy emitters) and to consider their inclusion in the overall emissions calculation. The EPA formally adopted Scope 1, 2 and 3 activities for use in all future emissions calculations as shown in the following Table 2.

Over time, activities will be added to Scope 3 that have a material impact on overall emissions as soon as the data becomes readily available.

Table 1: EPA CO<sub>2</sub> Emission Sources

	Emission Source	Nature of Source	EPA Location
Scope 1	<b>Heating sources (Stationary combustion) in EPA Buildings</b>	Stationary combustion of natural gas, kerosene, wood chip and bio-LPG for space heating	Wexford, Dublin, Cork, Monaghan, Kilkenny & Castlebar
	<b>EPA Owned Vehicles</b>	Mobile combustion of petrol and diesel	Wexford, Dublin, Cork, Monaghan, Kilkenny & Castlebar
Scope 2	<b>Purchased Electricity</b>	Indirect Stationary Combustion	Wexford, Dublin, Cork, Monaghan, Kilkenny & Castlebar
Scope 3	<b>Business Travel</b>	Mobile combustion of motor fuel (Private Motor Vehicle and Public transport (Bus, Taxi, Rail (National, DART & Luas)) Mobile combustion of aeroplane fuel	Wexford, Dublin, Cork, Monaghan, Kilkenny & Castlebar
	<b>Employee Commuting</b>	Mobile combustion of motor fuel	Wexford, Dublin, Cork, Monaghan, Kilkenny & Castlebar
	<b>Purchased Goods and Services</b>	Water consumption	Wexford, Dublin, Cork, Monaghan, Kilkenny & Castlebar
	<b>Waste Disposal</b>	EPA generated non-hazardous and hazardous waste for recovery/disposal	Wexford, Dublin, Cork, Monaghan, Kilkenny & Castlebar
Biomass	<b>Wood Chip and Bio-LPG</b>	Stationary combustion of wood chip and Bio-LPG fuel for space heating	EPA HQ Wexford

### 3 REPORTING BOUNDARIES

The GHG Protocol methodology categorises emissions sources into direct (Scope 1) and indirect emissions (Scope 2 & Scope 3).

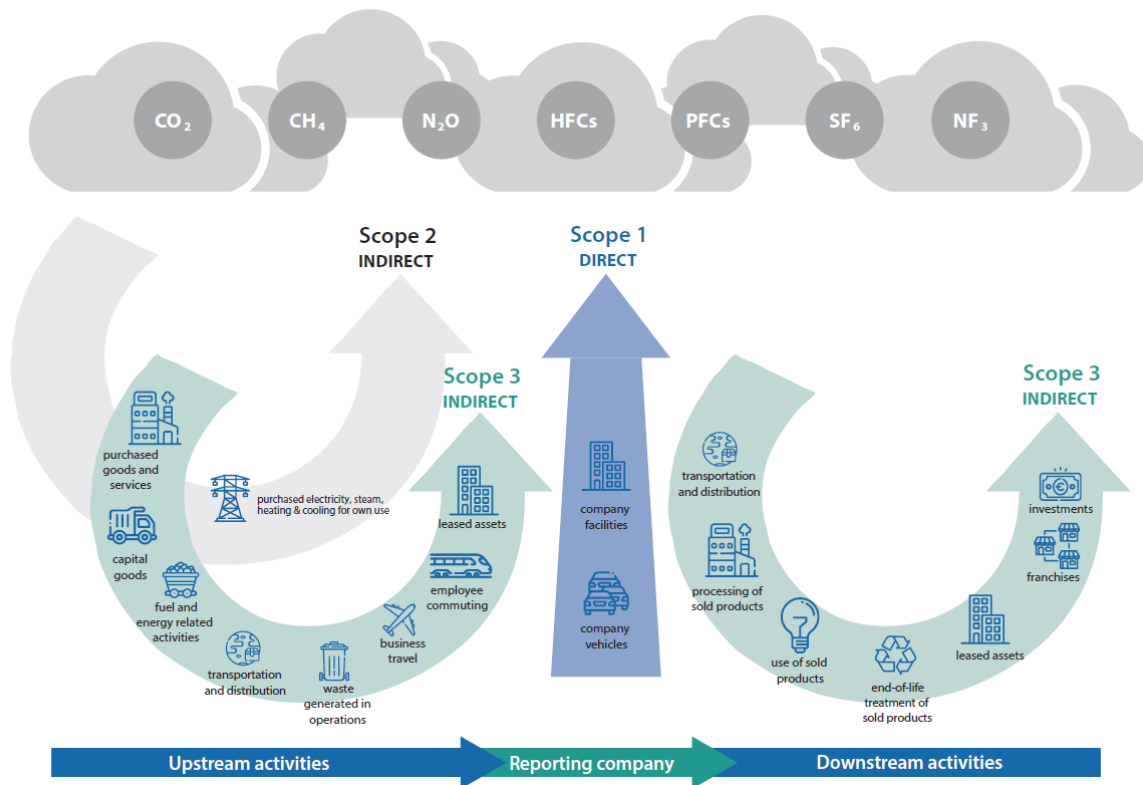


Figure 5: Scope 1, 2, 3 activities under the GHG Protocol

The EPA’s activities are currently categorised into three scopes as listed below.

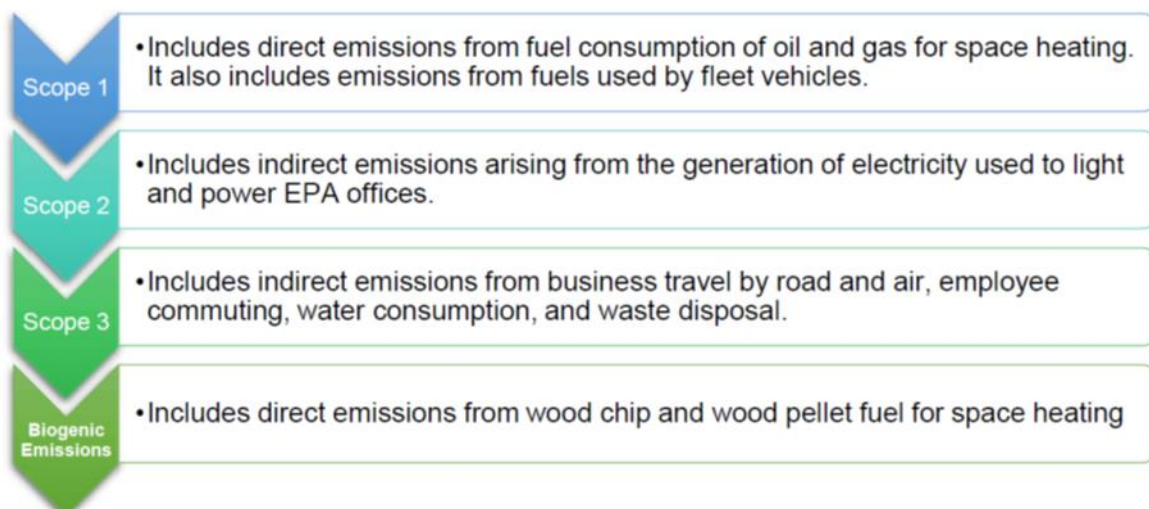


Figure 6: EPA Activities by Scope

### 3.1 Direct Emissions (Scope 1)

Direct emissions are emissions from sources which are owned or controlled by the EPA. All direct emissions generated from EPA activities are included in Scope 1. These include emissions from the stationary combustion of natural gas, kerosene, and bio-LPG for space heating; and emissions from the mobile combustion of diesel and petrol in EPA-owned vehicles as shown in Table 3.

Table 2: Scope 1 Emissions

Source Category	Activity Name	EPA Location
<b>Mobile Combustion – Owned Fleet</b>	EPA Owned Fleet – Fuel Cards	EPA Regional Inspectorates - Dublin, Kilkenny, Monaghan, Castlebar, Cork
<b>Stationary Combustion</b>	Natural Gas	EPA Regional Inspectorates - Dublin, Kilkenny, Castlebar
<b>Stationary Combustion</b>	Kerosene	EPA Regional Inspectorates – Monaghan & Cork
<b>Stationary Combustion</b>	Bio LPG	EPA Headquarters Wexford
<b>Stationary Combustion</b>	Wood Chip	EPA Headquarters Wexford

Biogenic emissions are reported separately to the three scopes as per GHG Protocol methodology. Biogenic emissions incorporate direct emissions from the combustion of wood chip and Bio-LPG (CH<sub>4</sub> & N<sub>2</sub>O fraction) for space heating at EPA HQ in Wexford.

### 3.2 Indirect Emissions (Scope 2)

Indirect emissions are emissions which are a consequence of the activities of the EPA but occur at sources owned or controlled by another entity. All indirect emissions are included in scopes 2 and 3.

#### 3.2.1 Scope 2 Indirect Emissions

Scope 2 includes indirect emissions arising from the generation of electricity. These emissions are a result of stationary combustion at the site of electricity generation. The scope 2 emissions relate to lighting and heating of EPA buildings and mobile transport in EPA owned electric vehicles (EVs).

Table 3: Scope 2 Emissions

Source Category	Activity Name	EPA Location
<b>Purchased and Used electricity</b>	Electricity	EPA Regional Inspectorates - Dublin, Kilkenny, Monaghan, Castlebar, Cork. EPA Headquarters Wexford – Lighting and heating of buildings, Laboratories, and canteen under the Operational Control of the EPA

<b>Purchased and Used electricity</b>	Electricity	EPA Regional Inspectorates - Dublin, Kilkenny, Monaghan, Castlebar, Cork. EPA Headquarters Wexford – charging of EPA owned (fleet) Electric vehicles (EVs)
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### 3.2.2 [Scope 3 Indirect Emissions](#)

In 2021 the Green Team led a screening exercise to evaluate the EPA activities that fell within Scope 3 emissions to be included in the Carbon report in line with GHG Protocol Standard. The aim was to identify the activities that are material to our carbon footprint (i.e., heavy emitters) and consider their inclusion in the overall carbon emissions calculation.

The Scope 3 Standard recommends that organisations identify which scope 3 activities are expected to have the most significant emissions, offer the most significant reduction opportunities, and are most relevant to the company’s business goals. The relevant EPA activities falling within the Scope 3 emissions categories (voluntary for inclusion) are listed in Table 5 below.

*Table 4: EPA Activities which fall within Scope 3*

Scope 3 Emissions	Activity	Relevance to EPA Activity (Upstream, Downstream or Not Applicable)
<b>1. Purchased Goods and Services</b>	<ul style="list-style-type: none"> <li>Laboratory supplies</li> <li>Stationary, Paper, Ink</li> <li>IT Services</li> <li>IT equipment</li> <li>Construction materials</li> <li>Outsourced Contractor services -Construction</li> <li>Facilities fit out (maintenance, carpets, painting, lighting)</li> <li>Provision of Clean Water</li> </ul>	Upstream
	<ul style="list-style-type: none"> <li>Offsite Storage of EPA Files</li> <li>Outsourced contractor services – legal, consultancy, maintenance, IT, Security, offsite file storage, monitoring,</li> <li>Events management</li> <li>Courier Services</li> <li>Landscaping</li> <li>Use of Clean Water</li> </ul>	Downstream
<b>2. Capital Goods</b>	<ul style="list-style-type: none"> <li>Laboratory Equipment (machines)</li> <li>Vehicles and Plant</li> <li>Furniture</li> </ul>	Upstream
<b>3. Fuel &amp; energy related activities (not included in Sc 1 or Sc 2)</b>	<ul style="list-style-type: none"> <li>Other fuels - sampling activities, pumps boats,</li> </ul>	Downstream
<b>4. Upstream Transportation and Distribution</b>	<ul style="list-style-type: none"> <li>Transportation of Goods and Services</li> <li>Transportation of related activities - Purchased Fuels, Biomass</li> </ul>	Upstream
<b>5. Waste Generated in operations</b>	<ul style="list-style-type: none"> <li>Waste disposal of EPA generated waste</li> </ul>	Upstream
<b>6. Business travel</b>	<ul style="list-style-type: none"> <li>All other travel on vehicles not owned/controlled by EPA including private motor vehicles, public transport by road and rail and air travel</li> </ul>	Downstream

Scope 3 Emissions	Activity	Relevance to EPA Activity (Upstream, Downstream or Not Applicable)
	<ul style="list-style-type: none"> <li>Hotel Stays</li> </ul>	
<b>7. Employee Commuting</b>	<ul style="list-style-type: none"> <li>Commuting to Work</li> <li>Working from Home</li> </ul>	Downstream

The feasibility of including all Scope 3 activities in this carbon report was assessed during the screening process. Factors such as the quality of data currently recorded by the EPA, the level of effort required to gather datasets and their relevance to the overall carbon footprint were considered.

Challenges were identified that required consideration within the EPA. The main challenges identified were:

- **Data availability:** Scope 3 covers a broad range of goods and services. The level of readiness of external providers to provide the required data is low at present but is expected to improve in the coming years; and
- **Resource Commitment:** Capturing data begins at procurement stage and requires on-going effort particularly where services are ongoing (e.g., outsourced sampling, consultancy). A resource commitment will be required from all business units procuring goods & services and a centralised resource will be required to support and co-ordinate the data gathering/reporting.

While these challenges exist for all organisations, the EPA ambition is to add activities that have a material impact as soon as the data becomes readily available. To this end the Green Team has developed a Materiality Matrix that will be used to determine the sequence new activities to be added to Scope 3.

### 3.2.3 [Materiality Matrix](#)

A set of criteria was developed to assist in the evaluation of the identified Scope 3 emissions sources of relevance to the EPA. The criteria were sourced from the GHG Protocol and additional criteria were added to provide a specific context for EPA when screening Scope 3 activities. The GHG Protocol criteria are presented in Figure 6 below.



**Table [II] Criteria for identifying relevant scope 3 activities**

<b>Criteria</b>	<b>Description of activities</b>
<b>Size</b>	They contribute significantly to the company's total anticipated scope 3 emissions
<b>Influence</b>	There are potential emissions reductions that could be undertaken or influenced by the company
<b>Risk</b>	They contribute to the company's risk exposure (e.g., climate change related risks such as financial, regulatory, supply chain, product and technology, compliance/litigation, and reputational risks)
<b>Stakeholders</b>	They are deemed critical by key stakeholders (e.g., customers, suppliers, investors or civil society)
<b>Outsourcing</b>	They are outsourced activities previously performed in-house or activities outsourced by the reporting company that are typically performed in-house by other companies in the reporting company's sector
<b>Sector guidance</b>	They have been identified as significant by sector-specific guidance
<b>Spending or revenue analysis</b>	They are areas that require a high level of spending or generate a high level of revenue (and are sometimes correlated with high GHG emissions)
<b>Other</b>	They meet any additional criteria developed by the company or industry sector

Source: Adapted from table 6.1 from the *Scope 3 Standard*

*Figure 7: Criteria for identifying relevant Scope 3 activities [Source: GHG Protocol]*

A rating score was applied to the criteria which resulted in a materiality matrix being developed. Each of the EPA activities which fell within the GHG Protocol Scope 3 categories were scored in line with the materiality matrix. The results provided confidence in the Scope 3 activities included in the data being reported and identified additional Scope 3 categories that will be considered for potential future inclusion. Scope 3 activities that have been included in the 2022 Carbon report is presented in Table 6.

*Table 5: Scope 3 inclusions*

<b>Scope 3 (Indirect) emissions</b>	<b>EPA Activity</b>	<b>EPA Location</b>
<b>Business travel (downstream)</b>	All business travel on vehicles not owned/controlled by EPA including air travel, public transport (buses, trains, taxis) and travel by road in private vehicles (expensed travel)	<b>All Locations</b>
<b>Waste generation (in operations)</b>	Waste recycling and disposal of EPA generated waste	<b>All Locations</b>
<b>Employee commuting (downstream)</b>	Commuting to work by car, bus, train, tram or motorcycle	<b>All Locations</b>
<b>Purchased goods and services (downstream)</b>	Use of clean water	<b>All Locations</b>

### 3.3 Progressive approach to carbon reporting

The first essential steps were made in 2021 and 2022 in terms of reporting against the 2030 Climate Action targets. This step focused on strengthening and streamlining our existing data collection process. An environmental database was enhanced and in use throughout all locations through the SEM's. This database forms a central repository for relevant energy, electricity, waste, water, and employee (numbers only) data that must be recorded within the EPA.

The Green Team has spent considerable time in 2023 reviewing and validating the 2022 Scope 1, 2 and 3 data to ensure that information included in this report is accurate and representative of our activities.

It is planned to build on this approach for 2023 data and the materiality matrix will be reviewed to extend the number of activities that the EPA include under scope 3. In line with SEAI public sector reporting the mandatory inclusion of business travel by public transport was captured for 2022 data.

The extension of inclusions into Scope 3 will be on-going year on year until the EPA determines that all applicable and relevant activities are captured.

### 3.4 Base Period (2016-2018) Selected

When selecting a base year or period, the GHG Protocol recommends selecting a year which includes a complete dataset from which to glean comparisons from the earliest relevant point in time for which the EPA has reliable data for. There are two recommended methods of base year selection outlined the GHG Protocol: (a) selecting a single year of historical data (**base year**) or (b) selecting an average of multiple years (**base period**).

The selection of a **base period** allows us to balance the effort of data gathering with the potential impacts of early action. Using multi-year base periods has the added advantage of smoothing out any unrepresentative data within years (e.g., increased heating needs due to extremely cold winters).

The National Climate Action Plan sets out Public Sector Decarbonisation targets with the aim of reducing emissions by 51% by 2030. The base period of 2016-2018 for achieving this target is set out in the Climate Action Plan.

Aligning with the Climate Action Plan, we selected 2016-2018 as the most appropriate base period for reporting (See table 7). The timeframe is also more representative of the current situation with the EPA in terms of staffing numbers and provides an ambitious benchmark upon which to base future targets for reduction measures.

*Table 6: Total and averaged Annual base period emissions*

Year	2016	2017	2018	Base Period (Average 2016-2018)
<b>Biogenic Emissions</b>	194.33	185.95	154.70	178.33
<b>Scope 1</b>	319.15	322.89	348.69	330.24
<b>Scope 2</b>	576.91	592.46	534.14	567.84
<b>Scope 3</b>	724.45	736.07	790.79	750.43
<b>Total</b>	<b>1814.85</b>	<b>1837.36</b>	<b>1828.31</b>	<b>1826.84</b>



## Section B

## 4 CARBON EMISSIONS 2022

### 4.1 Methodologies used to calculate emissions.

An emission factor is a calculated ratio relating emissions to a measurement of activity; for example, using emissions from electricity production relate to the combustion of fuel to create the electricity and total electricity consumed nationally. An emission factor for emissions per kWh of electricity consumed within that nation may be calculated (WBCSD and WRI, 2004).

Emissions were calculated as carbon dioxide equivalent (CO<sub>2</sub>e). Emission factors that were as regionally reflective as possible, were chosen.

#### 4.1.1 [Use of Sustainability Software](#)

To condense and streamline the conversion of multiple activity/energy streams, the EPA engaged an online sustainability software platform. All data related to Scope 1, 2 and 3 activities is populated into a bespoke excel template and uploaded onto the online platform. Data is then converted into tonnes of CO<sub>2</sub> equivalent from their respective units (litres, kWhrs, passenger km travelled, vehicle km, m<sup>3</sup> of water used, tonnes of waste etc.) using industry/internationally recognised GHG emission conversion factors. The platform uses nationally and internationally recognised emissions factors from the SEAI and the UKs Department for Energy Security and Net Zero and DEFRA. Emissions factors applied for 2022 are presented in full in **Appendix A** to this report.

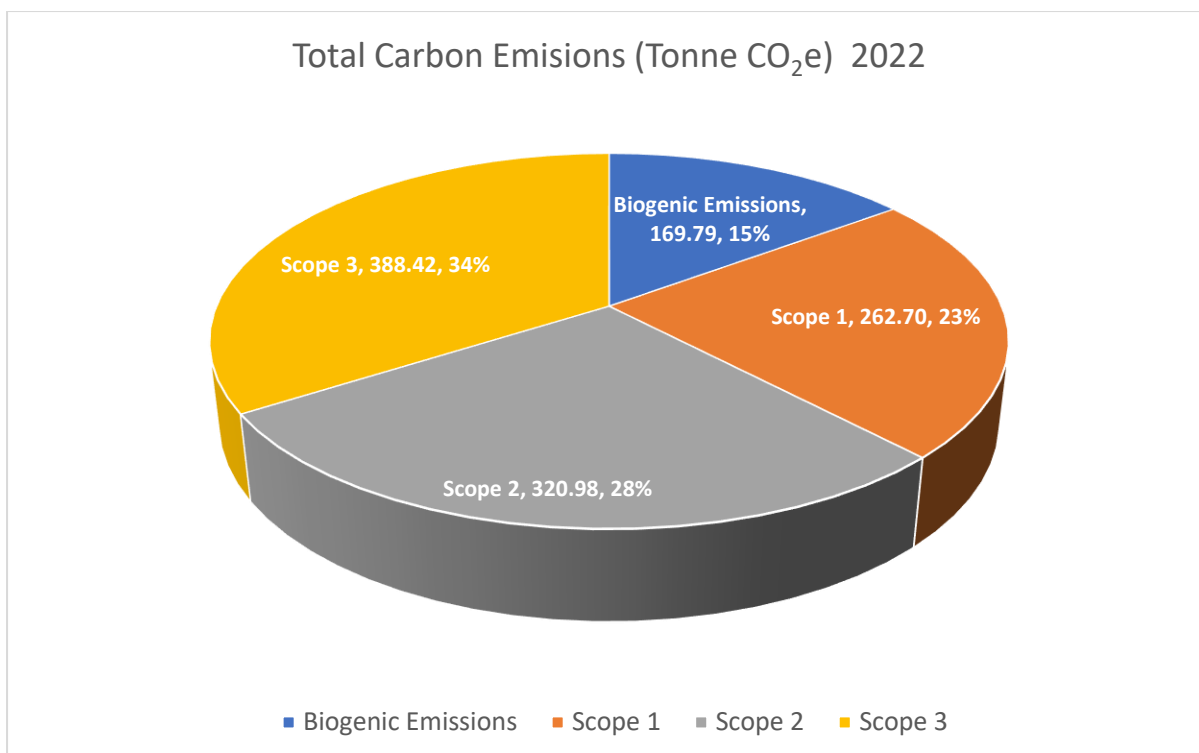
### 4.2 Annual Emissions Summary

Total emissions for 2022 are presented in the following tables (Table 8 and Table 9) and figures (Figure 7 & 8). The total annual emissions are presented in Tonnes of CO<sub>2</sub> equivalent.

*Table 7: Total Annual Carbon Emissions 2016-2022 (Tonnes CO<sub>2</sub>e)*

Scope	2016	2017	2018	2019	2020	2021	2022
Biogenic emissions (Biomass & Bio-LPG)	194.33	185.95	154.70	185.25	133.54	162.46	169.79
Scope 1	319.15	322.89	348.69	334.78	224.77	243.11	262.70
Scope 2	576.91	592.46	534.14	530.27	385.41	330.96	320.98
Scope 3	724.45	736.07	790.79	765.96	236.35	226.40	388.42
<b>Total Emissions</b>	<b>1,814.85</b>	<b>1,837.36</b>	<b>1,828.31</b>	<b>1,816.26</b>	<b>980.07</b>	<b>962.92</b>	<b>1,141.89</b>

Our total carbon emissions generated in 2022 was 1,142.89 tCO<sub>2</sub>e. The largest emissions were generated from Scope 3 activities accounting for 34% of total emissions with Scope 1 accounting for a 23% or slightly less than a quarter.



*Figure 8: Total Carbon Emissions (tCO<sub>2</sub>e) 2022 by Scope*

A third (34%) of total emissions were generated from Scope 3 activities mainly attributed to business travel and employee commuting activities. Our core operations returned to pre-pandemic levels in 2022 with the introduction of a blended working from home/office presence. Business travel by air resumed but less than 2019 levels and our core functions of site-based inspections and in person attendance at a range of meetings, appointments and events returned to normal.

*Table 8: Activity data 2019-2022 vs base period*

Activity	Base Period (2016-2018)	2019	2020	2021	2022
<b>Heating</b>	362.14	370.58	277.68	322.90	332.97
<b>EPA Owned Fleet</b>	146.42	149.45	85.96	82.66	99.52
<b>Purchased Electricity</b>	567.84	530.27	385.41	354.23	343.55
<b>Business Travel Air</b>	157.72	149.94	18.19	1.57	51.45
<b>Business travel - Mileage</b>	216.97	186.35	60.67	46.58	121.44
<b>Employee Commuting</b>	367.36	417.19	146.02	152.85	191.81
<b>Water usage</b>	0.72	0.99	0.70	0.14	0.46
<b>Waste Generated</b>	7.66	11.49	5.45	1.97	0.7
<b>Total Carbon Emissions (tCO<sub>2</sub>e)</b>	1,827	<b>1,816</b>	<b>980</b>	<b>963</b>	<b>1,142</b>

The increased presence in the offices did not have a significant effect on waste generated, water usage, or electricity usage in 2022 following the resumption of office-based functions. As personnel resumed site attendance, meetings, and events however a marked increase in business travel and employee commuting was observed in 2022.

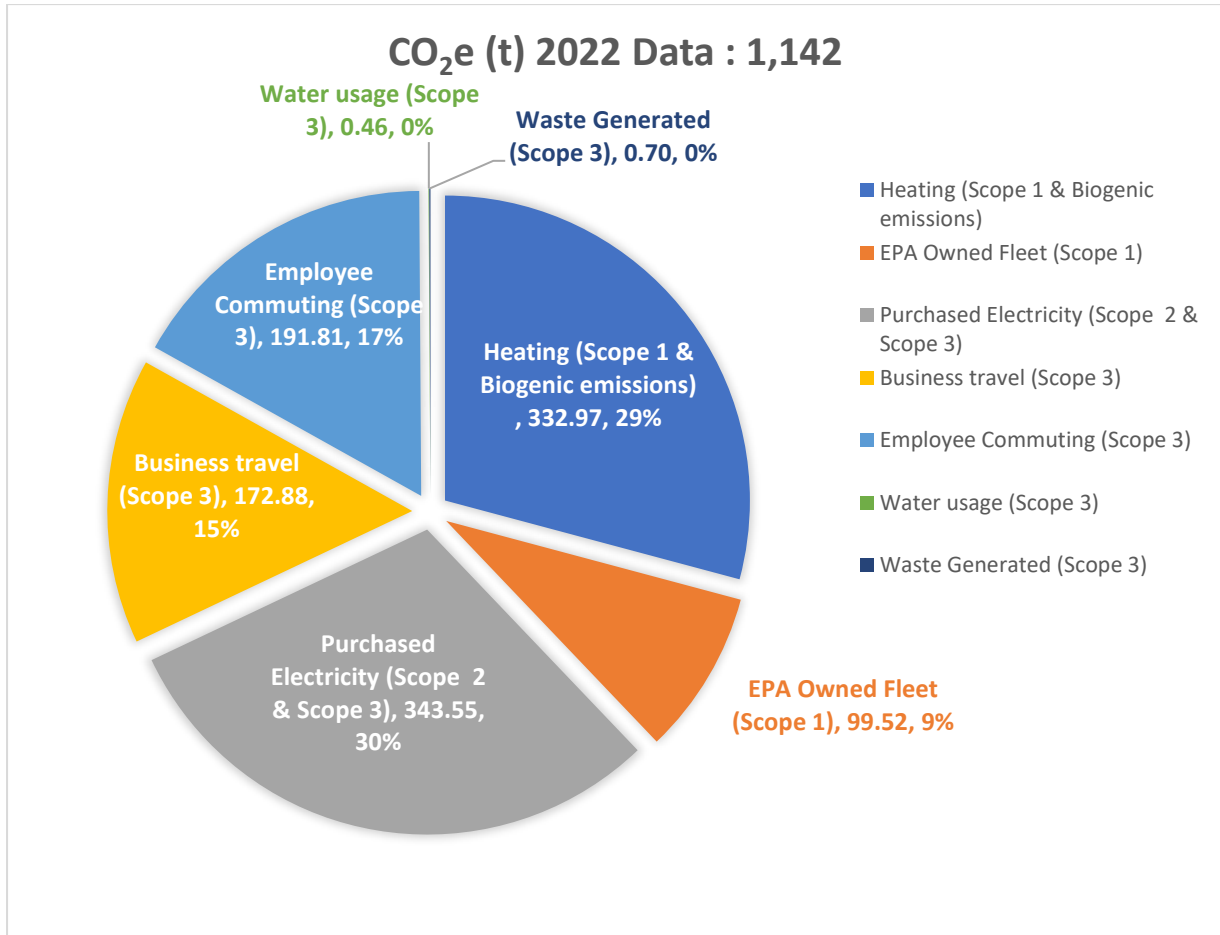


Figure 9: Carbon 2022 by Activity

### Total Carbon Emissions (tonnes CO<sub>2</sub>e) by Activity

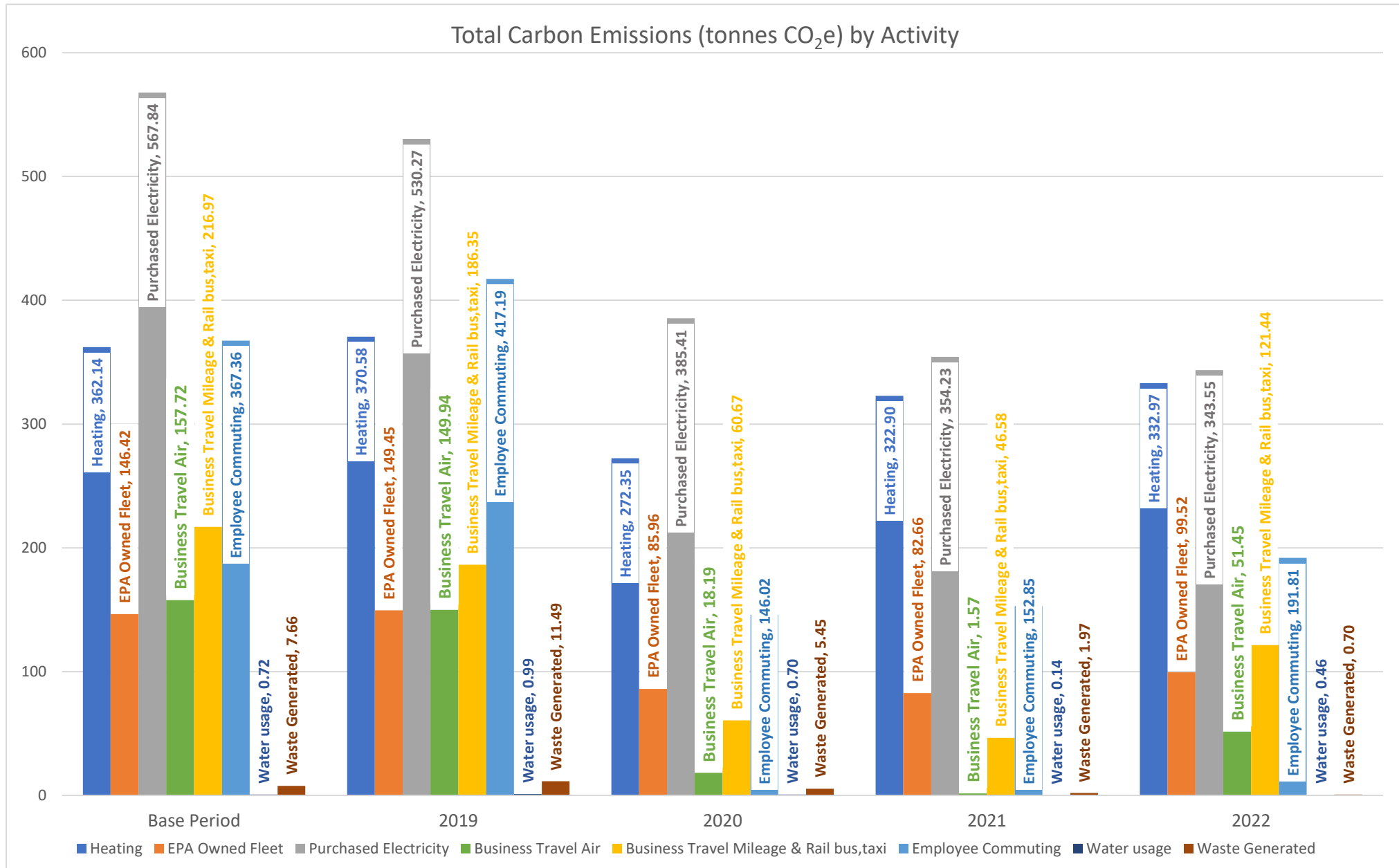


Figure 10: Carbon Emissions by Source Activity



## 4.3 Emissions Overview

### 4.3.1 Scope 1

Scope 1 emissions comprise direct emissions which were generated from stationary combustion of natural gas, wood chip, bio-LPG and kerosene at EPA Locations as well as the combustion of petrol and diesel in EPA fleet vehicles.

When compared against the Base Period (average 2016-2018), the results for 2022 indicate fluctuations in Scope 1 emissions with a 32% reduction in fuel usage from owned fleet, 33% increase in kerosene use, and a 15% reduction in natural gas consumption. The increased kerosene usage was due to a breakdown in the wood pellet boiler in Cork which meant that the facility had to revert to kerosene. Similar there was a partial failure of the heating system in Monaghan which resulted in having to run the boiler for a longer duration to reach optimum temperature to heat the building.

When compared to the 2019 there was a 2% reduction in natural gas usage and a 42% increase in kerosene usage in 2022. Similarly, there was a 20% increase in diesel and petrol usage to operate the EPA owned fleet of vehicles in 2022 in comparison to 2021.

Table 9: Scope 1 comparison with Base Period (Tonnes CO<sub>2</sub>e)

Source Category	Activity Name	Base Period	2019	2020	2021	2022
<b>Mobile Combustion</b>	Owned Fleet Fuel	146.42	149	85.96	82.67	99.52
<b>Mobile Combustion - Owned Fleet Total</b>		<b>146.42</b>	<b>149.45</b>	<b>85.96</b>	<b>82.67</b>	<b>99.52</b>
<b>Stationary Combustion</b>	Bio-LPG	0	0	0.04	0.03	0.03
	Kerosene	42.56	44.41	41.07	56.43	63.07
	LPG	21.38	9.64	0	0	0
	Natural Gas	115.24	123.09	93.10	98.06	95.69
	Wood Chip	5.22	6.973	4.054	5.929	4.39
	Wood Pellet	1.73	1.231	0.553	0	0
<b>Stationary Combustion Total</b>		<b>186.14</b>	<b>185.33</b>	<b>138.81</b>	<b>160.445</b>	<b>163.18</b>
<b>Grand Total</b>		<b>332.56</b>	<b>334.78</b>	<b>224.77</b>	<b>243.11</b>	<b>262.70</b>

We are transitioning towards more sustainable solutions and are moving to convert heating systems at EPA Locations to more sustainable types, e.g., conversion to electric heat pumps and installation of Solar PV in all locations. This transition will continue in line with the EPA's commitment under our own Strategy and National Climate Action Policies.

## 4.3.2 Scope 2 - Indirect Emissions

### 4.3.2.1 *Electricity*

Electricity data is captured by the Site Environmental Managers (SEM's) from onsite meters and logged onto the EPA's internal Environmental Database monthly. This data is recorded in Kilowatt hours and is verified by the SEM's monthly against electricity utility bills.

Electricity is used by the EPA to power and light all EPA offices (and more recently heat in both the Dublin & Monaghan offices) across the country. In addition, electricity is used to power the EPA's fleet of electric vehicles. At the time of writing, we had four fully electric vehicles in the fleet and five hybrid vehicles accounting for 26% of total fleet. We plan on expanding this number in 2024.

Emissions associated with electricity consumption (320.98 tCO<sub>2</sub>e) was significantly reduced (by 43%) in 2022 in comparison to the base period average (567.84 tCO<sub>2</sub>e). This reduction is due to the efficiency measures undertaken by the EPA over the past number of years and it is expected that this reduction in Scope 2 emissions will continue as further measures are implemented such as the installation of Solar PV at all EPA locations and the continued rollout of energy efficient lighting. The planned installation of Solar PV on all our buildings is estimated to reduce our emissions by 107tn CO<sub>2</sub>e and generate >28% of our electricity needs.

## 4.3.3 Scope 3 Emissions

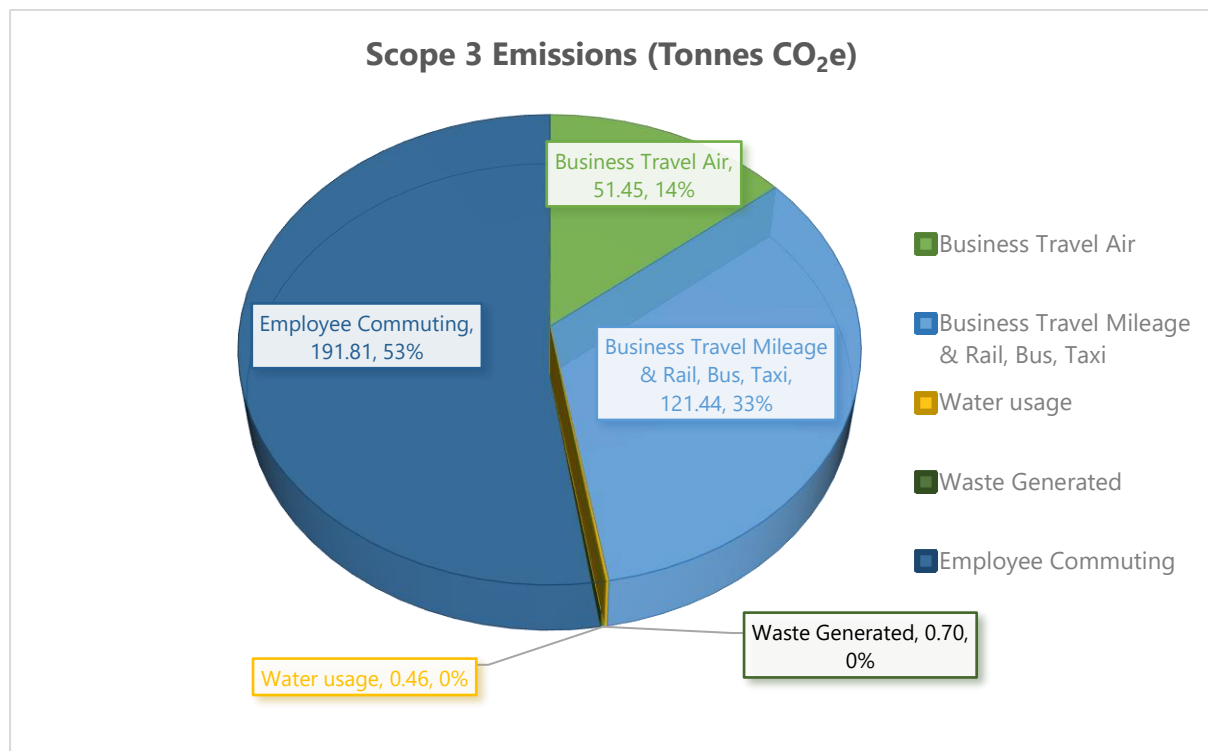


Figure 11: Scope 3 carbon emissions (Tonnes CO<sub>2</sub>e) breakdown 2022

Figure 11 above shows the percentage breakdown of Scope 3 emissions included in the 2022 Carbon Report. Most Scope 3 emissions are derived from emissions from mobile combustion during employee commuting (53%) and business travel by road, and public transport (33%).

Further analysis of the scope 3 emissions selected for inclusion in the Carbon Report is detailed below.

#### 4.3.3.1 Business travel (Air travel, Road travel by public transport and private car (expensed mileage))

Business travel is an essential requirement for the fulfilment of many of our core functions. Business travel by car is captured through the travel and subsistence claims for mileage. This data is logged by employees into the EPA’s expense claims system and includes information such as distance travelled, vehicle make and model, engine size and VRT tax band. The information is then used to consolidate total kilometres travelled by VRT band per EPA Location (where the staff member is normally based). This method of data capture has been in place at the EPA for many years and is well established.

When compared to the base period, travel by road has reduced by 44% (216.97 tCO<sub>2</sub>e [Base Period] vs 120.12 tCO<sub>2</sub>e [2022]). When compared to 2019 there has been a 35% reduction in travel by road.

With the easing of covid restrictions, 2022 was the first full calendar year that business travel by air resumed back towards pre-pandemic levels.

In 2022, Air travel generated 51.45 tCO<sub>2</sub>e of emissions and is still well below the Base period average (157.72t CO<sub>2</sub>e) and 66% lower than 2019 emissions levels.

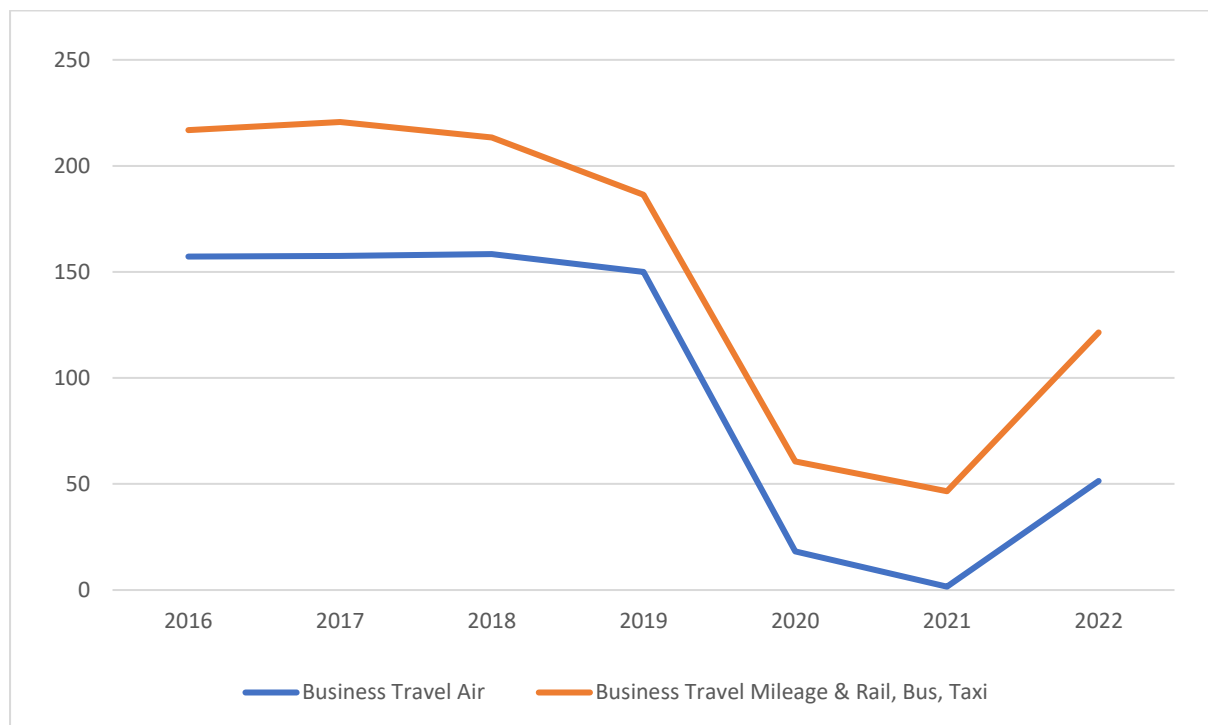


Figure 12: Business travel trends 2016-2022

In 2022, the SEAI brought in mandatory reporting of business travel by public transport. This includes expensed travel by rail, tram, bus, and taxi. In 2022, this activity generated 1.32 tonnes CO<sub>2</sub>e.

#### 4.3.3.2 Employee Commuting (car, rail, bus, motorcycle)

This category includes all commuting activities carried out by EPA staff in 2022 and covers travelling by all modes of transport from home to their normal place of work. Emissions arising from travel by private car, bus, train were included. Information on walking and cycling were collated also.

Data on commuting patterns was obtained via an online survey which was rolled out to all EPA staff in September 2023. The Survey asked the respondents about commuting patterns to and from work between January and December 2022. A summary of the survey questions is provided in Appendix B to this report. The survey request was open for responses until Mid-November to facilitate increased participation.

In efforts to increase participation rates following a low response rate in 2021, the decision was made to revert to a simplified survey format for 2022 without getting into the intricacies of make and model of road vehicle used but instead relying on the VRT tax band and generalised engine size/fuel type format.

Significant effort was made to encourage and engage with staff across the EPA to obtain a higher participation rate for the 2022 survey.

Response rates for the 2022 survey and previously conducted surveys are presented below.

Table 10: EPA Employee commuting survey response rates

Year of Survey	2014	2019	2021	2022
Total Number of FTE Staff	366	408	431	450
Total number of survey respondents	312	272	177	308
<b>Response Rate</b>	<b>85.25%</b>	<b>67%</b>	<b>41%</b>	<b>68%</b>

In line with GHG Protocol guidance, the responses from the survey were a sample of the total employee population and therefore the data was factored up to provide a figure representative of the whole EPA. Emissions were calculated for the responses received in the reporting year. This represented 68.68% (response rate) of the total EPA commuting emissions. The remaining 32% was factored by calculation and the use of an intermodal figure<sup>3</sup>.

Intermodal employee commuting for the reporting year and the base period were based on the extrapolation rates presented in Table 11.

Table 11: Extrapolation rates

Year	2016	2017	2018	2019	2021	2022
<b>Total Number of FTE Staff</b>	384	392	400	408	431	450
<b>Total number of survey respondents</b>	312	312	272	272	177	308
<b>Response Rate</b>	81.25%	79.59%	68%	66.667%	41.067%	68.444%
<i>Basis for Extrapolation Calculation</i>	18.75%	20.41%	32%	33.34%	58.93%	31.56%

<sup>3</sup> The total carbon contribution of the represented response rate was used as the basis of the extrapolation calculation rather than the carbon contribution of individual modes of transport

Annual employee commuting data has been recalculated as described above for all years from 2016 to 2022 to provide a comparable like-for-like benchmark and is presented graphically below in Figure 13.

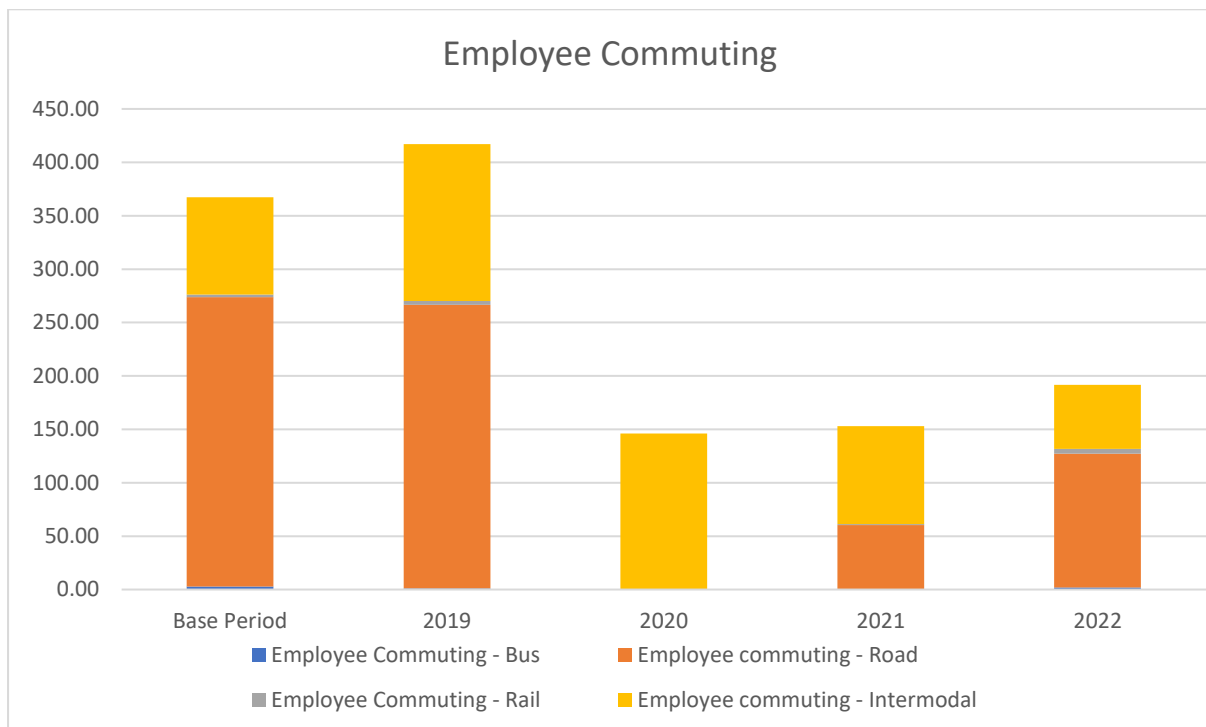


Figure 13: Employee commuting patterns 2016 - 2022

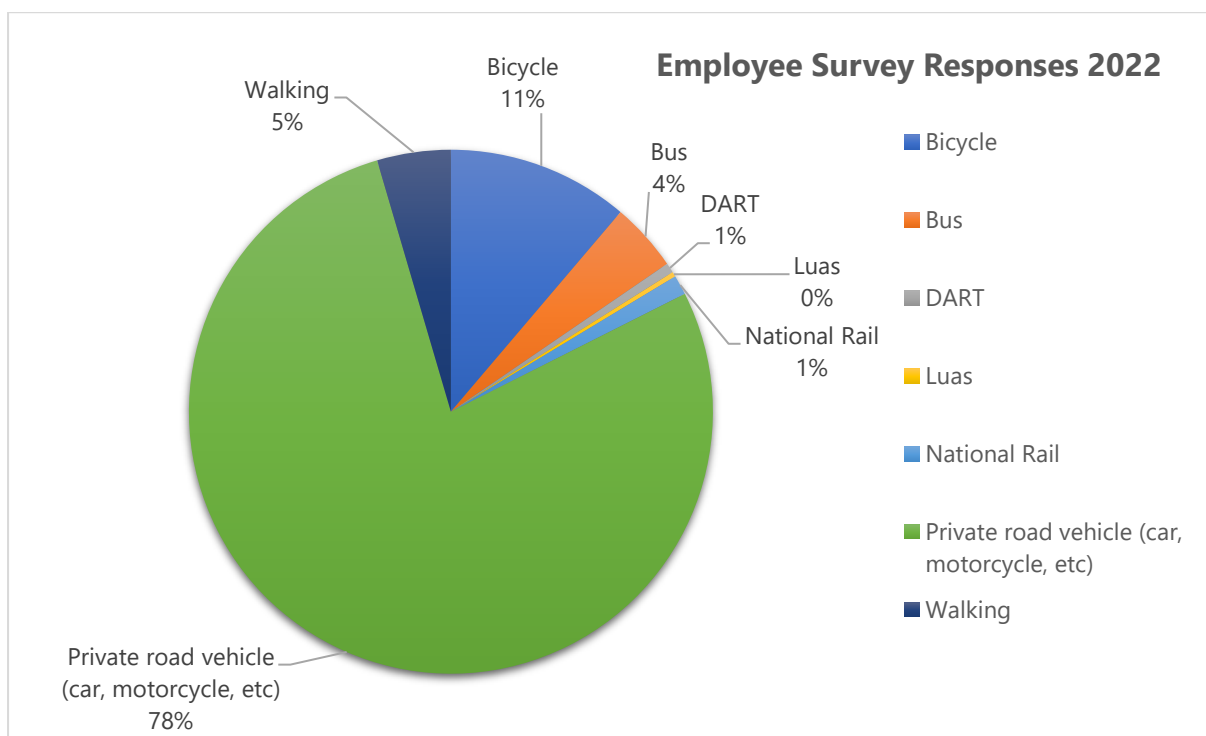


Figure 14: Commuting survey responses

Commuting patterns in 2022 indicated a heavy reliance on private vehicles to get to and from designated places of work. This is to be expected given the rural locations of many of the EPA offices. Despite this, in terms of emissions, the average reported distance travelled by employees in their daily commute ranged between 26km– 70km per day.

Use of public buses in 2022 (1.8 tCO<sub>2</sub>e) has shown a 36% reduction in emissions in comparison to the base period (2.82 tCO<sub>2</sub>e), however when compared to 2019 (1.16 tCO<sub>2</sub>e) commuting by bus increased by 56%. Overall carbon emissions generated by employee commuting has fallen by 175.55 tCO<sub>2</sub>e in 2022 from the Base Period which reflects a 48% reduction in emissions as a result of the blended working approach.

#### *4.3.3.3 Waste Generated in operations.*

Waste treatment in facilities owned or operated by third party contactors is included in Scope 3. Treatment of waste generated is categorised in the GHG protocol as an upstream Scope 3 category as the services are purchased by the EPA under contract. Waste treatment includes disposal at landfill, recovery for recycling, energy recovery, and composting. The EPA's Scope 3 emissions from waste generated in operations is derived from the Scope 1 and Scope 2 emissions of the solid waste management companies who are contracted to accept and treat the waste collected from the EPA.

For the purposes of the Carbon Report only non-hazardous solid wastes are included in Scope 3. Waste types included mixed municipal waste from offices and laboratories, non-hazardous mixed dry recyclables, and food waste from canteens. In 2022 waste generated represented <0.061% of Scope 3 emissions.

The EPA use a waste-type-specific method of emission calculation for the 2022 Carbon Report and have applied this to waste streams where standard recognised emission factors were readily available (refer to Appendix A to this report for emission factors).

The EPA generates some hazardous wastes from laboratories and general waste electrical materials at EPA locations; however, the quantities are not sufficient to justify the level of effort in calculating the total associated carbon emissions nor were there any appropriate emissions factors available for use.

Additionally, emissions associated from transportation of waste in waste collection vehicles operated by the waste contractor are not included in the emissions calculation for waste generated in 2022.

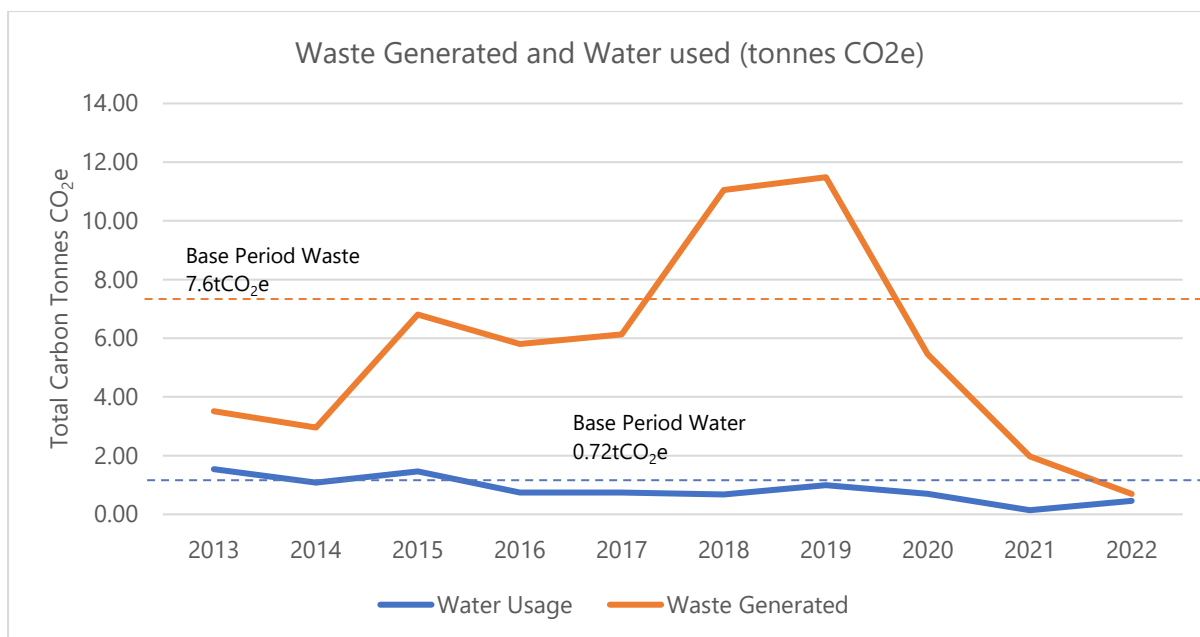


Figure 15: Waste and Water trends

#### 4.3.3.4 Purchased Goods and Services - Water Usage

Water usage is the only EPA activity included from Purchased Goods and Services. Water consumption by the EPA is mainly for domestic and laboratory analytical purposes. Continuous monitoring of water usage is the most useful way to detect leaks or anomalies.

The emissions associated with water usage is insignificant in comparison to the other Scope 3 activities; however, water is a precious resource, and the EPA are committed to ensure that water conservation and consumption is tracked across all locations.

Significant progress on water management has been made in the EPA over the last ten years. Meter reading/OPW metered readings are in place at all EPA locations. Rainwater harvesting is used in Wexford for toilet flushing. Drinking water filtration systems have been installed on mains water for drinking, preventing the generation of plastic bottles for drinking water. Water conservation projects have been rolled out in Dublin, Wexford, and Kilkenny where reduced flush cisterns, tap restrictors and waterless urinals have been installed.

Emissions associated with water usage in 2022 (0.46 tCO<sub>2</sub>e) were significantly reduced (down 37%) in comparison to the Base Period emissions. This is a result of blended working, repairs and conservation measures implemented which ensured that wastage was minimised. When compared to 2019 (0.99 tCO<sub>2</sub>e), a 54% reduction was observed.

## 4.4 Base Period (2016-2018) Emissions Profile

The chosen base period is an average of total emissions from 2016, 2017 and 2018 inclusive. See Figure 16 which shows the total emissions for 2019 - 2022 in comparison to the base period average. These years were selected as a representative benchmark from which to compare our carbon emissions to. It should be noted total emissions in 2022 were 20% higher [179 tonne CO<sub>2</sub>e] than 2021 levels. Total

emissions (1,142 tCO<sub>2</sub>e) for 2022 are still substantially (37%) lower than the chosen base period (1,826.84 tCO<sub>2</sub>e) overall and we continue our efforts to reduce carbon emissions across all of our operations.

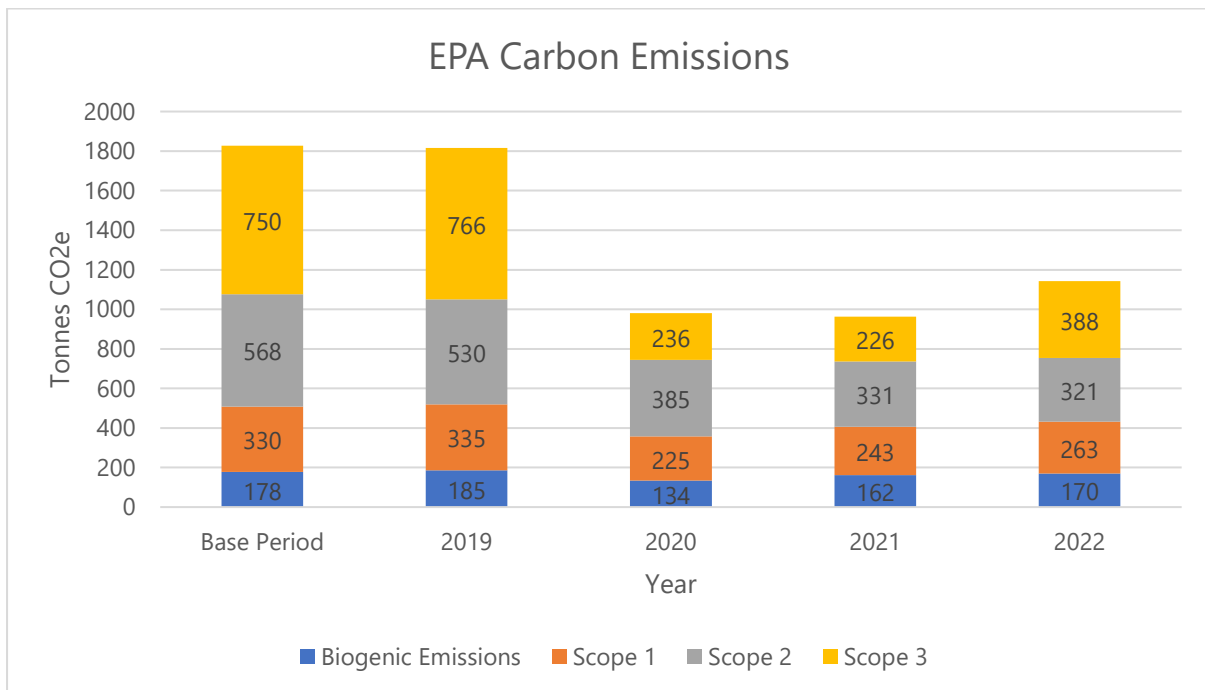


Figure 16: Total Emissions 2019-2022 by Scope

Figure 16 below provides an indicative trendline for carbon emissions since the 2016-2018 base period. It is anticipated that we will face continued challenges to maintain emissions at or below the chosen base period threshold as we continue to operate in the post pandemic era.

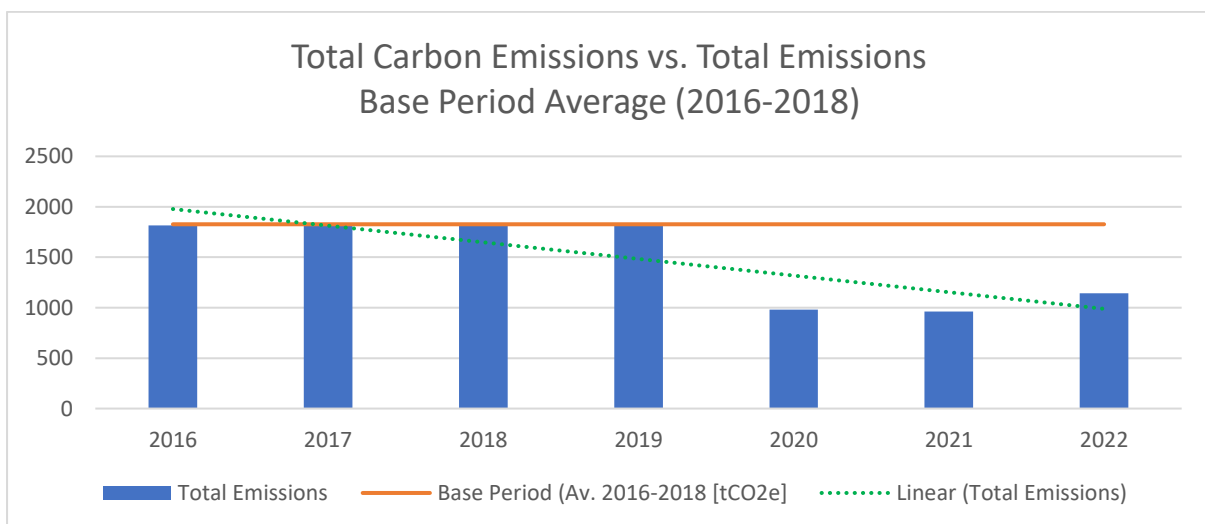


Figure 17: Total Carbon Emissions per year tracked against Base Period average.



## 4.5 Exclusions

The Scope 3 activities detailed in Table 13 have been excluded from the EPA Carbon Report for 2022. The EPA’s ambition is to add activities that have a material impact on emissions as soon as the data becomes readily available. Consequently, Scope 3 inclusions will need to be periodically reviewed using the materiality matrix tool.

Table 12: Scope 3 Exclusions Carbon Report 2021

Scope 3 (Indirect) emissions	EPA Activity
<b>Purchased goods and services (downstream)</b>	Offsite Storage of EPA Files, Outsourced contractor services – legal, consultancy, maintenance, IT, Security, monitoring, Events management, Courier Services, Landscaping,
<b>Fuel and Energy related activities (not included in scope 1 or scope 2) (downstream)</b>	Other fuels - sampling activities, pumps boats,
<b>Use of sold products (downstream)</b>	Use of product distributed during EPA Events
<b>Upstream Fuel and Energy related activities (not included in scope 1 or scope 2)</b>	Fuel and Energy used in upstream activities (e.g. fuel/energy used in power generation)
<b>Purchased goods and services (Upstream)</b>	Laboratory supplies, Stationary, Paper, Ink, IT Services, IT equipment Construction materials, Outsourced Contractor services - Construction Facilities fit out (maintenance, carpets, painting, lighting) Provision of Clean Water
<b>Upstream capital goods including vehicles, plant, buildings, and equipment</b>	Laboratory Equipment (machines), Vehicles and Plant, Furniture
<b>Upstream transportation and distribution</b>	Fuel used in the transport of Purchased Goods and Services
<b>Upstream waste generation</b>	Waste generated in the manufacture/supply of Purchased Goods and Services

## **5 GHG REDUCTION INITIATIVES AND PERFORMANCE TRACKING**

We have identified opportunities to demonstrate leadership as a public sector climate conscious organisation. Making public commitments and taking action to reduce carbon emissions is a priority for the EPA. We are also committed to staff engagement and participation in the climate conversation through facilitating a collective understanding of the EPA's own carbon emissions. This will enable better understanding for staff and wider stakeholders the issues involved and allow individual ownership of CO<sub>2</sub> emissions reduction efforts.

### **5.1 Reduction Initiatives Summary 2022**

Ireland's Climate Action Plan up to 2030 includes ambitious reductions and changes in energy use by way of a decarbonisation pathway and as such we are well placed to continue energy and carbon reduction initiatives with further building improvements planned for lighting upgrades with energy efficient LED, expansion of Solar PV, moving towards decarbonising our vehicles and a continued focus on the reduction of carbon emissions.

In order to build on our successes to date, we carried out detailed energy audits of all EPA buildings in order to identify both 'quick wins' and strategic ways to reduce carbon emissions and increase our energy efficiency. We are investing in more renewable heating solutions, efficient building systems and have developed a three-year rolling plan to increase efficiency and reduce emissions through improvement of building fabric (insulation, glazing, air tightness), adding of additional solar PV, LED, and geothermal solutions.

Prioritisation and selection of solutions are based on availability of budget, life-cycle costing, predicted carbon savings, energy efficiency gains and business continuity. We are committed to improving the energy efficiency of our buildings beyond 50%, and bring buildings to a minimum Non-Domestic Building Energy Rating (NDBER) of B.

### **5.2 Public Sector Statutory Performance Tracking obligations**

The National Energy Efficiency Action Programme (NEEAP) set a target for public bodies to improve its own energy efficiency by 33% by 2020. We have achieved significant success in relation to achieving the public sector energy efficiency savings by reducing our energy demand with a reduction of over 50% since 2006. Figure 18 details the update EPA Energy Performance Indicator profile 2006-2022.

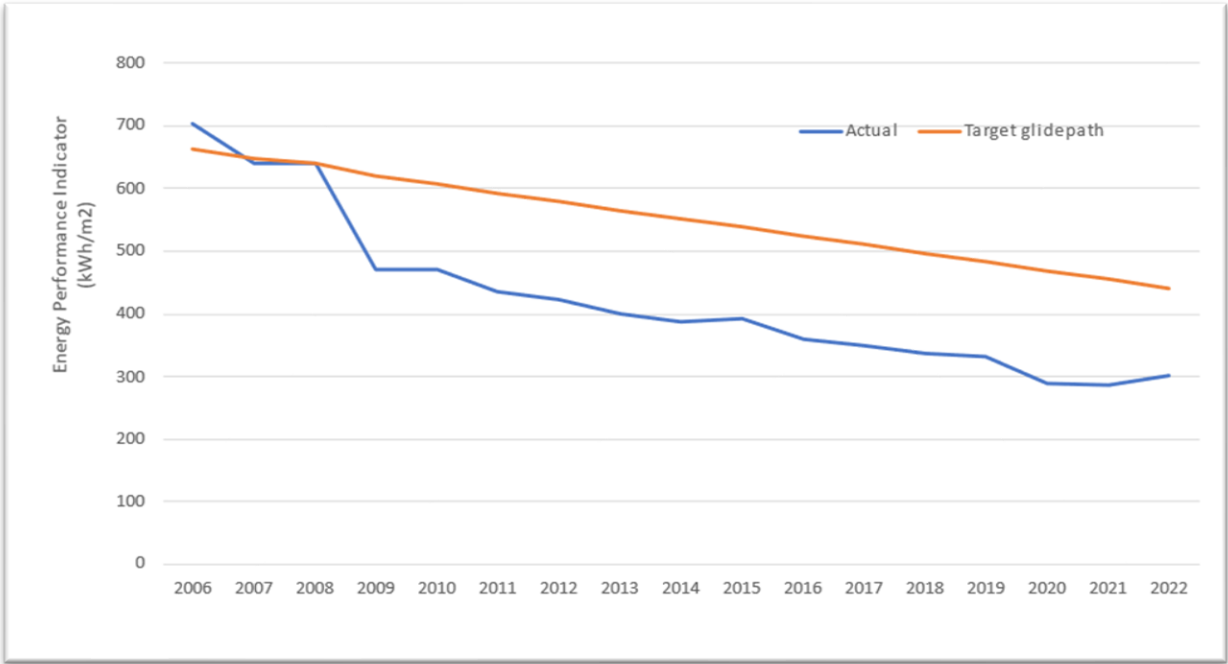


Figure 18: EPA Energy Performance Indicator 2006-2022

## 6 NEXT STEPS

We have made significant progress in 2022 evaluating and calculating the Carbon footprint associated with our activities. The commitment to obtaining accurate and meaningful carbon data is evident in the quality of empirical data collected and used as the basis for this report. To improve the accuracy of carbon reporting in the future there are a number of points to consider which are set out below.

### 6.1 Improvement plans for Scope 3 data capture.

#### 6.1.1 [Category 1 – Purchase goods and services](#)

As outlined in Section 3.2 the materiality matrix was developed in 2021 to assist with the screening process for future inclusions into Scope 3. There are plans to review this matrix to ensure that any potential activities from this category can be captured and included in 2023 carbon emission report.

#### 6.1.2 [Category 5 – Waste](#)

The waste category does not include hazardous waste; nor does it include transport emissions from waste collection vehicles travelling from EPA locations to the various waste treatment destinations. All waste streams and activities associated with waste collection will be included in future reports once data is available.

#### 6.1.3 [Category 6 – Business travel](#)

During 2022, the SEAI required all Public Sector bodies to report emissions data on business travel by public transport. This data capture is facilitated through expenses reports in the EPA's timekeeping system and once available, the carbon emissions can be calculated via the Carbon accounting software platform.

A complete review of all employee vehicles used for mileage expense claims will be undertaken to facilitate the improved accuracy of the Carbon emissions generated for various VRT bands assigned.

#### 6.1.4 [Category 7 – Commuting](#)

The response rate to the 2022 employee commuting survey was vastly improved in comparison to the 2021 survey results, some minor edits are required to the survey questions in advance of the roll out of the 2023 in the spring of 2024.

## 7 CONCLUSION

This Carbon Report presents the EPA's total calculated carbon emissions arising from Scope 1, Scope 2 and Scope 3 activities of the EPA in 2022. The methods used for creating the Base Period carbon data have also been detailed.

The average Base Period emissions for 2016-2018 are 1,827 tCO<sub>2</sub>e. Carbon emissions in 2022 were 37% below that figure at 1,142 tCO<sub>2</sub>e.

## 8 REFERENCES

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# Appendix A

## Emission Factors

Scope	Activity Name	Activity Input	Emission Type	Units	Publisher	Publication Title	Date Emission Factor Published	Published Emission Factor	CO <sub>2</sub> e Units
Biogenic Emissions	Stationary Combustion	Bio-LPG	Biofuel CO <sub>2</sub>	litres	DEFRA/DECC	2022 UK Government GHG Conversion Factors for Company Reporting	22/06/2022	1.54	kg CO <sub>2</sub> e/L
		Wood Chips	Biofuel CO <sub>2</sub>	kWh	DEFRA/DECC	2022 UK Government GHG Conversion Factors for Company Reporting	22/06/2022	0.35357	kg CO <sub>2</sub> e/kWh
Scope 1	Stationary Combustion	Bio LPG	CH <sub>4</sub>	litres	DEFRA/DECC	2022 UK Government GHG Conversion Factors for Company Reporting	22/06/2022	0.00214	kg CO <sub>2</sub> e/L
		Kerosene	CO <sub>2</sub>	litres	SEAI	Energy in Ireland. 2021 Report	15/12/2021	2.524075	kg CO <sub>2</sub> e/L
		Natural Gas	CO <sub>2</sub>	kWh	SEAI	Energy in Ireland. 2021 Report	15/12/2021	0.182546	kg CO <sub>2</sub> e/kWh
	Mobile Combustion - EPA Owned Fleet	Diesel	CO <sub>2</sub>	litres	SEAI	Energy in Ireland. 2022 Report	15/12/2022	2.682652	kg CO <sub>2</sub> e/L
		Petrol	CO <sub>2</sub>	litres	SEAI	Energy in Ireland. 2022 Report	15/12/2022	2.355616	kg CO <sub>2</sub> e/L
	Stationary Combustion	Wood Chips	CO <sub>2</sub>	kWh	DEFRA/DECC	2022 UK Government GHG Conversion Factors for Company Reporting	22/06/2022	0.01053	kg CO <sub>2</sub> e/kWh
Scope 2	Electricity	Electricity	CO <sub>2</sub>	kWh	AIB	European Residual Mixes. Results of the calculation of Residual Mixes for the calendar year 2021	31/05/2022	570.09	g CO <sub>2</sub> e/kWh
					SEAI	Energy in Ireland. 2021 Report.	31/12/2021	295.8	g CO <sub>2</sub> e/kWh
Scope 3	Air Business Travel	International, to/from non-UK - Economy class	CH <sub>4</sub>	passenger km	DEFRA/DECC	2022 UK Government GHG Conversion Factors for Company Reporting	22/06/2022	0.000005	kg CO <sub>2</sub> e/pkm
			CO <sub>2</sub>	passenger km				0.07364	kg CO <sub>2</sub> e/pkm

# Appendix B

## Commuter Survey 2022



### EPA Commuter survey 2022

We are gathering information to calculate the carbon footprint associated with your commute to and from the office in 2022. This information will be used in the calculation of the EPA's total carbon footprint in 2022. This survey will take 5 minutes to complete.

Please have the following items to hand to complete this survey:

1. Your Vehicle Registration Number (if your vehicle is pre 2008 you will also require the engine size and fuel type )
2. Google maps – to calculate the distance of your commute.

**Question 1.1.** The data collected in this survey will be used for reporting, analysis and management of EPA's greenhouse gas emissions arising from transport.

- I accept
- I do not accept

### Question 1.2

Please insert your Employee ID number \_\_\_\_\_ (e.g. 0207)

Your id number can be found on the top left-hand side of the screen on the Core System at log in.

### Question 1.3

Were you working for the EPA in 2022?

- Yes
- No

### Question

1.4

Please select your designated EPA Location in 2022:

- |                                      |  |
|--------------------------------------|--|
| Castlebar, Co Mayo (incl. Athlone)   | Monaghan, Monaghan                     |
| Clonskeagh Sq., Dublin               | Richview, Dublin,                      |
| Inniscarra, Co Cork (incl. Limerick) | EPA Headquarters, Johnstown Castle, Co |
| Callan, Co Kilkenny                  | Wexford                                |



**Question**

What office are you assigned to?

- ODG
- OCCS
- OEA
- OEE
- OES
- ORM

**Question 1.6**

**How did you commute to work in 2022?**

- Walking
- Bicycle
- Bus
- Luas
- Dart
- National Rail
- Private Road Vehicle (Car, motorcycle, etc)

**Question 1.7**

**What is your total daily commute in km? This refers only to your commute from home to work - not site inspections or other business-driving. If you commute by car some days and bike other days, please estimate your total daily commute for each mode of transport.**

**Note: Multiply your one-way daily commute by 2 to get total KM travelled each day.**

Walking	_____	Bicycle	_____
Private Car	_____	Motorbike	_____
Carpool	_____	Bus	_____
Luas	_____	Dart	_____
National Rail	_____	Other	_____

**Question 1.8**

**What VRT band is your car in? For cars sold since 2008, you can find your VRT band and associated CO<sub>2</sub> emissions here: <https://www.motortax.ie/OMT/motortaxinfoeg.do>**

Response

- I don't use a car to commute.
- 0 –1 gr/km CO<sub>2</sub> (electric car)
- 1-50 gr/km CO<sub>2</sub>
- 51-80 gr/km CO<sub>2</sub>
- 81-90 gr/km CO<sub>2</sub>
- 91-100 gr/km CO<sub>2</sub>
- 101-110 gr/km CO<sub>2</sub>

- 111-120 gr/km CO<sub>2</sub>
- 121 – 130 gr/km CO<sub>2</sub>
- 131-140 gr/km CO<sub>2</sub>
- 141 – 150 gr/km CO<sub>2</sub>
- 151 – 160 gr/km CO<sub>2</sub>
- 161 – 170 gr/km CO<sub>2</sub>
- 171 – 190 gr/km CO<sub>2</sub>
- 191 – 200 gr/km CO<sub>2</sub>
- 201 – 225 gr/km CO<sub>2</sub>
- 226 – 999 gr/km CO<sub>2</sub>
- It's not in these bands, its pre-2008 (go to question 1.9)

### Question 1.9

If you don't have a VRT band what is the engine size of your vehicle

Petrol Car <0.9; 0.9-1.2l; 1.21-1.5; 1.51-1.7; 1.71-1.9; >1.9; >3.0

Diesel Car 1.2-1.5; 1.51-1.7l; 1.71-1.9l; >1.9.

Small Motorbike, up to 125cc

Medium Motorbike, 125cc to 500cc

Large Motorbike, over500cc

Thank you for your time If you would like to provide us with feedback on the survey, please do so in the box below:

# Appendix C

## Emissions Inventory Report



### GHG Protocol Emissions Inventory Report

<b>Company:</b>	<b>EPA</b>			
<b>Scope:</b>	1, 2, 3, Biogenic Emissions, Outside of Scopes			
<b>Source Categories:</b>	Purchased and Used Electricity, Stationary Combustion, Mobile Combustion - Owned Fleet, Employee Business Travel, Employee Commuting, Water, Waste			
<b>Activity Types:</b>	Stationary Fuel Use, Purchased & Used Electricity, Road Transport, Rail Transport, Air Transport, Water, Waste, Inter-modal Travel, Electricity Generation			
<b>Organisation Level:</b>	EPA			
<b>Period:</b>	01/01/2022 - 31/12/2022			
<b>GHG Emissions disaggregated by Scope</b>				
<b>Scope Name</b>	<b>tonne</b>	<b>tonne Location based</b>	<b>tonne Market based</b>	
<b>Biogenic Emissions</b>	169.79			
<b>Scope 1</b>	262.70			
<b>Scope 2</b>		320.98	618.61	
<b>Scope 3</b>	388.42			
<b>Scope</b>	<b>Biomass</b>	<b>CO2</b>	<b>CH4</b>	<b>N2O</b>
<b>Biogenic Emissions</b>	169.789840			
<b>Scope 1</b>		262.702878		
<b>Scope 2</b>				

<b>Location based</b>		320.976712		
<b>Market based</b>		618.612629		
<b>Scope 3</b>		388.140597	0.004465	0.274259
<b>CO2 Emissions from Biogenic combustion (Biomass) in tonne CO2</b>				
<b>Carbon Offsets Purchased in tonne CO2</b>				
<b>Carbon Captured and Stored in tonne CO2</b>				
<b>GHG Emissions Summary</b>				
		<b>tonne CO2e Location based</b>	<b>tonne CO2e Market based</b>	
<b>Gross Emissions (Scope 1, 2, 3)</b>				
<b>Scope 1</b>		262.70	262.70	
<b>Scope 2</b>		320.98	618.61	
<b>Scope 3</b>		388.42	388.42	
<b>Climate Mitigation</b>				
<b>Net Emissions</b>		972.10	1269.73	
<b>Scope 1, 2, 3 Emissions disaggregated by Activity End Use</b>				

<b>Activity End Use</b>	<b>tonne CO2e</b>
<b>Business Travel</b>	220.95
<b>Employee Commuting</b>	191.81
<b>Facility Electricity Supply</b>	962.16
<b>Facility Heating</b>	163.18
<b>Facility Waste Disposal</b>	0.70
<b>Facility Water Supply</b>	0.46
<b>Not Specified</b>	51.45
<b>Scope 1 Emissions Breakdown</b>	
<b>Scope 1 Emissions disaggregated by GHG Type</b>	
<b>GHG Type</b>	<b>Scope 1 tonne CO<sub>2</sub>e</b>
<b>Carbon Dioxide</b>	258.28
<b>CO<sub>2</sub>e</b>	4.42
<b>Scope 1 Emissions disaggregated by Source Category</b>	
<b>Source Category</b>	<b>Scope 1 tonne CO<sub>2</sub>e</b>
<b>Mobile Combustion - Owned Fleet</b>	99.52
<b>Stationary Combustion</b>	163.18
<b>Scope 1 Emissions disaggregated by Country/Region</b>	

<b>Country/Region</b>	<b>Scope 1 tonne CO2e</b>	
<b>Ireland</b>	262.70	
<b>Scope 1 Emissions disaggregated by Facility</b>		
<b>Facility</b>	<b>Scope 1 tonne CO2e</b>	
<b>EPA Regional Inspectorate Dublin</b>	56.92	
<b>EPA Regional Inspectorate Kilkenny</b>	40.74	
<b>EPA Regional Inspectorate Monaghan</b>	46.16	
<b>Clonskeagh Sq.</b>	11.62	
<b>EPA Headquarters,</b>	4.42	
<b>EPA Regional Inspectorate Castlebar</b>	62.67	
<b>EPA Regional Inspectorate Cork</b>	40.16	
<b>Scope 2 Emissions Breakdown</b>		
<b>Scope 2 Emissions disaggregated by GHG Type</b>		
<b>GHG Type</b>	<b>Scope 2 tonne CO2e Location based</b>	<b>Scope 2 tonne CO2e Market based</b>
<b>Carbon Dioxide</b>	320.98	618.61
<b>Scope 2 Emissions disaggregated by Source Category</b>		

<b>Source Category</b>	<b>Scope 2 tonne CO2e Location based</b>	<b>Scope 2 tonne CO2e Market based</b>
<b>Purchased and Used Electricity</b>	320.98	618.61
<b>Scope 2 Emissions disaggregated by Country/Region</b>		
<b>Country/Region</b>	<b>Scope 2 tonne CO2e Location based</b>	<b>Scope 2 tonne CO2e Market based</b>
<b>Ireland</b>	320.98	618.61
<b>Scope 2 Emissions disaggregated by Facility</b>		
<b>Facility</b>	<b>Scope 2 tonne CO2e Location based</b>	<b>Scope 2 tonne CO2e Market based</b>
<b>EPA Regional Inspectorate Dublin</b>	54.28	104.62
<b>EPA Regional Inspectorate Kilkenny</b>	25.62	49.38
<b>EPA Regional Inspectorate Monaghan</b>	16.27	31.35
<b>Clonskeagh Sq.</b>	75.20	144.93
<b>EPA Headquarters,</b>	116.86	225.23
<b>EPA Regional Inspectorate Castlebar</b>	19.58	37.73

<b>EPA Regional Inspectorate Cork</b>	13.17	25.38
<b>Scope 3 Emissions Breakdown</b>		
<b>Scope 3 Emissions disaggregated by GHG Type</b>		
<b>GHG Type</b>	<b>Scope 3 tonne CO2e</b>	
<b>Carbon Dioxide</b>	281.32	
<b>CO2e</b>	60.00	
<b>Methane</b>	0.00	
<b>Nitrous Oxide</b>	0.27	
<b>Radiative Forcing CO2</b>	24.25	
<b>T&amp;D Losses CO2</b>	22.57	
<b>Scope 3 Emissions disaggregated by Source Category</b>		
<b>Source Category</b>	<b>Scope 3 tonne CO2e</b>	
<b>Employee Business Travel</b>	172.88	
<b>Employee Commuting</b>	191.81	
<b>Fuel- and Energy-Related Activities Not Included in Scope 1 or Scope 2</b>	22.57	
<b>Purchased goods and services</b>	0.46	
<b>Waste</b>	0.70	
<b>Scope 3 Emissions disaggregated by Country/Region</b>		



<b>Country/Region</b>	<b>Scope 3 tonne CO2e</b>
<b>Ireland</b>	388.42
<b>Scope 3 Emissions disaggregated by Facility</b>	
<b>Facility</b>	<b>Scope 3 tonne CO2e</b>
<b>EPA Regional Inspectorate Dublin</b>	78.59
<b>EPA Regional Inspectorate Kilkenny</b>	22.10
<b>EPA Regional Inspectorate Monaghan</b>	8.92
<b>Castlebar</b>	0.63
<b>Clonskeagh Sq.</b>	7.43
<b>Cork</b>	1.49
<b>Dublin</b>	27.92
<b>EPA Headquarters,</b>	130.47
<b>EPA Regional Inspectorate Castlebar</b>	27.64
<b>EPA Regional Inspectorate Cork</b>	61.82
<b>Kilkenny</b>	1.35
<b>Monaghan</b>	0.22
<b>Wexford (Headquarters) Air Business Travel</b>	19.85
<b>Global Warming Potentials</b>	

<b>Gas</b>	<b>Reference</b>	<b>Global Warming Potential</b>
<b>CO2e</b>	IPCC Fourth Assessment Report (AR4 - 100 year)	1
<b>CO2e</b>	IPCC Second Assessment Report (SAR - 100 year)	1
<b>N2O</b>	IPCC Second Assessment Report (SAR - 100 year)	310
<b>CO2</b>	IPCC Fourth Assessment Report (AR4 - 100 year)	1
<b>CO2</b>	IPCC Second Assessment Report (SAR - 100 year)	1
<b>CH4</b>	IPCC Second Assessment Report (SAR - 100 year)	21
<b>CH4</b>	IPCC Fourth Assessment Report (AR4 - 100 year)	25
<b>N2O</b>	IPCC Fourth Assessment Report (AR4 - 100 year)	298