



Dear Caspar,

The Dutch government is finally proactively stimulating the purchase and use of electric vehicles. I was really irritated by the recent media exposure stating that electric vehicles are not that environmentally friendly.

Damien Ernst, a professor at the University of Liège, recently

calculated (for the Belgian TV programme *Auto Mobile*) that electric cars have to drive 700,000 kilometres before their CO₂ footprint per kilometre is less than that of petrol cars. According to Ernst, the battery of an electric car alone already generates half the emissions of the average comparable gasoline car. Many media, such as Dutch newspapers *AD* and *De Telegraaf*, reiterated this message.

This number immediately led to strong criticism from researchers. In the first place, the figure Ernst had used for the CO₂ emissions from battery manufacture was too high (something the professor admitted afterwards). In addition, Ernst admits he did not take into account emissions from the production and transport of petrol. At the same time, he used the German energy mix for the production of electricity, whereby coal-fired power stations generate high CO₂ emissions. By taking all these things into account in new calculations, and assuming a greener energy mix, Ernst now comes to a tipping point of around 85,000 kilometres.

The debate on how to calculate the emissions of electric versus fossil fuel cars does not, however, reflect the long-term developments relevant to investors.

Rapid technological developments in the battery industry have almost halved the weight of batteries in the past 10 years, while the CO₂-intensive material, cobalt oxide, is being replaced by other, more sustainable, substances. Recycling batteries will also reduce CO₂ emissions even more in the future.

The tipping point will therefore continue to drop and, combined with the increasing range that batteries have, the improved charging infrastructure and the lower cost of batteries, the rise of electric driving seems assured and only a matter of time.

What is your view on this and do you already drive an electric vehicle?

Regards,

Ruud Hadders
Responsible Investment Officer - ACTIAM

"The debate on how to calculate the emissions of electric versus fossil fuel cars does not reflect the long-term developments relevant to investors."

Dear Ruud,

The fact is that it is absolutely necessary for the Dutch government to develop policies to increase the number of electric vehicles. Let me tell you why. In order to attain the environmental benefits that electric vehicles (EVs) promise to deliver, they first need to become truly mainstream.

There has been a large percentage growth in sales from 50 to 60% in most major markets. However, this only accounts for around 5% of total vehicle sales globally. Furthermore, we should also focus on the existing fleet when looking at CO₂ emissions. This fleet is aging, telling us that fewer new cars are being sold annually (at least in Europe). In Europe the average vehicle is more than 11 years old and this is increasing.

Next to sales, there needs to be margins and they should be high enough for car manufacturers to profit from EV sales. First indications tell us that this might be an issue. For the roll-out of mainstream EVs, the general public should be able

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to purchase them. The indications are that the premium models like the Tesla model S, are too pricey and won't enable EVs to become mainstream. Less pricey models in the EV range will require manufacturers to scale and seek the optimisation of processes or to create business models that increase margins and profits from EVs.

Otherwise, at current prices, EVs will become luxury products which will mean that no environmental benefits are gained. Underlining this, McKinsey indicates in its report "Making electric vehicles profitable" that most manufacturers are not making a profit on the sale of EVs at this point in time.

Manufacturers are being faced with lots of challenges in order to truly bring EVs into the mainstream. So when we see regulations specifically on EVs and the Paris climate agreement, this is an encouraging and necessary sign. Luckily we are seeing a big push from car manufacturers towards EVs, from lower end VWs to high end BMWs, all aiming to build a big fleet of new EV models and clearly seeing opportunities there.

Until prices drop, I will stick to public transport. Although I realise that, looking at the entire supply chain of stakeholders, this is also less environmental friendly than it sounds.

Talk soon!

Caspar Snijders
Portfolio manager Equities - ACTIAM

