HOW TO ACHIEVE NET ZERO USING DATA ANALYTICS

By using data analytics, business leaders across the manufacturing sector and all the supply chain can significantly reduce their carbon emissions – as well as improve efficiency, reduce costs, and drive innovation.

EUROPE'S COMMITMENT TO ZERO NET

On 12 May 2021, the European Commission adopted an Action Plan ("Towards a Zero Pollution for Air, Water and Soil"), that envisions a zero pollution policy for 2050. And it means that air, water and soil pollution need to be reduced to levels no longer considered harmful to health and natural ecosystems.

This translates into critical 2030 targets for eliminating pollution at the source as quickly as possible. These are some of the objectives:

- To cut by 55% the number of premature deaths due to air pollution by improving air quality;
- Reducing garbage, plastic litter at sea (by 50%), and microplastics released into the ecosystem (by 30%) in order to improve water quality;
- Enhancing soil quality by halving nutrient losses and reducing the need of chemical pesticides by 50%;
- Lowering EU ecosystems where air pollution poses a danger to biodiversity by 25%;
- Reducing the number of people who are chronically affected by traffic noise by 30%;
- Significantly reducing waste generation and by 50% residual municipal waste.

May we remind you that net zero alludes to the adjustment between the quantity of greenhouse gasses (GHG) produced and the quantity removed from the air. Net zero is accomplished when the sum included is no more than the sum taken away.

Net zero could be a commendable and vital objective, since expanding levels of GHGs (of which CO_2 is the foremost common) contribute to climate change – and climate change undermines us all.

The World Meteorological Organization has warned that the warmest 20 years on record have all been in the last 22 years – with the most recent years among the warmest. Researchers overwhelmingly concur that, in the event that no activity is taken, the world's temperature might increase by up to 5℃ by 2100 – with disastrous results.

THE MANUFACTURING SECTOR AND ITS AIM TO REDUCE POLLUTION

In 2019, the manufacturing sector was responsible for emitting an annual total of 775 tonnes of CO_2 equivalents. With a 22% share of Europe's total polluting emissions, manufacturing is the third largest emitter – after energy and transport. Therefore, there is a big pressure on these companies to reduce pollution.

The good news is thousands of businesses globally have joined the race to achieve the "net zero" goal. But progress has varied dramatically, with some companies investing heavily and making major changes, while others have made only small incremental improvements or taken no action at all. Still, there is an increasing interest among business leaders to become more environment-friendly. Actually, seven out of ten senior executives participating in a BSI Group poll said that their organizations have made, or are considering making, a commitment to net zero.

One problem is that, like most other businesses, manufacturing's progress in lowering emissions has been significantly hampered by the coronavirus pandemic. As a result, many organizations have made little progress in the recent year, instead concentrating on stabilizing their operations.

But the last months have demonstrated that this industry has a remarkable ability to adapt. Gin firms have switched gears to make hand sanitizer, others have added plastic visors to their production line, and major fashion brands have made scrubs for employees that work in the health system instead of their ordinary clothes. And this adaptability will be crucial for firms to continue decarbonizing and contributing to the worldwide transition to net zero emissions.

HOW TO MITIGATE FROM "I WANT TO DO IT" TO "I DID IT"

Manufacturers are aware of the reasons why they need to decarbonize, but the challenge they face is putting this into action. Many have already switched to renewable energy providers, reduced their plastic usage, and added controls to machines that put them to sleep when they're not being used.

The research carried out by Drax Group – which is a renewable energy company engaged in renewable power generation, the production of sustainable biomass and the sale of renewable electricity to businesses – revealed that 85% of the key decision makers in the manufacturing sector considered data analysis a top priority within the plan for reaching net zero, but fewer than half (42%) cited a lack of data analysis knowledge within the business as a barrier to implementing the needed change.

In fact, **data analysis is a part of the solution:** data-driven insights have the power to drive down carbon emissions across the manufacturing sector – from aerospace through to food and drink. According to Drax's research, there are some ways to use data analysis that can help the business in their mission to cut their carbon emission – and this is related to changing the ways they manage their energy.

Businesses can rely on digital technology to streamline production lines, deliver in depth data gathering and analytics on power usage, and basically offer a new way for them to monitor energy consumption, even from other sites. Analyzing half hourly meter data, for example, can help optimize a company`s energy usage, as well as cut costs. Also, data can tell companies whether to switch on machines or turn up usage when electricity is at its cheapest.

But what do you need in order to take proper actions? First of all, a data strategy for net zero, thinks William Theisen, Head of Net Zero at Atos North America, that involves three things:

1. **Be ambitious**: For many businesses, the numerous data collection systems and processes already in place can be a challenge in and of itself. However, gaining information into various emissions scopes, climate change trajectories, and emissions reduction programs allows enterprises to have a holistic understanding of their progress. There are digital platforms that enable businesses and organizations to use digital to streamline and automate emissions collection, calculation, reporting, data analysis, and visualization throughout the value chain. Their aim is to reduce human work and pain points associated with emissions data collecting and aggregation while also providing new data insights to improve corporate data-driven decisions and predictability.
2. **Define the net zero roadmap with data – and work out the costs**: Setting and achieving any target involves a wide range of initiatives and a certain amount of financial investment. You can use tools that summarize your choices and recommend the best course of action in order to have a better understanding of which initiatives cut emissions and are the most economically viable, ensuring that actions implemented are consistent with your commitments.
3. **Align your business objectives with your net zero objectives**: All companies must strive for net zero carbon emissions by 2050. However, attaining this goal will need a thorough examination of a company's business strategy, which includes

products, operations, vendors, and supply chains. It's critical to make sure that the emissions data collected, reported, and used inside the company is relevant and connected with business goals.

Companies require integrated emissions data management systems, as well as knowledge, in order to analyze the data quickly and seamlessly, convey environmental findings clearly, and accurately forecast reduction scenarios.

THE CRUCIAL ROLE OF DATA ANALYSIS

Concrete KPIs, carbon reduction targets and carbon neutrality objectives are now an important part of companies' strategies. But what is to be done when establishing a decarbonization strategy?

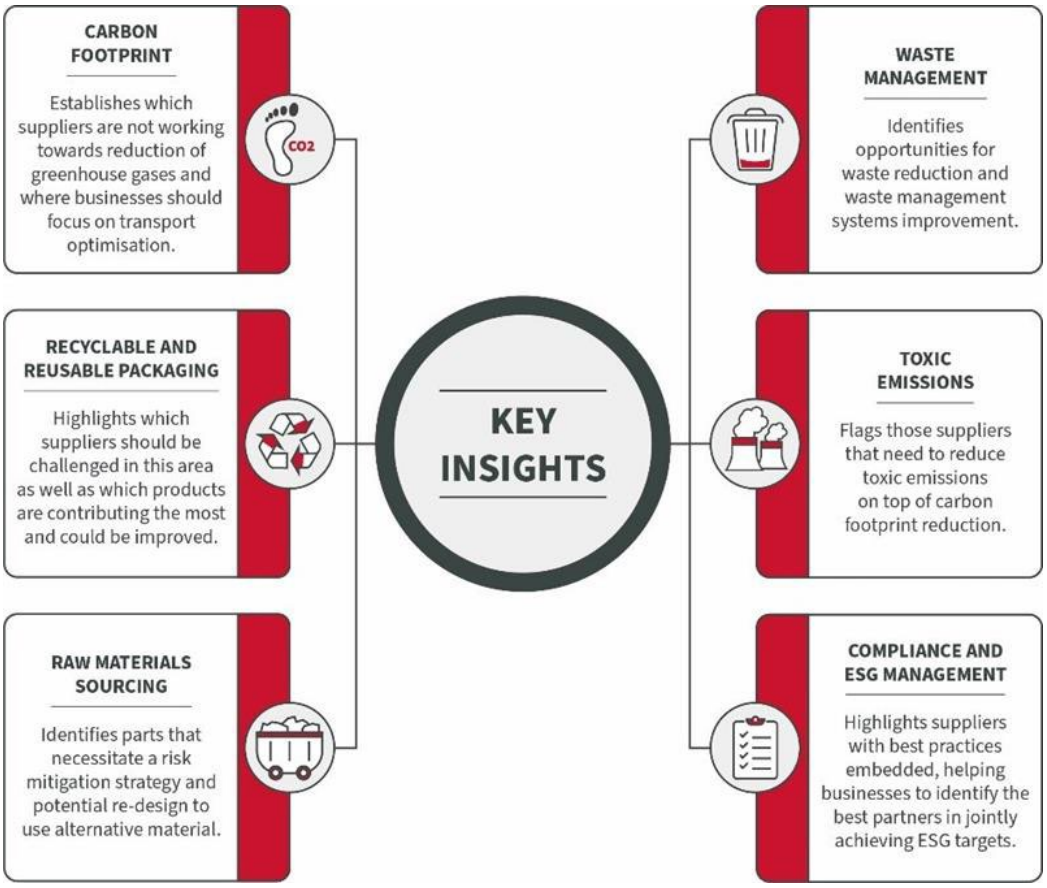
First of all, ensuring **end-to-end visibility of the supply chain** is critical. This enables factory leaders to identify the primary carbon drivers that need to be addressed and focus time and resources in the proper areas, resulting in intelligent decision-making.

Also, manufacturers need **to achieve complete data transparency** throughout the organization's supply chain and operations. To do so, they must collect and process all relevant data in order to create a baseline against which to analyze trends in reliability, cost, and environmental performance.

After that, the focus should be on **evaluating a variety of baseline risk characteristics**. The companies will be able to assess the impact of suggested changes to its processes and sourcing strategies as a result of this. Manufacturers should categorize data in great depth as part of this assessment; in addition to internal, critical customer, and supplier-related risks, you should also think about potential environmental performance difficulties in areas like compliance and waste management.

The data should then be utilized to **identify areas where KPI performance can be improved**. Customized algorithms can be designed using assumptions or insights to automatically indicate opportunities to improve environmental performance and generate corporate value. A detailed strategy can then be developed, giving Board-level decision makers, customers, and investors, confidence that the company's chosen KPIs will be met with measurable improvements.

It's crucial to remember that decarbonization initiatives must be flexible and reviewed on a regular basis!



The road to a decarbonization strategy. Source: Manufacturing Management

EXAMPLES OF DATA-DRIVEN DECARBONIZATION STRATEGIES

Some companies have already embraced industrial automation as a means of boosting output. By delivering sector-specific decision assistance and unified intelligence, industry-specific AI empowers these businesses.

These systems may now be operated remotely, at any time and from any location, thanks to the cloud. Because they collect more data on operational systems, workers can benefit from harnessing this data to make faster and more effective decisions.

Here are some examples of data-driven decarbonization strategies:

Gatwick Airport: Used data analytics software to reduce both the noise and carbon footprint around the airport and to save fuel.

Infigen: This wind farm operator optimized monitoring and alert consolidation of the wind energy production from SCADA systems.
Veolia Water Technologies: Leveraged the cloud to unify engineering teams across five continents on a single, data-centric platform.
Neste: The Finnish-headquartered company used a strategic digital solution to reduce emissions from conventional refining while boosting production of renewable diesel.
Dubai Airport: Applied technology on customer-centric processes and used data and a digital platform to give them real-time insights to drive efficiency across the airport.

Sources and further reading

- "Towards Zero Pollution for Air, Water and Soil" – European Commission
- "Going net-zero: mind the data gap" – Eco-Business
- "Reducing the Carbon Footprint of the Manufacturing Industry with the Power of Data" – Splunk
- "A data-driven approach to developing a net zero roadmap" – Manufacturing Management
- "How data is helping manufacturers achieve net zero" – The Manufacturer
- "By working together, we can use data to achieve net zero" – CIO.com
- "Why data is key to successful net zero transition" – Atos