

NOVEMBER 2023

PROFIT WITH PURPOSE MAGAZINE



NET
ZERO

**TOP 5 MISLEADING
ASSUMPTIONS ABOUT
CARBON MANAGEMENT**

**CAN AI SOLVE
CLIMATE
CHALLENGES?**

**CAN WE GET RID OF
CARBON?**

**COPING
WITH
CARBON**

**CLIMATE ACTION OR ILLUSION?
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The mission of Profit with Purpose Magazine is to inspire innovators to build a sustainable and just economy.

We follow the Global Charter of Ethics for Journalism governed by the International Federation of Journalists to ensure this publication meets the highest professional standards.

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EDITOR'S NOTE



Regulations, reporting, experts, events, and even the media have placed carbon emissions in the zone where it has become inevitable for leaders to deal with the environmental impact of their organisation.

However, despite the ever-growing number of carbon pledges to achieve net zero emissions, we still fail to halt the climate crisis and get glimpses of its impact in the forms of storms, flooding, and people migrating from areas made inhabitable due to climate change.

To unleash innovations and inspire action instead of leaving people paralysed with fear or just avoiding the whole situation because it's too much to handle, we need to find ways to bring it closer, making it more appealing and doable at the same time.



Szilvia Szabó

Journalist,
Managing
Editor

"The ones who are successful are the ones who really want it. You have to have that inner drive otherwise, it's not going to work out," said Kerri Strug, American gymnast and Olympic gold medalist.

For us to succeed in this endeavour to come out on the winning end of climate change, inspiration and motivation are just as important as any new set of rules.

This digital edition is dedicated to making the carbon challenge more manageable, spiced up with resources and inspiration to start acting now.

Businesses, big and small, are a force to be reckoned with, and they have the power to bring about a more equitable, greener world.

Although, their potential concerning sustainability remains untapped until we address the elephant in the room - the lack of understanding and education.

It's time for businesses to get an education that is more about how their operations can be used for good and how they can positively or negatively impact their teams, customers, and surrounding communities.

With this newfound clarity, they would be in a better place to tackle the world's greatest challenges like climate change, but through the process, they can also find brand-new purpose and prosperity.



Bronagh Loughlin

Journalist,
Co-Editor

We cannot expect businesses to instantly know what and how to do that would make sense without dropping the jargon, breaking things down and making the climate case more inviting. Climate change is currently not business as usual, but as Theodore Roosevelt said, "Believe you can, and you're halfway there".

We hope to bring inspiration and understanding with this edition of the Profit with Purpose Magazine, recognising not only the severity of the environmental crisis and the need to act but also the light and what this bright green future could potentially look like.

Steering Dublin towards a low-carbon economy



Ross Curley
Head of Economic
Development Department,
Dublin City Council

I write this foreword at a timely juncture in the context of Dublin's journey to Net Zero since Dublin City Council (DCC) recently commenced public consultation on a climate action plan.

The Climate Neutral Dublin 2030 proposal is the city's draft Climate Action Plan that outlines how DCC can promote a range of mitigation, adaptation and other climate action measures.

It aims to help deliver on the National Climate Action Plan and the Irish Government's overall National Climate Objective, which seeks to make the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy before 2050.

The plan has three interdependent targets:

- A 51% reduction in greenhouse gas emissions by 2030 while striving for neutrality before 2050 as per Dublin City's participation in the 100 Climate Neutral and Smart Cities EU initiative.
- Design a climate resilient city prepared to deal with the predicted and unknown impacts of climate change.
- Deliver a Just Transition, considering all stakeholders across all sectors and leaving no one behind, aligning with the EU Green Deal objectives.

“

With this in mind, we must all sharpen our focus and actively work towards these ambitious climate plans.

The Economic Development team at DCC has been working on several projects to enable the transformation of the city towards a low-carbon economy while building a hub for climate innovation.

One of the initiatives is the MODOS business training that helps companies adopt circular economy principles and sustainability practices. This training was first launched in 2019 and will be delivered nationally in 2023/2024 to widen the reach and impact of the program and support more entrepreneurs.

Besides training opportunities, DCC also designs innovative events, such as the first-ever SoCircular event in Dublin in 2022, to celebrate Irish social and circular enterprises while facilitating networking between key actors to boost business opportunities.


According to plans, the event will continue to explore how accessing local supply chains can significantly reduce our carbon footprint via alternative procurement approaches while embracing the potential of a social economy.

Dublin City Council was a strategic partner in hosting the international Circular Economy Hotspot Dublin 2023 conference, which attracted over three hundred delegates from all over the world and put Dublin on the European sustainability map.

To further support businesses, the Local Enterprise Office network across the country continues to be the first stop shop for all enterprises, providing tailored training on courses such as 'Green for Business' and having a panel of mentors available to identify practical steps and opportunities in adopting sustainability measures.

It is important to emphasise that every business is at a different stage of its journey, and taking those all-important first steps can be just as important as any other action, remembering that every journey starts with a single step.

Making this happen takes all of us to actively contribute, and our team at DCC is devoted to developing a supportive environment and embracing the opportunities to create a low-carbon economy where sustainable businesses can thrive.



With many supports on hand and ready to be deployed, the urgency is to further engage with the business ecosystem and encourage active participation.

“

Why does 1.5 C matter?

You might not even feel if the temperature changes 1.5 degrees as it seems so insignificant.

Yet, it has a very different meaning when we look at global warming caused by greenhouse gas emissions and other human-induced activities, such as deforestation.



At COP21 in 2015*, world leaders committed to limiting global warming first below 2 degrees and then to 1.5 degrees compared to pre-industrial levels to prevent the worst impacts of the climate crisis, based on scientific research that shows going beyond this threshold will significantly increase the chances of extreme weather conditions such as flooding, droughts, wildfires.

This commitment, also known as the Paris Climate Agreement, clearly set the road for shifting industries, policies and finance to avoid severe climate disruptions that can potentially accelerate conflict, drought, and hunger across the globe.

This target has long been championed by those developing nations, which are the most vulnerable to climate change's effects despite that they have little to do with what's causing this crisis.

However, not only developing countries have been feeling the impact of extreme weather as floods and wildfires swept through North America and Europe in the past years, giving a glimpse of the future if we fail to meet the 1.5 Degrees Celsius target.

There are multiple feasible and effective options to reduce greenhouse gas emissions and adapt to human-caused climate change, and they are available now, said scientists in the latest Intergovernmental Panel on Climate Change (IPCC) report released in March 2023.

"Mainstreaming effective and equitable climate action will not only reduce losses and damages for nature and people, it will also provide wider benefits," said IPCC Chair Hoesung Lee.

"This Synthesis Report underscores the urgency of taking more ambitious action and shows that, if we act now, we can still secure a liveable, sustainable future for all."

*COP is the annual United Nations Climate Change Conference

Why does 1.5C matter?

Innovation, business development, and policies have all started steering their strategies towards this goal of keeping global warming at bay, which results in shifts in global and local economies.

A recent study found that dealing with the damage caused by the climate crisis through extreme weather has cost \$16m an hour for the past 20 years.

We already got a preview of what extreme temperatures could look like for society in 2018. In Pakistan, a May heatwave took temperatures above 43.3 Degrees Celsius and cost 65 lives in just one city alone. Europe has also experienced this new 'normal', with temperatures rising above 46 Degrees Celsius in Portugal, deadly floods in Greece and soaring wildfires in Western Europe and the Mediterranean.

According to [NASA](#), reducing warming to 1.5 Degrees Celsius would limit the number of people frequently exposed to extreme heatwaves by around 420 million.

In addition to the atmosphere, oceans are also warming, but keeping this limit would save 10 to 30 per cent of coral reefs from dying off. By contrast, limiting global temperature to 2 Degrees Celsius would only save 1 per cent of coral reefs.

Due to global warming, over 4 million people in the US are at risk because they live along coastlines, but meeting the warming limit could also halve the sea level rise that will occur by the end of the century.

A rise above 1.5 Degrees Celsius can ultimately cause numerous extreme events, from hurricanes to floods, impacting our climate resilience.

As the ocean rises, numerous small island nations globally are at risk of becoming uninhabitable. Ultimately, every tenth of a degree that is prevented can be critical in limiting the extent of future damage to the planet.

Mia Mottley, Prime Minister of Barbados, added that global warming of 2 degrees Celsius "is a death sentence for the people of Antigua and Barbuda, for the people of the Maldives, for the people of Dominica and Fiji, for the people of Kenya and Mozambique, and yes, for the people of Samoa and Barbados."

Collective efforts are needed to prevent the climate crisis from escalating beyond our capabilities to handle the consequences.

Extensive environmental damage due to climate change is closely followed by increased economic risk that will impact the business sector on multiple levels.

Therefore, business leaders need to play their part in contributing to a low-carbon economy where they can thrive instead of survive.

Simon Kofe, Minister for Justice, Communication & Foreign Affairs of Tuvalu, sent a video message to COP26 in 2021 representing Pacific Island leaders, standing knee-deep in the sea, demanding immediate climate action.



As the ocean rises, numerous small island nations globally are at risk of becoming uninhabitable.

Can we get rid of carbon?

Possibilities to remove carbon from the climate equation.

We are racing against time to achieve net-zero emissions by 2050 or sooner if possible.

Preventing greenhouse gas emissions from entering the atmosphere and actively removing carbon from the atmosphere are the main avenues to make that happen.

What is the current carbon landscape?

Understanding fast and slow carbon cycles

Slow refers to carbon stored for hundreds or thousands of years in underground reservoirs, while fast refers to carbon captured from the atmosphere by plants and released back when the plants die and decay, all happening within a relatively short time. Planting trees means storing carbon in the fast carbon cycle.

Explainer:

Carbon sink: Absorbs more carbon from the atmosphere than it releases – ocean, soil, plants.

Carbon source: Releases more carbon into the atmosphere than it absorbs – burning of fossil fuels or volcanic eruptions.

What is best? Removal or avoidance carbon credits?

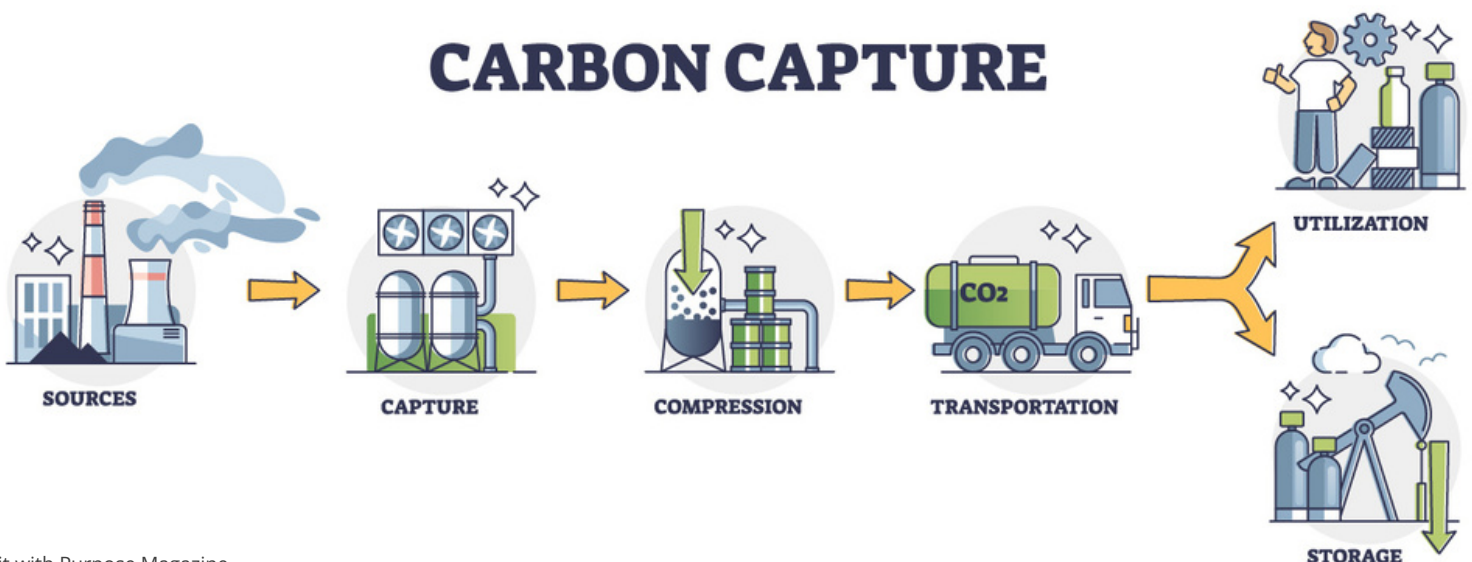
Avoidance credits – essentially any activity that prevents hazardous greenhouse gases from being released into the atmosphere. Typically, it includes renewable energy, forest protection or efficient cook-stove projects that have the potential to save 40-70% of firewood and up to 90% reduction in smoke. Currently, three billion people cook on open fire, which means this simple but effective shift could have a massive impact on a global scale, not to mention the health benefits.

Removal credits – basically anything that actively removes carbon from the atmosphere. These projects focus on reforestation or engineered solutions such as direct air carbon capture. However, there are more innovative solutions to make active removal possible. Also, it is still at a very early stage, with lots of research required to prove its viability.

Overall, it is more efficient to avoid releasing carbon than trying to remove it after it is released.

Simply put, it is much easier to protect an existing forest compared to start planting trees and nurture a complex habitat, which takes a long time and has many risks.

CARBON CAPTURE



Innovative Approaches

Producing Biochar

A unique solution that mixes the slow and fast carbon cycles. It acts like a biological coal, created by burning plants with a lack of oxygen so that the carbon stored in these plants for thousands of years in the ground.

Using this material in agriculture is also beneficial because it enriches the soil, making it more fertile.

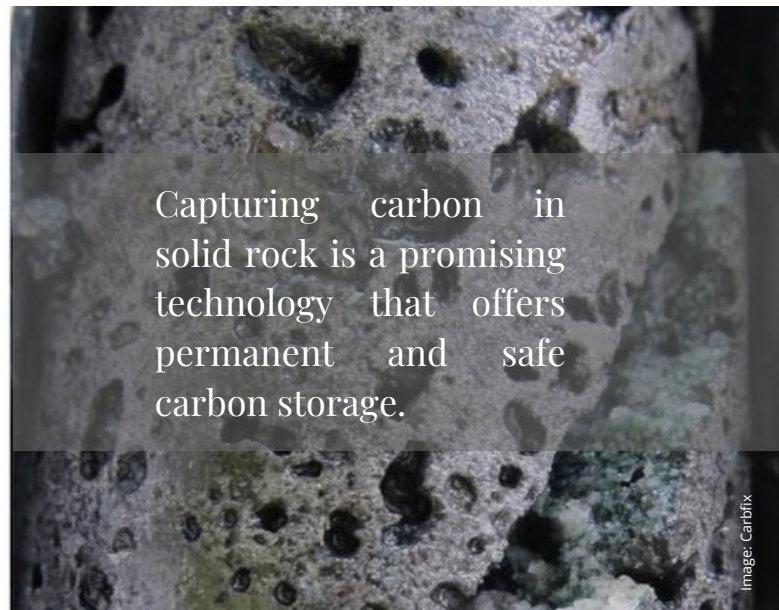
Turning carbon dioxide into energy

Long duration energy storage was made possible by an Italian company, Energy Dome, which created solutions like "CO2 battery" and the Energy Transition Combined Cycle to use CO2 in effective energy production.

Capturing carbon in concrete

A UK and Ireland-based start-up, Concrete4Change, has set out to utilise the natural potential of concrete for the permanent storage of CO2.

They developed an innovative technology capable of storing up to 30 per cent of CO2 in concrete while making the material stronger and the production cheaper.



Capturing carbon in solid rock is a promising technology that offers permanent and safe carbon storage.

Image: Carbfix

Storing carbon in rocks

Icelandic company Carbfix provides a natural and permanent storage solution by turning CO2 into stone underground in less than two years.

This technology imitates and accelerates a natural process where carbon dioxide is dissolved in water and interacts with reactive rock formations, such as basalts, to form stable minerals, providing a permanent and safe carbon sink.

Ocean-based solutions

New research commissioned by the High Level Panel for a Sustainable Ocean Economy (Ocean Panel) shows that ocean-based climate solutions can deliver up to 35% of the annual greenhouse gas emission cuts needed in 2050 to limit global temperature rise to 1.5 degrees C.

These include ocean-based renewable energy, reduction of transport, and embracing blue carbon ecosystems (mangrove forests, seagrass meadows and tidal marshes) that can store up to 5 times more carbon per area than tropical forests and absorb it from the atmosphere about 3 times as quickly, and sustainable ocean-based food production, among other things.

Further resources:

Mini video on [How Direct Air Capture Works>>](#)

Article by World Resource Institute:
[6 Things to Know About Direct Air Capture](#)

[Decision-Makers Guide to Natural Climate Solutions](#)

Find explainers, toolboxes and further resources to better understand and adopt climate actions that embrace natural solutions.

"Natural Climate Solutions are conservation, restoration and improved land management strategies that help remove carbon dioxide from the air while also keeping our air and water clean and our soil healthy and productive."*

*Definition by [U.S. Nature4Climate](#)

Image: Getty Images



Five misleading assumptions about addressing carbon emissions

1 / Becoming carbon neutral is the end goal.



Carbon Neutrality

While reaching the point where you are balancing off what your company emits is a great starting point, it is not enough to improve our situation and fight climate change.

Settling to balance out the total amount of carbon emissions you produce will not be sufficient in the long term to future-proof your business.

Aiming for maximum reduction of environmental footprint and offsetting more than the overall emission of your business, or in other words, becoming carbon negative, is where things can get better.

2 / We can offset our way out of climate action.

Even though it might seem like a simple mathematical equation that we use offsetting to cancel out emissions, it is more complex than that.

Carbon offsetting is far from being a flawless process, with many controversial issues and a lack of reliable scientific evidence on its actual short and long-term impact.

A [recent investigation](#) by the Guardian and researchers from Corporate Accountability analysed the top 50 emission offset projects - those that have sold the most carbon credits in the global market.

Using a thorough analytical method, they claim that “78% of them were categorised as likely junk or worthless due to one or more fundamental failing that undermines its promised emission cuts”.

The rest of the projects looked problematic or could not be determined definitively due to a lack of credible available data.

It is compelling to look at carbon credits as the ultimate solution.

Still, the best way forward is to reduce emissions as much as possible and look for offsetting through critical analytical lenses that ensure the best outcome.

The shocking revelation is that the projects marked as “junk or overvalued” made up almost a third of the global voluntary carbon market, raising the question of whether carbon offsetting benefits are exaggerated across the whole portfolio.

3 / We are a digital tech company - no worries about emissions.

All digital services, from sending emails to running video conferences, use energy that accounts for emissions, and putting together all the small amounts emitted through these activities could sum up to a considerable amount.

Data centres used by small and large tech companies are essentially massive warehouses packed with servers consuming electricity primarily generated by fossil fuels, like power plants that burn coal.

There are various ways to manage digital companies' carbon footprint. An interesting approach from Facebook was moving some parts of its IT infrastructure to northern Sweden, where the naturally cold environment helps reduce the energy needed to keep servers from overheating.

Switching to cloud-based solutions that operate more energy-efficiently is a popular choice for environmentally conscious companies to reduce their footprint.

4 / AI solutions will solve all climate challenges.

[Read more about AI solutions on page 15](#)

Experimental projects are looking at using blockchain-based carbon tracking systems, and data analytics and predictive algorithms can help companies better understand and manage their energy usage, transportation, and manufacturing processes to model and measure their Scope 1 and 2 emissions accurately.

AI-driven applications can also contribute to managing Scope 3 emissions through supply chains by optimising connections and material usage between different stakeholders.

According to a [study by the European Union](#), the use of AI and machine learning in energy management systems could result in energy savings of up to 15% in commercial buildings.

Predictive analytics is also an area of interest since it can model future carbon emissions and identify potential areas of improvement. Using previous data and patterns, AI can present different carbon footprint scenarios, allowing decision-makers to choose the one that best fits their strategic goals.

5 / Planting more trees is enough to offset carbon emissions.

Trees are natural carbon absorbers commonly known as the easiest, most environmentally friendly way to offset carbon emissions.

Different tree species have various absorption capacities, but in general, it is considered that 6 mature trees can store about 1 ton of CO₂.

According to calculations shared by the Massachusetts Institute of Technology (MIT), it would take 640 trees per person to account for all American emissions, which adds up to more than 200 billion trees.

To plant those trees, you need to find available and appropriate lands to start with, which would be a challenge in itself, not to mention keeping those trees healthy and alive.

Experts agree that while planting new trees is beneficial in fighting climate change, protecting and nurturing existing forests with complex ecosystems is best.

Trees are more like time capsules for keeping carbon from entering the atmosphere since when they decay, they release most of the carbon they store.

Besides, newly planted trees must reach maturity before they can become formidable carbon sinks, need proper care and protection over their lifetime, and should be accounted for carbon release when decomposing.

Planting trees is not a quick fix but a valuable tool in the box.

[Read the full article with more insights >>](#)

Carbon offsetting on the ground

Carbon projects are more than mere calculations in an Excel sheet. They impact the lives of many people besides helping reverse engineering the worst effects of climate change.

Carbon offsetting enables individuals and organisations to reduce their carbon footprint by purchasing verified carbon credits, which essentially means investing in offsetting projects that independent third parties manage and monitor.

Renewable energy, biodiversity protection, community projects, clean water, and improved cookstoves can be offsetting projects offered by various organisations that reduce emissions and transform communities worldwide.

“It’s a global issue,” explains **Ciara Feehely**, Head of Communications and Fundraising at [Vita Ireland](#), an Irish NGO creating sustainable, climate smart livelihoods with rural communities in East Africa.

Empowering the people of East Africa through community-led development based on equality and sustainability and tackling climate change by transitioning to renewable energy and leveraging existing resources has been the driving force behind Vita’s work.

Working in Ethiopia and Eritrea for the last twenty years, Vita knew how critical fuel-efficient stoves and access to clean water are to the quality of life while positively impacting the climate and the environment.

A woman can spend 16-30 hours a week gathering sticks for a fire, to cook food and sanitise water,” explains Feehely.

With that in mind, they launched the Vita Green Impact Fund in 2015 to monetise carbon emissions savings to benefit the local community and the environment.

The focus of this social impact investment vehicle was on balancing economic development and climate justice.

Vita’s investors were looking for environmental and social impact, along with the security of verifiable carbon emissions savings, independently accredited by [The Gold Standard](#).

They raised €2 million for the Fund and used the investment to finance water programs and supply homes in East Africa with fuel-efficient stoves between 2016 and 2020.

“It doesn’t matter where you take that tonne of carbon out of the atmosphere.

Every time you buy a carbon offset, you have a global impact.”

Supporting the development of climate smart communities is a triple win for people, planet and the economy.



Carbon offsetting on the ground

“We reached 311,000 people with clean water or clean cooking,” adds Feehely. “With the €2 million we spent, we generated 2 million carbon offsets.

It’s a very cost-effective model because there is no commercial leakage since we retain the ownership right up until the point of sale.”

Following the success of their pilot scheme, a €10m scalable carbon investment Fund was closed in May 2023 after backing from a unique collaboration of Irish venture philanthropists and US impact investors.

One of Vita’s most critical carbon offsetting programs is the repair of broken **water pumps**.

Water pumps installed in the 80s and 90s had fallen into disrepair, and with no access to materials or parts, villagers were unable to fix them.

Without access to clean water, the dirty water must be boiled and sterilised. This typically means a lot of firewood is required as fuel for the stove, which leads to mass deforestation.

The need to cut down trees for fuel can be reduced by making clean water available, thus putting less strain on the local environment.

Saving trees has an immediate impact on the atmosphere since fully grown tree absorbs anywhere between 10 and 50kg of CO2 on average per year.

Another area of Vita’s work is introducing **fuel-efficient stoves**.

Open stoves in cooking are an inefficient and dangerous activity that emits tonnes of carbon into the atmosphere every year.

Those who operate open stoves often suffer health implications relating to the eyes, heart and lungs. Using modernised versions reduces approximately 50% of carbon emissions compared to the traditional stone stoves.

They also run **sustainable forestry programmes** in tandem with their development projects. For example, each recipient of a fuel-efficient stove will get some saplings.

These are grown on a plantation in the village, and local women are taught how to manage the trees sustainably to ensure reduced carbon emissions and better energy security for all of the community.

Vita was able to repay their investors with a modest return and invested the profit back into the community that had generated the carbon offsets in the first place.



Can AI help tackle the carbon challenge?

As technology continues to advance, AI is something people are increasingly embracing. It is already taking over automating repetitive tasks, enhancing productivity, and freeing up human resources, so why not use it in the climate crisis?

Firstly, it can contribute to optimising our energy consumption and reducing waste through AI-driven smart grid management, allowing us to achieve both goals. These technologies include advanced data processing, communication, sensing, and control.

With AI, smart grid management can analyse real-time data from various sources to predict energy demands and detect patterns more accurately.

With this in mind, it could be easier to optimise the allocation of energy resources to prevent waste and ensure supply meets demand.

Smart grids also manage distributed energy resources such as energy storage systems and solar panels to balance the grid and prevent potential blackouts or overloads.

AI can also optimise the deployment and operation of renewable energy systems by analysing weather patterns, maximising output, and forecasting energy generation so we can drive a stable energy supply.

Adopting Artificial Intelligence can also optimise the design and operation of carbon capture technologies to drive their cost-effectiveness and efficiency while also playing a crucial role in monitoring and predicting emissions.

Additionally, these advanced technologies can arrange to collect data from operations, including activities like IT equipment and corporate travel, and every part of the value chain, from securing materials from suppliers to downstream users of their products.

Predictive AI can forecast future emissions across an organisation's carbon footprint concerning current reduction efforts, new carbon reduction methodologies and future demand – meaning that organisations can set, adjust, and achieve reduction targets more accurately.

Embracing and further developing AI-driven solutions can be harnessed to effectively reduce emissions as it offers insights into every aspect of the value chain, which increases transparency for action.



AI to fight carbon emissions in practice

Mortar IO

Mortar IO is a London-based company using AI to digitise and quickly plan carbon reduction for thousands of buildings. Buildings are responsible for approximately 40 per cent of carbon emissions globally, which is more than every single train, plane, and car on the planet.

Most of the buildings that will be standing in 2050 are already built, so decarbonising existing buildings is critical.

Mortar IO uses automated digital audits to help organisations comprehend how to achieve net zero for entire real estate portfolios in a matter of minutes rather than months. They also have plans to create an AI-powered chatbot feature to automate energy audit tasks.

Eugenie.ai

A start-up with offices in the US and India uses AI's power to drive sustainable development. Eugenie.ai is an emission intelligence platform created to help manufacturers in sectors such as oil, mining, metal, and gas decarbonise their operations.

They aim to help these businesses achieve higher environmental regulation compliance with accelerated sustainable growth while enhancing their bottom line.

Their SaaS combines data from satellite images with process and machine data to offer a comprehensive overview of operations. From this point, their AI analyses the data to help businesses track, trace, and curb emissions by between 20 and 30 per cent.

Start-ups are not the only ones leveraging AI to tackle the carbon challenge.

The United Nations Environment Program (UNEP) is also utilising AI to help analyse and predict the concentration of carbon dioxide in the atmosphere besides assessing changes in glacier mass and sea level rise.

UNEP hopes to use AI as a form of 'mission control' for the planet.

The International Methane Emissions Observatory (IMEO) is another tool used by the United Nations that uses AI to mitigate and monitor methane emissions.

Ultimately, AI's strength in helping us tackle the carbon challenge lies in its ability to learn by experience, collect massive amounts of data from its environment, recommend appropriate actions, and make connections that humans often fail to notice. While it can be used as a tool to help us in our fight, it does still come at a cost to the planet since using these tools also has a notable carbon footprint.

On the other hand, experts and researchers warn that using AI has its own environmental footprint that cannot be overlooked.

Researchers at the University of Massachusetts, Amherst, found that the training process for a single AI model can emit more than 626,000 pounds of carbon dioxide, which is about the same amount of greenhouse gas emissions as 62.6 gasoline-powered passenger vehicles driven for a year.

Empowering the process of training AI and using it on a large scale requires a lot of energy, and global companies like Microsoft refuse to share relevant information regarding resources used in powering AI solutions.

Therefore, before we jump to AI as the ultimate solution to all our carbon problems, we must look at all aspects of its overall societal and environmental potential impact.

New buzz in offsetting – BLUE CARBON

Just when businesses are starting to measure, reduce and offset their carbon emissions, a new term entered the realm of carbon management.

Blue carbon is simply a term that refers to the carbon captured by the world's ocean and coastal ecosystems and has become a buzzword in the search for solutions to mitigate climate change.

How does underwater carbon capture work?

Mangroves, seagrass meadows, salt marshes and phytoplankton absorb carbon dioxide through photosynthesis. Some of this CO₂ is converted into carbon in leaves, branches and other parts of the organism in much the same way as land-dwelling plants.

The difference is that marine habitats can sequester carbon up to 10 times faster than mature forests. Below layers of coastal vegetation are thick carbon-rich sediments which have accumulated over time, often for hundreds or thousands of years.

Three main carbon-sinking habitats: Mangroves, Tidal Marshes, and Seagrass.

Why do these ecosystems matter?

These natural habitats can store huge amounts of carbon when protected and restored. However, if destroyed or degraded, they emit the carbon accumulated for hundreds of years, becoming a source of additional greenhouse gases. According to experts, as much as 1.02 billion tons of CO₂ can be released annually from degraded coastal ecosystems, equivalent to 19% of emissions from tropical deforestation globally.*

Example:

Verra registered its first blue carbon project in 2021: a mangrove conservation initiative called Vida Manglar ('mangrove life' in Spanish) situated on the north coast of Colombia.

The project is set to remove 1 million tonnes of CO₂ over the next thirty years. Some income generated from carbon credit purchases will go towards sustainable development and improving local education and employment.

What are Blue Carbon Credits?

Land-based carbon offsets are the typical choice for businesses, primarily associated with tree planting. In recent years, the same idea has been adopted to fund blue carbon projects with enormous carbon offsetting potential.

Blue carbon credits are now considered premium products in the voluntary carbon market.

Offsetting with added benefits

Coastal communities are being struck especially hard by the effects of climate change, such as rising sea levels and disappearing fish stocks. Blue carbon credits can provide these communities with crucial financial aid while reducing greenhouse gas emissions.

Blue carbon habitats are also extremely scarce – they only make up 2% of global ocean cover and are disappearing quickly – yet they support a vast range of economically and ecologically important species.

Blue carbon started to gain attention in 2009 when the United Nations published an influential report entitled *Blue Carbon: The Role of Healthy Oceans in Binding Carbon*.

Over 150 countries have blue carbon habitats within their borders, making their conservation and protection a global issue.

The Blue Carbon Initiative (BCI) is perhaps the flagship example of this type of multilateral collaboration. This UNESCO-backed agency brings together research institutions, governments, NGOs, and stakeholder communities from around the world to tackle global warming through the sustainable management of blue carbon ecosystems at all levels.



It is worth noting that some researchers are sceptical since determining carbon removal rates for marine ecosystems is far from an exact science – estimates can vary widely even along a single stretch of coast. This makes it difficult to know precisely how effective any blue carbon restoration project will be in the longer term.

In practice:

The [Blue Carbon Projects](#) works on REDD+ Mangrove Project Development in Indonesia and Mexico, including coastal ecosystems of mangroves, tidal marshes, and seagrass meadows.

Indonesia's mangroves are estimated to contain 3.14 billion metric tonnes of carbon, one-third of global coastal carbon stocks. However, deforestation and the destruction of peatlands make Indonesia the world's third-largest emitter of greenhouse gases.

REDD+ stands for Reducing Emissions from Deforestation and Forest Degradation.

Why is Blue Carbon so unique?

- Mangroves and salt marshes remove carbon from the atmosphere at a rate ten times greater than tropical forests.
- Seagrass meadows account for just 0.1 per cent of the world's seafloor but store 11 per cent of the organic carbon buried in the ocean.
- Mangroves and salt marshes store three to five times more carbon per acre than tropical forests.
- 83% of the global carbon cycle is circulated through the ocean.
- Coastal habitats cover less than 2% of all ocean areas but account for about half of the total carbon sequestered in ocean sediments.

(Sources: The Blue Carbon Initiative; Office for Coastal Management NOAA)

*According to The Blue Carbon Initiative

Global Distribution of Blue Carbon Ecosystems



EU to ban “climate neutral” and other sustainability claims

Most companies are busy putting energy and resources into turning the wheel of their operation towards more sustainable business practices, measuring their environmental footprints and announcing sustainability strategies and pledges.

However, when it comes to communication, fighting greenwashing and deciding what is true and what is false regarding sustainability messages has become a major challenge for consumers, investors and other stakeholders.



According to the latest provisional agreement by the EU Parliament and Council, new rules are coming to ban misleading advertisements and provide consumers with better product information from 2026.

This proposal will hit hard on commercial communication using “generic environmental” claims or adopting questionable green marketing approaches.

To combat misleading messages regarding a company or product’s carbon footprint that has become extremely popular, the new regulations will also ban claims based on emissions offsetting schemes that a product has a neutral, reduced or positive impact on the environment.

These set of rules aim to combat greenwashing and help consumers make better purchasing choices.

It will banish the use of terms such as “environmentally friendly”, “natural”, “biodegradable”, “climate neutral”, or “eco” without proof of recognised excellent environmental performance relevant to the claim.

Practically, businesses must be prepared to have authentic and credible verification based on approved certification schemes or established by public authorities of any sustainable message they use regarding their products, services or the company.

Besides fighting greenwashing, the directive will also push commercial organisations to make guarantee information more visible, as many people are unaware that all goods enjoy at least a two-year guarantee in the EU.

The final vote by Members of the European Parliament is expected to take place in November. Upon approval, the directive will come into force, giving member states 24 months to incorporate the new rules into their law.

Irish businesses unlocking potential in low-carbon solutions

Tom Crean Brewery

“We want to produce a beer that doesn’t cost the earth” is the motto of the Tom Crean Brewery based in Kenmare, County Kerry.

Aileen Crean O’Brien, granddaughter of Irish Antarctic explorer Tom Crean, opened the brewery in November 2019 with her business partner Bill Sheppard to create an authentic selection of beer produced as sustainably as possible.

All their beverages are vegan, contain only four ingredients and have no preservatives, colouring or artificial flavouring.

Besides the production, they host tours to take people on a journey to learn how their beers and ales are made alongside the family history and sustainability efforts they make.



Sustainability highlights:

- 9Kw solar panel rig on the roof
- Instead of power-hungry chiller rooms and air conditioning units to keep beer stocks cool during warmer months, they designed a natural and free air cooling system version. It works the opposite way to a bathroom extractor as it is timed to come on in the early morning hours, drawing in cooler outside air, which slowly dissipates during the day.
- A wood-burning stove with the latest EU efficiency rating heats the space in the brewery during tours, using timber from a sustainable source.
- Night-time electricity empowers the mash tun, which requires more energy, with an additional double-insulated jacket to reduce heat loss further.
- LED lights are used, and sensors ensure efficiency.
- Sharing their sustainability actions with people participating in the tours, highlighting that everyone can find their own way to take climate action.

How did the Green for Business program by the Local Enterprise Office help with sustainability?
[Watch the YouTube video here >>](#)

Latest carbon project:

The team has been working on a carbon capture project to use the CO₂ generated as a by-product of brewing.

With the development of a “kitchen top” system, they aim to capture CO₂ and then transport it to an organic farmer who can use the gas in his tunnels, thus improving the production of vegetables by approximately 30% and converting the CO₂ via photosynthesis into oxygen.

There are many obstacles to overcome, including the safe handling of a potentially dangerous gas, but there is great potential in experimenting with this approach.

Jinny's Bakery and Tea Rooms

Located in Leitrim, the Northwest of Ireland, this family business run by Sinead and Pascal Gillard is all about authentic, traditionally made bread in addition to hosting self-catering cottages in the beautiful countryside set up.

The mindset has always been to make the best quality products.

When Pascal joined the business in 2007, he added a touch of logical sustainability elements to the sourcing and production side of operations, bringing his experience from previously running the Irish Organic Farmers and Growers Association.

After getting more involved and receiving professional help from the Green for Micro program run by the Local Enterprise Office (LEO) and the Origin Green* program mentors, they discovered more ways to improve the business through environmental actions.

Having practical sustainability measures and being able to communicate them credibly gives Jinny's Bakery an edge, especially as a supplier to bigger supermarket chains, where sustainability is among the selection criteria.

*Origin Green is a sustainability programme of Bord Bia, the Food Board in Ireland



Getting recognised as a green business brought new market opportunities, resulting in better positioning and no more competition based only on price.

First steps to start with sustainability:

- Managing the bins and looking at the waste generated through running the business. As a result, introducing brown bins for compostable waste and putting up signs that help separate waste were low-hanging fruits with visible results.
- Composting to save money and use waste to regenerate resources – using the brown bin content, grass, apple and carrot peelings, cardboard, and more stuff previously thrown away. The compost is then used to grow vegetables and manage the garden.

Advanced sustainability measures:

- Utilising the waste heat from the ovens used for baking was one of the most significant areas to look at.
- Changing the lights to energy-efficient alternatives.
- Introducing professional composting.
- Creating a five-year sustainability action plan.

Positive Carbon

Entrepreneurs Aisling and Mark Kirwan set up Positive Carbon to design an automated food waste monitoring system for hospitality and other food industry businesses to reduce their environmental impact and increase profit.

A third of all food produced is wasted even though producing uneaten food squanders a whole host of resources—seeds, water, energy, land, fertiliser, hours of labour, financial capital—and generates greenhouse gases at every stage.

Positive Carbon is working on an innovative tech solution that can be easily used in any professional kitchen. They train an AI model that can identify what food is being thrown in the bin with 90% accuracy and collect data instantly to help optimise resource use.



Aisling and Mark Kirwan, Founders, Positive Carbon

According to the United Nations, “reducing Food Waste is the single greatest solution to bring carbon out of the atmosphere”.

Hotel Doolin

This multi-award-winning boutique eco hotel in County Clare is located along the Wild Atlantic Way and became a trailblazer in sustainable hospitality by becoming the first certified carbon-neutral hotel in Ireland in 2019.

Multiple activities under the Green Work initiative of Hotel Doolin help reduce their operation's overall environmental footprint and ensure they are constantly on the lookout to adopt the best sustainability practices.

These actions include avoiding single-use plastic and plastic bottles, reducing waste, harvesting rainwater, and participating in local clean-ups, among other things.

Hotel Doolin aims to become carbon-negative in the upcoming years and lead the way toward a net-zero economy.

Sustainability highlights:

- Switch heating from oil to air-to-water system.
- Using a green electricity supplier.
- Staff training and establishing a Green Team to monitor sustainability areas and provide input for development.
- Food served in the restaurant is sourced within 50km to support local producers and reduce environmental footprint.
- Planting native trees for offsetting.



The impact of carbon labels on consumer behaviour



If items sold in stores were labelled according to the carbon emissions embodied in them, would customers be encouraged to shop more eco-consciously?

Carbon labelling is a relatively new concept that enables manufacturers to display information surrounding the impact their products have on the environment.

The idea behind a climate label is that the label on a product not only tells the consumer what the product contains but also tells the planetary costs that went into manufacturing the product. These expenses are typically hidden from consumers and might range from water usage to animal welfare and carbon emissions.

Think of a climate label like a nutritional label on a food product that helps customers make better choices. However, just like a nutritional information label, we must question whether this is an effective approach to encouraging consumers to shop more sustainably.

A group of American researchers sought to determine this with a [SUSDIET project](#).

They completed a study in a suburban grocery store in Ballina for 12 weeks in 2008. They identified five categories of grocery items with a high turnover and wide product choice. These 37 products were then categorised according to their CO₂ emissions generated up to the point of sale.




They were labelled with one of three symbols – average or medium (yellow footprint), lower than average (green footprint), and higher than average (black footprint).

The classification was significantly influenced by the energy used during transport and the energy embodied in the packaging.

The labels were in place for 8 weeks, and over the eight weeks, the number of black-labelled sales fell from 32 per cent to 2 per cent while the share of green-labelled sales soared from 53 per cent to 57 per cent. A further analysis unveiled three different trends of consumer response.

In other words, when green-labelled products were also the cheapest, there was a strong consumer response. However, if the green-labelled goods were not the most affordable, the reaction to the labelling was weaker.

Experimental carbon labelling

-  Higher than average footprint
-  Average or medium footprint
-  Lower than average footprint

Other research has also been conducted to analyse the effectiveness of carbon labelling for driving behavioural change.

Some findings have concluded that those who express higher environmental concern and typically purchase eco-friendly products are more likely to buy carbon-labelled items. Carbon labelling has also been found to increase people's willingness to pay more for a product.

Researchers across the globe agree that carbon labels successfully get customers to consider the ecological impact of their choices. A [paper](#) published in 2018 revealed the presence of a carbon label makes customers more likely to purchase a product.

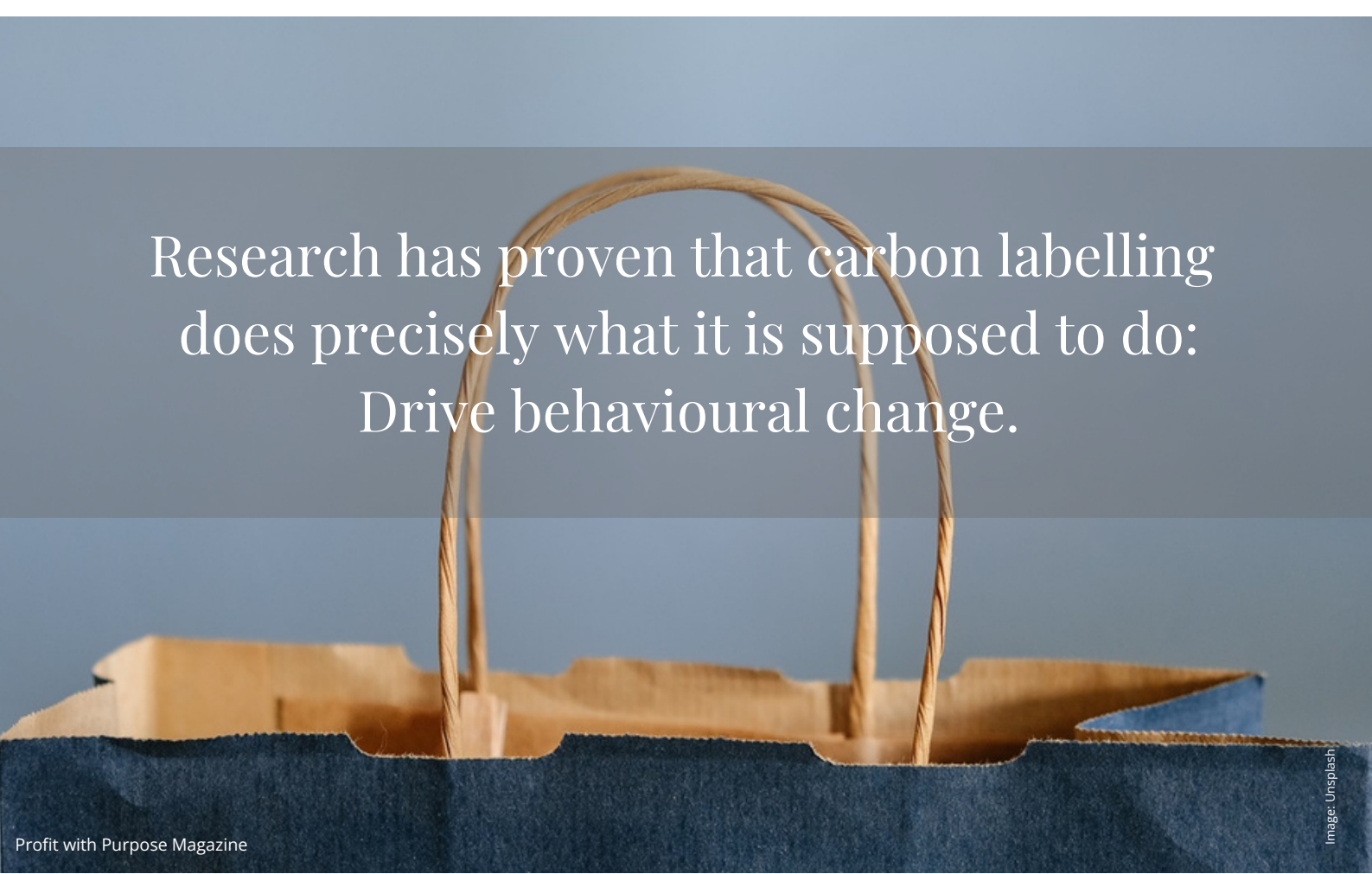
Additionally, European shoppers were found to be willing to pay premium prices of 20 per cent for a product. Other [studies](#) have also backed up these findings. A Carbon Trust 2020 survey uncovered customers were more likely to think positively about a brand when it could showcase its environmental impact on its products. Besides, a [TENZING](#) study confirmed carbon labels could help alter consumer behaviour.

[Research](#) does still note that customers have a poor knowledge of carbon measurements. In other words, when carbon labels are re-designed using familiar symbols like traffic light colours, a consumer's understanding increases significantly.

Considering the potential positive impact of carbon labelling seems to be a way to make sustainability communication more consumer-friendly while incentivising and encouraging sustainable choices.

According to the Carbon Trust, most consumers actively want carbon labelling. Their [survey](#) found that over 10,000 people from Germany, France, Italy, Spain, Sweden, the UK, the Netherlands, and the US support carbon labelling on products.

Carbon labels could have a significant role to play in the transition to a greener world. However, the latest EU proposal on banning vague carbon and environmental claims concerning products and services will also force organisations to be strict on labelling.



Research has proven that carbon labelling
does precisely what it is supposed to do:
Drive behavioural change.

Coping with carbon: the rise of carbon anxiety



The phrase 'eco-anxiety' has become increasingly used, but just like sustainability, eco can be quite the umbrella term. Climate or eco-anxiety refers to a chronic stress or fear associated with the climate crisis.

There's no denying that much of this fear is well and truly justified. For some, fear may be a motivator for engaging in more sustainable activities. For others, it can leave them feeling powerless and immovable.

People navigating eco-anxiety often feel they are not doing enough. With the focus being placed primarily on carbon footprint, net zero emissions, and a just transition, it's safe to say many are experiencing a sense of carbon overwhelm.

Think about the many terms that come under this umbrella and the vast number of carbon management activities. When you see it all written down, it can be information overload.

It is also important to acknowledge that education or lack of awareness or knowledge is a significant barrier to making change happen. This lack of education can especially be applied to carbon, a constantly evolving area.

Today, more entrepreneurial leaders recognise the need to protect the planet while generating a profit. Although the motivation to do better is there, the journey still needs to be as simple as possible to get results, but right now, the carbon landscape isn't so crystal clear.

We are seeing the rise of new approaches, like various types of carbon offsetting and storing. Still, new terms like carbon neutral, carbon positive, carbon negative, net zero, carbon zero, and much more are also there to keep up with.

With all the buzz around carbon, businesses with the best intentions still don't know how to approach this area, making the feeling of being overwhelmed more likely.

Despite the challenges, the [SME Climate Hub](#) report found that half of small businesses calculate emissions, and 60 per cent have created plans on how to reduce their carbon impact.

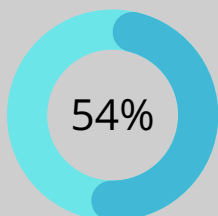
In saying that, two-thirds of small business owners did share that they were worried they lacked the proper knowledge and skills to tackle the environmental emergency of which carbon is a significant part.

The top reason they shared to delay climate action was a lack of knowledge and skills (63 per cent). Ultimately, the survey concluded that SMEs need additional support and guidance surrounding carbon, and we can assume some larger organisations also struggle with this, given the complexity of their operations.

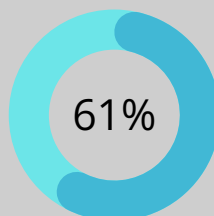
There is a significant need for a comprehensive yet easy-to-digest carbon literacy like never before so businesses can take adequate steps to minimise their carbon footprint.

Carbon literacy goes beyond simply comprehending the science behind climate change. Still, it is an awareness of carbon dioxide impacts and costs of everyday activities and the motivation and ability to reduce emissions on an organisational basis.

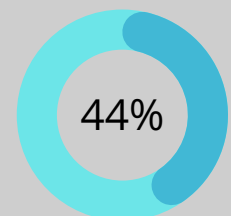
Research from the [British Business Bank](#) finds that most small businesses in the UK do not comprehend how common environmental terms like 'carbon neutral', 'carbon footprint', and 'net zero' apply to their business. The opinion survey included 1,000 senior decision-makers.



Over half (54%) feel the language, information, and terminology surrounding carbon emissions reduction is highly complex.



Sixty-one per cent said they would find more information and advice about taking action to reduce and measure their carbon emissions helpful.



Nearly half (44%) said they do not know where to find information about reducing their emissions.

A [British Chamber of Commerce report](#) unveiled that a lack of business understanding has blocked action on net zero in the business sector. This is both in terms of the actual targets and steps to achieve these targets.

Without a complete understanding, businesses will unlikely to act, which is greatly needed, given that lack of action undermines their ability to reach net zero emissions and future-proof their enterprise.

Research from BRC reports that around 70 per cent of consumers openly admit they do not understand the contributions to their carbon footprint or comprehend the most impactful choices they can make.

[NatWestGroup](#) research revealed that 87 per cent of UK SMEs are unaware of their organisation's total carbon emissions. While they have good intentions, a lack of understanding is acting as a significant barrier.

This isn't just affecting UK organisations; plenty of businesses and entrepreneurs worldwide are struggling with carbon overwhelm.

A survey found that Irish businesses are doubtful they can meet carbon neutrality, recognising that it is challenging and a major undertaking.

The lack of corporate and business understanding of net zero and carbon emissions also filters down to their customers.

The sense of anxiety and hopelessness business owners can feel about the carbon challenge is justified. However, businesses must take action as they must play a significant role in mitigating the crisis.



Riailtas na hÉireann
Government of Ireland

Climate Jargon Buster

An A-Z plain English guide to climate action terms



Plain English
Approved by NELA

Images: Government of Ireland; Carbon Literacy Project

Many resources are available that work to demystify the carbon landscape and make it more accessible for businesses.

Leaders can also find other supports like the [Carbon Jargon Buster](#) and [The Carbon Literacy Project](#) to enable and empower organisations to take on this challenge.



How do Irish people think about climate change?

People in Ireland show high levels of concern about climate change and support climate action, yet think that people in other countries and in the future will be more impacted than Irish people in the here and now.

The Environmental Protection Agency (EPA) has announced the 'Climate Change in the Irish Mind' project, a baseline study of Irish people's beliefs, policy preferences, attitudes, and behaviours concerning the environmental crisis.

The work for this baseline study has been undertaken by the EPA and the Yale Program on Climate Change Communication in support of the National Dialogue on Climate Change.

The project is based on the established methodology of the 'Climate Change in the American Mind' survey carried out by the Yale Program on Climate Change Communication and the George Mason University Centre for Climate Change Communication. The fieldwork was carried out in 2021 by the survey company Behaviours & Attitudes, following a recognised industry standard.

It was conducted with a representative sample of Irish people aged 18 years and older. The survey saw 4,030 interviews completed and contained a series of topics and themes. Such themes include worry about climate impacts/extreme weather; beliefs, risk perceptions, policy support; behaviours (consumer and political); norms; personal experience of climate change; and media sources.

Policy support

The key overall findings for the policy support topic were that a majority of Irish people support climate action policy. It was found that 79 per cent of Irish people say climate change should either be a 'very high' or 'high' priority for the Government.

Most of these individuals also support spending carbon tax revenues on programmes to reduce carbon emissions and prepare for climate change impacts.



A large majority of people (85 %) in Ireland are concerned and worried about climate change.

Across four specific policy areas – banning peat, coal, and oil; higher taxes on cars that use petrol and diesel; reducing cattle herd size; and building new infrastructure to support reinvested use of renewable energy - the level of national opposition was significant.

It was between 32 and 36 per cent for the first three and 15 per cent for building new infrastructure to support reinvested use of renewable energy.

Survey reveals how Irish people think about climate change

One hypothesis was that a core group of adults were commonly in opposition to all of these policies. However, when cross-analysed, it emerged the opposition was broader than initially expected. In other words, 62 per cent of Irish adults were opposed to at least one of the policy areas, indicating opposition was driven by individual issues.

Risk perceptions

The overall findings for the risk perceptions topic were that over four in ten Irish people think people in Ireland are currently being harmed by climate change.

Most people also believe they will be harmed by climate change but feel others will be more affected. A large majority of people (85%) in Ireland are concerned and worried about climate change.

This figure includes 37 per cent who describe themselves as 'very worried'. It was found that 22 per cent of people believe climate change will start to harm people in Ireland in the next ten years.

Few people (2%) think climate change will ever harm people in Ireland or will harm them only in the very distant future, for example, in 50 (9 %) or 100 (4%) years.

Nearly all Irish people feel that future generations of people (95 %), people in developing countries (94 %), and plant and animal species (94 %) will be harmed a 'great deal' or a 'moderate amount' by the environmental crisis.

Meanwhile, 63 per cent think they will be harmed by climate change, and 16 per cent believe climate change will harm them significantly.

Roughly eight in ten believe people in Ireland will be harmed, seven in ten or more feel their family, people in their community (75 %), and the Irish way of life (72 %) will be harmed. Two in three people believe Irish historic sites (66 %) will be affected by climate change.

The results reveal there is a gap between the projected harmful effect on 'us' versus 'others', and this is highly consistent by age.



79% of Irish people say climate change should either be a 'very high' or 'high' priority for the Government.

Younger adults consistently exhibited significantly higher levels of concern and risk perceptions. This attitude difference is significantly evident between the two youngest age groups (much higher 18-24 years vs 25-34 years). It was also discovered that young women are disproportionately concerned about climate change.

Consumer behaviours in the past 12 months also reveal young adults exhibit a consistency between their attitudes and behaviours concerning sustainability.

However, intentions for the next 12 months show little age variation, with young adults conforming to the strong national average. This could indicate young adults are content with their current activity levels. It was found that the age group most concerned about climate change are also the least likely to perceive it as an immediate threat.

Climate Change in the Irish Mind
Wave 1: Insight Report No.2
Climate Risk Perceptions

epa
Environmental Protection Agency

THE PROGRAM ON
Climate Change
Communication

National Dialogue on Climate Action

Eilíne na Míreanna
Government of Ireland

Image: EPA

“The report also shows that there is an ‘othering’ or disconnection from the impacts of climate change. People believe that it will harm people in the future, far away, animals and plants, other people, and lastly, themselves personally”.

Dr Eimear Cotter,
Director of the EPA's Office of Evidence & Assessment

Invisible impact

We tend to think of the online world as green by default. But every time we visit a website, send an email or use social media, a small amount of carbon dioxide is emitted.

The Digital Declutter Toolkit by Business Declares, whose mission is to help accelerate action on climate change within the business community, was created to help introduce the concept of digital carbon footprints to the wider business community and provide a starting point to begin quantifying and reducing their impact.

Tom Greenwood, Co-Founder and Managing Director at Wholegrain Digital, contributed to the tool kit and says that we consume far more through digital services than we ever did through print.

“Although we cannot see it, all digital services have a carbon footprint,” says Tom.

“If the internet were a country, it would be the world’s sixth biggest polluter.”

There is also a significant carbon footprint in manufacturing all electronic devices we use, not to mention the negative environmental impact when they end up as waste.

Even if digital is better on a like-for-like basis, it might not always be when we look at the bigger picture.

FACTORS ADDING TO DIGITAL CARBON FOOTPRINT

IT Hardware Products that we use every day for work and fun. Consider the original manufacturing, packaging, shipping, electricity consumption in-use, and end-of-life disposal, known as e-waste.

Video calls and streaming Imagine when you have multiple people in a video call using their cameras. We are uploading our video to all participants and streaming videos from each of them to our devices. According to scientists at the UK’s Royal Society, 4K video streaming on the phone generates 8 times more emission than standard definition (SD).

Websites Sustainable webdesign is a relatively new area, which is often overlooked. However, improved user experience and better performance come as a reward for reducing your website emission. Each page view and hosting your data generates carbon, and given the number of page loads and amount of data, it results in significant emission.

Emails We wouldn’t think of emails as a harmful component in the fight against climate change. Besides spam and unnecessary emails, an email with big attachments can create 50g CO₂e. And again, the massive number of emails sent every day adds up.

Cloud storage The invisibility of storing data in the cloud could easily give the impression that it is not even there. However, the buildings that house the thousands of hard drive-bearing rack use a significant amount of energy and usually powered by fossil fuels.

Mobile Apps All software, including the application running on your phone, consumes electricity. Designing energy-efficient apps and sustainable sources, such as wind or solar energy, is a great step forward.



Get the [Digital Declutter Toolkit](#) for free!

Digital Marketing All the information that we exchange online is data. With the ever-increasing competition for our audience’s attention, the quantity over quality approach has emerged, producing more digital marketing content. This means more data with more energy.

The further the data travel, the more energy they consume

Example: Channel 4 investigated in their “Dispatches” current affairs program the impact of a single post. They found that when football star Cristiano Ronaldo posted to his 240 million followers, it consumed as much energy as ten average UK household for one year.



Does carbon offsetting really work?

Carbon offsetting is a method that enables companies, individuals, and countries to minimise their climate impact. An organisation or individual can purchase carbon credits to account for the carbon they emit due to their activities. These carbon credits are obtained by investing in projects that reduce or remove carbon dioxide from the atmosphere, such as tree planting, restoring natural ecosystems, and protecting forests.

Verified and certified carbon credits are traded at the carbon market, allowing companies, governments, and other organisations to address their greenhouse gas emissions.

The idea of carbon offsetting was created by the United Nations when they realised the challenge of reaching net zero at the Kyoto Protocol in 1992.

Carbon offsetting enables business leaders to think of their carbon footprint as a form of accounting.

Their emissions are then their expenditure, and the carbon offsets they purchase act as their revenue. Essentially, businesses should try to break even every year to transition to net zero.

What offsetting offers isn't bad; renewable energy for poor communities and tree planting are fantastic initiatives. However, offsetting alone cannot deliver what we need to secure a low-carbon economy.

Some argue that they are a distraction from meaningful climate change solutions and that offsetting fuels greenwashing and unsustainable behaviour.

Beyond these claims, offsetting may not be entirely effective at cancelling out emissions. For instance, a newly planted tree can take up to 20 years to capture the amount of CO₂ a carbon offset scheme promises.

With this in mind, we would need to plant and protect a significant quantity of trees for decades to offset just a fraction of worldwide emissions.

Research has also determined that carbon offsetting may not be an effective sole strategy for tackling our carbon problem.

A [study](#) for the European Commission looked into the UN-sanctioned offset projects and discovered three-quarters of projects were unlikely to have resulted in additional emissions reductions.

Additionally, just 2 per cent had a high likelihood of being classed as additional.

There is also worry that carbon credits are being used as excuses to put off the systemic reforms to our energy generation and usage that are desperately needed.

Others have argued it doesn't work at all since emissions levels are too high to possibly offset, and it is also challenging to calculate the real impact of offsetting programmes.


[The Guardian](#) conducted research in 2023 that unveiled two-thirds of the most popular offsetting schemes are overpromising and underdelivering on actual impact in terms of cancelling our emission.

According to [AlliedOffsets](#), the most comprehensive emissions trading database, these popular global offsetting programs span twenty countries, dominantly in developing regions, including forestry schemes, hydroelectric dams, solar and wind farms, waste disposal and greener household appliances schemes.

However, a vast number of these carbon offsetting schemes do great work for important causes like protecting wildlife, providing developing countries with energy-efficient technology and investing in green energy.

We need these kinds of actions, but we also must recognise that carbon offsetting cannot solve our carbon issue alone.

Efforts should be focused on drastically reducing emissions and keeping the world's forests standing.

A photograph of a forest path with sunlight filtering through the trees. The path is covered in fallen leaves, and the trees are lush green. The image is used as a background for the text on the right side of the page.

Considering the pros and cons, it seems that carbon offsetting is more of a plaster than a cure for the problem.

Carbon Navigator

terminology explainer

Carbon management in business

It calculates the emissions produced by all business operations, thus determining the level and scope of action required, including how to reduce, manage and possibly offset carbon footprint. This can be applied to a wide variety of business activities, products and services, supply chains or employee management.

Carbon footprint

The amount of Greenhouse Gases (GHG) that trap heat in the atmosphere and warm the planet (such as carbon dioxide or methane) emitted by an organisation through all its activities or the environmental impact in terms of carbon emissions.

Science-based targets

Emissions reduction targets adopted by companies to reduce GHG emissions are considered “science-based” if they are in line with the level of decarbonisation required to keep global temperature increase below 1.5°C compared to pre-industrial temperatures.

The Science Based Target initiative (SBTi) mobilises the private sector to take the lead on urgent climate action by showing companies how much and how quickly they need to reduce their greenhouse gas emissions to prevent the worst effects of climate change – technically, to set science-based emissions reduction targets.



Carbon Neutral

Carbon neutrality is when you or your commercial/industrial operations emit the same amount of CO₂ into the atmosphere that you offset by other means. You are practically removing or avoiding the equivalent amount of emissions your business produces. By balancing out emissions, you are not making the status quo worse or better.

Net zero

Net zero is more or less the same as being carbon neutral. The net total of your emissions is essentially zero when you still generate emissions but offset the same amount elsewhere.

This is the amount of an organisation's greenhouse gas emitted equal to the amount captured or removed from the atmosphere.

Carbon negative

This is what really makes things better, meaning that the amount of CO₂ emissions you remove from the atmosphere is more than you emit. To achieve a net zero economy, companies must move towards becoming carbon negative rather than just aiming for carbon neutrality.

Note: Carbon positive is more of a communication term used for marketing purposes and is slightly confusing since it actually means the same as carbon negative.

Scope 1-2-3 emissions

A company's greenhouse gas emissions are classified into the following scopes:

Scope 1 – direct emissions from owned or controlled sources.

Scope 2 – indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company.

Scope 3 – includes all other indirect emissions that occur in a company's value chain, including business travel, waste generation, transportation, franchise operation, etc.

Carbon Offsetting

Reducing one's greenhouse gas emissions and compensating for the amount that cannot be reduced somewhere else to balance out the overall emission.

Offsetting is measured in tonnes of carbon dioxide-equivalent (CO₂e), and 1 tonne of CO₂e means one tonne of carbon dioxide or its equivalent in other greenhouse gases has been removed.

This can be done through investment in renewable energy, energy efficiency, forestation or other clean, low-carbon technologies by purchasing certified carbon credits to cancel out the generated emissions.

Carbon Credit

A carbon credit is a permit that allows the company that holds it to emit a certain amount of CO₂ into the atmosphere.

One carbon credit is the equivalent of 1 tonne CO₂e. Businesses that cannot reduce their emissions sufficiently at present can buy these credits to cut their carbon footprint.

Carbon credits need to be certified, and it is available for purchase from accredited partners.

Regulatory Carbon Market

Carbon markets are marketplaces through which regulated organisations trade and manage emissions permits or offsets to meet regulatory requirements.

Voluntary Carbon Market

It started under the UNFCCC* in 2000. It allows CO₂ emitting activities (organisations and individuals) to take voluntary climate action by financing carbon reduction or carbon capture and storage programs with co-benefits to the local communities and biodiversity.

* United Nations Framework Convention on Climate Change



Directory of regulations and initiatives

Image: Getty Images

The European Climate Law

Entered into force in 2021, this law makes the goals set out in the [European Green Deal](#), launched in 2019, that Europe's economy and society to become climate-neutral by 2050 legally binding to all member countries.

In addition, it also sets the intermediate target of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels.

The Climate Law includes measures to keep track of progress and adjust actions accordingly, and it is reviewed every five years.

The new Social Climate Fund will dedicate €65 billion from the EU budget and over €86 billion in total to support the most vulnerable citizens and small businesses with the green transition.

The `Fit for 55` package was adopted by the EU Commission just before the COP28 Climate Conference to reinforce its commitment to reaching a 55% emission reduction by 2030.

[Find more insights on how the EU plans to deliver the Green Deal>>](#)

Corporate Sustainability Reporting Directive (CSRD)

All larger companies and listed SMEs are required to report on their sustainability according to the Corporate Sustainability Reporting Directive (CSRD) since January 2023.

The first companies will have to apply the new rules for the first time in the 2024 financial year for reports published in 2025.

Companies subject to the CSRD must submit reports according to European Sustainability Reporting Standards (ESRS). Reporting includes carbon emissions across all three scopes, among other measures.

Carbon and Environmental claims

In September 2023, the EU Parliament and Council agreed on new rules to ban misleading advertisements considered greenwashing and improve consumer information on product durability.

According to these plans, generic environmental claims and other misleading marketing tricks will be banned, and only sustainability labels based on approved certification schemes or established by public authorities will be allowed by 2026.

The rules will apply to generic environmental claims and communications regarding emissions offsetting schemes that a product has a neutral, reduced or positive environmental impact.

(Read more on page 18)

100 Climate-Neutral and Smart Cities

The EU Commission announced 100 cities participating in the EU Mission for climate-neutral and smart cities by 2030 in April 2022.

The chosen 100 cities represent 12% of the EU population, and the Cities Mission is receiving €360 million of Horizon Europe funding covering the period 2022-23 to start the innovation paths towards climate neutrality by 2030.

The research and innovation actions will address clean mobility, energy efficiency, and green urban planning and offer the possibility of building joint initiatives and ramping collaborations in synergies with other EU programmes.

The joining cities include Paris, Bologna, Dublin, Porto, Helsinki, Amsterdam, Munich, Warsaw, and Zagreb, among others.

The 100 selected cities are to develop Climate City Contracts, including an overall plan for climate neutrality across all sectors, such as energy, buildings, waste management and transport, together with related investment plans.

This process will involve citizens, research organisations and the private sector.

Urban areas are home to 75% of EU citizens, while globally, these areas consume over 65% of the world's energy, accounting for more than 70% of CO₂ emissions. Therefore, cities must act as experimentation and innovation ecosystems to help all others in their transition to becoming climate-neutral by 2050.



Images: Net Zero Cities

In October 2023, ten cities outlining and adopting outstanding Climate City Contracts were awarded the Label of the EU Mission for Climate-Neutral and Smart Cities.

The Commission, together with the Mission Platform, currently managed by the project NetZeroCities, will continue supporting the effective implementation of the Climate City Contracts.



Resources and inspiration to achieve net zero



Image: Getty Images

Vision 2050: Time to Transform

The World Business Council for Sustainable Development (WBCSD) released an updated version of its Vision 2050 in 2022, promoting 9 Transformation Pathways, providing the business community with comprehensive, reliable and ambitious guidance on how it can lead the transformations the world urgently needs.

It maps out the areas of business activity essential to a sustainable and just society: energy; transportation and mobility; living spaces; products and materials; financial products and services; connectivity; health and well-being; water and sanitation, and food.

SME Climate Hub

The SME Climate Hub is a non-profit global initiative that empowers small to medium-sized companies to take climate action and build resilient businesses for the future.

Companies can pledge their actions to halve emissions by 2030, achieve net zero by 2050, and report on their progress yearly.

The online platform offers free-to-use tools and resources to make the transition smoother.



Race to Zero and Race to Resilience

Through their campaigns, the UN Climate Change High-Level Champions and the Marrakech Partnership are spearheading the race to a cleaner, safer, healthier, and more resilient world.

The Race to Resilience and Race to Zero campaigns aim to elevate ambition and mobilise credible climate action among cities, regions, businesses and investors.



The Carbon Trust

An organisation with over 400 environmental sustainability experts working with diverse industries and business sectors across the world. Their website acts as an educational resource for businesses working to address carbon management.

They share impact stories, guides, reports, and tools to demystify the carbon landscape and help businesses achieve their sustainability goals.

The 1.5C Business Playbook

A 3.0 version of this practical guide for companies created by the [Exponential Roadmap Initiative](#) was launched in September 2023 to help them work on their strategies and actions built around four climate pillars.



Climate Action Toolbox

This is a free, easy-to-use online tool by the [Sustainable Business Network](#) (SBN) which shows businesses how to measure and curb their emissions.

The toolbox is based on a simple assessment and identifies priority action areas for the business type and core activities.

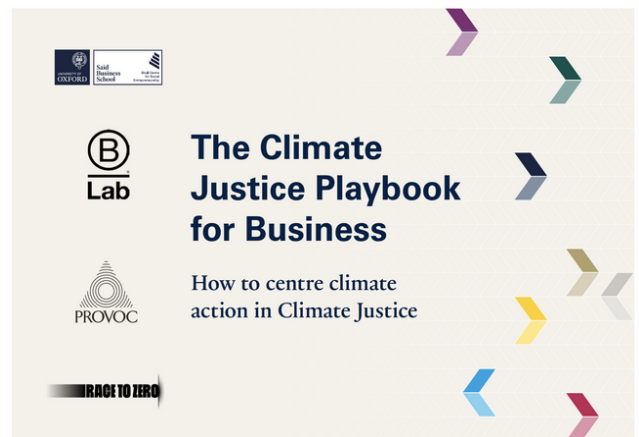
It also offers tailored advice and support, such as step-by-step guides on how to reduce emissions, personalised action plans, and inspirational stories.

All that is required to get started is a two-minute-long self-assessment.

B Corp Climate Collective

This group was created by Certified B Corporations to work together to take action on the climate emergency.

The Collective released [The Climate Justice Playbook for Business](#), which provides insights, guidance, and case studies of companies seeking to advance climate justice in their operations, supply chains, and the communities they impact.

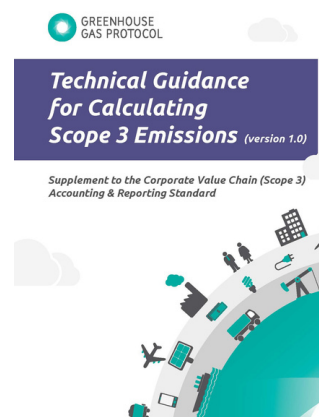


Greenhouse Gas Protocol

This website offers tools to enable cities and businesses to develop reliable and comprehensive inventories of their greenhouse gas emissions. Their Corporate Accounting and Reporting Standard offers guidance on the entire greenhouse gas inventory development process for businesses.

They also provide cross-sector, country-specific, and sector-specific tools for cities and countries to better track progress toward their climate goals, besides hosting training on various carbon-related topics.

The Scope 3 Evaluator Tool is a unique resource to address this area, which is the hardest to manage and reduce.



Starter kit for Irish businesses to take climate action

Supports and Funding

Enterprise Ireland

[Green Transition Fund>>](#)

[Client Solution Hub - Sustainability workshops and webinars>>](#)

[Green Start>>](#)



**SMALL CHANGES.
BIG IMPACT.**



[Green for Business](#)

This FREE programme helps small businesses take the first step towards becoming more sustainable, giving you access to a green consultant who'll show you the small changes that can have a big impact on your company - and the world around you.

[Learn more>>](#)

Potential benefits of greening your business:

- Increased cost savings
- Improved resource efficiency (for example: using less energy, water, and materials)
- Reduced environmental footprint and greenhouse gas emissions
- Opportunities for higher and additional value on products and services
- Increased access to customers, improved corporate image and reputation
- Increased resilience to climate change impacts

Guidelines and Learning

Climate Toolkit 4 Business

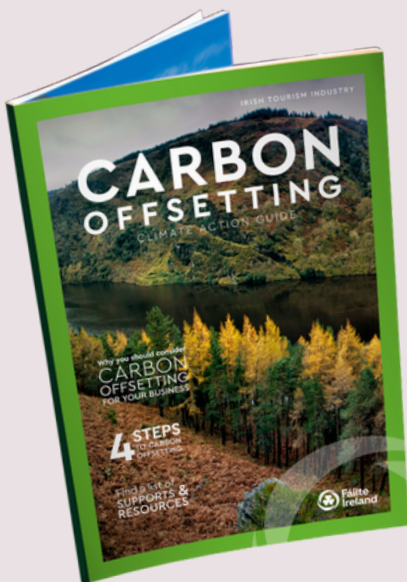
This Irish government initiative aims to support businesses in their zero-carbon journey.

The toolkit is an online resource, and in a few simple steps, businesses can tailor a climate action plan for their business.

The website calculates data provided by a business, sharing its estimated carbon footprint and the tailored action plan that they can also share with their colleagues, assign tasks, and track success.

Climate Toolkit 4 Business

Start your zero carbon journey



Ireland's Knowledge Centre for Carbon, Climate and Community Action -

Providing education for the transition to a low-carbon economy.



Climate Action Roadmap for the Hospitality Industry

Fáilte Ireland wants to help tourism and hospitality businesses make a positive impact on the environment and contribute to Ireland's net zero goal. They provide a user-friendly Climate Action Roadmap complete with a series of guides and supports for climate action.

Climate Action: A toolkit for business

This comprehensive toolkit provides businesses with the information they need for their climate action journey and provides practical guidance on how to develop an enduring climate action strategy. Published by Ibec, in collaboration with Accenture.

Climate Action

A toolkit for business





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