



# TALKING POINTS ON NOW AND NEXT

Examining the drive to  
sustainability within automotive

Expert insights on how to navigate the  
challenges and opportunities on the road  
to sustainability in the automotive sector.

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# OUTSIDE-IN THINKING WILL UNLOCK SUSTAINABILITY

The drive for sustainability is triggering more disruption in the automotive sector than anything seen since the dawn of the digital age.

Parallels can be drawn between our approach to sustainability to date, and the early days of the digital era. When first introduced into the office environment, technology was focused on discrete tasks and adopted in a piecemeal fashion – much like efforts toward sustainability to date. But, just as we have witnessed a digital revolution, we are now starting to see our industry shift from a siloed approach to sustainability, focused on pockets within the value chain, to an outside-in, end-to-end strategy.



## BEYOND ENGINEERING

Sustainability has traditionally been seen as the preserve of the engineering department. That team was tasked with the challenge of maximizing vehicle efficiency and delivering cleaner, greener cars. The vehicle itself was the focus of sustainability efforts and associated transformation rippled out from this central point, resulting in an inside-out mindset and approach.

It's natural, perhaps, that the industry's efforts began with the vehicle; motivated by tightening regulations and global agreements on climate change, notably the COP26 declaration on zero emission cars and vans. The reality, however, is that original equipment manufacturers (OEMs) are now recognizing that addressing sustainability by tackling the drivetrain in isolation is like trying to bail out a boat with a spoon.

**It's becoming increasingly apparent that while executing this vehicle-centric change journey, OEMs must, in parallel, think far beyond the car to deliver on sustainability aspirations and commitments.**

Coming on the back of widespread disruption due to the pandemic and other major global events, this compounding of complex challenges is daunting. It requires shifts in mindsets, processes, and culture to switch from reacting to external pressures and regulations, to putting in place specific programs and investments to proactively embrace sustainability as intrinsic in every area of the automotive ecosystem.





## MAPPING THE ROUTE FORWARD

In this report, we provide perspectives on how, by thinking outside-in, OEMs and the broader supplier ecosystem can make, and benefit from, rapid sustainability progress on multiple fronts. Our report contributors draw on their specialist automotive expertise to provide inspiration and guidance on aspects covering data management, organizational culture, partnership networks, product design, manufacturing, procurement, circular economies, consumer behavior, and supply chains.

By thinking about the whole expanded ecosystem, automotive players will make the leap to true sustainability. Visibility of data and practices will need

to extend further than tier 1 suppliers. Responsibilities and support for supplier relationships deeper into the network may need to be reevaluated. In the pursuit of sustainability, transparency will be required around materials along the whole value chain.

The ecosystem itself will come under scrutiny. Is the existing set-up fit for purpose? By collaborating with a partner on a new, joint solution, could emissions be cut or resources saved? Could suppliers contribute toward sustainability aims through adoption of renewable energy sources? Are there inter-industry collaborations to be forged when it comes to reuse and repurposing of materials? OEMs must holistically consider new and old players that will enable the capabilities, interconnections, and data flows to

both evidence and enable sustainability well beyond just the vehicle's use, but in its production, energy source, materials sourcing, and reuse.

This holistic mindset will prove invaluable within the organization, too. Making significant strides along the road to sustainability will not be possible without reconsidering internal processes, skills, and teams. Data that is held in silos cannot easily be analyzed to assess the current state and measure the impact of new initiatives. One or two sustainability experts will not influence policy and behavior if they are working in isolation. And line managers and employees will struggle to translate top-down directives without KPIs and incentives that illuminate the impact of their work on sustainability.



## UNLOCKING OPPORTUNITIES

There are certainly challenges to be faced on this journey to an outside-in sustainability strategy. But one thread running through all the expert opinions in this report is a sense of excitement at the opportunities that present themselves in this sphere.

OEMs on a quest for end-to-end sustainability will find themselves reaping rewards well beyond the environmental upsides. Through data mastery, intelligent production and

supply chain strategy, and circular design thinking, the industry can increase profitability, resilience, customer centricity, and talent.

Take the adoption of a circular economy as an example. Recycling, remanufacturing, and repairing products minimize the raw material footprint. But it can also bring an unexpected bonus in terms of customer satisfaction. By introducing free, as-a-service, or subscription services, the number of customer touchpoints increases, as does end-user data. This data can inform

service improvements and additional offerings: equating to increased revenue for the organization and better customer satisfaction and retention.

This holistic re-imagining of ecosystems, relationships, and processes heralds the introduction of bold new commercial models such as mobility as-a-service, power provision, remanufacture, secondary markets and data, and digitally driven revenue streams.

## IN CONCLUSION

**Where once, in the automotive sector, sustainability was synonymous with the electric vehicle (EV), OEMs are now beginning to embrace an approach in which the car itself is just one component.**

The UN defines sustainability as “meeting the needs of the present without compromising the ability of the future generations to meet their own needs.” In considering sustainability as a driver for innovation, ambitious OEMs are pioneering new ways to meet the needs of the present in all areas of mobility; and laying a foundation for a better triple bottom line of profit, people, and the planet in future.

This is an exciting time to be part of the automotive industry. In years to come, the industry will look back at the 2020s as the decade not only when cars went electric, but also when mobility itself transformed for good.



# Individual insights for a shared ambition

**Where does sustainability start? In the manufacturing plant? In the design phase?  
I would argue, somewhere much, much earlier.**

In our sector, we are seeing a transition from sustainability as a reaction to external pressures like regulation, to an opportunity to redefine an enterprise's value proposition. That's not to say it is easy. For enterprises to take an outside-in approach, many complexities must be overcome. That's why I asked nine experts from across the Capgemini organization to share their individual insights on the challenges and opportunities represented by sustainability. Their responses will, I hope, provide practical insights for advancing your own sustainability strategy – while also illustrating the unique expertise Capgemini has to offer in this field.



**Markus Winkler**

Executive Vice President – Global Automotive Sector at Capgemini

## **Methodology:**

To create this opinion paper, Capgemini conducted interviews with ten experts to identify and incorporate their views on recent developments in the automotive industry with regard to sustainability. Opinions expressed in the following content belong to the individuals, not Capgemini.



# SUSTAINABILITY AS STANDARD, NOT IN SILOS

With Markus Winkler



**Sustainability offers enterprises in the automotive sector the opportunity to differentiate and innovate. To broaden out beyond the vehicle itself and offer affordable, sustainable mobility for consumers.**

Let us take a consumer example. Today's car configurators give no real guidance on how a customer can build their vehicle to be as green as possible. That represents an opportunity for OEMs to guide, engage, and educate consumers as part of the evolution of mobility.

## **BRING SUSTAINABLE PURPOSE TO LIFE**

I see many parallels with digitalization. In the past, there was a digital department with the Chief Digital Officer at the top – and now digital is integral to the enterprise. Similarly, sustainability goes far beyond hiring a sustainability officer; an enterprise-wide approach is what is needed to empower employees to bring sustainable purpose to life.

The key to shifting attitudes is to lead from the top. Teams need guidance and frameworks to take action. For instance, when the purchasing department draws up its criteria, where should the impact on sustainability sit against price, quality, and availability? Let us say an OEM has to choose between two suppliers to source a part. One is more

expensive, but has less of a footprint in the sustainability chain. A business strategy needs to exist to help teams evaluate the cost versus the impact on areas such as climate change. Which, of course, is not straightforward: it will involve experimenting with variables around actual CO<sub>2</sub>, pricing, and other scoring criteria.



## SUSTAINABILITY FROM A TO Z

While obvious areas such as electrification, batteries, and sourcing of materials receive a lot of focus, sometimes the approach to sustainability is not sufficiently end-to-end. Could more use be made of digital twins and simulations for activities like crash testing? Could the metaverse reduce carbon footprint in the sales process?

But of course, we must consider the impact of those new technologies themselves. Blockchain and virtual currencies have sustainability footprints. The increased demand for driving assistance systems calls for more computing power. Finding the right cloud partner, which itself runs on renewable energy, will be key.

Sustainability will not come overnight. Although our recent research has seen sustainability investment flatten, or even reduce, we are only at the

beginning of the shift. It will take a sustained push to create enterprises with sustainability in their DNA. But in my view, sustainability is shifting to a major discipline in our sector, and OEMs should be asking not, "How can I comply?" but "What does it take to be a leader in this area?"



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**About the author:** Markus Winkler is Executive Vice President – Global Automotive Sector at Capgemini. He uses his extensive experience in delivering major business transformation programs to help clients ensure innovations in technology deliver new, sustainable value propositions, while bringing efficiency to legacy and commoditized IT services.



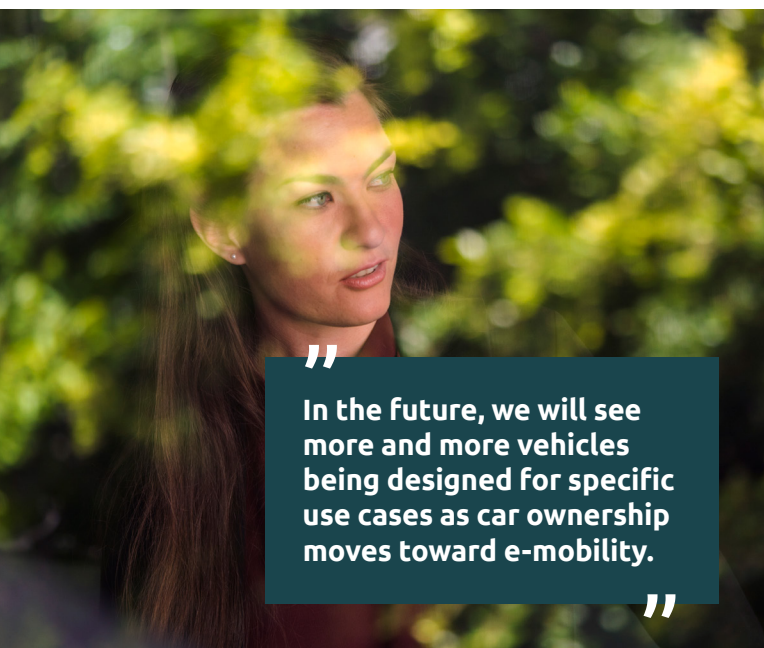
# THINK BEYOND EMISSIONS

With Klaus Feldmann

**How sustainable an electric vehicle is, depends on more than emissions.**

## BUILDING TOWARD BATTERY EFFICIENCY

Let us look at batteries first. Some companies integrate a battery cell directly into a pack, because it's cheaper and offers a higher energy density per volume in the vehicle. But that means you can only reuse the complete EV battery, and there may be safety concerns if some cells are no longer performing as they should. Often that means the only thing to be done with the battery is to recycle it. Whereas if you go down the traditional route of cell to module to pack, if one module breaks you can remove it and use the others in different applications.



"In the future, we will see more and more vehicles being designed for specific use cases as car ownership moves toward e-mobility."

Data is key to this type of reuse: both historical data and real-time usage, in order to determine how long the battery will last when used under certain conditions – or indeed what steps could be taken to extend its life.

Detailed, real-time data analysis will be important to support new trends. In the future, we will see more and more vehicles being designed for specific use cases as car ownership moves toward e-mobility. This is a significant shift for batteries, as they will fit 100% of their intended use case, meaning they are super-efficient. Vehicles will not be carrying tons of battery weight unnecessarily.

## COLLABORATING ON INFRASTRUCTURE

Another key dependency is the charging infrastructure for end users. When thinking about sustainability, an end-to-end smart charging grid is very important. Customers need the right power, at the right time, in the right place. Different industries must share data for maximum efficiency. For instance, data from vehicles can support the infrastructure providers, which in turn support the grids and energy producers.

Currently, there are an enormous number of charging infrastructure providers, which causes invoicing complexity for the consumer. A better approach is a single charge card provided by the OEM which allows customers access across the partnership network with a single invoice. This takes a commitment to partnership and data sharing. An even more elegant solution is so-called 'plug in and charge': OEMs partner with charging infrastructure companies so that the vehicle is recognized when it's connected and the owner automatically receives an invoice.

The common theme of these sustainable solutions? Partnerships. In my view, they are critical to OEMs, who will not be able to achieve their goals alone.



**About the author:** Klaus Feldmann is CTO for Automotive Sustainability and e-Mobility, Capgemini Engineering. He supports organizations in the automotive sector on their path to carbon neutrality across products, footprints, and services to fight climate change and contribute to a decarbonized economy.



# THE OCEAN OF OPPORTUNITIES IN THE CIRCULAR ECONOMY

With Clément Chenut

**When it comes to achieving sustainability, there is a difference between setting off at top speed and making sure you are going the right way. OEMs will need to be clear, at a holistic level, on their direction of travel.**

There are five interconnected dimensions to consider:



**A long-term strategy, applicable in the day-to-day.** In a world of limited resources, resilience will rely on a long-term strategy with new performance indicators that help shift from a business of volume to a business of value.



**Product design sets the circular strategy.** Use product design to deliver superior value during the product lifecycle through modularity, repairability, or recyclability. Technology selection is key, to connect products and deliver increased benefits right across the value chain.



**Reverse operations for revalorization.** Ensure products retain value, and preserve resources, by using reverse logistics for repair or remanufacturing. Enabling product collection will be a key success factor in this new model.



**Ecosystem transformation.** Get the right partners and data-sharing practices to work together on mutual objectives. Create your own consortiums to work collectively on research and development (R&D) investment



**Innovation.** Use innovation as a driver for sustainability at speed and scale by investing in physical, digital, and biological technologies.



Let's take a closer look at the long-term strategy point. The electrification of transport will drive an explosion in the requirement for metals by 2040, with demand for lithium increasing by forty-two times, cobalt by twenty-one and nickel by nineteen. To mitigate their exposure to scarce resources, and to embrace the mega shifts toward industry electrification, increased software deployment, and as-a-service models, OEMs will need to transition to the circular economy.

**Attracting and training the right talent will be crucial.**

Not just developers, tech experts, and data scientists, but also software engineers, mechanical engineers, electrochemists, and battery experts. Because the circular economy is more than just understanding the traditional borders of our industry, investment will be needed in additional areas: notably in telecoms, mobility, and energy expertise. And, of course, capabilities within sustainability itself, to better understand the interconnectedness between all its components.



## UNTAPPED VALUE

So far, most OEMs have focused on the upstream end of the value chain, in terms of the provisioning of raw materials and establishing capabilities in manufacturing electric batteries as a differentiator. But the real added value in the circular economy remains untapped: the ocean of opportunities that sits between end of use and recycling for vehicles.

We are starting to see exciting developments in this area. Renault launched a refactory in France to remanufacture and retrofit vehicles. European battery manufacturer Northvolt has partnered with aluminum company Hydro to improve recyclability, in order to be able to reuse 50% of its batteries.

Circularity has a sustainability benefit as it minimizes the raw material footprint, yes. But it also supports commercial objectives by reducing the depletion in value of goods and materials. Two benefits to the business are:

- **More resilience against four external factors: pollution, lack or absence of recovery, difficulty sourcing raw materials, and CO2 reduction (moving away from provisioning raw materials reduces the CO2 bill for OEMs by between 45% and 60%).**
- **Financial benefits: organizations that adopt the circular economy experience better economic value and consumer desirability.**

That final point around consumer value is an interesting one. An unexpected benefit of circularity is that the extension of product life provides greater intimacy with consumers. Relationships last longer, touchpoints increase, and more customer data is gathered, allowing companies to improve services and add revenue streams. Customer satisfaction and retention improves, and delivering on the broader vision of sustainability creates a positive cycle of benefits within the organization.

One thing is for sure. Whether it happens through push or pull movements, or a mixture of both, the advent of the circular economy is inevitable. I would encourage OEMs to embrace the opportunities it offers.



**About the author:** Clément Chenut is Circular Economy Expert, Group Sustainability Accelerator at Capgemini Invent. He works to increase awareness on sustainability issues and accelerate the development of circular business models. Alongside his professional activities, Clément lectures at the University of Paris Dauphine, among others, on the application of the circular economy in leveraging technology.



# PUTTING THE E INTO END-TO-END

With Vera Schneemann

**When it comes to investment in sustainability in our sector, we have seen an incredible increase in e-vehicles, but the end-to-end perspective is still missing.**

OEMs are launching e-vehicles, but the 'e' relates only to the vehicle, not to the sustainability of production or to extending the car's lifecycle. Progress is being made, however, on refurbishment and reuse of materials, particularly within non-safety components. Start-ups play an important role in this area.

## TRANSPARENT ECOSYSTEMS

The Catena-X open data ecosystem will have a big part to play in increasing transparency around materials along the whole value chain; improving traceability and circularity up- and downstream.

Traceability and availability are important topics. To make your sustainable vision a reality, you need to be able to answer questions like:

- **Have you thought end-to-end about circularity, including implementing smart component return processes?**
- **Do you have the right network of partners who will openly cooperate on repairs, refurbishment, manufacturing, and recycling?**

Some of the answers will lie in a large ecosystem or marketplace, allowing interchange between industries. Where recovered materials from aerospace, for instance, can be used in automotive; and automotive materials can be repurposed in consumer products.







” Some of the answers will lie in a large ecosystem or marketplace, allowing interchange between industries. ”

## TALKING TALENT

The human factor must not be underestimated in all this. How are you showing your employees the impact their daily work has on sustainability? Have you identified the two or three sustainability experts in departments such as procurement who can help to guide and upskill the wider team?

Middle management should be a focus area in order to generate a step change. The C suite understand that the drive for sustainability is a growth opportunity. But appropriate incentives have not yet necessarily been put in place to drive the right behaviors further down the organization.

As an OEM, your attitude to sustainability can be an advantage in the talent pool, with more entrants to the job market choosing firms whose values align with their own.

When talking about end-to-end sustainability for OEMs, there are three areas that are sometimes overlooked:



**The broader organization.** One business unit cannot do it alone, the push must be company-wide. And the attitude must be open-minded. Not just, “How can we produce the best e-car?” but “With our current available ecosystem, processes, and energy provision, how can we be as sustainable as possible, now?”



**Smaller suppliers.** OEMs expect tier 1 suppliers to take responsibility for their own sustainability, and to – in turn – manage the tier 2 suppliers. But beyond that, we are dealing with smaller and smaller firms who cannot afford to invest in sustainability projects. OEMs need to focus on how to deal with this issue.



**Consumer behavior.** How can you, as an OEM, influence people’s choices? How can you create more awareness? Because if the customer is willing to pay for it, more investment becomes available for sustainability projects.



**About the author:** Vera Schneemann is Global Lead, Sustainable Operations and Supply Chain at Capgemini Invent. With over 15 years of experience in supply chain management, she takes a holistic approach to analyzing the status quo in terms of emissions along the value chain, developing end-to-end approaches to sustainable operational processes.



# DATA ILLUMINATES THE PATH TO SUSTAINABILITY

With Benjamin Fritz

**Net zero can only be achieved with the right data structures in place – and the reality is that for many companies, these do not yet exist.**

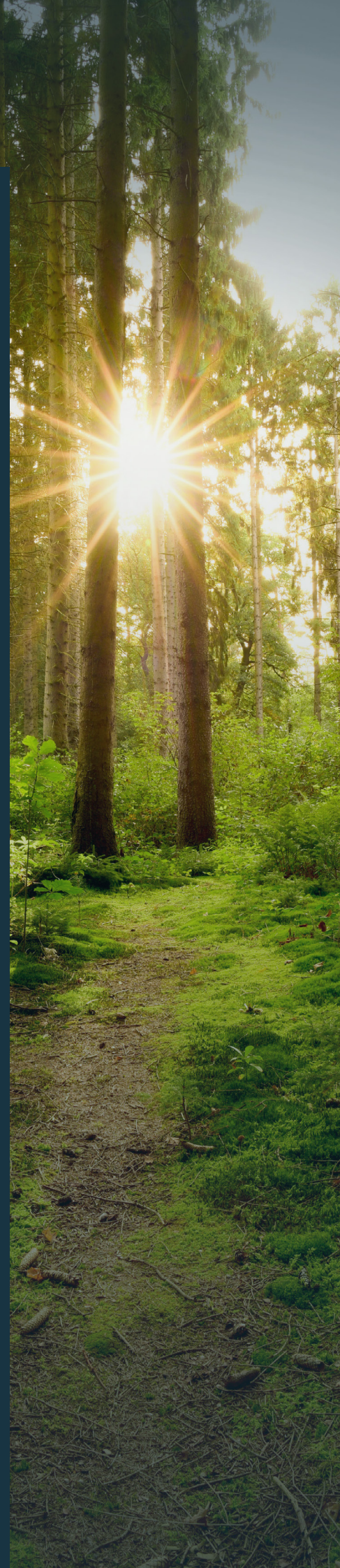


## UNDERSTANDING THE VALUE CHAIN

How does your company measure up in terms of sustainability, and to what extent does it need to change? Which actions will have the most impact and how much will they cost? These questions can only be answered with efficient data management. But often data exists in silos that are not easily consolidated. That makes it hard to compare, say, emissions data at the company or product level. And the ability to measure the current state is vital in order to assess the impact of mitigating actions.

A clear picture is needed right across the value chain. Data on the complete product lifecycle, from development, production, supply chain, and logistics, must be brought together with data from vehicles, customers, and other departments.

In technological terms, what is needed is a data mesh with decentralized architecture. Data sovereignty remains within individual domains, but information can be combined and evaluated for analysis purposes.





## THE IMPORTANCE OF CONTEXT

In my opinion, all OEMs need to work closely with the hyperscalers to build a cloud infrastructure as a foundation for sustainability. Then they can use a semantic layer across the organization to access the data and generate insights.

With this foundation, enterprises can use quality data to drive AI systems, with a focus on ensuring the data clearly conveys what the AI needs to learn. Teams can then focus on performance, rather than spending time trying to improve the model.

The most important thing to consider in all of this, is context. In your AI model, bringing context into the algorithm ensures it understands where it's running. But it's vital for people and teams, too. A net zero intelligence nerve center, or central sustainability office, can be set up at the interface of all functional areas to manage the system for sustainability. But if people do not participate, structure, governance, and technology will not change a thing.



“If people do not participate, structure, governance, and technology will not change a thing.”

For OEMs keen to harness data in pursuit of improved sustainability, I would suggest the following areas of focus:

-  **1** Link your existing data initiatives with a consistent strategy that aligns with net zero objectives.
-  **2** Translate the top team's vision into clear net zero performance.
-  **3** Consider how, from a carbon intensity perspective, you can capture and combine environmental data into a unified accountability system.
-  **4** Determine how to switch from climate claims to actionable environmental analytics.
-  **5** Finally, when it comes to regulation, identify how you can adapt your data capabilities to meet regulatory requirements and reporting imperatives.



**About the author:** Benjamin Fritz is the Global Head of Automotive for Insights and Data at Capgemini. With more than 15 years of experience working with clients in Europe and North America, he supports major automotive companies in their digital business transformation toward a data-driven enterprise able to fully harness data, analytics, and artificial intelligence to drive tangible business value.



# TANGIBLE RESULTS NEED BOOTS ON THE GROUND

With Daniel Davenport



**Sustainability today is moving from the strategic to the tactical. That necessitates a much broader purview, to consider everything from global manufacturing locations all the way to consumer practices around driving behavior.**

It's a massive undertaking and to influence meaningful results, you have got to take a holistic view. Moving from strategy to tactics means getting boots on the ground: implementing and accelerating infrastructure processes in relation to cloud and connectivity.

Here are some tangible steps OEMs can take to introduce sustainability initiatives:



**1 Establish provenance.** Map your supply chain so you gain a solid understanding of where parts are coming from and how and why they are sourced.



**2 Assess the manufacturing process.** Make sure you can access and analyze the right data in the control tower to measure current state and effect improvements in the manufacturing plant.



**3 Expand your concept of mobility.** In North America particularly, mobility tends to mean a car. But the concept of sharing is important: car-sharing is one approach, but think about right-sized. How can you help a consumer plan a journey with the most sustainable element for each stage?

Sustainability and business goals are becoming more aligned. That's being driven both by companies themselves and by consumer demand – and the two will, I believe, continue to converge.





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## THE EV ECOSYSTEM

In the EV space, I think we are getting closer to achieving affordable EVs for the mass market. However, there are still knowledge and behavior gaps to address for consumers who have never driven or charged an EV. There are mindset hurdles to overcome, and geographical ones in large, spread-out territories such as North America.

Performance in an EV goes beyond just the battery and the range. Greater airflow, better use of aerodynamics, the use of wall batteries or solar charging panels all play a part. The whole ecosystem needs to come together to provide optimal performance: not only in terms of driving, but also in general usage and maintenance.

Thinking about the ecosystem in a different way, connectivity unlocks a tremendous world of new uses for EVs. Compare using a computer pre-internet: you might have been restricted to word processing or using spreadsheets, but as soon as you could get online, the world opened up. When you add always-on connectivity to vehicles, there will be a similar type of sea change. It's going to open up new capabilities, partnerships, and business opportunities. It's a very exciting time for connectivity – and therefore, for sustainability – in the e-mobility space.



**About the author:** Daniel Davenport is Client Partner in Capgemini's North American operation. In this role, he works with clients in the automotive industry to implement transformation initiatives, increase brand value, and grow their long-term revenue and market share – while also collaborating with mobility providers to create the next generation of transportation products and services.



# MANUFACTURING A SUSTAINABLE FUTURE

With Maryem Sahnoun

Over the past three years, the automotive industry has grappled with supply chain and shipping disruptions resulting from the pandemic, as well as ongoing parts and semiconductor shortages. Despite these large-scale disruptions, OEMs recognize both internal and external pressures are propelling the industry toward a new normal of advanced mobility and sustainable practices – and that considerable change is required.

Executives within the manufacturing field are outperforming others when it comes to taking actions to increase sustainability. But not all OEMs have the expertise to ensure the digital implementation of sustainability initiatives.

## **The solution is to tackle everything as-a-service.**

OEMs excel within their own field, but need the support of specialized partners and ecosystems offering technological solutions as-a-service.

## **CIRCULARITY AND ELECTRIFICATION**

Applying ecosystem thinking, two initiatives to focus on are circularity and electrification.

A circular economy maximizes the use of resources, reusing materials instead of going down the traditional manufacturing route; allowing OEMs to cut costs and generate savings.

Electrification is the most innovative technology in terms of reducing greenhouse gas emissions and improving air quality. This is a big investment for OEMs, but they must strengthen their sustainability strategies in order to not fall behind on their targets.

In both cases, sustainability offers an interesting way to scope out product innovations that use fewer resources or meet specific social needs.

Designing products and services around sustainability can increase profits and cut costs. Furthermore, it can enhance business reputation: another element of competitive advantage. There are many short- and long-term benefits to having a sustainable business strategy in place.





## THE SMART FACTORY

Car manufacturers have made a significant shift toward green practices by incorporating more recyclable materials, choosing energy alternatives to reduce fossil fuel usage, and producing more sustainable car parts. Steel, plastic, aluminum, and even fabrics can be recycled and reworked into new cars; and old tires can be melted down to produce new ones.

Circular design helps keep materials in circulation, moving us toward a regenerative future. For me, the

smart factory supports this circularity in automotive by maximizing plant efficiency in terms of resources, energy consumption, production sourcing, and materials' use and reuse. Because everything is in real time, problem solving and decision-making can be faster when it matters most; especially when it comes to sustainability. And the data captured automatically by smart manufacturing systems can be used to inform sustainability initiatives.

Digitalization is not just about production and engineering. It's also about helping organizations

harness the data, which is already available to them, in order to create better products and become more agile. With the right roadmap to digital transformation, OEMs will be able to maximize their assets to develop sustainable routes to competitive advantage.



” Sustainability offers an interesting way to scope out product innovations that use fewer resources or that meet specific social needs. ”



**About the author:** Maryem Sahnoun is Sustainability Senior Specialist, Capgemini Engineering. An industrial and production engineer by training, Maryem works with organizations to help them increase sustainability through carbon footprint and greenhouse gas management, environmental impact assessments, and sustainability mapping.



# SUSTAINABILITY IS A SHARED ENDEAVOR

With Daniel Garschagen

## To achieve sustainability in the automotive sector will take a joint effort.

Collaborating more closely is already on the agenda in our industry. OEM-supplier relationships are changing to partnership models in some areas – for example, OEMs have developed joint solutions with chipmakers like Qualcomm and Nvidia.



“Only by working together and seeing this sustainability transformation as a team sport, will we achieve success.”

## POWERFUL PARTNERSHIPS

New collaborations will, naturally, require thought and investigation into the optimum model. Each contributor will need to understand their specific part in the value chain. Where the value is clearly assigned, such collaborations will be win-win. Design the partnership so everyone can benefit, because the potential rewards of a successful collaboration are considerable – for individual players and for sustainability as a whole.

Symbiotic relationships between OEMs and other suppliers mean that a sustainable mobility ecosystem is key in our sector. If the infrastructure for EVs does not exist, OEMs will not sell their EVs. The same applies to digital services or charging solutions that support sustainable driving. OEMs are integral to the ecosystem, but they need to take care of the whole, interconnected piece so that they, along with suppliers and other providers, can benefit.

## TWO IMPERATIVES FOR SUCCESS

For me, these are the two key areas to consider when it comes to sustainability:



**Everyone needs to go all in.** Only by working together and seeing this sustainability transformation as a team sport, will we achieve success.



**Partnership models go beyond traditional OEM suppliers.** When OEMs work more broadly with others, such as chipmakers and hyperscalers, solutions are developed which benefit both parties; and in such a huge transformation area it is crucial to work together than develop in isolation and try to bring solutions together later on.



**About the author:** Daniel Garschagen is Lead Sustainability in Automotive Business Unit, Capgemini Germany. A digital-first consultant, Daniel uses his expertise in the automotive industry to bring innovation and digital business models to traditional sectors. As Head of the Applied Innovation Exchange in Munich, he helps create innovative new mobility solutions and a novel customer experience throughout the customer journey.



# SUSTAINABILITY IN 3D

With Henrik Norman

**I see sustainability in three dimensions: people, profit, and the planet. For many companies, adjusting to this 3D view is tricky.**

There is a growing understanding that sustainability must be built into business processes. Senior decision-makers are starting to get to grips with the data and take ownership of the journey, because they see the importance of it. In particular, there is interest in how to introduce a circular economy; refurbishing vehicles or components, rather than creating new footprints with raw materials.

## SUSTAINABILITY DATA'S SUPERPOWER

New skills are required to deal with sustainability data. To my mind, it has a different superpower than other data, because it contains a different truth than can be extracted from logistics or finance data. Executives are asking themselves, "How can I trust this sustainability data when it is a calculated figure?" Organizations must grow into the sustainable data space, leaning on data engineers and scientists to help present data for decision-making.

There are lots of small moves we can make to change people's behaviors. KPIs relating to sustainability can be introduced to start helping educate people day-to-day. Bring these discussions into personal development dialogs and look for measures that demonstrate when employees are embracing the changes. In that way, people are exposed to the environmental impact of their decisions, where before they were guided purely by financial or logistical considerations.

A unified data platform underpins all these initiatives; helping sustainability through the removal of data redundancy, duplication, and waste.

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## GOING BEYOND THE OEM

Measurement and action must go beyond your organization, into the supply chain. Three things you need are:



**Transparent, reliable data to calculate the CO2 footprint on each transport event.**



**Good relationships with your tier 1 suppliers and carriers. And, from a data point of view, to see into tier 2 and further levels within the network.**



**The ability to educate and support decision-makers to act on sustainability data in designing their processes. This is the most important, and where I see the magic.**

To bring your organization, market, and workforce – who may, and probably will, have different priorities – along on the journey, you need a good dashboard. This should show the different perspectives of people, profit, and planet in the same context. A dashboard that combines your sustainability data with financial and other key data equips you, as an organization, to make decisions that support your climate ambitions as well as your financial objectives.



**About the author:** Henrik Norman is Senior Director, Sustainability and Innovation, Insights and Data, Capgemini Sweden. With more than 25 years of professional experience, Henrik drives transformation programs using deep experience gained in analytics, data management, corporate performance management, and organizational change.





# THE LANDSCAPE IN FIVE TO TEN YEARS

With Siegfried Adam

**Sustainable mobility is becoming more and more important within the automotive sector. That is why circularity is increasingly being adopted as an attitude and culture within OEMs to improve customer experience on many levels.**

## THINK CIRCULAR FIRST

Designing and developing products with circularity in mind from the start is integral to success. Most decisions are taken and options explored in the first phase of the product lifecycle. If you don't design a product in such a way that it can be remanufactured, reused, or recycled, those options are denied to you later on.

Materials are one thing, but another important consideration is the components. Can modules be taken apart and reused? Can you reuse the whole product in mobility and sharing business models; perhaps refurbishing complete vehicles and making new vehicles out of used ones? These questions offer space for innovation and the application of technology in the architectural phase.

## A DECADE OF CHANGE AHEAD

The foundations of vehicle and process architecture are being redesigned, along with collaboration models. This will drive significant changes over the next five years, compared to what we have seen in the previous half-decade. By 2035, I believe we will see a totally different landscape; potentially with entirely new players dominating this industry.

Today, no single OEM is embracing circularity on every operational level. However, we are seeing OEMs setting ambitious targets. Polestar announced it intends its products to be carbon neutral by 2030 and BMW is targeting to use more than 50% secondary materials.

OEMs who investigate how to extend the lifecycle of products can contribute significantly to the idea of circular economy; as can those exploring the potential of shared mobility.

*Continued...*



## TACKLING CHALLENGES CREATIVELY

It's my view that a number of unexpected challenges will arise as OEMs dive deeper into the idea of circularity. It's not yet understood, for instance, how business models will work in a reverse supply chain:

how partnerships can thrive and be profitable.

R&D will be crucial in addressing these challenges; it is a chance for OEMs to rethink their own processes and how they operate in partnership with others. One route might be to rethink in-sourcing – perhaps bringing

in-house functions, which were typically outsourced, such as design and development. And outsourcing activities that require collaboration across enterprises: an easier undertaking for an external partner than for one player within the industry.

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**About the author:** Siegfried Adam is Director, Global Lead Sustainable Mobility at Capgemini Invent. In this role, he helps automotive organizations make their strategic ambitions become reality by leveraging digital technology and by putting their customers at the center of business decisions.



## Capgemini experts featured in this Point of View include:



**Markus Winkler**

Executive Vice President – Global Automotive Sector, Capgemini



**Klaus Feldman**

CTO for Automotive Sustainability and e-Mobility, Capgemini Engineering



**Clément Chenut**

Circular Economy Expert, Group Sustainability Accelerator, Capgemini Invent



**Vera Schneemann**

Global Lead, Sustainable Operations and Supply Chain, Capgemini Invent



**Benjamin Fritz**

Global Head of Automotive for Insights and Data, Capgemini



**Daniel Davenport**

Client Partner, NA Automotive, Capgemini



**Maryem Sahnoun**

Sustainability Senior Specialist, Capgemini Engineering



**Daniel Garschagen**

Lead Sustainability in Automotive Business Unit, Capgemini Germany



**Henrik Norrman**

Senior Director, Sustainability and Innovation, Insights and Data, Capgemini Sweden



**Siegfried Adam**

Director, Global Lead Sustainable Mobility, Capgemini Invent





## Our passion for sustainability

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