

**Colomendy: Net-Zero Horizons**

***Pen Y Bryn Joinery***  
**Carbon Footprint Report**



**ONE EARTH**  
EDUCATION



Funded by  
UK Government



POWERED BY  
**LEVELLING  
UP**



# Contents

Introduction.....	3
Why is Carbon Reporting Important?.....	4
Scope Emissions.....	5
Conversion Factors & CO <sub>2</sub> e.....	6
Energy & Fuels.....	8
Business Travel.....	10
Waste Generation.....	12
Conclusion.....	14



## Net-Zero Horizons

The Net-Zero Horizons project, delivered by One Earth Education and funded by Cadwyn Clwyd through the Shared Prosperity fund, is an ambitious initiative to support businesses on the Colomendy Industrial Estate transition to net-zero emissions. The project aims to equip companies with the tools, knowledge, and resources necessary to reduce their environmental impact.

This includes conducting carbon footprint surveys and producing reports to help businesses further understand their emissions and produce carbon reduction strategies.

## Executive Summary

Established in 1985, Pen Y Bryn Joinery is a distinguished bespoke joinery, building, and fit-out company based in Denbighshire, Wales. Founded by two passionate tradesmen, the company has grown to employ 30 skilled tradesmen and support workers. Renowned for its commitment to quality craftsmanship and personalised service, Pen Y Bryn Joinery combines traditional techniques with modern innovations to deliver exceptional custom furniture, comprehensive building solutions, and high-end interior fit-outs for both residential and commercial clients.

This report offers a detailed assessment of Pen Y Bryn Joinery's carbon emissions, with visual aids, carbon emission calculations, and tips on better reporting methods. Alongside this report is a Net-Zero Toolkit, which includes carbon emission reduction techniques based on the findings from this report.

Measurements in this report have been calculated using the information provided. Advice on how to improve reporting methods to gather more accurate data is provided in this report.

## Introduction

Joinery companies release emissions primarily through the following activities:

- Material Sourcing and Processing
- Manufacturing Processes
- Waste Management
- Transport
- Use of Chemicals

This report will:

- Give you an insight into your carbon emissions
- Breaks down your data into estimated tCO<sub>2</sub>e
- Provide advice & guidance on reporting techniques

***You will receive a tailored Net-Zero Toolkit along with this report. The toolkit includes initiatives and techniques for reducing your overall carbon footprint.***



## Why is Carbon Reporting Important?

Carbon reporting is crucial for the joinery sector for several reasons:

- **Environmental Responsibility:** Understanding and reducing carbon footprints help joinery companies contribute to global climate change mitigation efforts, promoting sustainability.
- **Regulatory Compliance:** Ensures adherence to government regulations and industry standards on emissions, avoiding legal penalties and maintaining operational licenses.
- **Market Demand:** Meets the increasing consumer demand for eco-friendly products, giving companies with transparent carbon reporting a competitive edge in the market.
- **Cost Efficiency:** Identifying sources of emissions can lead to more efficient resource use, reducing waste and operational costs.
- **Corporate Image:** Enhances reputation by demonstrating a commitment to sustainability, attracting environmentally conscious clients and investors.
- **Risk Management:** Helps identify potential environmental risks associated with operations, allowing for proactive measures to mitigate these risks.
- **Investor Relations:** Investors are increasingly prioritising sustainability; robust carbon reporting can improve investor confidence and access to capital.

- **Operational Efficiency:** Drives innovation in processes and technologies to reduce emissions, often leading to improvements in overall operational efficiency.
- **Supply Chain Transparency:** Encourages suppliers to adopt sustainable practices, fostering a greener supply chain and enhancing the overall environmental impact.
- **Employee Engagement:** Demonstrates a commitment to sustainability, which can improve employee morale, attract talent, and reduce turnover.
- **Future-Proofing:** Prepares companies for future regulations and market shifts towards greater environmental accountability, ensuring long-term sustainability and success.



# Scope Emissions

In the context of greenhouse gas (GHG) accounting and reporting, emissions are categorised into three scopes by the Greenhouse Gas Protocol, a widely used international framework. Here's an overview of each scope with examples relevant to joinery:

## Scope 1: Direct Emissions

Scope 1 emissions are direct emissions from owned or controlled sources. These emissions occur from sources that the company directly operates.

Examples for Pen Y Bryn Joinery:

- *Fuel Combustion: Emissions from on-site heating systems, generators, and company-owned vehicles.*
- *Chemical Use: Emissions from solvents and finishes used in the joinery process.*

## Scope 2: Indirect Emissions from Purchased Electricity

Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating, and cooling consumed by the reporting company. While these emissions occur at the facility where electricity is generated, they are considered indirect for the company using the electricity.

Examples for Pen Y Bryn Joinery:

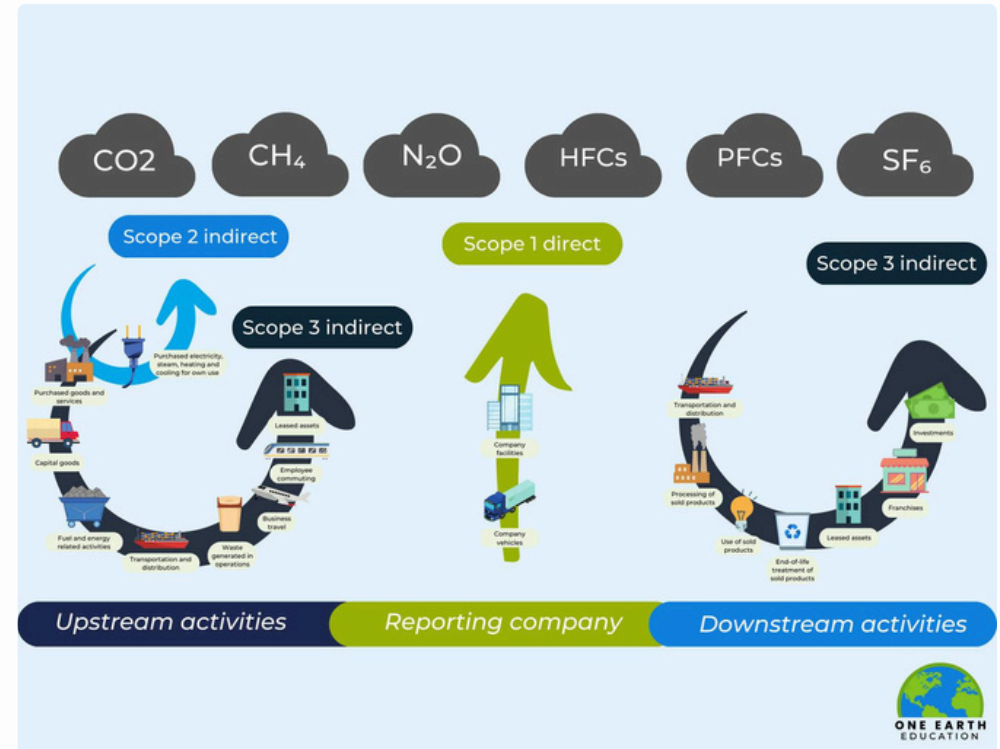
- *Electricity Consumption: Emissions from the generation of purchased electricity used to power machinery, lighting, and other equipment.*

## Scope 3: Other Indirect Emissions

Scope 3 includes all other indirect emissions in a company's value chain. These are emissions that are not owned or directly controlled by the company but are related to the company's activities.

Examples for Pen Y Bryn Joinery:

- *Purchased Goods and Services: Emissions from producing and transporting raw materials and components.*
- *Waste Disposal: Emissions from the treatment and disposal of waste generated by joinery operations.*
- *Employee Commuting: Emissions from the transportation of employees to and from the workplace.*



## Conversion Factors & CO<sub>2</sub>e Kg

Throughout this report, you will see that we have generated the total carbon emissions for each section. To do so, we have used the UK Government's 2023 Conversion Factors.

### What are Conversion Factors?

Conversion factors are numerical values used to convert one set of measurements to another in order to make them comparable or to perform specific calculations. They help translate various activities, like burning fuel or consuming electricity, into equivalent amounts of carbon dioxide (CO<sub>2</sub>) emissions. This translation allows us to understand and quantify the impact of different activities on climate change.

### What does kg CO<sub>2</sub>e mean?

"tCO<sub>2</sub>e" stands for tonnes of carbon dioxide equivalent. This metric is used to express the impact of each greenhouse gas in terms of the amount of CO<sub>2</sub> that would create the same amount of global warming. It is a standard unit for measuring carbon footprints. It helps compare the climate impact of gases like methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O), which have higher global warming potential than carbon dioxide. The "e" in CO<sub>2</sub>e stands for equivalent, highlighting that it's not just carbon dioxide being measured but the equivalent impact of other gases as well.

In summary, conversion factors are essential tools in environmental management. They help quantify and manage greenhouse gas emissions in a standardised way. The use of tCO<sub>2</sub>e allows for a comprehensive understanding of an entity's total climate impact, taking into account all types of relevant emissions.

### The Equation

To calculate carbon dioxide equivalent (CO<sub>2</sub>e) emissions using the UK government's 2023 conversion factors, the following equation is used:

$$\text{CO}_2\text{e} = \text{Activity Data} \times \text{Emission Conversion Factor}$$

Each type of activity, whether fuel combustion, electricity use, business travel, or waste management, has a corresponding emission conversion factor regularly updated to reflect the latest emissions data. The Global Warming Potential (GWP) values for different gases are typically integrated into these emission factors.

These government-provided conversion factors ensure that the calculated emissions are aligned with national inventory reports and can be used for official reporting and compliance purposes. This also ensures accuracy in reporting for regulatory frameworks like the UK's mandatory greenhouse gas reporting requirements for large organisations.



# Energy & Fuels

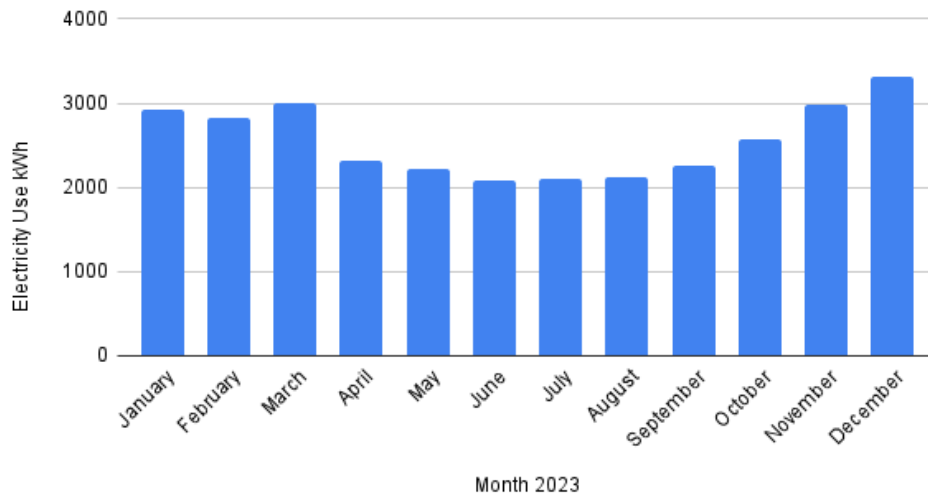
## Why do we measure Electricity & Gas in kWh?

We measure gas and electricity in kilowatt-hours (kWh) because it provides a consistent and universal unit for quantifying energy consumption across various forms of energy use, facilitating easy comparison and management.

- **Standardised Measurement:** kWh is a standardised unit of Measurement recognised globally.
- **Energy Conversion:** kWh allows for a direct comparison of energy consumption across different forms of energy. For instance, calculating everything in kWh enables you to understand the energy equivalence, whether you're using electric power or gas.
- **Billing and Cost Calculation:** Utility companies bill consumers based on the electricity and gas used, measured in kWh. This Measurement helps provide a clear and precise billing system that customers can understand and verify.

**This data is taken from Pen Y Bryn Joinery's Electricity use for 2023:**

Electricity Use 2023



## Key Observations:

### High Consumption Periods:

- January to March: Electricity use is consistently high, around 3000 kWh per month.
- December: Peaks again near 3200 kWh.

### Lower Consumption Periods:

- April to September: Monthly use decreases, stabilising around 2300-2400 kWh.
- July: Records the lowest usage, slightly above 2000 kWh.

## Possible Influencing Factors:

- Seasonal Variations: Higher usage in colder months (January-March, December) is likely due to increased heating needs.
- Operational Changes: Potential lower activity during mid-year months contributing to reduced usage.

# CO<sub>2</sub> Emissions

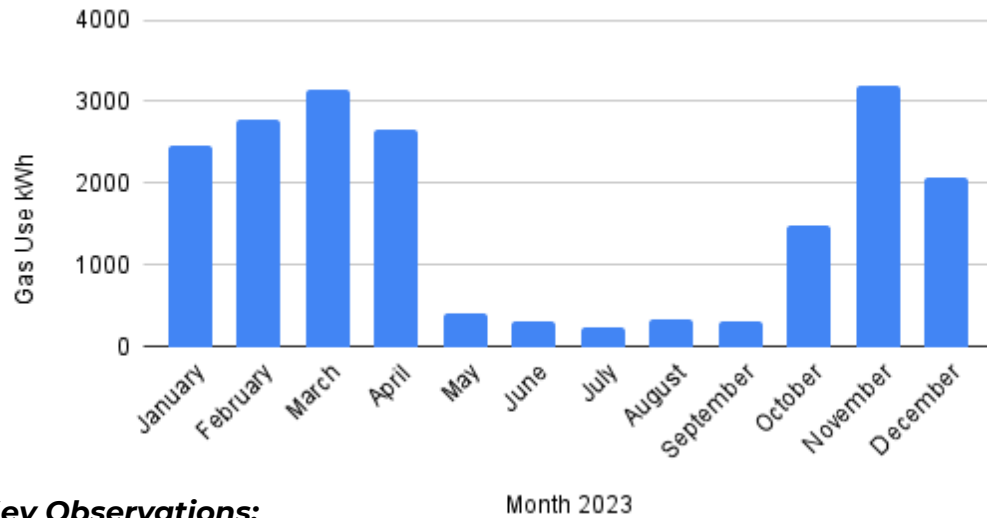
The CO<sub>2</sub>e for Pen Y Bryn Joinery's Electricity Use is as follows:

$$30729 \times 0.207074 = 6.3 \text{ tCO}_2\text{e}$$

# Energy & Fuels

This data is taken from Pen Y Bryn Joinery's Gas Use for 2023:

## Gas Use 2023



### Key Observations:

#### High Consumption Periods:

- January to April: Gas use is consistently high, peaking in March around 3500 kWh.
- November and December: Significant increase again, especially in November near 3500 kWh.

#### Low Consumption Periods:

- May to September: Dramatic reduction in usage, with the lowest in July and August, almost negligible.

# CO<sub>2</sub> Emissions

## Possible Influencing Factors

- Seasonal Variations: High usage in colder months (January-April, November-December) is likely due to heating needs.
- Operational Changes: Reduced activity during warmer months (May-September) contributing to lower usage.

The CO<sub>2</sub>e for Pen Y Bryn Joinery's Gas Use is as follows:  
 $19371 \times 0.18 = 3.4 \text{ tCO}_2\text{e}$



# Tips on Reporting Methods

Pen Y Bryn Joinery can best report on their energy use by implementing the following detailed steps:

## Data Collection:

- Install smart meters for accurate real-time tracking.
- Maintain a log of monthly utility bills and meter readings.
- Use energy management software to automate data collection and analysis.

## Categorise Emissions:

- Define Scope 1 (direct emissions from owned sources), Scope 2 (indirect emissions from purchased electricity), and Scope 3 (all other indirect emissions).
- Use the Greenhouse Gas Protocol for standardised reporting.

## Energy Audits:

- Conduct regular energy audits to identify areas of inefficiency.
- Use third-party auditors for unbiased assessments.

## Analyse Trends:

- Create detailed charts and graphs to visualise monthly and yearly energy consumption.
- Identify peak usage times and potential causes.

## Set Clear Targets:

- Establish specific, measurable energy reduction goals.
- Align targets with industry benchmarks and sustainability goals.

## Implement Energy Efficiency Measures:

- Upgrade to energy-efficient lighting, heating, and machinery.
- Implement smart HVAC systems and programmable thermostats.

## Renewable Energy Integration:

- Explore the use of renewable energy sources like solar or wind power.
- Invest in renewable energy certificates if direct implementation isn't feasible.

## Employee Engagement:

- Educate employees on energy-saving practices.
- Encourage participation in energy efficiency initiatives and reward achievements.

## Regular Reporting:

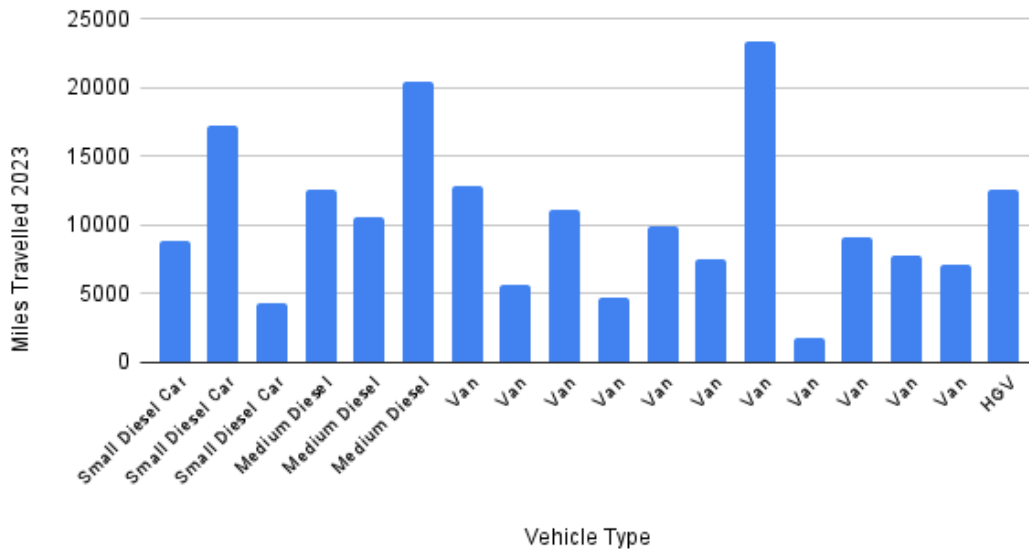
- Develop quarterly and annual reports for internal review and external stakeholders.
- Use reporting frameworks like CDP (Carbon Disclosure Project) for comprehensive disclosure.

## Transparency and Communication:

- Publish reports on the company website and in sustainability reports.
- Include energy use data and progress towards targets.

# Business Travel

Business Travel 2023



## Key Observations:

### High Usage of Vans:

- Vans are heavily relied upon for business travel, indicating their importance in day-to-day operations, likely for transporting materials and tools.

### Varied Car Usage:

- Medium and small diesel cars also see substantial usage, possibly for managerial or administrative travel.

### Significant HGV Usage:

- The HGV's mileage indicates its critical role in larger deliveries or bulk transport.

# CO<sub>2</sub> Emissions

The CO<sub>2</sub>e for Small Diesel Cars:

$$30219 \times 0.2242 = 6.5 \text{ tCO}_2\text{e}$$

The CO<sub>2</sub>e for Medium Diesel Cars:

$$43646 \times 0.26902 = 11.7 \text{ tCO}_2\text{e}$$

The CO<sub>2</sub>e for vans:

$$100646 \times 0.22875 = 23 \text{ tCO}_2\text{e}$$

The CO<sub>2</sub>e for HGV's:

$$12534 \times 0.87046 = 10 \text{ tCO}_2\text{e}$$

The CO<sub>2</sub>e for Total Business Travel is:

$$52 \text{ tCO}_2\text{e}$$

# Tips on Reporting Methods

## Detailed Data Collection

- **Travel Logs:** Maintain detailed travel logs for all business trips, including the purpose, distance travelled, mode of transport, and vehicle type.
- **Digital Tools:** Use digital tools or apps to automatically track and record business travel data. This can reduce errors and streamline data collection.

## Categorise Travel

- **Vehicle Types:** Clearly categorise travel by vehicle type (petrol, diesel, electric, hybrid) and by mode of transport (car, train, plane).
- **Purpose of Travel:** Differentiate between types of business travel such as client meetings, site visits, conferences, and training sessions.

## Standardise Reporting Metrics

- **Distance Travelled:** Report total miles or kilometres travelled for each category.
- **Emissions Factors:** Use standardised emissions factors to calculate and report the carbon footprint of each travel type. Ensure these factors are up-to-date and relevant to the specific vehicle types used.

## Frequency of Reporting

- **Regular Updates:** Provide regular updates on business travel, ideally on a monthly or quarterly basis, to keep track of trends and identify areas for improvement.
- **Annual Summary:** Include an annual summary in the sustainability report that consolidates all business travel data and highlights key insights.

## Engage Employees

- **Feedback Mechanisms:** Create channels for employees to provide feedback on business travel practices and reporting methods.
- **Incentives:** Encourage employees to participate in sustainable travel practices by offering incentives or recognition for low-emission travel choices.

## Set Clear Goals and Targets

- **Reduction Targets:** Set specific, measurable targets for reducing business travel emissions and report progress towards these goals.
- **Action Plans:** Develop and communicate action plans for achieving these targets, including strategies for reducing travel needs and promoting sustainable alternatives.

## Leverage Technology

- **Automated Systems:** Implement automated systems for tracking and reporting travel data to reduce manual input and increase accuracy.
- **Data Integration:** Integrate travel data with other sustainability metrics to provide a comprehensive view of the company's environmental impact.

## Continuous Improvement

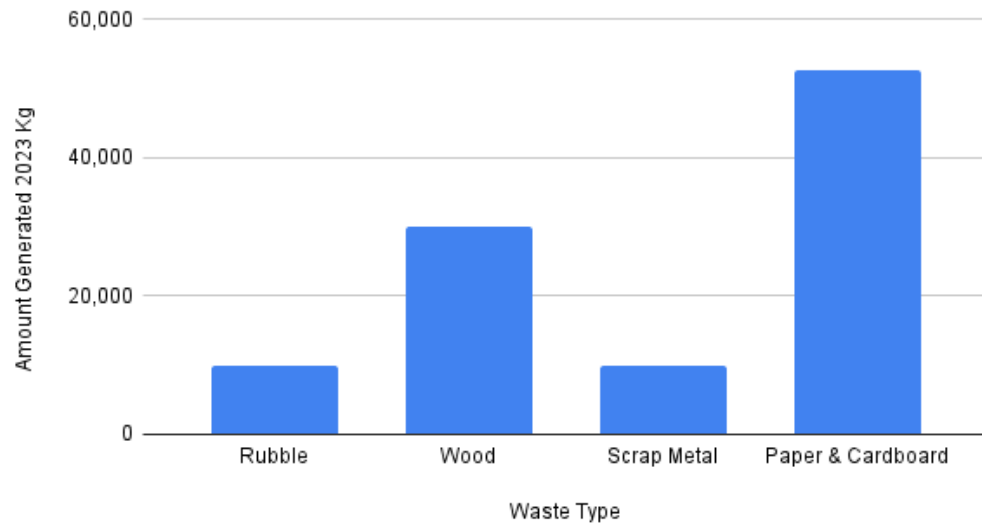
- **Regular Reviews:** Conduct regular reviews of business travel data and reporting practices to identify opportunities for improvement.
- **Benchmarking:** Benchmark against industry standards and best practices to ensure Pen Y Bryn Joinery is leading in sustainable travel reporting.

By following these best practices, Pen Y Bryn Joinery Limited can ensure accurate, comprehensive, and transparent reporting on business travel, helping to identify areas for improvement and effectively reduce their carbon footprint.

# Waste Generation

The following graph shows Pen Y Bryn's Waste Generation for 2023:

Waste Generation 2023



## Key Observations:

In 2023, Pen Y Bryn Joinery generated an estimated total of 102,800 kg of waste, consisting of 10,000 kg of rubble (9.7% of total waste), 30,000 kg of wood (29.2%), 10,000 kg of scrap metal (9.7%), and 52,800 kg of paper and cardboard (51.4%). This breakdown highlights the significant contributions from paper and cardboard, followed by wood, and then rubble and scrap metal, indicating key areas for potential waste management improvements.

# CO<sub>2</sub> Emissions

The CO<sub>2</sub>e for Rubble:

$$10 \text{ tonnes} \times 0.985 = 0.009 \text{ tCO}_2\text{e}$$

The CO<sub>2</sub>e for Total Wood:

$$30 \text{ tonnes} \times 21.281 = 0.6 \text{ tCO}_2\text{e}$$

The CO<sub>2</sub>e for Scrap Metal:

$$10 \text{ tonnes} \times 21.281 = 0.21 \text{ tCO}_2\text{e}$$

The CO<sub>2</sub>e for Paper & Cardboard

$$52.8 \text{ tonnes} \times 21.281 = 1.1 \text{ tCO}_2\text{e}$$

The CO<sub>2</sub>e for Total Waste Generation & Disposal (assuming waste is recycled):

$$2 \text{ tCO}_2\text{e}$$

# Tips on Reporting Methods

## Data Collection:

- Implement a systematic process to record the amount and type of waste generated daily.
- Use digital tools like spreadsheets or waste management software to log data.

## Categorisation:

- Classify waste into specific categories: rubble, wood, scrap metal, paper, and cardboard.
- Further subdivide categories if necessary, such as differentiating between treated and untreated wood.

## Waste Metrics:

- Calculate total waste generated per month and annually.
- Determine the percentage contribution of each waste category to the total waste.

## Tracking Progress:

- Establish baseline data for comparison.
- Set measurable waste reduction targets and timelines.
- Regularly monitor and compare waste data against these targets to evaluate progress.

## Reporting Tools:

- Use digital platforms for data compilation and visualisation, such as dashboards that display trends and insights.
- Incorporate graphs, charts, and tables to present data clearly.

## Compliance:

- Ensure waste reports comply with local and national regulations.
- Adhere to industry standards for waste reporting and management.
- Stay updated on any changes in regulations and adjust reporting practices accordingly.

## Stakeholder Engagement:

- Communicate waste management efforts to stakeholders, including employees, customers, and the local community.
- Solicit feedback and suggestions for further improvement.

## Continuous Improvement:

- Review and refine waste management strategies regularly.
- Implement new technologies and practices to enhance waste reduction.
- Encourage a culture of sustainability within the company.

## Third-Party Verification:

- Consider having waste data and reports verified by an independent third party.
- Use verification to enhance credibility and trust in the reported data.

# Conclusion

Considering energy usage, employee commuting, business travel, waste disposal and generation, Pen Y Bryn Joinery's carbon footprint equals **63.7 tCO<sub>2</sub>e**. To achieve net zero, Pen Y Bryn Joinery could invest in several carbon-saving opportunities.

*Measurements in this report have been calculated using the information provided. Advice on how to improve reporting methods to gather more accurate data is provided in this report.*

When deciding on its business targets, Pen Y Bryn Joinery should consider a number of factors, including its size, industry, current emissions levels, available technologies, and regulatory requirements. The target should be ambitious but also realistic and achievable.

## Science Based Targets (SBTi)

A carbon emissions target is science-based if it aligns with the reductions required to keep global temperature increases below 2°C above the pre-industrial level.

It is based on a global carbon budget that looks at what has already been put into the atmosphere and what further emissions can be made to keep warming within these limits.

The SBTi is a partnership between CDP, the United Nations Global Compact, the World Resources Institute (WRI), and the World Wide Fund for Nature (WWF). It aims to help companies set net-zero targets guided by the latest climate science research.

The targets should also contribute to Wales' broader strategy to combat climate change, emphasising a transition to net-zero emissions by 2050. Pen Y Bryn Joinery's engagement in these efforts reflects its commitment to meeting and exceeding these regional and global environmental standards.

Moreover, the Net-Zero Horizons project offers a structured path for companies like Pen Y Bryn Joinery to innovate and integrate net-zero strategies effectively. By participating in this project, Pen Y Bryn Joinery commits to continuously improving its sustainability practices, focusing on energy efficiency, waste reduction, and implementing renewable energy solutions.

This report provides Pen Y Bryn Joinery with an overview of its emission sources and tips for better reporting methods. By embracing the net-zero strategies detailed in their Net-Zero toolkit, Pen Y Bryn Joinery can stand out as a sustainability model on the Colomendy Industrial Estate and beyond.



# *Pen Y Bryn Joinery* Net Zero Toolkit



Funded by  
UK Government



≡Welcome≡

# Net Zero Toolkit for Businesses

to Your Sustainability Journey



In an era where sustainability is not just a choice but a necessity, we're thrilled to introduce you to the Net Zero Toolkit. This guide is your first step towards making a significant, positive impact on our planet, aligning with local and global goals for a greener future. It's all about joining forces and making changes that count, and we're here to make this journey as smooth and beneficial for Pen Y Bryn Joinery as possible.

**Instructions - As you progress through the toolkit, make notes of initiatives you will bring into the business to start your net zero journey. Later in the year, we will arrange a call with you to talk through your actions.**

## Tailoring Your Toolkit: Our Process

Every business is different, and there's no one-size-fits-all when it comes to sustainability. Here's how we ensure the Net Zero Toolkit fits Pen Y Bryn Joinery like a glove:



## Why This Matters for Your Business

Embracing sustainability isn't just good for the planet—it's great for Pen Y Bryn Joinery, too. Here's why:

- **Win More Business:** Today's customers and clients love businesses that care about the environment. We'll show you how to use your sustainability efforts to stand out and win hearts (and contracts).
- **Save Money:** Going green can also mean saving green. We'll explore how energy efficiency and renewables can cut costs in the long run.
- **Boost Your Brand:** Sharing your sustainability journey can make your brand stronger and more appealing. We're here to help you tell that story in a way that resonates.





## A Visionary Project

By participating in this project, you are contributing to a comprehensive effort to assess our area's carbon footprint and identify opportunities for renewable energy adoption and other sustainability initiatives. This project aligns your business with essential sustainability goals and is pivotal in attracting future investments and funding for the industrial estate.

Joining this initiative boosts your sustainability credentials and supports the community by laying the groundwork for future projects with far-reaching benefits.

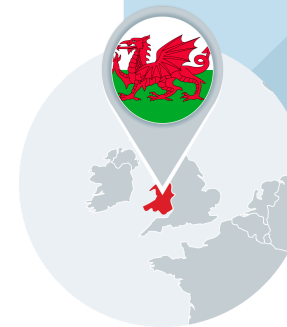
Together, let's embark on this journey towards a sustainable, net-zero future, making Pen Y Bryn Joinery a shining example of what it means to operate responsibly in today's world. We're excited to get started and even more excited to see where this journey takes us together.



### *Our Promise to You*

*At One Earth Education, we're not just consultants but your partners in this exciting journey towards sustainability.*

*We promise to keep things straightforward, relevant and tailored to Pen Y Bryn Joinery's unique path. From figuring out where to start to celebrate your achievements, we'll be with you every step of the way, ensuring that your move towards a greener future is both successful and rewarding.*



**Net-Zero Horizons Website**



## 2 Getting Started: Your Journey to Sustainability

Welcome to the first step of your sustainability journey with the Net Zero Horizons project. As we embark on this path together, our goal is to make the transition towards sustainability as seamless and impactful as possible for your business. Here's how we'll begin:

### Understanding Your Current Position

The initial phase involves a comprehensive assessment of your current environmental impact. This step is crucial in establishing a baseline from which we can measure progress. Our team at One Earth Education will guide you through gathering the necessary data, ensuring minimal disruption to your daily operations.



### Tailored Support for Your Business

Recognising that each business has unique needs and challenges, we customise our approach to suit your specific circumstances. Our team will work closely with you to find the most relevant areas for improvement and opportunities for growth in sustainability. Whether it's reducing energy consumption, optimising waste management, or exploring renewable energy options, we'll pinpoint strategies that align with your business goals and sustainability objectives.

### Easy Access to Resources and Training

We provide access to many resources, including online training modules, best practices guides, and technical support for renewable energy solutions. These tools are designed to empower you and your team with the knowledge and skills needed to implement sustainable practices effectively. Scheduled classroom courses and remote learning options offer flexibility to accommodate your team's availability, ensuring everyone can participate in this transformative journey.



### Collaborative Progress and Community Impact

By participating in the project, you're not just committing to your business's sustainability; you're contributing to a more significant community effort to achieve net-zero targets. This collaborative approach amplifies the impact of your actions, setting a precedent for environmental stewardship within the industrial estate and beyond.

# 3 Carbon Footprint Assessment: Simplifying Your Sustainability Evaluation

Embarking on the sustainability journey begins with understanding your starting point. The Carbon Footprint Survey is a pivotal step in the Net Zero Horizons project, designed to provide you with a clear picture of your business's environmental impact. We've streamlined this process to ensure it's straightforward and unobtrusive, allowing you to focus on your business operations without added stress.

### How It Works:

To kickstart this assessment, you'll receive an email from us containing a link to an online form. This form is your gateway to initiating the carbon footprint evaluation process. We've made it as simple as possible, requesting only essential information that impacts your carbon footprint. This includes:



**Number of Employees**



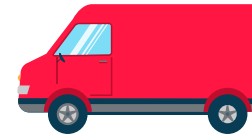
**Energy Usage**



**Waste Production**



**Commuting Practices**



**Company Vehicles**



**Business Travel**

*Filling out this form is easy, requiring just a few minutes. We aim to gather enough data to assess your carbon footprint accurately without overwhelming you with complex calculations or requests for detailed records.*



### What Happens Next?

Once you submit the form, our team at One Earth Education will take over. We'll analyse the information provided to calculate your business's carbon footprint. But our support continues beyond there. Along with your carbon footprint report, we can offer tailored suggestions for reduction methods. These recommendations will be practical, achievable, and designed to fit seamlessly into your existing operations.

### Your Report and Beyond

Your personalised carbon footprint report will highlight areas where your business excels in sustainability and identify improvement opportunities. This document will serve as a roadmap, guiding your business towards more sustainable practices and contributing to the collective effort of reducing environmental impact across the Colomendy Industrial Estate.



### A Hassle-Free Approach



We understand that the prospect of assessing your carbon footprint might seem daunting. However, we've designed this process to be as effortless and non-intrusive as possible. By participating, you're taking a significant step towards sustainability without the process becoming a burden on your daily operations. Our team is here to support you through every step, ensuring your transition towards a greener future is smooth and successful.

## 4

# Sustainable Best Practices: Detailed Strategies for Greener Operations

In this section, we delve into actionable strategies and examples to guide your business towards more sustainable operations.



## Energy Efficiency

**Audit and Upgrade:** Begin with an energy audit to pinpoint where your business can improve its energy use. Upgrading to LED lighting, optimising HVAC systems, and investing in energy-efficient appliances can significantly reduce your energy consumption.

## Employee Engagement

Encourage energy-saving behaviours among employees, such as turning off equipment when not in use and maximising natural light. Small changes, when collectively adopted, can lead to substantial energy savings.



## Smart Controls

Implement smart thermostats and energy management systems to better control heating, cooling, and electricity use. These systems can adjust to real-time conditions, ensuring energy is used efficiently.



## Reduce, Reuse, Recycle

Develop a plan to minimise waste by finding opportunities to reuse materials and ensure that recycling protocols are in place for paper, plastics, metals, and organics. For example, repurpose scrap paper for notes, donate old office furniture, and set up clearly labelled recycling bins.



## Supplier and Material Choices

Opt for suppliers prioritising sustainable practices and materials. Consider bulk purchasing to reduce packaging waste and select products made from recycled materials.



## Renewable Energy Options Solar Power

Assess your facility's potential for solar panels. Solar installations can provide a clean, renewable energy source for your business, reducing reliance on fossil fuels and lowering energy bills.



## Green Energy Providers

If on-site renewable options are not feasible, consider switching to a green energy provider that sources electricity from renewable sources.



## Waste Management Conduct a Waste Audit

Understand the types and volumes of waste your business produces. This knowledge is the first step in reducing your waste footprint.



## Wind Energy

For businesses with access to larger land areas, small-scale wind turbines can offer another avenue for renewable energy generation, particularly in wind-rich regions.

# 5 Funding and Grants Guide: Securing Financial Support for Your Sustainability Journey

Successfully securing funding for sustainability projects depends on effectively communicating your sustainability ambitions. By the end of the Net Zero Horizons project, we will provide the reports, guidance, and tools needed to bid for funding effectively. We are committed to helping all participants identify suitable funding opportunities and craft compelling applications that highlight their commitment to sustainability.

## Key Funding Opportunities:

### Prosperous Denbighshire Fund

The Prosperous Denbighshire Fund is designed to support local businesses in implementing projects that contribute to the region's economic prosperity, with a strong emphasis on sustainability. This fund is an excellent opportunity for businesses looking to invest in energy efficiency, renewable energy, and other green initiatives that clearly benefit the Denbighshire economy.



### Denbighshire Collaboration Fund

The Denbighshire Collaboration Fund encourages businesses to collaborate on projects promoting sustainability and innovation. By fostering collaboration, this fund aims to enhance the competitiveness and resilience of local businesses, supporting them in achieving their environmental goals while contributing to the community's overall sustainability.



## The Importance of Coming to Us First

Before diving into the application process, we encourage you to come to us. Our expertise in sustainability and familiarity with the specific requirements of funds like the Prosperous Denbighshire Fund and the Denbighshire Collaboration Fund means we can provide you with invaluable advice and support. We'll help you refine your project ideas, ensure your applications are robust, and significantly increase your chances of securing funding.

## Our Support in Your Funding Journey

Understanding the intricacies of each funding opportunity and the nuances of the application process can be daunting. That's why, as part of the Net Zero Horizons project, we are here to guide you every step of the way. From identifying the most relevant funding opportunities for your business to helping you articulate your sustainability ambitions in your applications, our team is dedicated to ensuring you have the support you need to secure funding successfully.

# 6 Net-Zero Roadmap: Charting Your Path to Sustainability

## Developing a Net-Zero Roadmap

Embarking on the journey to net-zero emissions is a commendable goal that requires a strategic and structured approach. A Net-Zero Roadmap is your blueprint for success, outlining the steps your business will take to reduce its carbon footprint to net zero. This roadmap is not just a plan but a commitment to sustainable practices and a guide to integrating them into every aspect of your operations.



### Steps to Create Your Roadmap:

- **Baseline Assessment:** Utilise the Individual Carbon Footprint Report provided for this project to understand your starting point.
- **Goal Setting:** Define what net-zero means for your business, considering your specific industry, size, and operational scope.
- **Strategy Development:** Identify the key areas where emissions can be reduced, such as energy use, waste management, and transportation.
- **Action Planning:** Develop detailed action plans for each strategy, including timelines, responsible parties, and required resources.
- **Implementation:** Begin executing your action plans, simultaneously focusing on quick wins and long-term strategies.

### Setting Milestones:

- **Short-Term Goals:** Set achievable goals for the first year to build momentum and create a culture of sustainability within your organisation.
- **Medium-Term Goals:** Identify milestones for the next three to five years requiring more significant changes or investments.
- **Long-Term Goals:** Outline your vision for achieving net-zero emissions, including offsets or carbon capture strategies.

### Measuring Progress:

- **Emissions Tracking:** Regularly monitor and record emissions in key areas to assess the effectiveness of your strategies.
- **Performance Metrics:** Develop specific indicators for energy efficiency, waste reduction, and renewable energy usage.
- **Review and Adjust:** Conduct annual reviews of your roadmap to celebrate achievements, understand challenges, and adjust plans as necessary.

## Our Role in Your Journey

One Earth Education supports you in developing and implementing your Net-Zero Roadmap. We understand that each business is unique, and we're committed to providing personalised guidance to ensure your roadmap is both ambitious and achievable.

## 7

# Training and Education: Empowering Your Team for Sustainability

Every business's journey to sustainability and achieving net-zero emissions is unique. That's why we emphasise the importance of custom-built training programmes tailored specifically to your business's needs, challenges, and goals. Our approach moves beyond generic, off-the-shelf training solutions that often fall short in addressing your company's specific challenges on its path to sustainability.

## Why Custom Training Matters:

**Relevance:** Training related to your business's operations, industry, and sustainability goals ensures higher engagement and applicability.

**Effectiveness:** Custom modules allow you to incorporate your company's data, scenarios, and objectives, making the learning experience more impactful and actionable.

## Developing Your Custom Training Modules

Our process begins with a deep dive into understanding your business, its sustainability ambitions, and the specific roles of your team members. This allows us to develop training modules that are:

- **Targeted:** Focused on areas where your business can significantly impact reducing its carbon footprint.
- **Engaging:** Utilising interactive content, real-life case studies from your business, and actionable strategies employees can implement.
- **Comprehensive:** Covering a wide range of topics from basic sustainability principles to advanced carbon reduction techniques and renewable energy options.



## Online Learning Portal Access

To ensure flexibility and accessibility, all our custom-built training programmes are available through our Online Learning Portal. This platform provides:

- **Easy Access:** Instructions and support to access the training programmes online, allowing your team to learn at their own pace and on their schedule.
- **Interactive Learning:** Engaging content, including quizzes, interactive assessments, and forums for discussion with peers and sustainability experts.
- **Continuous Updates:** Regular updates to training content to reflect the latest in sustainability practices and your evolving business needs.



## Our Commitment to Your Success

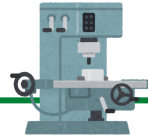
*We believe that education and training are foundational to embedding sustainability into the fabric of your business. By providing your team with the knowledge and tools they need, you're preparing them to meet sustainability goals and empowering them to drive future initiatives.*

## 8

# Your Industry-Specific Tools: Joinery

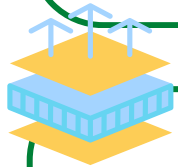
This section is specifically tailored to each business based on their Carbon Footprint Reports, highlighting initiatives to become more sustainable and work towards a net zero future.

## Energy Saving Initiatives



### Energy Efficiency:

Invest in high-efficiency woodworking machinery, such as CNC machines, that consume less energy. Retrofit existing equipment with energy-saving motors and drives. Use LED lighting in workshops and offices to lower electricity usage.



### Insulation and Heating:

Enhance insulation in workshops and storage areas to maintain stable temperatures, reducing the need for heating and cooling. Implement efficient heating systems like radiant heaters that are effective in large, open workshop spaces.



### Employee Training:

Train staff on the importance of energy conservation, including proper use and maintenance of machinery to avoid energy wastage. Encourage practices such as shutting down equipment when not in use and optimising work schedules to maximise daylight use.



### Smart Technology:

Use smart meters to monitor energy use across different sections of the facility. Install automated controls for lighting and climate systems that adjust based on occupancy and operational hours, reducing unnecessary energy use.



### Renewable Energy Sources:

Install solar panels on workshop roofs to power machinery and tools. Consider biomass boilers that can use wood waste for heating, reducing reliance on fossil fuels.



### Energy Monitoring:

Deploy advanced energy management systems to monitor real-time energy usage of specific machines and processes. Use the data to identify peak usage times and opportunities to stagger operations to reduce overall consumption.

### Process Optimisation:

Implement lean manufacturing principles to streamline processes, reducing idle time and unnecessary energy consumption. Optimise dust extraction systems to operate efficiently only when necessary.



### Sustainable Transportation:

Shift to electric or hybrid vehicles for transporting materials and finished products. Promote carpooling among employees and provide facilities for cyclists. For deliveries, use logistics planning software to minimise travel distances and optimise routes.

# Business Travel

Based on your Carbon Footprint Report data, here are several suggestions on how Pen Y Bryn Joinery can reduce emissions from business travel:



**Vehicle Upgrade:** Transition to electric or hybrid vans for transporting materials and finished products. Electric vans produce zero tailpipe emissions, significantly reducing the company's carbon footprint.



**Route Optimisation:** Use route planning software to optimise delivery routes, reducing travel distance and time. This can lead to less fuel consumption and lower emissions.

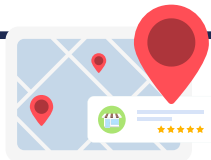
**Fleet Maintenance:** Regularly maintain vehicles to ensure they run efficiently, reducing fuel consumption and emissions. Proper tyre inflation, engine tuning, and timely oil changes are essential.



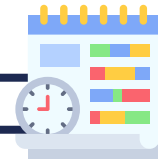
**Telecommuting and Virtual Meetings:** Encourage remote work where possible and use virtual meeting tools to reduce the need for travel. This can significantly cut down on emissions from business travel.



**Local Sourcing:** Source materials locally to minimise transportation distance and associated emissions. This not only reduces carbon footprint but also supports the local economy.



**Delivery Scheduling:** Consolidate deliveries to reduce the number of trips. Efficient scheduling can ensure that vans are fully loaded, minimising the number of journeys required.



**Carpooling and Public Transport:** Promote carpooling among employees for work-related travel. Provide incentives for using public transport, such as subsidised travel cards.

# Waste Reduction Initiatives

Based on your Carbon Footprint Report data, here are several suggestions on how Pen Y Bryn Joinery can reduce emissions from waste generation and disposal:



## Implement Waste Segregation:

- On-site Sorting: Introduce separate bins for different types of waste (wood, metal, rubble, paper/cardboard) to facilitate recycling and proper disposal.
- Employee Training: Train staff on the importance of waste segregation and proper disposal methods to ensure compliance.



## Increase Recycling Efforts:

- Wood Recycling: Partner with local recyclers to convert wood waste into mulch, compost, or biomass fuel.
- Metal Recycling: Establish agreements with metal recycling facilities to ensure scrap metal is properly processed and reused.

## Reduce Paper and Cardboard Waste:

- Digitisation: Move towards a paperless office by digitising documents and using electronic communication.
- Sustainable Packaging: Use minimal and recyclable packaging for products and materials.



## Optimise Material Use:

- Precision Cutting: Use advanced cutting techniques and software to optimise material use, reducing off-cuts and waste.
- Material Inventory Management: Implement a just-in-time inventory system to reduce excess material ordering and waste.



## Adopt Circular Economy Practices:

- Reuse and Repurpose: Find creative ways to reuse or repurpose off-cuts and waste materials in other projects or for community initiatives.
- Product Design: Design products with end-of-life in mind, making them easier to disassemble and recycle.

## Waste-to-Energy Initiatives:

- Biomass Boilers: Use wood waste to fuel biomass boilers, providing renewable energy for heating.
- Anaerobic Digestion: Explore anaerobic digestion for organic waste to produce biogas and compost.



# Long Term Sustainability Goals & Strategies

To align with global sustainability targets, Pen Y Bryn Joinery should consider setting ambitious goals to reduce its environmental footprint. This includes striving for carbon neutrality through strategic investments and innovative practices and technologies in manufacturing that can significantly enhance sustainability efforts. Some examples include:

## Renewable Energy Investments:

- Solar Panels and Wind Turbines: Install solar panels on the roofs of workshops and offices, and consider small-scale wind turbines to generate on-site renewable energy. This reduces dependence on fossil fuels and lowers greenhouse gas emissions.
- Biomass Boilers: Utilise wood waste from the joinery process to fuel biomass boilers, providing a sustainable heating solution and reducing waste simultaneously.

## Energy Efficiency:

- Upgrade Machinery: Invest in the latest energy-efficient woodworking machinery and tools that consume less power. Regular maintenance ensures optimal performance.
- Building Insulation: Improve insulation in workshops and storage areas to minimise heating and cooling needs. Implement energy-efficient HVAC systems for better climate control.

## Sustainable Materials:

- Certified Timber: Source wood from suppliers who provide FSC (Forest Stewardship Council) or PEFC (Programme for the Endorsement of Forest Certification) certified timber, ensuring it comes from sustainably managed forests.
- Eco-Friendly Adhesives and Finishes: Use low-VOC (volatile organic compounds) adhesives, finishes, and paints that have a lesser environmental impact and improve indoor air quality.

## Waste Reduction:

- Zero-Waste Policy: Adopt a zero-waste policy by recycling wood scraps and sawdust. Implement precise cutting techniques and software to optimise material use, reducing off-cuts and waste.
- Circular Economy Practices: Partner with other businesses to repurpose wood waste into new products, such as biochar or compostable packaging materials.

## Green Transportation:

- Electric Vehicles: Transition the fleet to electric vans and trucks for deliveries, reducing emissions from transportation.
- Employee Transport: Encourage employees to use public transport, carpool, or cycle to work. Provide incentives like subsidised travel passes or bike storage facilities.

## Employee Engagement:

- Sustainability Training: Educate employees on sustainability practices and the importance of reducing emissions. Foster a culture of environmental responsibility within the workforce.
- Incentive Programmes: Implement incentive programmes for employees who contribute innovative ideas for reducing the company's environmental footprint.

By integrating these detailed strategies, Pen Y Bryn Joinery can significantly reduce its carbon emissions and lead the way in sustainable practices within the joinery sector.

# Net-Zero Roadmap

<b>Baseline Assessment</b>	<ul style="list-style-type: none"><li>• Conduct a comprehensive audit of current carbon emissions across all operations, including energy use, transportation, and waste management.</li></ul>
<b>Set Clear Goals</b>	<ul style="list-style-type: none"><li>• Establish specific, measurable, achievable, relevant, and time-bound (SMART) targets for reducing emissions, aiming for net zero by a set future date.</li></ul>
<b>Renewable Energy Adoption</b>	<ul style="list-style-type: none"><li>• Invest in on-site renewable energy sources such as solar panels and wind turbines to reduce reliance on fossil fuels.</li></ul>
<b>Energy Efficiency Improvements</b>	<ul style="list-style-type: none"><li>• Upgrade to energy-efficient machinery and improve building insulation. Implement LED lighting and efficient HVAC systems.</li></ul>
<b>Sustainable Materials</b>	<ul style="list-style-type: none"><li>• Source certified sustainable timber and use eco-friendly adhesives and finishes. Implement a procurement policy that prioritises low-carbon materials.</li></ul>
<b>Waste Reduction</b>	<ul style="list-style-type: none"><li>• Adopt a zero-waste policy by recycling wood scraps and other materials. Implement precise cutting techniques to minimise waste.</li></ul>
<b>Green Transportation</b>	<ul style="list-style-type: none"><li>• Transition to electric or hybrid vehicles for company use. Encourage carpooling, cycling, and use of public transport among employees.</li></ul>
<b>Water and Resource Conservation</b>	<ul style="list-style-type: none"><li>• Implement water-saving technologies and recycle water used in manufacturing. Promote efficient use of resources throughout operations.</li></ul>
<b>Employee Engagement and Training</b>	<ul style="list-style-type: none"><li>• Educate and involve employees in sustainability initiatives. Provide training on energy-saving practices and incentivise innovative ideas for reducing the company's carbon footprint.</li></ul>

# Our Plan

*Read through the toolkit and select 4-8 initiatives that you will pledge to work towards over the next 12 months*



# Our Plan

*Read through the toolkit and select 4-8 initiatives that you will pledge to work towards over the next 12 months*





**ONE EARTH**  
EDUCATION