MARKET COMMENTARY



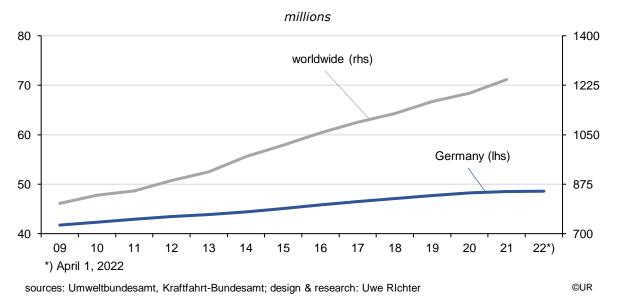
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Germans' love affair with their cars not about to end

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Contrary to all forecasts, Germany's car fleet – just as car fleets in the rest of the world – keeps expanding year by year. Neither the renaissance of the bicycle, the expansion of commuter railway systems, national rail networks or car sharing have stopped this trend, nor various recessions or the increase of gasoline prices. People love their cars and the option to hop in whenever they feel like it, and to drive wherever they want.

Ferdinand Dudenhöffer, one of the best-informed market analysts, has recently presented a new longterm forecast, published in "Wirtschaftsdienst", the German magazine for economic policy. The fleet of passenger cars had expanded at a fairly steady annual rate of 1.3 % since 2010. He predicts that the average growth rate will be less, 0.5 %, between now and 2050. From 2030, all new cars will be electric, and the stock of combustion engine cars will be phased out over the following 20 years. He estimates that by 2050, 95 % of all cars on the road will be powered by batteries.



number of passenger cars in Germany and worldwide

Under the conservative assumptions that EVs will on average be driven 13,000 kilometers a year and require 20 kWh of electricity per 100 kilometers, the fleet will need 138 TWh (Terawatt-hours) in 2050. For comparison: in 2020 Germany's 30,000 onshore wind turbines produced only 106 TWh. Not only mobility but other sectors of the economy as well require more electricity input between now and then. If the total future supply of electricity is to be generated by onshore wind, Germany must instal another 39,000 wind turbines, in addition to the 30,000 that exist already. Green electricity, including from photovoltaic, needs a lot of space. Natural limits are approaching quickly.

Dudenhöffer therefore favors to extend the useful life of Germany's existing nuclear power plants which are modern and, in his view, quite safe. This would certainly be better than burning fossil fuels and thus

harm the environment during the transitory period. He would rather accelerate the development of socalled molten-salt-reactors. Their key feature is that, by design, nuclear melt-downs are de facto impossible, thereby removing the main risk of nuclear power plants. Sounds almost too good to be true.

Another key trend in individual mobility is roboter cars. In the US, and especially in China the mood is like during the gold rush – but less so in Germany. Chinese high-tech companies from various sectors of the economy as well as several giga metro areas are competing to roll out new systems as fast as possible in order to realize economies of scale and thus achieve natural monopolies. There are already SUVs with a starting price of \$45,000 whose computers can perform 200 trillion operations per second (200,000,000,000,000/sec!). Dudenhöffer expects that the risks of driverless travel will be reduced so much that we will see 108-year old great-grandmothers and 8-year old kids operate these technological marvels.

At the moment, costs and prices of roboter cars are still prohibitively high. But we know that this will change over time, as with all revolutionary technologies. Will German and other European firms respond before the market is divided up?

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Jochen Wermuth founded WAM in 1999. He is a German climate impact investor who served on the steering committee of "Europeans for Divest Invest". As of June 2017, he is also a member of the investment strategy committee for the EUR 24 billion German Sovereign Wealth Fund (KENFO).

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