



## **Change for good: The road to zero emissions**

**When it comes to sustainability, the automotive industry doesn't have a great track record. But at a time when consumers don't just want change but are demanding it, organizations have a powerful opportunity to take the lead in driving the sustainability agenda forward through the products, services and experiences they create.**

### **What's going on**

Consumer demands have driven sustainable automobile solutions to become a matter of survival for the industry.

Globally, 66% of car buyers consider sustainability when deciding if and what to buy.<sup>1</sup> On top of this, there's pressure from governments on manufacturers to support sustainability initiatives. Norway, for example, now plans to raise the per-ton carbon tax from \$95 to \$240 by 2030 to help reach its climate goals.<sup>2</sup>



Momentum for change is building. And with nearly 40% of people worldwide open to innovative e-mobility solutions, the pressure is on automotive original equipment manufacturers (OEMs) to change and adapt—fast.<sup>3</sup>

The road to zero emissions is paved with innovation and it's being powered by electricity. Electric vehicles (EVs) are one part of the solution, and many manufacturers are moving toward EV fleets. The share of total EV car sales is now predicted to be 10% by 2025, increasing to 28% by 2030 and 58% by 2040, though predictions vary by region and by OEM.<sup>4</sup>

Ford, which is on track to fulfill its commitment of an \$11.5 billion investment in electrification through 2022, recently doubled its commitment to \$22 billion and extended the timeline to 2025 while also investing an additional \$7 billion in autonomous vehicles.<sup>5</sup>

BMW plans to double its fully EV sales this year, which already accounts for 15% of its sales in Europe.<sup>6</sup> Tesla led the race in 2020 by ramping up production to just under 500,000 full electric vehicles by the year's end.<sup>7</sup>

However, if the automotive industry is to truly maximize value to society and the environment, it needs to adopt circular economy practices—or a so-called “circular car” approach.

### **What's next**

A circular car approach means the efficient use of resources and public goods and measuring success in terms of the ability to provide mobility and reduce carbon emissions and non-circular resource consumption.<sup>8</sup>

This starts from an organization's business model and extends across car production through distribution to miles driven. Achieving circularity is not a one-time effort, however. Instead, it'll require collaboration across the automotive ecosystem over the years and decades ahead.<sup>9</sup>

This will be a major priority for OEMs in the coming years.

Because people like convenience and want greater sustainability, a significant opportunity lies in new sustainability solutions that are pragmatic enough to survive the flow of daily life.

Whatever the solution, it will need to match people's lifestyles.

The most effective strategies will involve exploring a variety of smart tools and options to adopt more sustainable life choices, progressively shifting toward more ethical and ecological options along the way, so that it fits seamlessly into people's everyday lives.



## Opportunities for reimagination

### 1. It's electric

EVs are a great start for the industry to become less of a catalyst for climate change, with research now proving that EVs reduce emissions.

For some years, it was suggested that emissions produced during EV manufacturing combined with the electricity needed to power the vehicles once on the road made EVs bigger polluters. But in 53 of 59 global regions—making up 95% of the world—EVs and electric household heat pumps produce fewer emissions and are better for the environment than fossil fuel alternatives, according to a recent study.<sup>10</sup>

OEMs are stepping up. Daimler is now working toward having an electric or hybrid version of each of its models by 2022. Volkswagen has pledged to achieve the same by 2030. General Motors, meanwhile, recently announced it will only sell zero-emission vehicles from 2035 on.<sup>11</sup>

Yet the batteries that power EVs have a way to go, which is why many brands are investing in research and development into battery manufacturing that can achieve truly clean energy solutions.

Chinese EV giant BYD and Japan-based Toyota, for example, are now partnering for EV battery R&D. Stellantis and Total/Saft have created joint venture Automotive Cells Company to do the same.<sup>13</sup>

In Germany, Opel has created a refurbishment center near its production plant for end-of-life batteries. This paves the way for second-life use by creating a charging point from used battery packs and by recycling spare parts to return to the first-life battery cycle.<sup>14</sup>

Such initiatives prove that investing in a cleaner power source positions the entire industry for success. They also help in setting standards beneficial to all regarding topics such as charging and payment regulations and grid integration, which is essential for ensuring sufficient infrastructure.





## 2. The circular economy

The automotive industry's philosophy on the value chain has already shifted fundamentally—from “take-make-waste” linear production and consumption models to “reduce, reuse, recycle.”<sup>15</sup> Yet though EVs are leading the charge, they alone cannot save the day.

With projections suggesting that EVs will account for 28% of all car sales by 2030, sustainable success will also depend on achieving a true circular economy.<sup>16</sup> This means leveraging circular economy strategies to transform products, as well as the way the products are used.

To move from sustainable ambition to reality, there are four main transformation pathways to increase circularity: energy decarbonization, material circularity, lifetime optimization and utilization improvement.<sup>17</sup>

“Renault has long been dedicated to making its business model more circular,” said Jean-Philippe Hermine, Renault's vice president, Strategic Environmental Planning.<sup>18</sup> “Extending vehicle lifetime, providing a second life for parts and recycling, as well as new innovations, will be at the core of these

activities. With the re-factory, we are also reaffirming our industrial footprint in France and are working with our unions to maintain the jobs that were originally dedicated to car manufacturing.”

Circular economy strategies have the potential to reduce carbon emissions per passenger kilometer by up to 75% and non-circular resource consumption by up to 80% by 2030, according to Accenture research.<sup>19</sup>

With cars increasingly bought online and flexibly subscribed to for shorter time periods, revenue streams are shifting toward the use phase, and the drive toward circularity is slowly picking up speed. Already, most automotive materials are recyclable. Meanwhile, more and more cars are being built to last and to be repaired.

These are all important aspects of circularity. But more work will be necessary to fundamentally reimagine the value chain to minimize lifetime carbon emissions and resource consumption.



### 3. Redefining luxury

Today, 88% of consumers look to brands to help them be more environmentally friendly in their daily lives.<sup>20</sup> Delivering on this is therefore quickly becoming essential for a brand's future success. But when it comes to cars, going green goes far beyond greening a car's power source.

Eco-conscious consumers expect to see change from the inside out. Considering that the materials and manufacturing burdens of a new vehicle can account for anywhere from 6% to 25% of its lifetime carbon footprint, both can have a material effect on sustainability.<sup>21</sup>

OEMs need to drive holistically sustainable solutions across the supply chain, and with their innovative use of more environment-friendly materials, luxury auto brands are leading the way.

Mercedes-Benz has incorporated a host of new materials. For example, Dinamica—a sueded fabric made from recycled plastic bottles and clothing fibers—is used for covering seats. On floorboards and dashboard trim Mercedes-Benz uses a

compressed timber product made from a sustainably harvested rattan called karuun.<sup>22</sup>

Volvo Car Group's EV sub-brand Polestar, which is exploring materials ranging from flax to recycled bottles and fishing nets, has a state-of-the-art manufacturing plant in Chengdu, China. The plant showcases every aspect of the brand's sustainability focus—from improved efficiencies in energy expended in its factories to the wellness of its employees.<sup>23</sup>

Using new materials can also increase the energy efficiency of vehicles by saving weight, which is becoming even more critical as battery technology matures. "Our material can cut the weight of interior panels by up to 50%," said Per Martensson, chief sales officer at Bcomp—the Swiss supplier of a flax-based composite Polestar is using.<sup>24</sup> "So, we reduce the plastic content drastically, and we increase the performance."



## What automotive leaders can do

### 1. Give innovation the backing it deserves

Innovation is a top priority. In fact, 71% of automotive executives believe that the stakes for innovation have never been higher.<sup>25</sup> So, it's imperative that multifaceted innovation is not only funded but incorporated into a brand's core operation.

Think beyond the hunk of metal that is the car to see how you can innovate within the production process: in the factory, along the supply chain, in your approach to partnerships—for example, collaborating with other organizations you might consider competitors.

As technology continues to evolve and new materials are uncovered, it's a smart move to invest in strengthening research partnerships with ecosystem partners and third-party organizations. Combining powers is key to unlocking new insights and know-how, as already seen in the race to better battery production for EVs. However, true success lies in agreeing upon a common framework for guiding and measuring progress toward

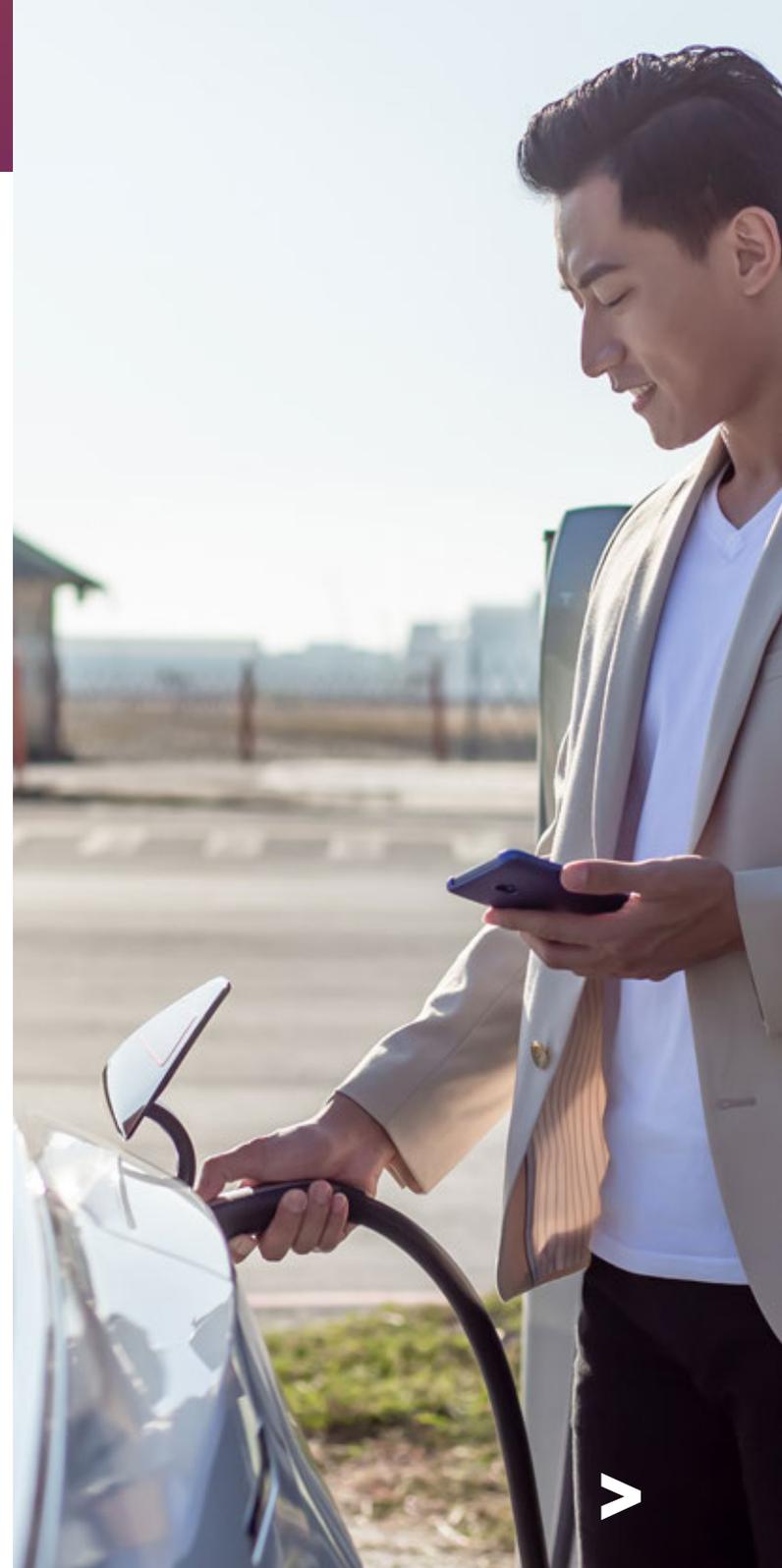
circularity. And this framework should raise industry ambition from merely doing less harm to building a truly sustainable global economy.

Remember, sustainability starts with design—not just product design, but also all the different design components that go into creating mobility solutions.

### 2. Walk the walk

It's essential that OEMs act, rather than simply pledge, to make the world better and that they're transparent about what they do.

Today's consumers—younger groups especially—want positive actions on sustainability from brands, not just words. In fact, 87% of Generation Z are worried for the environment and the planet, and 90% believe companies must drive action on social and environmental issues.<sup>26</sup>



For OEMs this means viewing everything they do through a sustainability lens. This should begin with the source materials OEMs use—questioning what they're made from, how they're produced, how long they'll last, if they're recyclable, or at least biodegradable, and so on—and extend to engaging with industry bodies and governments to find effective ways to enable EVs to be on the road.

Be transparent. For instance, develop strategies that enable increased data transparency and information sharing with other players along the automobility supply chain up to, and perhaps including, joint standards.<sup>27</sup>

### **3. Widen your horizons**

Sustainability doesn't just mean better for the environment—it's also better for the greater good. OEMs should, therefore, ensure sustainable mobility strategies that also address the need to benefit communities.

Partner with others to meet and then exceed people's growing sustainability expectations—like EV software companies Hubject and ev.energy did to simplify home and public EV charging.<sup>28</sup> Consider public-private partnerships. And partner with competitors for the greater good. The Drive Sustainability partnership, where the world's

ten biggest automakers are working to drive sustainability through the supply chain, is a great example of this.<sup>29</sup>

Car brands must go the extra mile in creating a more sustainable tomorrow. This could even mean investing in helping strengthen a city's infrastructure for charging or becoming more engaged in the design of smart cities.

Toyota, for example, recently rebranded itself as a mobility company with a focus on developing new technology to change the way people move.<sup>30</sup> Then in February 2021, it broke ground on the construction of Woven City—a prototype city of the future that's being built from scratch at the bottom of Mount Fuji in Japan.<sup>31</sup>

As well as being home to an initial 2,000 residents, Woven City will be a living laboratory where Toyota can test the latest smart technologies.



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