



# PRESS RELEASE

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## Report shows matching battery size with vehicle use is crucial for environment

**A new study by Ricardo for the Low Carbon Vehicle Partnership (LowCVP) aims to push the boundaries of knowledge of Life Cycle Assessment, an increasingly important area of research in the area of road transport**

As new types and technologies of vehicles enter the market place and as electrification of road transport becomes mainstream, the ability to assess emissions 'beyond the tailpipe' to provide the basis for better regulation and more effective policies, will become more and more important. Life Cycle Assessment (LCA) is about taking a holistic approach to the analysis of a product's total environmental impact.

The report looks across a broad range of vehicle sectors for the first time and finds that the relative contribution of each vehicle life cycle stage is highly dependent on the vehicle type and powertrain technology as well as what assumptions are made about a vehicle's operational life, mileage and duty cycle.

For electric and plug-in hybrid vehicles the carbon intensity of the power grid is, of course, also a key factor in terms of the vehicle's full life cycle emissions. Well-to-wheel CO<sub>2</sub>e emissions of current electric vehicles are already significantly lower (40-60 percent) as a proportion of full lifetime emissions than those of typical current passenger cars (70-85 percent) and this difference can increase as the electricity grid becomes increasingly decarbonised. However, if a race for bigger

and bigger batteries is left unchecked, EVs doing low mileages could undermine some of the potential benefits.



The environmental impacts associated with the production phase, in particular, for road vehicles will become increasingly important in the context of the full life cycle and, therefore, the focus of more policy attention as the UK and other governments around the world strive to meet greenhouse gas (GHG) emissions reduction targets in order to tackle climate change.

The Ricardo study focuses on providing insights into how life cycle CO<sub>2</sub>e emissions vary by vehicle segment and powertrain technology. It considers 'L-category' (micro) vehicles, passenger cars, heavy duty trucks and buses across four life cycle stages – vehicle production, fuel production, vehicle use and vehicle end-of-life.

For larger, heavy duty trucks, life cycle CO<sub>2</sub>e emissions are overwhelmingly from vehicle use (>95 percent); unsurprising given the high utilisation and lifetime mileages of these types of vehicles. In this sector using lower carbon fuels and energy sources will deliver the greatest carbon reductions in the near term.

For smaller vehicles, such as passenger cars and micro vehicles, there is much greater sensitivity in each life cycle stage; often more than 50 percent of the overall impact comes in the manufacturing stage.

This new analysis – *Understanding the life cycle GHG emissions for different vehicle types and powertrain technologies* – builds on earlier work for the LowCVP, including the 2011 report *Preparing for a life cycle CO<sub>2</sub> measure*, also by Ricardo.

LowCVP's Managing Director, Andy Eastlake who will be jointly presenting more details of the Ricardo/LowCVP study at the LCV2018 event being held at Millbrook Proving Ground today said: "Many studies have looked at the environmental impacts of passenger cars, but far less is known about the life cycle sensitivities of other road vehicles. This work helps provide the latest knowledge and framework and will inform future discussions to ensure that the UK has the most comprehensive understanding of the impacts and can focus on the best environmental solutions across all vehicle sectors.

“This work shows that vehicle electrification using ‘right-sized’ batteries should progress hand-in-hand with low carbon fuels and energy and production innovation, to deliver the biggest greenhouse gas savings across the whole road sector.” “like total cost of ownership differences, the total life cycle impact of EVs needs the careful consideration and clear thinking highlighted by this report.”



"Life Cycle Assessment is an extremely useful approach to understanding the full environmental impact of a product or service, from design to acquisition of raw materials, manufacturing, and through-life operational use, through to end of life disposal and recycling," commented Jane Patterson of Ricardo Strategic Consulting. "As our report published by the LowCVP today demonstrates, the holistic life cycle philosophy that underpins LCA can provide extremely valuable insights when considering the various low carbon transport options. This provides an intelligent, rational and evidence-based framework to guide future strategic investment decisions, which often challenges the perspective of more restricted, shorter-term analysis."

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## NOTES TO EDITORS:

**The LowCVP**, which was established in 2003, is a public-private partnership that exists to accelerate a sustainable shift to lower carbon vehicles and fuels and create opportunities for UK businesses. Nearly 200 organisations are engaged from diverse backgrounds, including automotive and fuel supply chains, government, vehicle users, academics, environment groups and others. For more information visit [www.lowcvp.org.uk](http://www.lowcvp.org.uk).

The LowCVP/Ricardo study follows closely after the publication of the European Climate Foundation report (prepared by carbone4) *From Cradle to Grave: e-mobility and the energy transition*. That report clearly shows that there are current life cycle emissions benefits from operating electric vehicles and that these will increase further as power grids decarbonise.

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