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# **Achieving net zero manufacturing**

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# 1. Introduction

The race to net zero is accelerating across industry sectors and UK manufacturers have an opportunity to transform what they make and how they do it, to achieve growth and future proof their businesses.

Many manufacturers have been focused on saving energy and minimising waste for decades. However, with public concern about the impact of climate change and investors becoming more keenly focused on ESG performance, business leaders need to accelerate plans to decarbonise their products and operations.

Setting out a vision for encouraging investment in low-carbon activities and transforming processes, the Government's Industrial Decarbonisation Strategy has placed the UK's manufacturing sector at the heart of its push to achieve net zero carbon emissions by 2050. With legislation expected to follow, manufacturers know there is no time to waste in transforming their operations. But where should they start?

This whitepaper provides insights from research conducted in 2021 with **152 C-Suite executives at UK-based manufacturing businesses** about their commitment to sustainability, and the action they are taking to reduce the carbon footprint across their operations and supply chains. It also aims to provide guidance on adopting low-carbon processes and implementing green sourcing strategies.





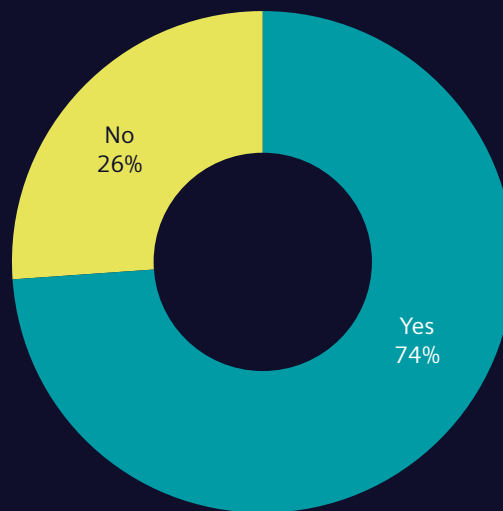
## 2. Net zero: A boardroom issue

Achieving net zero manufacturing will require strong commitment and informed leadership. However, the drive to create a roadmap to decarbonisation and fund its delivery also relies on an accurate view of the business's carbon footprint.

Our research shows that senior-level commitment to reducing carbon emissions is strong across the UK's manufacturing sector – 74% of C-Suite executives confirmed that decarbonisation is on the boardroom agenda. However, this hasn't translated into action in all cases – for example, more than a third of the businesses have yet to appoint a head of sustainability or ESG (35%) or implement a green sourcing strategy (34%).

18% of respondents admitted to not knowing the carbon footprint of their manufacturing business and about three quarters – 74% – said they would like to know more about it, suggesting that their understanding is incomplete. Without access to reliable emissions data, businesses are unable to accurately monitor and improve their environmental performance.

**Would you like to know more about your business's carbon footprint?**

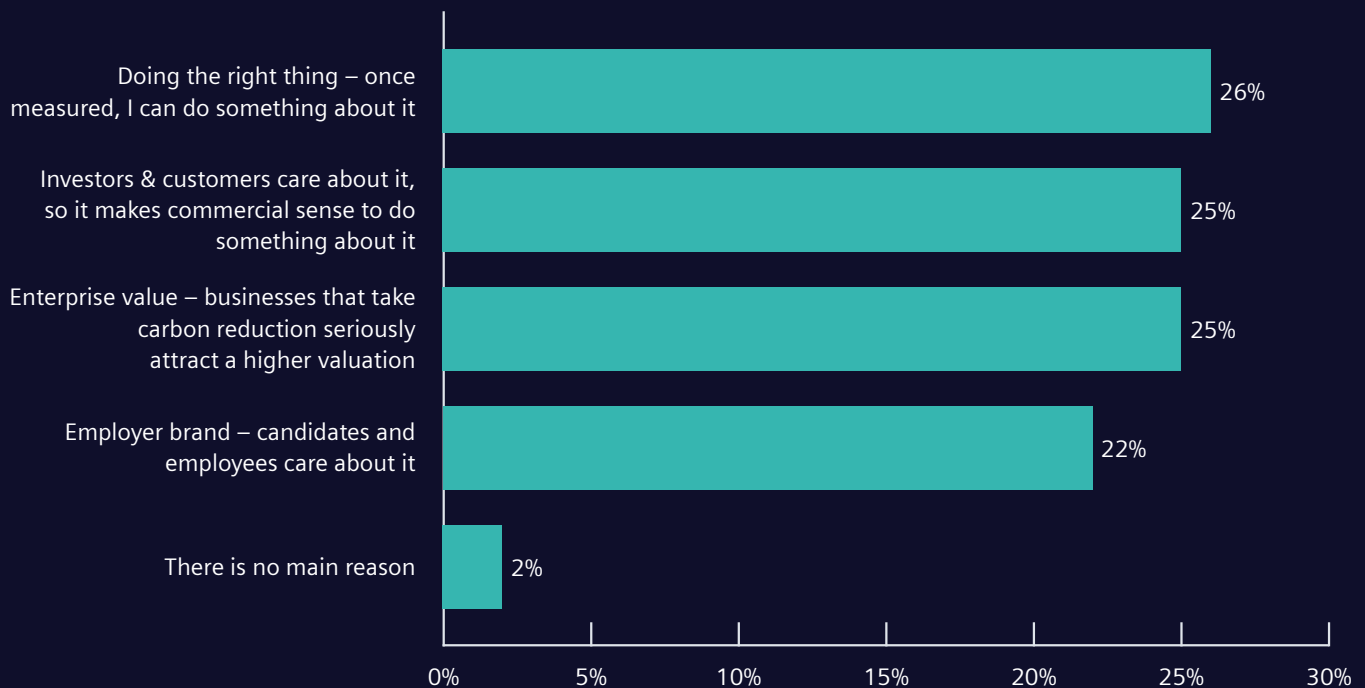


Source: The present data is based on own research in this field





### What is the main reason that you would like to know more about your business's carbon footprint?



Source: The present data is based on own research in this field

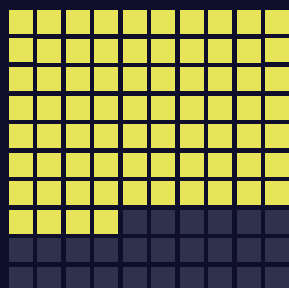
While our research found that some business leaders may not know the carbon footprint of their business, they do understand the case for decarbonisation. **The top four reasons given for wanting to know more about the business's carbon footprint were to do the right thing; strengthen customer and investor relationships; enhance enterprise value; and become more attractive as an employer.**

If UK manufacturers need further convincing that decarbonisation can transform their businesses for the better, a [report<sup>1\)</sup>](#) published recently by the CBI, entitled 'Seize the Moment', sets out a cross-industry vision for a dynamic and future-focused economy, which is committed to winning the global race to net zero. **The report identifies 'decarbonisation' as one of six business-led opportunities that the UK could capture by 2030, which are worth around £700 billion to the economy.**

Business leaders must ensure their organisations come out on top, both commercially and environmentally, in the race to net zero. Greater understanding of manufacturing emissions and the importance of green sourcing strategies are critical.

### 3. Top five most revealing statistics

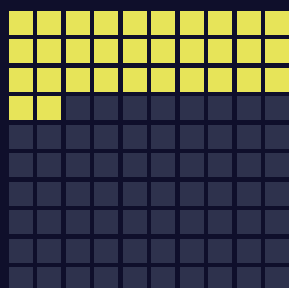
From our survey of 152 C-Suite executives at UK-based manufacturing businesses, here are the top five most revealing statistics:



**74%** want to know more about the carbon footprint of their business

#### So what?

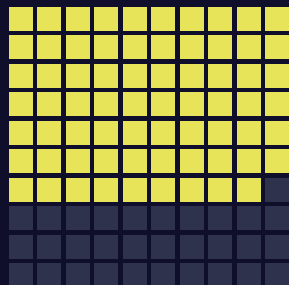
While it's positive to find that so many business leaders are keen to know more about their carbon footprint, it is surprising that one in four – 26% – feel they have a good enough understanding already. The reality is that many manufacturers will know the carbon emissions linked to transportation and logistics but relatively few will have a handle on their manufacturing process and overall operating emissions.



One in three – **32%** – don't consider carbon emissions when sourcing a new part or developing a new product

#### So what?

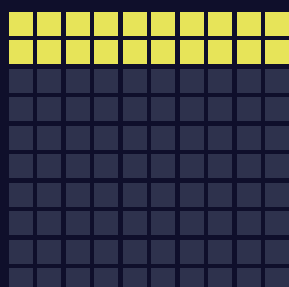
This indicates a gap in understanding about manufacturing emissions. If business leaders don't know the carbon footprint of the components or raw materials they are sourcing, how can they calculate the total carbon footprint of their operations?



Over two-thirds – **69%** – would only adopt a net zero-led sourcing strategy if it delivered a net cost benefit too

#### So what?

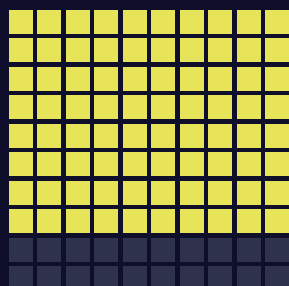
This suggests that some manufacturers may not be taking decarbonisation seriously enough, despite the legally-binding net zero by 2050 target. Some decarbonisation initiatives could take years to implement and a long-term view is needed to realise the cost benefits these might bring. Effective cost management can help to balance the need to decarbonise with the need to protect margins and achieve sustainable growth.



One in five – **20%** – of new customers ask about a product's carbon footprint before making a purchase

#### So what?

This is evidence that awareness of the need to decarbonise is impacting behaviour across the supply chain. At the moment, much of this interest is likely to focus on the carbon emissions generated by the transportation of components and raw materials, but some customers are beginning to ask for information about manufacturing emissions too.



**80%** believe that ESG performance has a direct impact on customers' buying decisions

#### So what?

The majority of business leaders understand the link between ESG performance and enterprise value and they can see evidence of this in customer behaviour. However, one in five respondents may not yet understand this (e.g., only considering elements like manufacturing location and recyclability), which means their business model could be at risk in the race to net zero.

Source: The present data is based on own research in this field



## 4. Making progress: On the way to net zero

Even though decarbonisation has been a priority for many UK manufacturers for some time, just over half (53%) of C-Suite executives said that environmental considerations have yet to be fully embedded into their business operations.

More progress is needed, and quickly, to enable UK manufacturers to reposition their businesses for growth on the way to net zero.

A lack of supply chain visibility could make it more difficult for some manufacturers to decarbonise their operations, simply because they don't know the environmental impact of raw materials and products sourced by the business. This in turn is leading to a lack of understanding about manufacturing emissions, which is making it more challenging to embed carbon reduction strategies into standard business processes. For example, **when developing a new product or sourcing a new part, 32% of respondents said that carbon emissions are not considered.**

For carbon-intensive industries such as aerospace, automotive, steel, oil and gas, and chemicals, decarbonising processes is extremely complex and challenging to achieve, requiring significant resources and industry support. For example, the steel manufacturing industry operates with a 25-year investment cycle and plants have a lifespan of some

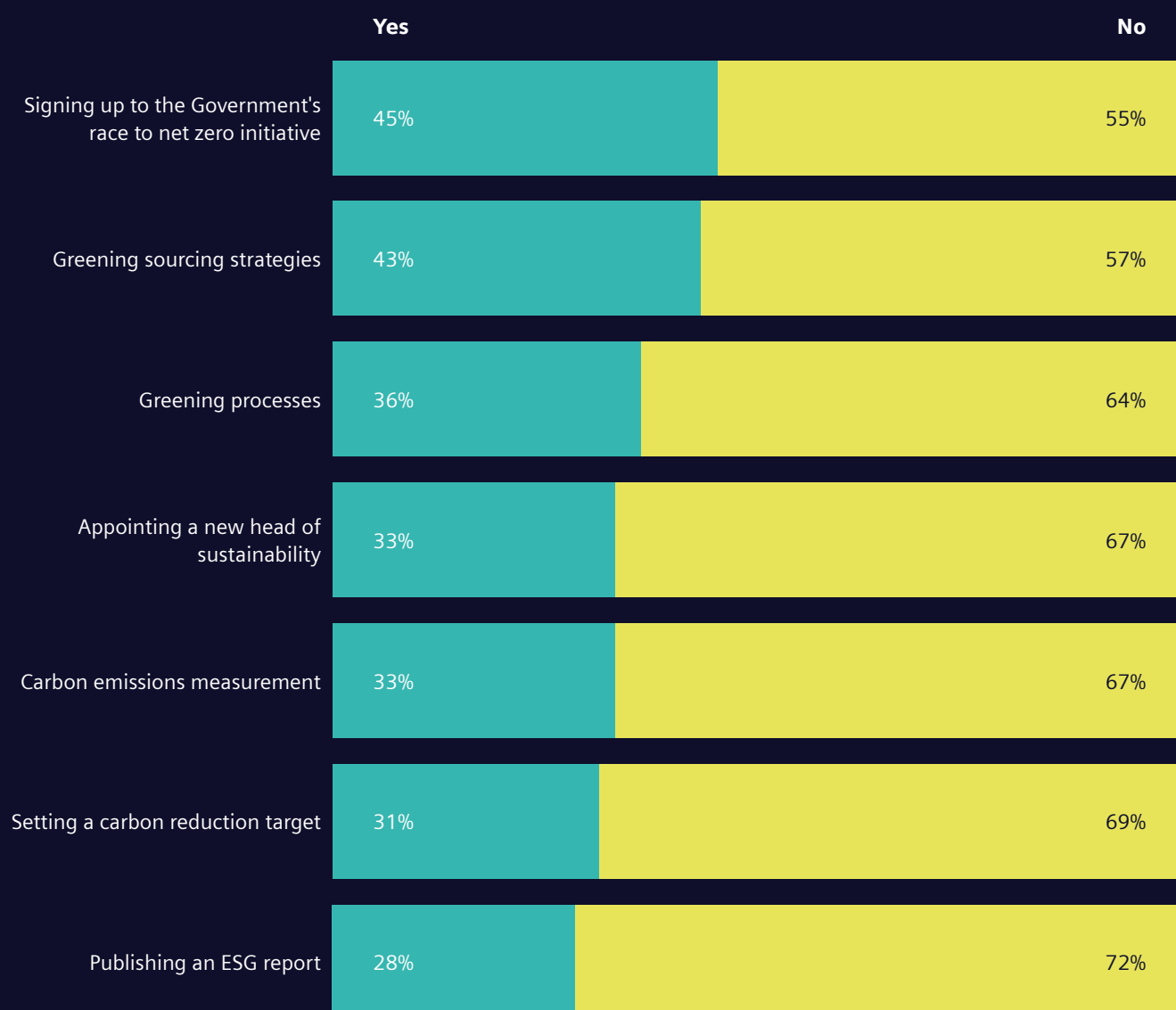
40 years, so action is needed now to ensure they can continue to operate in the future. According to a [report<sup>2\)</sup>](#) by Energy Monitor, the energy intensity of steel production has only come down by just over 10% in the last 25 years, so a significant challenge remains.

In the automotive industry, the ban on the sale of new internal combustion engine (ICE) vehicles from 2030 has accelerated the introduction of all-electric ranges for the mass market, which appeal to carbon-conscious motorists. However, consumers might be surprised to know that the manufacturing emissions of these vehicles remain high.

Extensive use of aluminium and steel for the bodywork and chassis means many have a significant carbon footprint and, as most of it is sourced from China, the carbon cost of transportation is significant too. Innovative and recyclable composite materials could be part of the solution, but there is still a lot of work to do. Batteries and other electric componentry also contain finite metals and minerals, such as lithium and cobalt. **Due to the complexity of automotive supply chains, many vehicle manufacturers have little knowledge of the carbon footprint of parts sourced beyond Tiers 1 and 2, so performing an end-to-end carbon impact assessment of their supply base is a highly complicated and time-consuming undertaking.**



## Are you planning to invest in the following decarbonisation/net zero commitments in the year ahead?



Source: The present data is based on own research in this field

While electrification has a role to play in supporting decarbonisation, it is likely that energy systems will also need to change, through the application of innovative technologies such as carbon capture and storage. These technologies can provide clean energy, decarbonised electricity and large-scale hydrogen supply. Many industries will also need to find ways to recycle or repurpose parts in order to minimise their whole-life carbon footprint.

To decarbonise successfully, manufacturers will require significant support, including access to industry-specific models to calculate the environmental impact of any changes they choose to make to their processes and sourcing strategies.

**Data is key to achieving net zero manufacturing. Not only can it improve understanding of an organisation's carbon footprint, it can also identify opportunities to manage the cost base and enhance competitiveness.**



## 5. Balancing cost and rewards

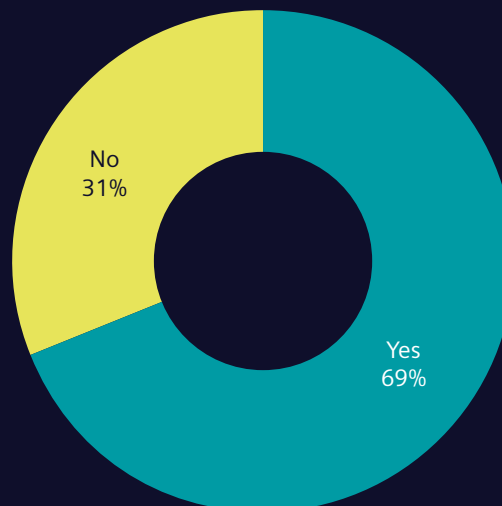
The legislative drive to decarbonise is a concern for many UK manufacturers, particularly in view of the shifting deadlines recently imposed by Government in the race to net zero. As well as staying compliant, they need to ensure that decarbonisation is affordable.

Our research reveals that 92% of C-Suite executives are concerned about the need to report on decarbonisation in the future and the main reason given is the need to balance upfront costs with uncertain rewards. The cost of carbon mitigation schemes that might be required to achieve net zero carbon emissions is a specific area of concern, as well as compliance risk and a general lack of capital to invest.

The need to balance cost and rewards is also evident in how far C-Suite executives are prepared to go in prioritising decarbonisation. While 72% indicated that they would be willing to adopt a net zero-led sourcing strategy in the future, over two-thirds – 69% – would only do so if it delivered a net cost benefit too. Carbon impact is the second most important sourcing criteria, with cost in first place.

**Sourcing criteria are expected to shift in favour of ESG over time, as businesses respond to UK industry's decarbonisation agenda. By 2030, 68% of C-Suite executives expect carbon impact to be the same or more important than cost when sourcing parts and materials.**

**Would you only invest in a green sourcing strategy if it delivered a net cost benefit?**

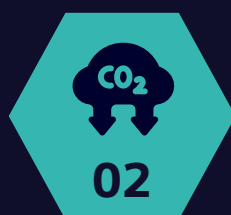


Source: The present data is based on own research in this field

**According to our research, the top four sourcing criteria used by UK manufacturers are:**



**Cost**



**Carbon impact**



**Quality**



**Resilience**

## 6. Looking ahead: Pushing customers' net zero buttons

While cost and compliance are important factors when planning to invest in decarbonisation, manufacturers also need to know what impact it could have on demand for their products.

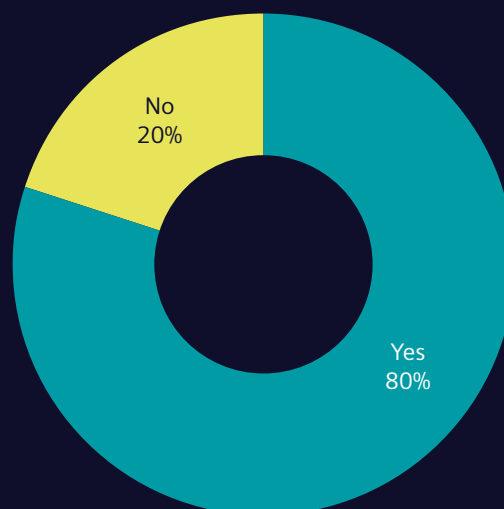
**There is likely to be an early-mover advantage for businesses that achieve net zero manufacturing ahead of their competitors. How much advantage and how long it will last will depend on the speed of industry transformation.**

Regardless of whether they manage to secure an early-mover advantage or not, most manufacturers are convinced that decarbonisation will result in increased demand. Our research reveals that 80% of manufacturers believe that environmental performance has a direct impact on

customers' buying decisions. It is clear from this that the majority of business leaders understand the link between environmental performance and enterprise value and can see evidence of this in customer behaviour. However, one in five respondents may not yet understand this, which could mean their business model is at risk in the race to net zero.

Further demonstrating the influence that environmental considerations have on customer behaviour, our research reveals that one in five - 20% - of new customers ask about a product's carbon footprint before making a purchase. 63% of C-Suite executives expect customers to take an even more environmentally-conscious approach in the future and 49% believe this trend has accelerated during the pandemic.

**Does your business's environmental performance have a direct impact on customers' buying decisions?**



Source: The present data is based on own research in this field



# 7. Achieving net zero manufacturing: How to get it right

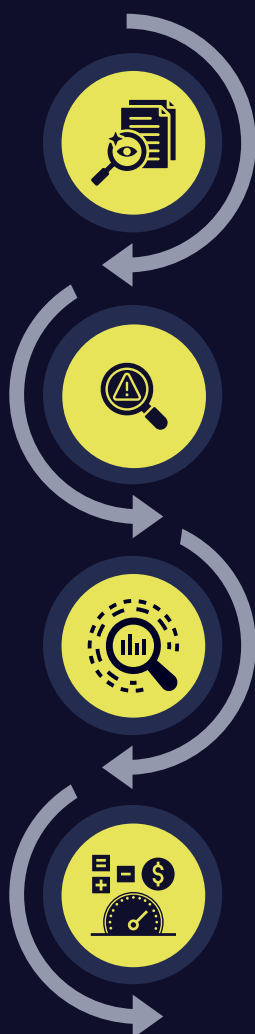
While decarbonisation strategies are work in progress for many UK manufacturers, Vendigital's research indicates that plans are being made. For example, 45% of respondents said they intend to sign up to the UN's Race to Net Zero initiative and 43% will be adopting a green sourcing strategy. About a third will be investing in more environmentally-friendly processes (36%) and setting a new carbon reduction target (31%) for the business. Pressure from customers and investors is also placing ever greater importance on businesses to be able to demonstrate a positive environmental impact. Only 2% of C-Suite decision-makers are not planning to invest in decarbonisation in the year ahead.

As plans are developed, decisions will need to be made about which initiatives should be prioritised and therefore it is important that a good understanding of carbon impact is established to ensure focus is placed in the right areas.

When developing decarbonisation strategies, it is important to take an organisation-wide view and consider all business functions. End-to-end visibility of the supply chain is critical in order to get an accurate view of the main carbon drivers that might need to be addressed – and access to reliable data is critical to achieving this.

Without strong leadership at Board-level, decarbonisation strategies are unlikely to secure the investment required to implement them effectively. For this reason, the strategy must sit firmly on the boardroom agenda – and, importantly, be rooted in clear KPIs that are focused on delivering long-term value for the business.

**Here are four practical steps to assist manufacturers in implementing their decarbonisation strategies across their supply chains and operations:**



## Step 1: Data transparency

The starting point for an end-to-end supply chain review is ensuring that the business has access to reliable and accurate data. This involves collating and transforming all relevant data to create a base line from which the business can begin to measure trends in terms of reliability, cost and environmental performance. In the automotive sector, for example, the use of a centralised database known as IMDS (International Material Database System) means that the material content of components and products is declared. This type of existing system could be updated to include carbon impact.

## Step 2: Risk identification

This step involves an assessment of all base line risk factors so the business can weigh up the impact of proposed changes to its processes and sourcing strategies. As well as considering all of the internal, key customer and supplier-related risks, this assessment should include potential environmental performance issues in areas such as compliance and waste management, to categorise data at the most granular level.

## Step 3: Data insights

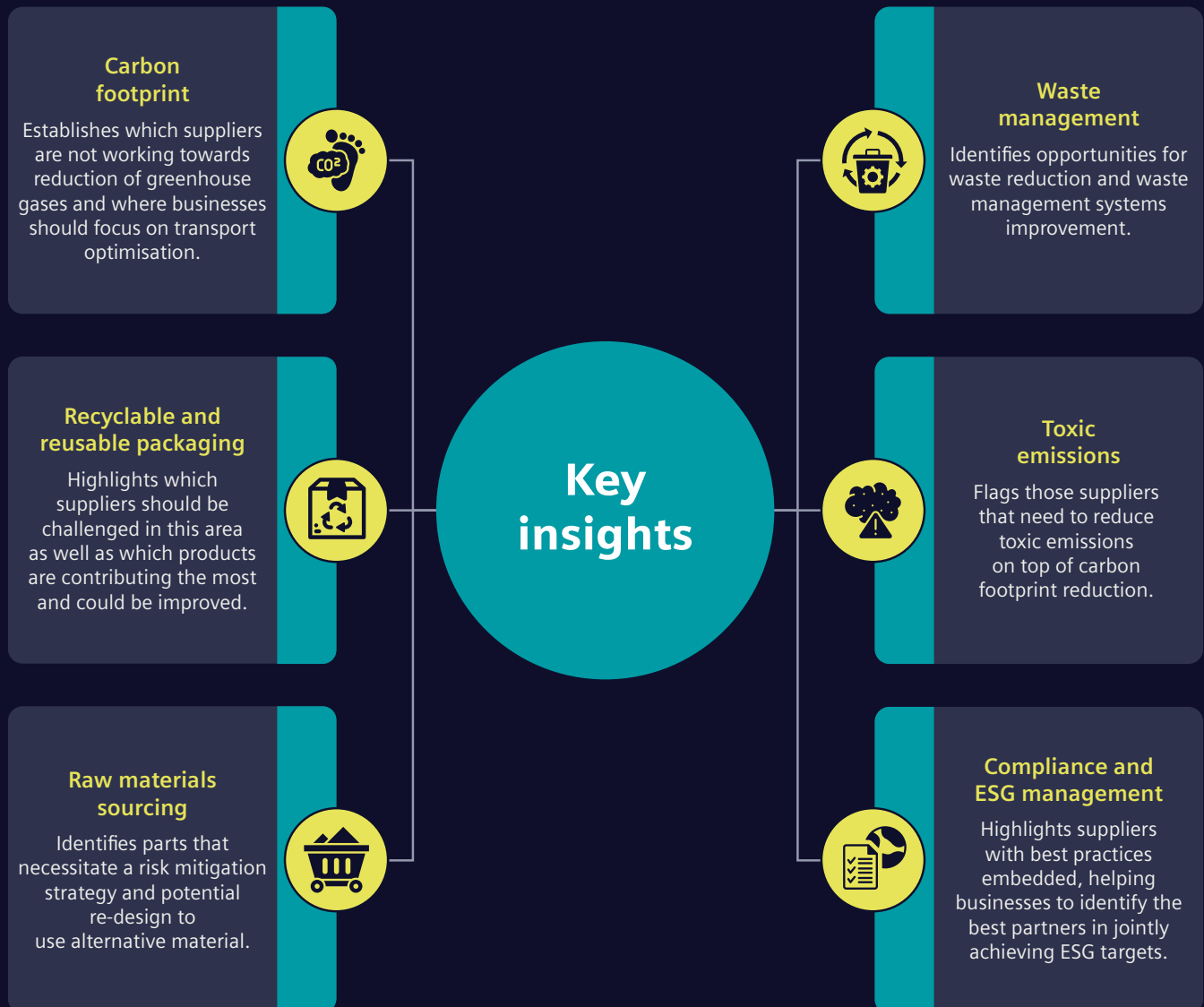
Once the right data has been captured and categorised, it's important to use it effectively to identify KPI performance improvement opportunities. This is achieved by creating hypotheses or insights from which bespoke algorithms can be developed that will automatically flag opportunities to boost environmental performance and drive enterprise value. Following qualification of the opportunities, a robust plan can be developed which gives Board-level decision-makers, customers and investors confidence that demonstrable performance improvements can be achieved against the strategic KPIs.

## Step 4: Performance management

Once established, the company's approach to decarbonisation should be kept under continuous review, and evaluated regularly along with other business performance criteria. Having reliable dynamic data will ensure that the Board has access to up-to-date information and any opportunities to further improve performance and gain a competitive edge are identified and acted upon promptly. To assist with this process, performance dashboards can be developed to monitor progress over time.

Dynamic data is critical to assist companies in enhancing their performance, including their environmental performance. Vast quantities of categorised data have to be processed to deliver meaningful insights to guide strategic decisions on an ongoing basis.

Once a data-led strategic model has been developed in line with the steps mentioned, it can then deliver insights across the key categories impacting the carbon footprint of a business's supply chains and operations.



If they are serious about decarbonisation, decision-makers in the manufacturing sector will need a level of detail around the supply chain that the vast majority simply don't have at the moment. A data-led approach is critical to achieving sustained performance improvements.





## 8. Conclusion

This is a defining moment for the UK's manufacturing sector and businesses are poised to decarbonise their processes and sourcing strategies on route to the Government's net zero by 2050 target.

For carbon-intensive industries and those with complex supply chains, achieving net zero manufacturing is going to be extremely challenging. However, where there's a will, there's a way. By developing practical industry-specific models to support them in measuring manufacturing emissions, implementing green sourcing strategies and investing in environmental technologies, businesses can position themselves for growth.

Achieving net zero manufacturing is going to require investment. If it isn't already happening, carbon emissions should be made a key factor in sourcing strategies and, in many instances, there will be a cost associated with this. To stay both commercially and environmentally competitive in the future, manufacturers will need to know where they can reduce cost and how to prioritise spend, while ensuring they have access to accurate carbon data.

As the UK gears up to host COP26 in November, manufacturers in the UK have an opportunity to lead the way to net zero but success will only be achieved if the costs and rewards of investing in decarbonisation are fully understood.

**Manufacturers are facing a major challenge to decarbonise their products and operations in a short timeframe and significant investment will be needed. They need to find ways to take cost out and invest strategically to ensure they remain both commercially and environmentally competitive.**

**About Siemens Advanta**

Siemens Advanta is a strategic advisor and trusted implementation partner for digital and sustainability transformations on an enterprise level. Drawing on the Siemens tech stack, Siemens Advanta delivers end-to-end solutions, from strategy and operations consulting to solution architecture and implementation. With comprehensive expertise in IT and OT, Siemens Advanta combines extensive experience from Siemens' own transformation journey with an established reliability stemming from customer projects across diverse industries and countries. By leveraging the power of Siemens businesses and its partners, Siemens Advanta helps customers unlock the full value of Siemens technologies across their entire value chain. Headquartered in Munich, Germany, Siemens Advanta operates with a global network of about 800 employees in 18 countries and 47 offices.

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**Sources**

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