

"Lifecycle assessment for cars need to be comparable"

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FINAL REPLY. Several lifecycle assessments of electric cars, plug-in-hybrid cars and ordinary cars with different fuel have been made. The problem is that they are based on different assumptions which makes them difficult to compare. All vehicles regardless of powertrain should present a comparable lifecycle assessment, writes Anders Welin.

Initially I would like to thank for the constructive thoughts that have been entered in the field of comments and the replies from Mattias Goldmann, Tibor Blomhäll and IVL.

I share the view of Mattias Goldmann that there are advantages with electric cars within other sectors than emissions that affect the climate. On the other hand I do not advocate the use of fossil fuel instead of electricity or hydrogen, which some of the comments suggests.

However, the need for further information increases when you are about to make comparisons between cars with different powertrains and fuel. It does not matter where in the lifecycle of the car the emissions are emitted. They effect the climate just as much.

Several lifecycle assessments (LCA) of Electric cars, Plug-in hybrids and ordinary cars with different fuel have been made and I have studied several of them. The problems are that they are based on different assumptions and thus the results vary, which makes it difficult to compare them with each other.

A Swedish study, which tried to explain the differences in outcome, was published in 2014. The study reviewed 79 different LCA that had been published and found that there were inadequacies in the execution of the LCA studies. Among other things how the assumptions regarding the recycling process of the batteries were disclosed. The Swedish study, for example, questioned the available technical recycling methods. There is therefore a substantial need to come up with standardized models for how LCA are to be conducted to increase the comparability.

The car companies should be able to present a LCA for their current models, since they have information about their production processes. This is confirmed by IVL in their reply. Volkswagen has done it for e-Golf and e-Up models and some of their conventional cars. In my examples, which are presented in my article, I have used data from e-Golf since none of the other manufacturers discloses emissions from the production of the batteries.

It is a fairly recent LCA presented in January 2014. VW does not include any gains from recycling the battery, but ends it's LCA with dismantling the battery without recycling it. The LCA of the e-Golf is reviewed and verified by the same certifying authority, TÜV, that Blomhäll refers to regarding the LCA for Mercedes B-class. I have also compared the figures disclosed by VW with similar data and the figures from VW falls within the range presented by independent researchers.

Moreover it is only the emissions from production of the battery that I use in my calculations, not the actual car. Those emissions need to be added, but that is necessary with ordinary cars too. VW compares the e-Golf with a diesel and a gasoline model of Golf. The e-Golf then has the lowest emissions of carbon dioxide over the whole lifecycle. At present Volkswagen have removed all LCA

except Up and e-Up from their web page, probably because they include comparisons with diesel cars.

It is gratifying that both Goldmann, Blomhäll and IVL share my opinion that LCA are needed for it to be possible to compare the effects of cars on the climate and the environment. This debate has focused mainly on electric cars but there is also need for LCA for ordinary cars, which do not have a uniform composition any more. I support the suggestion from IVL to include buses and then it is obvious to require the same information from trucks. It must be possible to make comparisons between vehicles, regardless of the manufacturing process, powertrain and fuel.

It is important that the regulations, that make a foundation for how the LCA are to be made public, are widely accepted. If the IVL recommended EPD (Environmental Product Declaration) record stands on solid ground, there is already a system available. I presume that the phase of operation according to the EPD-guidelines also include the best available environmental alternatives for each model. Then it will be clear how important it is to charge and fuel the vehicles with the most environmental friendly electricity and fuel.

Up until now trains and trams are the only transportation that is disclosed in the EPD record. The proposition from IVL that it should be compulsory to register a LCA when entering a procurement of buses and cars can probably speed up the development towards greater transparency and comparability.

Besides that I propose that the Swedish State (and other countries as well) demand that a lifecycle assessment is disclosed in the EPD record before state subsidies are granted for the vehicle (cars, buses, trucks). If the manufacturers on a voluntary basis start to register vehicles in the EPD record there will be a flying start for this.

Climate change involve great challenges that require cooperation and transparency. The solutions need to be systemic solutions so we do not move the emissions from a sector to another.

Alltså – För alla bilar (och andra fordon), oavsett drivlina och drivmedel bör en livscykelanalys redovisas inför typgodkännandet. Först då blir det möjligt att göra jämförelser på ett rimligt sätt.

In conclusion, for all cars (and other vehicles) regardless of powertrain and fuel a lifecycle assessment should be disclosed before the type approval. Only then will it be possible to make comparisons in a reasonable way.

Anders Welin, skribent, tidigare auktoriserad revisor granskare av hållbarhetsredovisningar på PWC

Anders Welin, writer, former authorized public accountant reviewer of sustainability reports at PwC

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