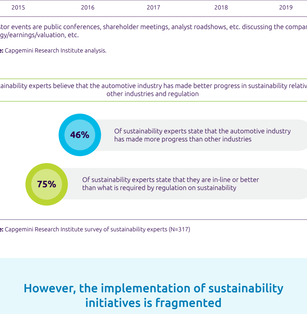
Capgemini RESEARCH INSTITUTE

The Automotive Industry in the Era of Sustainability

Sustainability has become a strategic priority for the automotive industry

The number of investor events discussing sustainability has more than doubled in the last five years

Number of investor events discussing sustainability*



*Investor events are public conferences, shareholder meetings, analyst roadshows, etc. discussing the company's strategy/earnings/valuation, etc.

Source: Capgemini Research Institute analysis.

Sustainability experts believe that the automotive industry has made better progress in sustainability relative to other industries and regulation

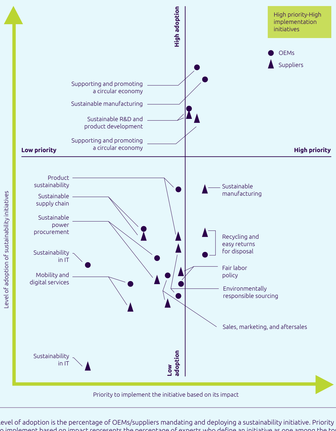
46% Of sustainability experts state that the automotive industry has made more progress than other industries

75% Of sustainability experts state that they are in-line or better than what is required by regulation on sustainability

Source: Capgemini Research Institute survey of sustainability experts (N=317)

However, the implementation of sustainability initiatives is fragmented

The value-chain is not entirely covered while suppliers lag OEMs in adoption.



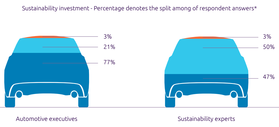
Level of adoption is the percentage of OEMs/suppliers mandating and deploying a sustainability initiative. Priority to implement based on impact represents the percentage of experts who define an initiative as one among the top three priorities for automotive organizations.

Source: Capgemini Research Institute survey of automotive executives (N=503) and automotive experts (N=317), November–December 2019.

An additional USD $50 billion is required to meet sustainability commitments

The automotive industry needs to invest more in sustainability

Sustainability investment - Percentage denotes the split among of respondent answers*



Source: Capgemini Research Institute survey of automotive executives (N=503) and automotive experts (N=317), November–December 2019.

The automotive industry needs to realize the true sustainability potential of electric vehicles and circular economy

Electric vehicles can significantly reduce lifetime GHG emissions when powered by renewable sources

Overall lifecycle GHG emission analysis (g.CO2 eq/km)

	Internal combustion engine vehicle	Electric vehicle
Fuel combustion	208	0
Power production/fuel production	50	67
Battery	0	72
Maintenance	9	9
Production of body/components	37	43

*Assuming a total lifetime distance of 150,000 Kms, EVs powered by the EU-27+UK grid. The chart shows a comparison of average GHG emissions between five EVs and five ICEs. Electric cars are Tesla Model 3 standard range (2020), VW ID.3 standard range, Polestar 2, Tesla Model 3 standard 50kWh (2018). ICE cars in consideration are Toyota Corolla Verso 177 (2013), VW Golf 52W TDI (2016), Volvo C30 2.0 and Ford Fiesta 1.25 (2017).

Source: Luxembourg Institute of Technology - Climobile Model for EV, 2019; Capgemini Research Institute analysis.

The circular economy also touches upon sustainability initiatives across the value chain, from product sustainability to end-of-life disposals

Sales, marketing, and after-sales services:	Recycling of waste and easy returns for end-of-life disposal:	Environmentally responsible sourcing of metals, minerals and products:
Using remanufactured engines results in 73% to 87% fewer CO2 emissions compared to building a new one through traditional processes[1].	At Michelin's UK plant, old truck tires are rethreaded and this process, reuses 85% of a tire, which saving 30 kg of rubber and 20 kg of steel per tire, as well as 60 kg of CO2 emissions[2].	In France, 86% of end-of-life components by weight is saved and recycled owing to the circular economy[3].

[1]S.S. Yang et al., The impact of automotive product remanufacturing on environmental performance, Elsevier B.V, 2015.
[2]The society of motor manufacturers and traders, "2018 UK Automotive Sustainability Report," 2018.
[3]European commission, "Annual report the End-of-Life Vehicle sector observatory - 2017 data," February 2019.

How can the automotive industry accelerate sustainability?

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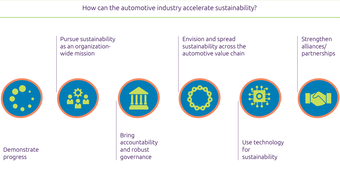

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