Is AI the enemy of sustainability?

Hiyield's AI & Sustainability Report

Hiyield

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Introduction

Welcome to Hiyield's AI and Sustainability Report. We're thrilled to share the insights and data we've gathered on this critical topic. AI is becoming more pervasive, influencing nearly every aspect of our lives and work. With this report, we set out to explore how AI is being used, its environmental impact, and the level of awareness surrounding this.

AI has the potential to enhance our work, streamline processes, and make our businesses and projects more efficient. However, as with any powerful tool, it's crucial that we approach it responsibly. This means selecting the right tools for the job and ensuring we're mindful of the environmental cost of what we create. At Hiyield, we are committed to understanding this impact and taking steps to mitigate it wherever possible.

One of the most rewarding aspects of creating this report has been engaging with individuals across different industries, learning how they're leveraging AI, and discussing the challenges and opportunities it presents. Their thought-provoking insights have highlighted the importance of striking a balance between innovation and sustainability.

We hope this report not only informs but also inspires you to think critically about the role AI plays in your work and how we can collectively strive for a more sustainable future. Thank you for taking the time to explore this important issue with us.

Matt Ville
Founder and CTO of Hiyield

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About Our Report

This report consists of the findings of our survey of business decision-makers from diverse sectors to explore the key drivers, challenges, and concerns surrounding AI adoption and its environmental impact.

Additionally, we commissioned the University of Exeter to carry out desk research on the environmental implications of AI, complemented by our own comprehensive desk research.

The findings reveal that while AI has the potential to streamline operations and boost productivity, its environmental footprint is a growing concern. To address this, we spoke to experts in the field to provide actionable recommendations that can help businesses align their AI usage with their sustainability goals.

This report explores three critical areas to provide a wide-ranging perspective of the issues at play:

AI's Environmental and Ethical Challenges
AI's Role in Advancing Sustainability
Practical Steps for Sustainable AI Use

Read on to find out how your business can harness AI's potential without costing the earth.

Part One

AI's Environmental and Ethical Challenges

The Cost of Intelligence

It's impossible to ignore the rise of AI in the business world, and in our everyday lives. From AI-powered chatbots revolutionising customer service in banks and retail, to personalised product recommendations from e-commerce giants like Amazon and Netflix, and even Gmail suggesting ways to polish our emails, AI is everywhere. With OpenAI's ChatGPT now a household name, it's clear that AI is no longer a futuristic concept - it's an integral part of our daily reality.

According to the Office for National Statistics (ONS)[1], approximately 1 in 7 (15%) businesses reported in September 2024 that they are currently using some form of AI, 5 percentage points higher than in September 2023. And for businesses with 250 or more employees, this percentage was higher at 30%, a rise of 12 percentage points.

With this increase comes a significant and growing demand for AI-related skills and roles in the UK job market, spanning various industries and job categories. Research from recruitment company StandOutCV[2] suggests that job vacancies requiring AI skills are growing four times faster than all other jobs in the UK, and that UK employers are willing to pay 14% more for candidates with AI skills.

Yet it's become increasingly clear that AI's rapid adoption significantly increases the environmental footprint of businesses that use it. Desk research collated for us by the University of Exeter reports that the use of ChatGPT-3 is 10 times more energy demanding than a Google search, and that training ChatGPT-4 is estimated to have used 50 times more energy than training ChatGPT-3.

With more AI comes the need for more data centres, a daunting prospect from an environmental perspective. According to the 2024 McKinsey report on AI[4] data centres currently account for approx 1% of global electricity consumption, and this share is projected to increase significantly as AI use grows. In the United States, power demand from data centers is expected to reach 606 terawatt-hours (TWh) by 2030, up from 147 TWh in 2023, representing about 11.7% of total US power demand.

[1] https://www.gov.uk/government/statistics/business-insights-and-impact-on-the-uk-economy-3-october-2024
[2] https://standout-cv.com/stats/ai-in-recruitment-statistics-uk
[3] University of Exeter Methodology: This research study involves the usage of secondary sources, for example: directories, databases, academic and industry literature to identify and collect information ...Staff time from within the Green Future Solutions team (University of Exeter) was provided to deliver this service. The work was desk-based and time-limited. As such, it is not an exhaustive piece of research, however key requests were prioritised.
[4] https://www.mckinsey.com/featured-insights/sustainable-inclusive-growth/charts/ais-power-binge

The Hiyield report highlights the growing sustainability challenges posed by AI, an important and complicated topic.

AI operates as a ‘nebulous oracle,’ obscured by abstraction, yet its reliance on energy-intensive calculations creates tangible environmental impacts. Unlike traditional computing, AI can’t rely on shortcuts, meaning every action demands significant energy and produces heat. While advancements like fusion energy could revolutionise this, we’re decades away, and our underfunded National Grid is ill-prepared to handle renewable energy at scale.

AI’s exponential growth requires immediate action. At The Positive Internet Company, we use 100% renewable energy, passive cooling, and innovative recycling at our data centre, while also rewilding the surrounding land to foster biodiversity. If businesses nationwide took similar grassroots steps, alongside systemic change, we could mitigate AI’s environmental toll. The choice is ours: Utopia or Dystopia? With the right focus - prioritising discovery over profit - we can ensure AI becomes part of the solution rather than the problem.

Nick Mailer
Founder, Director, and Global CTO
The Positive Internet Company

Little wonder then perhaps that the environmental impact of AI emerged as a pressing concern for the business leaders who took part in our survey. Carbon emissions from software - including AI - ranked as the top sustainability concern (62%), ahead of service-related emissions (59%), business travel (56%), and supply chains (47%).

It's possible that this startling finding may have been influenced by the composition of the respondent group, many of whom work in sustainability-focused roles. Yet it highlights growing awareness of AI's environmental implications, underlining the need for further investigation into whether these concerns are reflected more broadly across diverse industries and business leaders.

When it came to AI and sustainability, our survey respondents had three main concerns:

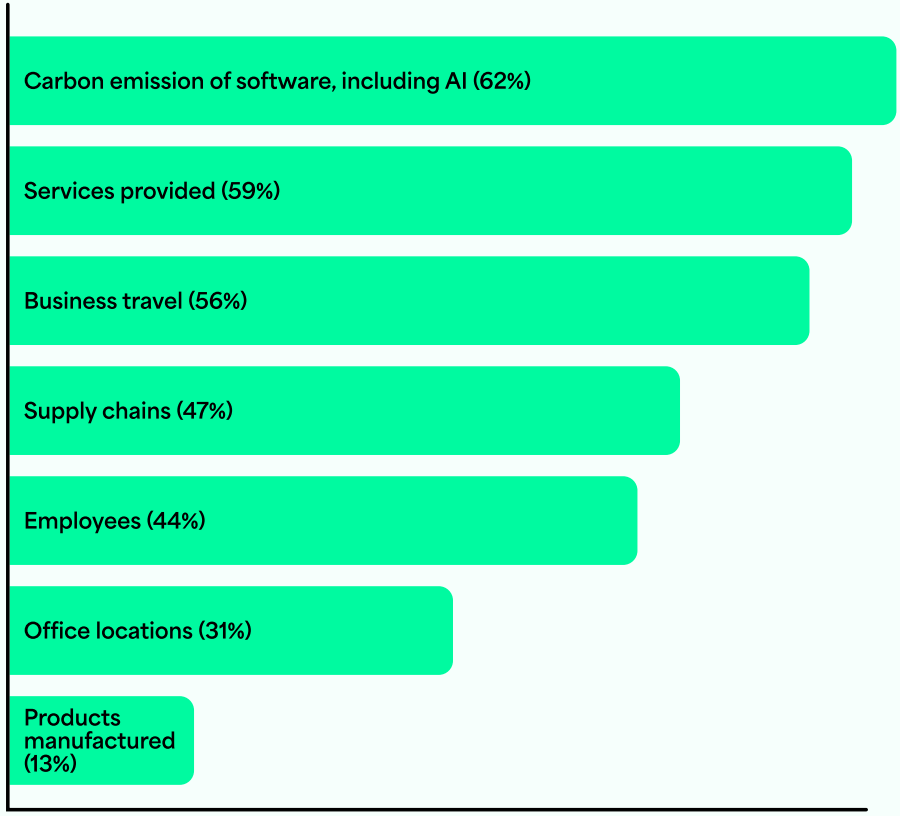
The lack of regulation around AI's carbon footprint.

That AI's high energy consumption can sometimes generate large amounts of low-value output.

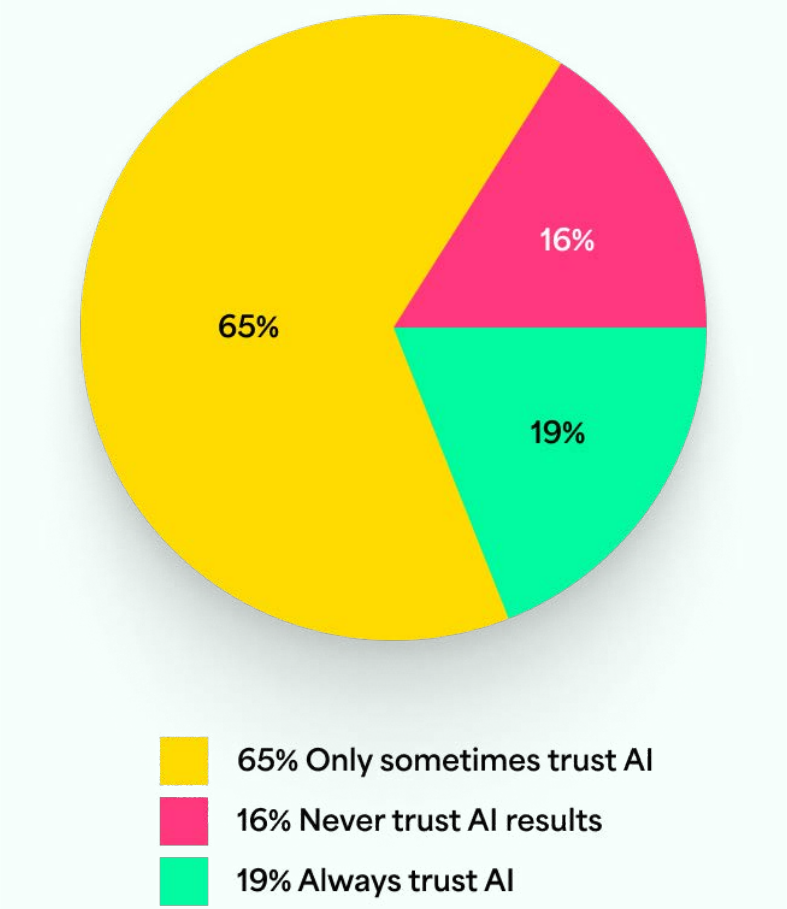
AI is being adopted without sufficient consideration of its necessity or environmental impact.

Respondents flagged the need for regulation to manage the growth of AI tools, and the importance of businesses using AI for a good reason, not just because they can.

The top sustainability concerns of business leaders



This also ties in with another interesting finding from the study, related to AI's output. Despite its growing use, trust in AI tools remains low according to our data.



We found that less than a fifth (19%) of respondents always trust AI, while 16% never trust the results of AI tools. The majority - 65% - were cautious and said they only sometimes trust AI.

Verbatim Quotes from the Hiyield Survey:

"My main issue with AI is that a huge amount of energy is used to produce so much output of incredibly low value. Companies are doing it because they can do it, but not considering if they should do it."

"The carbon footprint of AI far outweighs the good it can do. As with climate, poor, ineffective regulations may have good intentions but are simply not enough." and "We have pushed back on the use of AI on the most part due to the file size and energy involved."

With Keir Starmer vowing to position Britain as an 'AI Superpower' - through pro-innovation regulation, opening public data to researchers, and establishing zones for data centres (as reported[5] by Reuters on 13 January 2025) - it's clear that the environmental impact of AI will remain a hot topic, sparking conversations in boardrooms and beyond.

But could AI be part of the solution to the challenges it creates? Read on as we explore this thought-provoking question.

[5] https://www.reuters.com/world/uk/uk-pm-starmer-outline-plan-make-britain-world-leader-ai-2025-01-12

> This report is a fascinating glimpse at the increasing usage of AI and the growing concern of its environmental impact.
>
> "AI" is many things, and in general there are many positive benefits of AI. But there are also many negatives that we're only just beginning to discuss, and the balance between good and bad is not equal across the AI landscape. As users we need to make difficult judgment decisions amid a vast data deficit, so reports like this are important in helping us discuss and learn more about AI's positive-negative dichotomy, to help us pick "the right tool for the job"

Scott Stonham
CEO
Digital Carbon Online

Part Two

AI's Role in Advancing Sustainability

Smarter AI for a Greener Future

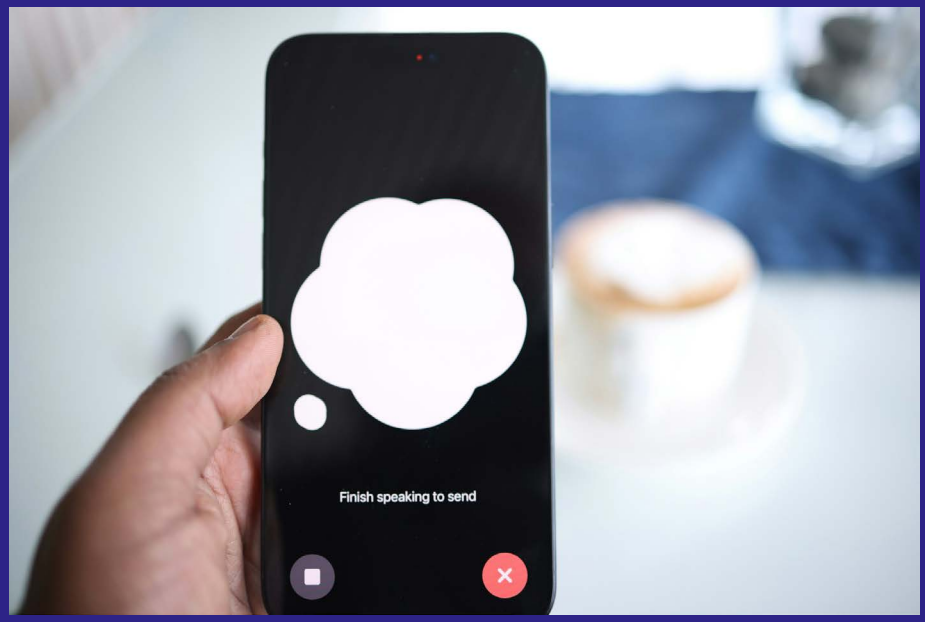
While AI poses challenges, it also holds immense potential to transform businesses and daily life, paving the way for a more sustainable future.

Experts believe that AI will play an integral role in managing greener energy solutions, and discussions at the King's Festival of Artificial Intelligence explored both the opportunities and challenges of leveraging AI for sustainability, noting its potential to optimise energy use and reduce environmental impact[6].

Many believe that with the help of AI we will be able to achieve net zero targets that have looked untenable. The McKinsey & Co State of AI Report 2024 discusses how AI foundation models may help achieve net-zero goals by facilitating the application of AI toward sustainability, with significant progress made toward a net-zero future[7].

There's also a compelling argument emerging about how AI can help us transition to a circular economy, an example of which is a July 2024 comment piece[8] published by Reuters exploring how AI can assist in transforming our disposable economy into a circular one.

Interestingly, our survey found that sustainability was a key function using AI (33%), reflecting growing interest in leveraging AI for environmental goals. Some leaders are taking a cautious approach, avoiding AI usage due to its energy demands. However, others emphasised the complexity of assessing AI's sustainability impact, suggesting that a more nuanced framework is needed - one that balances emissions with the potential benefits AI can offer, such as supporting purpose-driven businesses.



[6] https://www.kcl.ac.uk/news/the-opportunities-and-challenges-of-ai-for-sustainability

[7] https://www.mckinsey.com/capabilities/quantumblack/our-insights/using-digital-and-ai-to-meet-the-energy-sectors-net-zero-challenge

[8] https://www.reuters.com/sustainability/society-equity/comment-how-ai-can-help-us-turn-our-disposable-economy-into-circular-one-2024-07-02

More quotes from our study:

"We need to be careful not to judge sustainability of AI just through the lens of carbon emissions but to take all negative and positive impacts into account - perhaps there needs to be an agreed protocol/ framework to help judge if the use of AI for a particular purpose is warranted. For example if it helps me as a sole director/employee business help more purpose-driven businesses grow as a result of my work - the net impact may outweigh the limited use of AI.
It's a very complex topic."

"When applied in the right way, we know that AI could be a significant driver in the sustainability push. For me the key is always to weigh the benefit generated by an AI application, how to best enable that benefit, and awareness of the emissions at a holistic level."

“There’s no doubt that AI has the potential to significantly impact the world of sustainability and climate change.

The question is: will the impact be good or bad?

There’s tremendous potential for it to be used for good. As examples, AI can help us better understand supply chains and movement of goods, develop measurement and monitoring tools for emissions, and support action to understand and reverse biodiversity loss globally.

However, this comes at a cost, namely energy and data. We’ve already seen some of the world’s largest tech companies fail to meet climate goals, largely due to increased energy and data usage from AI.

So can AI be used to support the transition to a greener world? Absolutely, but it has to be used in a responsible way and we have to be aware of the consequences.”

Chris Phillips
Impact and Partnership Development Manager
Net Zero, University of Exeter

> AI is evolving at an incredible pace, which is both exciting and terrifying in equal measure.

When we discuss with our customers how they can best use AI in their campaigns, we tend to start with their goals. There are places where AI can help inspire an individual to send a more effective message to millions of people and drive incredible change.

But there are also many ways AI can be totally unnecessary, and lead to uncomfortable questions about energy use, climate, and ethics. We've made a deliberate (and somewhat controversial) decision at EcoSend to not implement AI features into our product until we understand more about their environmental and ethical consequences. We are not in a race to add AI for the sake of a tick-box feature.

Overall, we see tremendous potential, but today it is hard to recommend using AI to any business who cares deeply about digital sustainability and ethics. We will continue to champion a world where these topics are a bigger part of the conversation.

James Gill
Co-Founder
EcoSend

We've seen that while AI's energy demands and environmental footprint present real challenges, its potential to drive sustainability is equally significant.

From optimising energy systems to advancing the circular economy and helping achieve net-zero goals, AI offers innovative solutions to some of our most pressing environmental issues. However, as our survey highlights, striking the right balance is crucial. Business leaders must weigh the emissions associated with AI against its ability to accelerate meaningful progress.

In the next section of our report, we explore practical steps and recommendations to help organisations harness AI's power responsibly, ensuring its use aligns with sustainability goals.

Part Three

Practical Steps for Sustainable AI Use

AI with Purpose

Before diving into actionable steps for business leaders to strike the right balance and use AI sustainably, we wanted to highlight the United Nations Environment Programme's (UNEP) five key recommendations for limiting AI's climate impact. Published in September 2024, these guidelines are designed for global leaders to establish a coherent and strategic framework, ensuring AI is developed and deployed in ways that prioritise environmental responsibility:

1) Establish standardised procedures to measure AI's environmental impact, addressing the current lack of reliable information.

2) Develop regulations, with UNEP's support, requiring companies to disclose the environmental consequences of AI-based products and services.

3) Encourage tech companies to create energy-efficient AI algorithms, recycle water, and reuse components.

4) Promote greener data centres through renewable energy use and carbon offsetting.

5) Integrate AI policies into broader environmental regulations to ensure alignment and sustainability.

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At Greenhouse, we practice what we preach. We also take steps within our own organisation to ensure we’re using AI responsibly. Our AI manifesto sets out how we integrate tools like proprietary systems and public generative AI into our work in ways that align with our environmental and ethical goals. We measure and monitor our emissions and are proud to have visible targets to reach science-based net-zero, validated by the SBTi (Science Based Targets initiative).

It’s a shared responsibility to ensure AI is developed and deployed sustainably. Governments, organisations, businesses and individuals all have a role to play. It can feel complicated and uncompetitive, but only by adopting clear frameworks across an organisation - large or small - can leaders balance innovation and transformation with best practices to create a future where AI drives change meaningfully and sustainably.

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At Hiyield, we’ve set up an AI working group and come up with some best practices to make sure we’re using AI in a way that’s both ethical and effective, making our projects more efficient and creative.

This isn’t just about making our work better–it’s about helping our clients smash their goals too. A lot of them are doing incredible, climate-focused work, and by using AI in smart, thoughtful ways, we can boost their impact while trying to mitigate the downsides. The potential AI brings to this space is really exciting, and we’re all in on exploring it responsibly.

Nina Whitby
Digital Director
Greenhouse Communications

Laura Hudspith
Head of Operations & Sustainability
Hiyield

Hiyield's Sustainable AI Five-Step Checklist

1. Integrate Green Technology: Combine AI tools with renewable-powered hosting and energy-efficient data centres to reduce emissions.

2. Develop an AI Strategy: Ensure AI use is strategic, aligning with organisational goals and sustainability principles.

3. Focus on High-Impact Areas: Leverage AI in operations that yield the greatest value, such as automating routine tasks.

4. Conduct a Carbon Audit: Evaluate the environmental impact of AI tools and choose low-energy options where possible.

5. Collaborate for Sustainable Solutions: Work with AI providers to optimise energy use and offset emissions through renewable energy or reforestation projects.

Conclusion

With this report, we set out to answer the question: Is AI the enemy of sustainability?

The answer isn't black and white, but one thing is clear: AI's impact is a choice.

Used recklessly, AI's energy demands could accelerate environmental damage. But used intelligently and responsibly, it has the power to drive innovation, efficiency, and sustainable transformation at scale.

The future of AI and sustainability isn't set in stone, it's something we shape with every decision we make. Now is the time for businesses, policymakers, and innovators to ensure AI becomes part of the solution, not just another part of the problem.

At Hiyield, we believe that technology should serve people and the planet, not the other way around. We're committed to leading the conversation on responsible AI adoption and helping businesses harness AI's potential without compromising sustainability.

A huge thank you to our expert contributors for sharing their insights, and to you, the reader, for joining us in exploring this critical issue. Let's continue the conversation - and the action.

Matt Ville
Founder and CTO of Hiyield

Methodology

Survey Context

This research was commissioned by Hiyield to explore the intersection of AI and sustainability in business. Conducted via SurveyMonkey and shared on LinkedIn between 30 September and 18 November 2024, the survey aimed to provide a snapshot of perceptions and practices among professionals interested in these important topics.

Context and Considerations

While the survey provides valuable insights, its findings should be viewed as directional due to the modest sample size and specific respondent profile. The results offer an engaging starting point for broader discussions and deeper research into AI's role in advancing sustainable practices across industries.

Survey Design and Participants

The survey included a mix of structured multiple-choice and open-ended questions, gathering 43 responses from professionals across industries such as marketing and advertising (39.02%), software development (9.76%), and education (7.32%).

The survey primarily engaged Hiyield's LinkedIn followers, many of whom align with Hiyield's target personas: start-up leaders, SME marketers, and tech decision-makers in the third and public sectors. This group offered unique insights reflective of their professional environments.

About the University of Exeter Research:

Method

This research study involves the usage of secondary sources, for example: directories, databases, academic and industry literature to identify and collect information pertinent to the research questions identified during scoping conversations between the Green Future Solutions team and Hiyield.

Staff time from within the Green Future Solutions team (University of Exeter) was provided to deliver this service. The work was desk-based and time-limited. As such, it is not an exhaustive piece of research, however key requests were prioritised.

About our Experts

James Gill

James Gill is the Co-Founder of the email marketing platform EcoSend, whose mission is to make email a force for good in the world. EcoSend enables purpose-led organisations to send more thoughtful, ethical, sustainable, and successful email campaigns.

Laura Hudspith

Laura Hudspith is the Head of Operations and Sustainability at Hiyield a digital product studio committed to sustainability and innovation. Since joining in 2021 as the company's first project manager, she has played a key role in embedding operational excellence and guiding Hiyield through its B Corporation certification.

As Co-Chair of B Local Cornwall, Laura helps build a vibrant community of businesses committed to balancing profit with purpose. She is passionate about using business as a force for good, advocating for sustainable practices and social responsibility.

Nick Mailer

Nick Mailer is the Founder, Director, and Global CTO at The Positive Internet Company, a hosting provider emphasising ethical and sustainable practices. He is recognized for his expertise in internet technologies and his commitment to environmental responsibility within the tech industry. Nick advocates for energy-efficient computing solutions and the use of renewable energy sources.

Chris Phillips

Chris Phillips is the Impact and Partnership Development Manager focusing on Net Zero initiatives at the University of Exeter. With a strong commercial background, he specialises in working with organisations to develop sustainable and low impact business models, primarily using decarbonisation strategies, circular economy techniques and doughnut economics.

About our Experts

Scott Stonham

Scott Stonham is Chief Executive Officer of Digital Carbon Online, a company that helps businesses and organisations measure, manage, and reduce their digital carbon footprint. With extensive experience as a technology executive and consultant, Scott combines his passion for digital innovation with a commitment to sustainability. He has held leadership roles across various technology sectors, driving strategic initiatives and product development, and works tirelessly to leverage technology to create positive environmental and social impacts.

Matt Ville

Matt Ville is the Founder and CTO of Hiyield, With expertise in technology and product development, Matt leads teams in delivering impactful digital experiences. He is committed to using technology to drive business success while maintaining a focus on sustainability.

Nina Whitby

Nina Whitby is Digital Director at Greenhouse Communications, She oversees Greenhouse's Insights Lab and Digital Team. Nina is experienced in leading multidisciplinary teams to deliver innovative and effective research, communications and campaigns. With vast integrated experience, she has a clear understanding of best practice in the delivery of impactful brands, integrated campaigns, high performance websites and great content.

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