

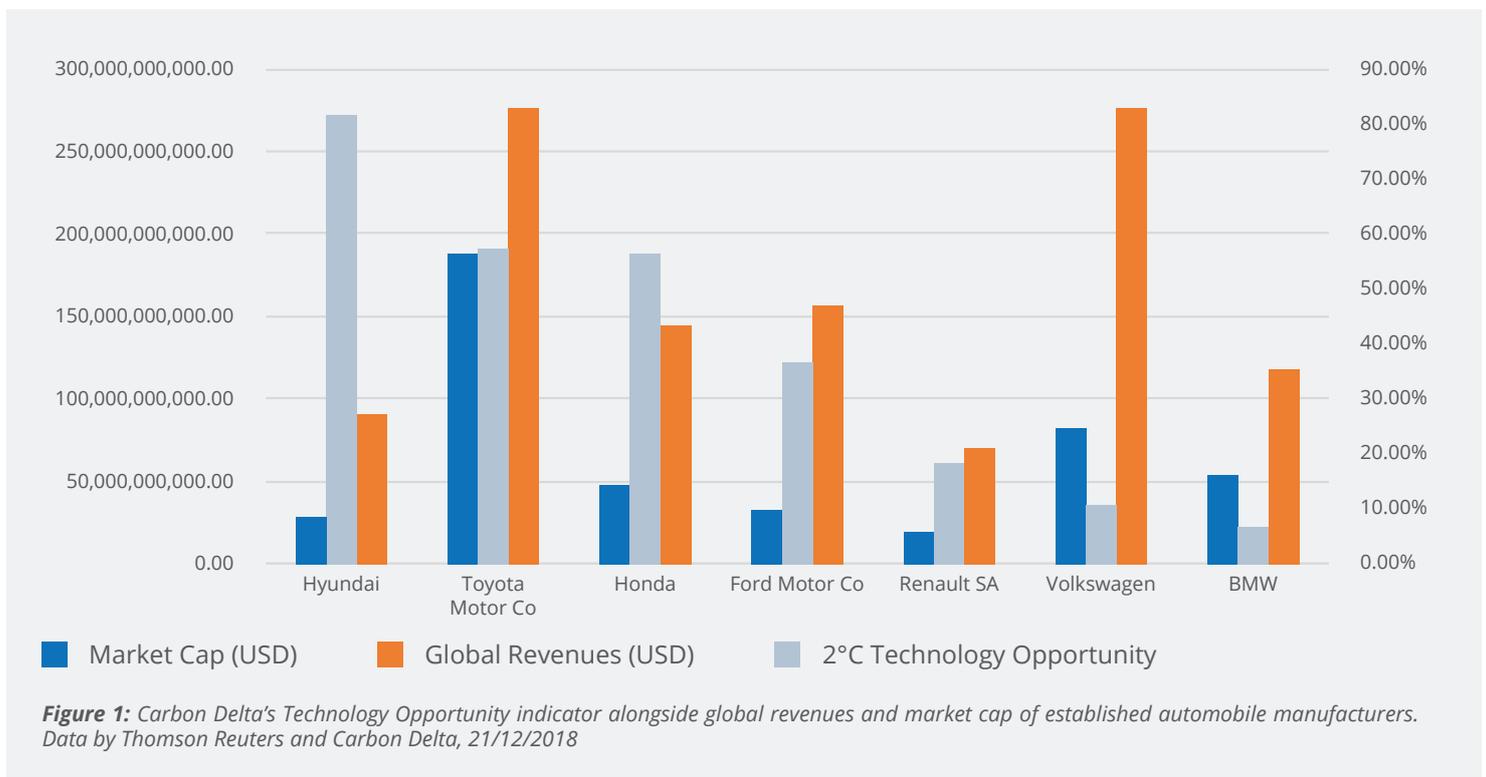
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ASIAN AUTOMOBILE MANUFACTURERS ARE LEADING THE TRANSITION INTO EV MOBILITY

Carbon Delta's Technology Opportunity metric analyses the low carbon patent value of public companies which allows an evidence-based, behind-the-scenes view into strategic R&D investments of companies. This article looks at a group of traditional automobile manufacturers and their potential to switch to low carbon technologies in the future.



The winds of change are blowing in the automobile sector and many believe that the USD 2 trillion auto industry is undergoing a fundamental change as electrical vehicles (EV) have started replacing internal combustion engines cars. Most global automobile manufacturers have recently announced their plans to launch mass market ready electric vehicles in the next couple of years and are seemingly ready for the challenge of transformation. In its recent comprehensive report on the subject, Bernstein, a prominent Wall Street research firm predicted that EV's

could represent 40% of auto sales per year and 30% of the global car park in twenty years.

At the same time, established car manufacturers like BMW and Hyundai are issuing profit warnings. Massive development costs are necessary to make the transformation happen. In 2017 alone, all major auto companies have poured USD 90 billion in investments to continue their research and development programs even though EV's only account for 1% of the automotive market currently.

Carbon Delta's Technology Opportunity indicator could help shed some additional light on the future transformation potential of this group of established automobile peers and inform investors of which companies are best placed to benefit from the low carbon transition.

The metric leverages statistical methods used in patent analysis in order to compute a potential future patent value for companies. One of the statistical indicators being analyzed are so-called 'forward citations' which look at how frequently a patent is cited by other issuers of patents. The number of forward citations a patent receives is used as a measure of a patent's significance and a correlation has been found between an increase in forward citations and actual technology deployment.

In Carbon Delta's model, Hyundai stands out with the highest technology opportunity (%). Close up are Japanese car manufacturers Toyota and Honda while Volkswagen, Renault and BMW are lagging behind. When looking more closely at the laggards, Ford Motor stands out with a technology opportunity of +36%. By contrast, Volkswagen and BMW appear last with opportunity values of only +10 and +7% respectively.

Asian manufacturers are leading the pack

Toyota is still to develop its first all-electric car but is nonetheless a recognized market leader in selling plug-in hybrids, like the Prius Prime. The company initially invested a lot of research efforts into hydrogen technologies which were not successful and is only now fully committed to EV's.

Hyundai, by contrast, already has three all electric vehicles on the roads: the new Kona SUV with a larger battery pack in the lower price segment, the all-rounder passenger car Ioniq in the medium price segment, and Nexo in the high price segment which combines electrical power and hydrogen with the only emission being water vapor. The Nexo is particularly fascinating as it has a driving range equivalent to combustion engine models and takes minimal time to refuel. Moreover, Hyundai has also unveiled plans for a new vehicle solar roof to be launched next year.

German manufacturers auto companies are catching up

The other competitors analyzed in the peer group have yet to launch electric vehicles that are commercially viable and ready for the mass markets. BMW, for example, introduced its line of i3 models in 2014, but the model is limited by a range of only 200 km. The company announced the launch of a much improved i4 model line by the year 2021. Volkswagen, on the other hand, declared that they are to launch automobiles that can match the range of a Tesla but with half the cost. In addition, non-Asian competitors are teaming up in order to shoulder the massive burden of R&D investments: Volkswagen and Ford recently revealed to be in "exploratory talks" to jointly develop electric vehicles in a far-reaching strategic alliance intended to save the companies billions of dollars.

Volkswagen could still catch up, as equity analyst Dorothee Cresswell of Barclays Capital finds in her latest study on the Automobile sector. While she acknowledges the significant research and development investments to be made, she is convinced that the recently announced efficiency measures will allow Volkswagen to master the transformation ahead.

As a final note, the country that may yet be leading the transition to EV could be China. China has massive transportation needs and at the same time, huge issues with air pollution. Compared to more established markets like North America and the EU, the Chinese government has the capacity and means to restrict the transportation choices of its citizens via regulation. To promote the green transition the Chinese government has recently granted special manufacturing permits to local companies active in EV technologies while at the same time being generous with R&D grants and consumer subsidies. As a result, new electric only car manufacturers have been emerging, as for example publicly-listed Geely. The company has been producing EV's for the Chinese mass market since 2013. Their current revenues of USD 15bn are already exceeding those of Tesla's USD 11bn.



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Anja Ludzuweit, CFA, is Director of Business Development at Carbon Delta. As such, Anja is involved with the firm's marketing and business development activities such as new client acquisition, event organization and relationship management. She previously worked 15 years for global market data provider FactSet where she was active in various sales management roles across different territories. As a multilingual sales and business development professional, Anja assisted clients with the evaluation of financial content and quantitative analytics solutions. During her time in the FactSet Strategic Partnership team she also successfully set up a number of data partnerships in the Fintech sector, driving innovation in the financial sector first-hand.

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