



# Carbon Emissions Reduction Strategy

# Independent Report 2023

Produced by: One Earth Education on behalf of Future Generations Commissioner for Wales



## **Contents**

Foreword	2
About Future Generations Cymru	3
Working with One Earth Education	4
FGC's Carbon Footprint: 2022-2023	5
Methodology: Emission Calculations	6
Understanding FGC's Emissions	7
<b>Emission Scopes: Direct and Indirect</b>	8
Scope 2: Indirect Emissions	9
Scope 3: All Other Indirect Emissions	10
Waste Production	11
Business Travel	12
<b>Working From Home</b>	13
Office Commuting	14
Spend Data	15
What Can FGC Do Next?	16
Carbon Awareness Training	19
Carbon Offsetting	20
FGC Feedback Dashboard	21

## Foreword from the Future Generations Commissioner for Wales

As Future Generations Commissioner for Wales, it is my role to promote sustainable development and act as a guardian for the interests of future generations. In my Cymru Can strategy, I have made it my mission to ensure all Welsh public bodies achieve their net zero and nature positive goals by 2030. As a result, I want to see that public bodies are leading action on climate change, including adaptation, in a way that reduces inequalities and maximises the benefits to people and communities across Wales.

But I also need to look inward at my own Future Generations Cymru team, our work and our impact on climate and nature. This report focuses on building a more climate-resilient and globally responsible organisation and provides a baseline for us to monitor, manage and improve our carbon footprint, now and into the future.

One of our unique roles is to support brave decisions; to do more to proactively champion 'win-win' approaches like community energy that provides low carbon energy while generating local funding and investment; and better understand how Wales can tackle the climate and nature emergencies in a way that prevents unintended consequences, like increasing inequalities. We intend to walk the talk of this approach, where possible taking brave decisions of our own and encouraging innovation and behaviour change within our team and our workspaces.

From supporting the team to becoming certified carbon literate to rethinking how we participate on the world stage, I am looking forward to leading Future Generations Cymru on this journey and sharing everything we are learning along the way.

Page 1 Page 2

<sup>~</sup> Derek Walker, Future Generations Commissioner for Wales

## **About Future Generations Cymru**

Future Generations Cymru (FGC) is a knowledge-based organisation with a staff team of around 25. The majority of the team primarily work from home with occasional office-based working. The team has a small office within a shared working space in central Cardiff.

FGC has already taken steps to become a carbon neutral organisation over recent years including becoming a paperless office, signing up to and achieving the level 1 Healthy Travel Charter, and it has a procurement policy that encourages sustainable decision making and supplier choices.

However, this is the first time that the team has baselined its emissions towards the next step of becoming net zero.



FGC Team at the Centre for Alternative Technology, Machynlleth.

## **Working with One Earth Education**

One Earth Education specialises in providing complete decarbonisation services to organisations, focusing on crafting bespoke, business-specific training programs. Our expertise guides entities through their sustainability journeys, offering a blend of strategic analysis, emissions management, and educational initiatives. Our collaboration with the Future Generations Commissioner Cymru exemplifies our commitment to driving meaningful environmental change. This report, from April 2022 to March 2023, is a testament to our collaborative efforts towards building a more sustainable and environmentally responsible Wales.

In this project, our role was comprehensive; encompassing the measurement, analysis, and development of strategies to reduce FGC's carbon footprint effectively. Our approach, deeply rooted in the latest scientific insights and best practices, ensured the development of sustainable and impactful initiatives.

The scope of our work covered a detailed analysis of various emission sources, from direct emissions in office environments to indirect emissions related to broader business activities. Following the Greenhouse Gas Protocol guidelines, we meticulously categorised emissions into Scope 1, 2, and 3, providing a clear and structured overview of the current emissions landscape. This in-depth analysis laid the groundwork for targeted carbon reduction initiatives.

A key component of our collaboration was delivering customised ecoliteracy training. These training sessions were designed to educate, inspire, and instil a culture of proactive environmental responsibility within the team. The training went beyond imparting knowledge; it empowered the team with the skills and mindset needed to drive effective environmental changes.

This report serves as a reflection of our achievements and a roadmap for future endeavours. The path to achieving a net zero and nature-positive Wales by 2030 is ambitious, yet with ongoing commitment and collaborative efforts, it remains an achievable goal. This document marks an important milestone in FGC's journey, showcasing our progress and outlining the steps forward in our continued pursuit of a sustainable future.

Page 3

## Carbon Footprint: 2022-2023

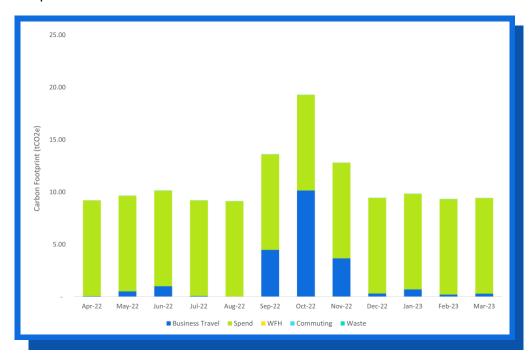
Future Generations Cymru's carbon footprint is based on electricity consumption, waste production, business travel for employees and spend data from April 2022 to March 2023. This report represents a great opportunity for Future Generations Wales to interrogate their data and to identify further carbon savings.

Month	Carbon Footprint (tCO₂e)	
April 2022	9.20	
May 2022	9.65	
June 2022	10.15	
July 2022	9.22	
August 2022	9.14	
September 2022	13.61	
October 2022	19.29	
November 2022	12.81	
December 2022	9.45	
January 2023	9.85	
February 2023	9.35	
March 2023	9.44	
Total	131.16	

## **Methodology: Emission Calculations**

A number of the charts used in this report have been generated using CBN Expert software, a business intelligence tool that calculates, measures, and tracks an organisation's carbon footprint. However, it is important to acknowledge that the calculated emissions will only be as accurate as the data that has been inputted into the software. This is something that Future Generations Cymru are keen to improve on in the future.

The chart below provides a visual representation of their total emissions, with October 2022 being highlighted as the largest source of FGC's carbon footprint. Total emissions from electricity consumption, waste production, business travel, spend data, commuting mileage and working from home hours equate to 131.16 tCO<sub>2</sub>e. Please note that FGC's electricity is supplied from renewable sources, meaning that the associated emissions are not included in their total carbon footprint.



Page 5 Page 6

## **Understanding these Emissions**

In order to monitor and manage emissions, it is important to understand how they are calculated. FGC's carbon footprint is based on multiplying the consumption of various resources by the Department for Energy, Security and Net Zero's 2022 and 2023 conversion factors. These carbon emissions can then be converted into kilograms or tonnes of ' $CO_2e$ ' (carbon dioxide equivalent); a metric to ensure comparability of impacts across different greenhouse gases (GHGs).

For example, one tonne of  $CO_2e$  is equivalent to 200,000 Google searches, 6,000 kilometres travelled in a diesel car or the production of 25 million plastic straws.

However, it is important to note that carbon dioxide is just one of the seven major GHGs identified in the Kyoto Protocol's international treaty for controlling the release of harmful gases. The table below provides an overview of these key emission sources:

Kyoto Gas	Example Source	
Carbon Dioxide (CO <sub>2</sub> )	Fossil fuel combustion	
Methane (CH₄)	Landfill and agricultural practices	
Nitrous Oxide (N <sub>2</sub> O)	Biomass and fossil fuel combustion	
Hydrofluorocarbons (HFCs)	Refrigeration and air conditioning gases	
Perfluorocarbons (PFCs)	Aluminium production	
Sulfur Hexafluoride (SF <sub>6</sub> )	Electronic manufacturing	
Nitrogen Trifluoride (NF <sub>3</sub> )	Semiconductor manufacturing	

## **Emission Scopes: Direct and Indirect**

Once an equivalent  $CO_2e$  footprint has been calculated, emissions can be divided into three distinct Scopes. The Greenhouse Gas Protocol defines these categories as follows:

**Scope 1** – direct emissions from owned or controlled sources such as gas for heating and hot water or company owned vehicles and machinery.

**Scope 2** – indirect emissions from the generation of purchased electricity, heat, steam, or cooling systems.

Scope 3 – all other indirect emissions that exist within an organisation's supply chain, including waste disposal, business travel and water consumption.

As Scope 1 and 2 often relate directly to resource consumption on site, such as gas and electricity, they can be easier to influence and reduce. Scope 3, on the other hand, may be more difficult to manage as they are an indirect result of business operations and outside of their direct control. Please note that the Tramshed office does not use gas for heating and hot water, therefore, Scope 1 emissions are not applicable in this report.

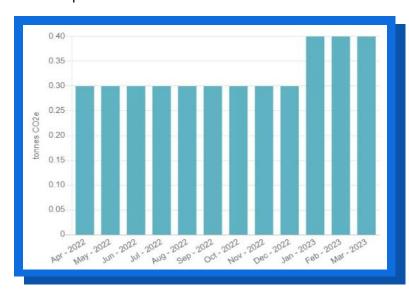


Page 7 Page 8

## **Scope 2: Indirect Emission**

As tenants of an office building, FGC's electricity consumption is primarily associated with lighting and powering IT equipment. The data provided by the Tramshed landlord was an annual usage figure for the reporting period, apportioned by floor area. As a result, the monthly consumption figure is consistent throughout the year. In reality, there would be fluctuations in these values that would more accurately reflect FGC's operations. This has been highlighted as an area for improvement when calculating their carbon footprint in subsequent years.

The Future Generations Cymru's emissions have been calculated using UK Government's 2023 Department of Energy Security and Net Zero conversion factors. These values enable organisations to convert their Kilowatt-hour electricity consumption into the tonnes of carbon dioxide equivalent. The conversion factors are updated annually to reflect changes in their calculation methodology and trends from the previous year. This is evidenced in the chart below, with January, February and March appearing to have a larger associated carbon footprint due to changes in the electricity conversion factor. This is due to an increase in natural gas use in electricity generation and a decrease in renewable generation compared to 2022.



## **Scope 3: All Other Indirect**

Scope 3 includes all indirect emissions that are not included in Scope 2 and are present throughout an organisation's value chain. This includes the upstream emissions associated with suppliers, and downstream emissions from business activities.

The wide range of activities associated with Scope 3 are usually outside of a business's direct control and, as a result, it can be difficult to account for and influence the reduction of these emissions.

In this report, Future Generations Cymru's Scope 3 emissions include production of waste, business travel, spend data, commuting mileage and working from home hours. Expanding the range of sources included in their Scope 3 inventory will play a key role in their carbon strategy in the future.

A breakdown of FGC's Scope 3 emissions is shown in the table below:

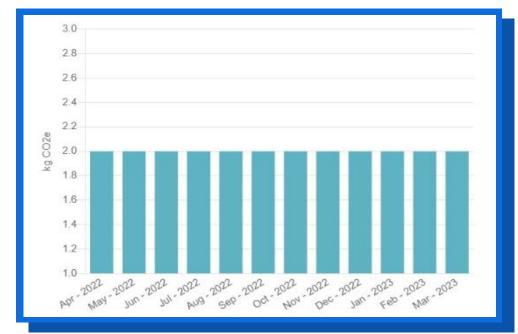
Scope 3 Emission Source	Carbon Footprint (tCO₂e)	
Waste	0.02	
Business Travel	21.53	
Working From Home	0.19	
Commuting	0.02	
Spend Data	109.28	
Total	131.16	

Page 9 Page 10

## **Waste Production**

FGC's operations produce a relatively small amount of waste, as demonstrated by the chart below. Similar to their electricity consumption, the volume of waste produced is based on average, annual estimates for the Tramshed. These figures were apportioned equally for each month of the reporting period and divided into the associated waste treatment type: commercial and industrial and paper and board mixed refuse. The conversion factors for both have remained the same from 2022 to 2023, ensuring that the associated carbon footprint is consistent across the reporting period.

Based on the current level of data availability, FGC's is 0.02 tCO<sub>2</sub>e. However, in order to calculate a more accurate and meaningful emissions profile, more granular and operations specific figures will be required. This is something that has already been implemented with employees monitoring the number of waste bin collections from their office each month. It is also important to note that a portion of FGC's waste may be recycled through the Tramshed's refuse management.

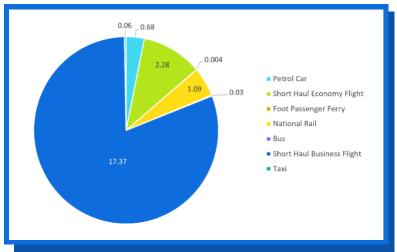


## **Business Travel**

In addition to collecting and monitoring their waste production data, FGC has chosen to measure their business travel mileage and the associated carbon footprint. This information is currently captured through expense claims of the following transport methods: petrol cars, buses, taxis, trains, planes, and ferries. FGC's total business travel carbon footprint for is 21.53 tCO<sub>2</sub>e and is distribution as shown below.

- Car 0.68 tCO<sub>2</sub>e
- Bus − 0.03 tCO<sub>2</sub>e
- Taxi 0.06 tCO<sub>2</sub>e
- Rail 1.09 tCO<sub>2</sub>e
- Short Haul Economy Flight 2.28 tCO₂e
- Short Haul Business Flight 17.37 tCO<sub>2</sub>e
- Foot Passenger Ferry 0.0004 tCO<sub>2</sub>e

FGC's expense forms are yet to account for electric vehicle mileage and, as a result, the associated carbon footprint. This is something that they will be incorporating in the future. In addition, a large proportion of their emissions are associated with short haul flights, particularly those flown as business class. Minimising the use of high carbon intensity methods of transport will be a priority during their next carbon accounting year with the aim of seeing a significant reduction in air travel emissions throughout this period.

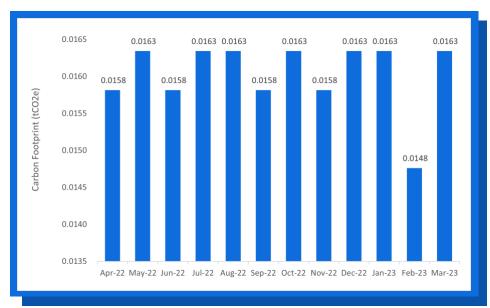


Page 11 Page 12

## **Working From Home**

In November 2023, FGC released their first annual transport survey to capture the emissions associated with staff commuting to the office and working from home. With 73% of the team completing the questionnaire, the carbon footprint of twenty-two of employees' individual working patterns was calculated. This was achieved through collecting data on the number of hours worked per week and the percentage of time spent working from home or another 'non-office' location. The results were then apportioned for the correct number of days per month to provide an estimated breakdown. Please note that February appears to have a lower carbon footprint due to the fact that it has fewer days than other months. Approximately 9% of the team work from home full time, and the total carbon emissions were equivalent to 0.19 tCO<sub>2</sub>e.

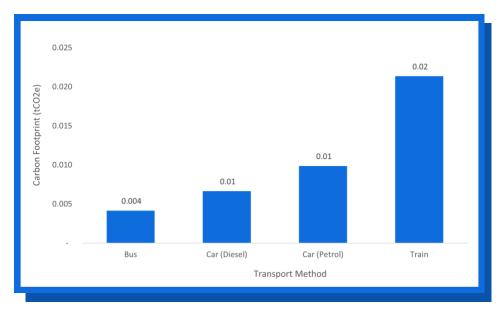
In order to improve the reliability of this data in the future, it is recommended that all team members complete the survey annually to accurately reflect working from home emissions.



## **Office Commuting**

The transport survey that was released earlier this year also collected data regarding the primary methods of transport, as well as the distance required for their team to travel to the office. As a number of employees live relatively close to the office, a significant proportion of FGC's commuting data is associated with walking and cycling. These are the most sustainable methods of transport, demonstrating their commitment to low carbon commuting options. In total, the office commuting carbon footprint (associated with 73% survey completion) is 0.04 tCO<sub>2</sub>e.

In addition to measuring emissions associated with commuting to the office, employees were asked whether they would be interested in carpooling or joining the Cycle to Work Scheme. Of those who completed the survey, 58% would consider carpooling with one other employee and 37% would be interested in the Cycle to Work Scheme. This is something that FGC aim to incorporate into their sustainability strategy in the future as it will enable them to decarbonise their commuting emission sources.



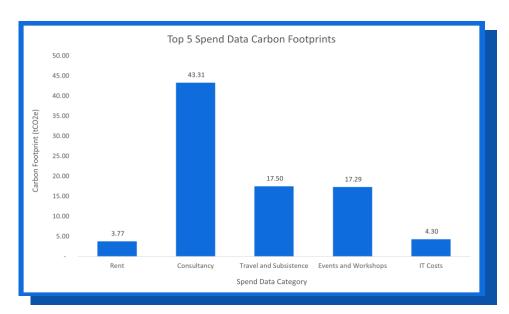
Page 13 Page 14

## **Spend Data**

Collating spend data from April 2022 to March 2023 has helped Future Generations Cymru to quantify a significant proportion of their supply chain emissions – arguably the hardest Scope 3 source to quantify. The UK's Business, Energy, and Industrial Strategy's 2019 'SIC Code Conversion Factors' have been used to assign a category to each purchase and to calculate their carbon footprint. It is important to note that the total spend data emissions (109.28 tCO<sub>2</sub>e) do not account for FGC's sustainable procurement policies. This is something that is expected to be included in subsequent versions of the conversion factor document.

An example of FGC's SIC code categories are shown below:

- Rent
- Legal Expenses
- Payroll and Pension Admin
- Consultancy
- Training and Recruitment
- Staff Welfare
- Travel and Subsistence
- Website Maintenance
- Events and Workshops
- IT Costs



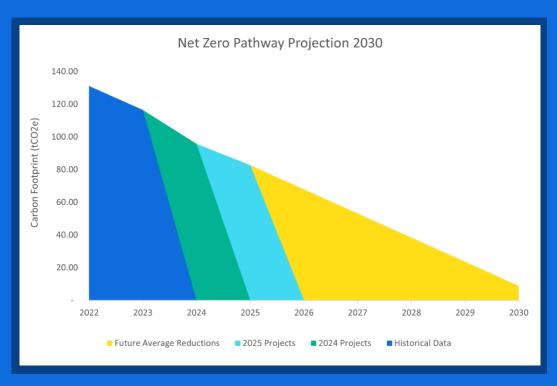


## **What Can FGC Do Next?**

FGC's total carbon footprint for their 2022 to 2023 reporting period is 131.16 tCO₂e. In order to achieve their net zero goal of 2030, they will be investing in a number of carbon saving opportunities. The table and chart below highlights four priority projects, including the associated reduction and implementation year:

Reduction Initiative	Carbon Saving (tCO₂e)	Year
Flight Policy	5.79	2024
Manage Spam Emails	0.08	2024
Web Browser Switch	0.12	2024
Eco-Literacy Training	14.59	2025

In addition to these quantifiable carbon saving opportunities, FGC will also be investing in a number of other sustainability projects. These include waste management, continued alignment with the Healthy Travel Charter 2 and additional training in the future. These initiatives are discussed in more detail in the following section.





## **Healthy Travel Charter 2**

The level 2 Healthy Travel Charter was launched in September 2022 to help public bodies to take rapid steps to reduce their carbon emissions, improve air quality and support staff health and wellbeing. The policy commits signatories to selecting bespoke actions over two years. FGC's chosen commitments are shown below:

#### **Senior Leadership and Accountability**

- Identify a named leader
- Agree a corporate budget

#### **Culture Change**

- Implement a culture change programme
- Listen and respond to staff views
- Take an inclusive approach, supporting equality and diversity

#### **Support Home and Agile Working**

 Offer agile working to staff, as appropriate to role

#### **Organisational Policies and Travel Planning**

- Implement sustainable travel plans
- Make sustainable travel the default for business travel

#### **Organisational policies and Travel Planning**

- Provide personalised travel planning for staff
- Set ambitious modal shift targets

## **Flight Policy**

Travelling by plane has a significant impact on the environment. The distance travelled and even the seating class can affect the assigned volume of carbon per passenger per kilometre. For example, a short haul economy flight is approximately 30% less polluting than flying business class for the same distance. To ensure that FGC's emissions are as low as possible, they are committed to creating and distributing a Sustainable Travel Policy, with particular focus on flights.

Their new policy will focus on discouraging flying and encouraging responsible and conscious decision-making regarding air travel. Alternative options will be promoted, and flights only considered when mission critical.

As part of this new policy, the Commissioner will take responsibility for the emissions generated from each flight by contributing to a scheme which delivers demonstrable well-being outcomes in line with the Well-being Goals and must have accreditation from a reputable body such as the UNFCC. Contributions will be equivalent to all FGC's annual residual emissions.

This initiative has been incorporated into FGC's carbon reduction pathway, with the potential to save  $5.79~\text{tCO}_2\text{e}$  if implemented in the next year. This figure is based on converting their 2022-2023 business class flights to economy for the same distance flown during the reporting period. Removing all short haul flights would result in a further  $2.28~\text{tCO}_2\text{e}$  reduction.

## **Supporting Employees**

In 2023 Future Generations Cymru has delivered certified Eco-Literacy training to all members of staff. Plans are to offer eco literacy to new starters as part of their induction going forward. This could help them to reduce their total carbon footprint by approximately 14.59 tCO<sub>2</sub>e.

They are also keen to raise awareness of the emission costs and impacts of daily activities and encourage their team to reduce their carbon footprint. Schemes such as those run by One Earth Education discuss the basic science of climate change and the journey towards a low carbon future.

Future Generations Cymru plans to incorporate sustainability into their employee support initiatives too. This could include a well-being gift, such as an indoor plant, an LED light bulb, or a draft excluder as part of its employee monthly rewards scheme, 'Cwpan Calon', where the winner is nominated by their colleagues. The potential carbon savings of each of these items is highlighted below:

- A large indoor plant could sequester up to 1.3 kgCO<sub>2</sub>e per year.
- Switching from an incandescent bulb to an LED could reduce the associated carbon emissions by approximately 83%.

## **Manage Emails**

Future Generations Cymru's current email provider is Microsoft Outlook and is managed by Orbits IT. According to research conducted by Statista and the Cisco Talos Intelligence Group, people receive on average 21 spam emails per day. This equates to approximately 163,800 spam emails per year for thirty employees.

FGC is aware that the use of technology and online services, such as email, have an associated carbon footprint (0.3 gCO<sub>2</sub>e). As a result, they are keen to monitor, measure and reduce the number of emails that are retained on internal servers. They aim to encourage all employees to regularly delete emails they no longer need to minimise the emissions associated with cloud storage, at least annually.

Based on 260 working days per year, it has been calculated that the removal of 163,800 emails from FGC inboxes would reduce their total carbon footprint by 0.05 tCO<sub>2</sub>e. This will be introduced in 2024 with regular reminders for staff members to delete unwanted emails and unsubscribe from lists they don't need.

The carbon footprint of an email:

- Spam Email 0.3 gCO<sub>2</sub>e
- Typical Email 4 gCO<sub>2</sub>e
- Email with Attachment 50.3 gCO<sub>2</sub>e

## **Switch Web Browsers**

Reducing the environmental impact of FGC's business operations is one of their key sustainability aims. Their default search engine providers currently include Microsoft Edge and Google Chrome, both of which have been carbon neutral for over ten years. However, FGC is keen to take their commitment to sustainability further.

Through mandating the use of Ecosia as the default browser on all company devices, they aim to ensure that all Internet searches are carbon negative. This means that a greater volume of carbon dioxide will be removed from the atmosphere than that generated by each search.

Ecosia is a B Corp certified online web browser with a social and environmental mission. For every forty-five searches conducted through their engine, a tree native to one of fifteen selected countries is planted.

The Future Generations Commissioner has already adopted Ecosia as their default web browser, setting a great example for both FGC staff and the Welsh community.

The carbon savings associated with switching to Ecosia is based on a number of assumptions including the number of daily searches during working hours per employee (15), the age of the tree when planted (sapling) and the number of working days per year (260). As a result, there is an expected carbon reduction of approximately 14.81 tCO<sub>2</sub>e from the year of implementation (2024).

## **Personal Pledges**

FGC aims to encourage their staff to adopt personal sustainability pledges throughout the year. This could include a range of activities such as, cycling to work, reducing the amount of meat eaten or washing clothes at a lower temperature. The adoption of personal pledges will be entirely optional for the team and any data captured will be anonymous. However, FGC encourages colleagues to discuss their progress, should they be comfortable to do so.

A range of pledges have been outlined below, as suggested by FGC employees during their annual Away Day in 2023. An estimated carbon reduction has been included alongside each opportunity.



Weekly Vegan Day – 1.00 tCO₂e per year based on 52 days



Switch to EVs – 0.02 tCO<sub>2</sub>e saving for those commuting with petrol or diesel cars



Meat Free Mondays – 0.19 tCO₂e per year based on 52 days

## **Carbon Awareness Training**

One Earth Education recently conducted a comprehensive feedback survey to evaluate the effectiveness of their Carbon Awareness Training programme. There was a great emphasis on the strengths of the training modules, primarily highlighting its interactive and engaging nature, flexibility, and the practical relevance of the content to Future Generations Cymru. The feedback, presented below provides valuable insights into various aspects of the training.

#### High-Quality Course Material:

90% of learners commended the course material, stating it was of high quality and apt for learning. This recognition reflects the dedication to providing relevant and engaging content that meets the educational needs of the participants.

Understanding of Net-Zero Strategy:

79% of learners reported that the course significantly increased their understanding of the UK's and Global Net-Zero Strategy and 74% of learners agreed it increased their understanding of the Welsh Net-Zero Strategy. While positive, there may be opportunities to explore how to enhance this understanding for those who expressed lower satisfaction.

#### Recommendation Rate:

An impressive 90% of learners expressed their willingness to recommend the course to friends or colleagues. This high recommendation rate is indicative of the positive impact and perceived value of the Carbon Awareness Training.

The overall rating of the course was 4.5 out of 5. The feedback received from learners indicates a generally positive experience, with high satisfaction rates in key areas. Recognising the commendable aspects and identifying areas for potential improvement, such as including more visuals, will enable One Earth Education to continually enhance and tailor the training programme to meet the evolving needs of future participants.

## **Carbon Offsetting**

Following the Carbon Awareness Training course, One Earth Education has discussed the use of Voluntary Carbon Offsetting with FGC. This is something to consider as part of their Carbon Strategy Report and within a broader sustainability landscape. Carbon offsetting should be considered as a complementary strategy, rather than as a substitute for direct emission reductions. We strongly advocate that Future Generations Cymru focus on minimising their carbon footprint as much as possible within their operations. This could be through improving energy efficiency, transitioning to renewable energy sources, and adopting more sustainable practices.

#### **Understanding Carbon Credits:**

Carbon Credits, also known as Carbon Offsets, are a unit of measurement that represents the reduction, removal, or avoidance of one tonne of carbon dioxide (CO<sub>2</sub>) emissions. These credits allow organisations to compensate for their greenhouse gas emissions by investing in projects that reduce or capture an equivalent volume of emissions elsewhere. These projects can include activities such as reforestation, renewable energy development, and methane capture.

These offsetting projects can be categorised based on their level of associated risk and effectiveness. Below is an explanation of each type:

- Low-Risk Offsets: These projects are more likely to remove an 'actual' tonne of carbon from the atmosphere. They are typically more expensive due to their reliability.
- High-Risk Offsets: These projects may be less reliable regarding their carbon removal effectiveness. They are often more affordable but carry a greater level of uncertainty.

We recommend incorporating low-risk offsets into FGC's carbon strategy due to their greater certainty in achieving actual greenhouse gas removals. If FGC decide to invest in carbon offsets, selecting and supporting Welsh-based projects which contribute to local biodiversity, sustainability and employment efforts should be a priority.

## **Future Generations Cymru Feedback Dashboard**



of learners said they would recommend the course to a friend or colleague



86%

of learners said the course objectives were clear





85% of learners said the course syllabus clear to understand and useful in their career



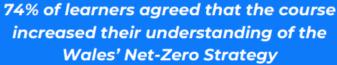
of learners said the course material was of high-quality and apt for 90% learning



75%



80% of learners agreed that the course increased their understanding of the **UK's Net-Zero Strategy** 





Future





## **Future Generations Cymru Feedback Dashboard**

"Engaging materials. range of ways to learn including graphics, videos and text."



Clear syllabus full of practical knowledge. The video clips used during the course were easy to understand. \*\*



The interactive elements and variety of educational content \*\*



What were the major strengths of this course?



Informative, interesting, engaging and easy to follow. \*\*



"A good mix of media and activities to keep the delegate engaged throughout."



I really enjoyed the mix of mediums between video content, text, graphics, activities and information. I also thought the content was pitched at the right level - some e-learning feels like it's been dumbed down but this was pitched well. \*\*





Comisiynydd **Future**Cenedlaethau'r Generations
Dyfodol Commissionel
Cymru for Wales



