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In the fast lane: Electric vehicles and the automotive technology revolution

ASX: DRIV

Betashares Electric Vehicles and Future Mobility ETF

Introducing the Betashares Electric Vehicles and Future Mobility ETF (ASX: DRIV)

Reflecting rapid technological innovation, the global automotive sector is on the cusp of profound change over the next few decades. These changes include the transition to low-emission electric and hydrogen-powered motors, automated driving, and car-sharing arrangements.

The roads of tomorrow will look nothing like those of today.

What's more, thanks to strong scale economies and network effects, it's likely that those companies able to achieve first mover advantage in many of these areas will be well placed to maintain a strong competitive position. Either way, due to the dynamic nature of the changes taking place, exposure to both existing and emerging companies in this burgeoning area offers investors a way to seek to capitalise on this secular growth thematic.

For Australian investors, exposure to leading players in the global automotive revolution offers an opportunity for both growth and diversification within their portfolios.

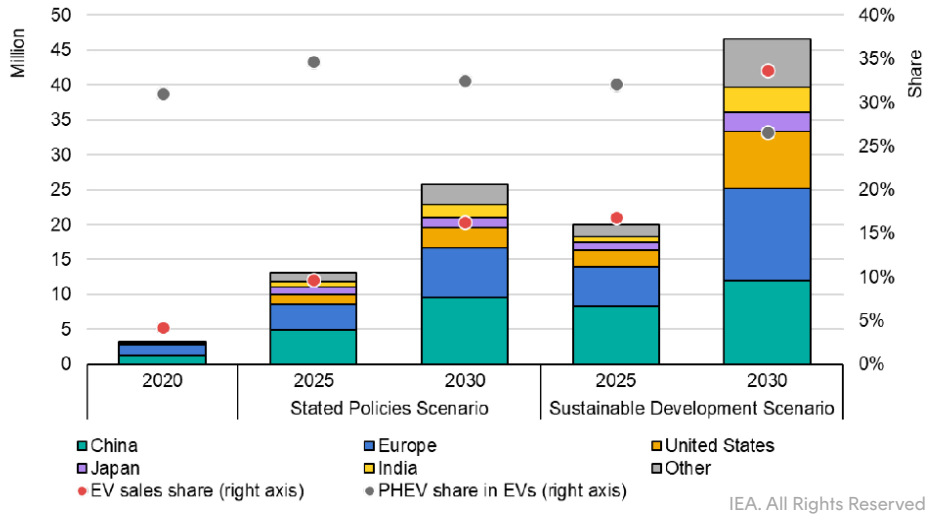
With this in mind, the Betashares Electric Vehicles and Future Mobility ETF (ASX: DRIV) has been designed to provide investors with exposure to some of the world's leading companies involved in the automotive technology thematic.

The climate-driven boom in electric car sales

The transition from fossil-fuel based internal combustion engines within cars and trucks to electric motors and battery power will be a critical means by which the world will aim to reduce carbon emissions over the next few decades.

Based on existing government carbon abatement policies, the International Energy Agency (IEA) estimates electric vehicle sales could rise from around 3m units in 2020 to 25m by 2030. If governments accelerated their efforts to deal with climate change, electric vehicle sales could reach 45m units by 2030, or just over one third of total vehicle sales[1]. These projections imply growth in electric vehicle sales of 25 to 30% p.a. over the coming decade.

Global EV sales by scenario, 2020 - 2030



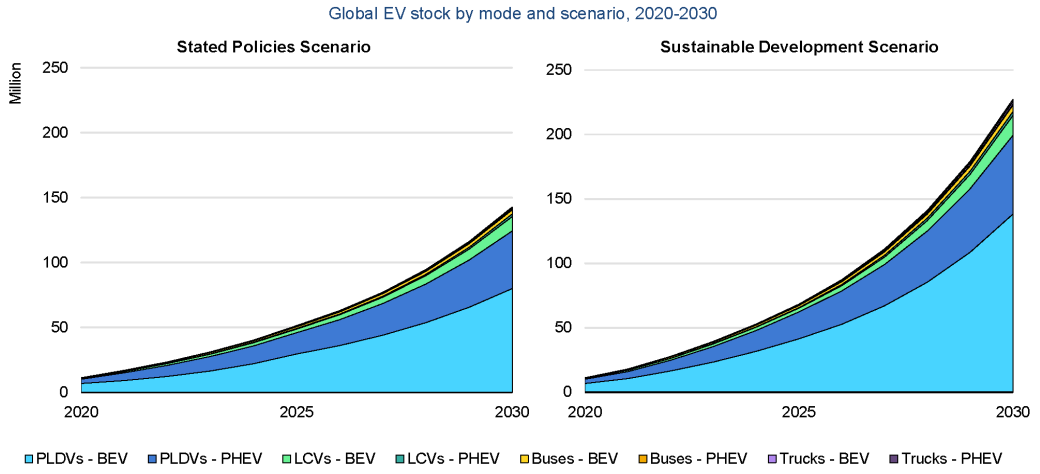
Note: PHEV = plug-in hybrid electric vehicle. EV sales share = share of EVs (BEV + PHEV) out of the total vehicle sales. PHEV share in EVs = share of PHEV sales out of EV (BEV + PHEV) sales. The regional breakdown of these figures by vehicle type can be interactively explored via the IEA's Global EV Data Explorer.

Source: IEA Analysis developed with the Mobility Model. Graph shows projections. Actual outcomes may differ materially from projected outcomes.

Stronger sales would also see the stock of electric vehicles in use rise significantly. According to IEA projections, the stock of electric vehicles could rise from 11m or 5% of the total stock in 2020, to 230m or 12% of the total stock by 2030 based on their sustainable development scenario (SDS).

[1] The first projection is based on what the IEA call their Stated Policies Scenario (STEPs), while the second scenario is based on their Sustainable Development Scenario (SDS).

Passenger cars drive the growth of electric vehicles to 2030

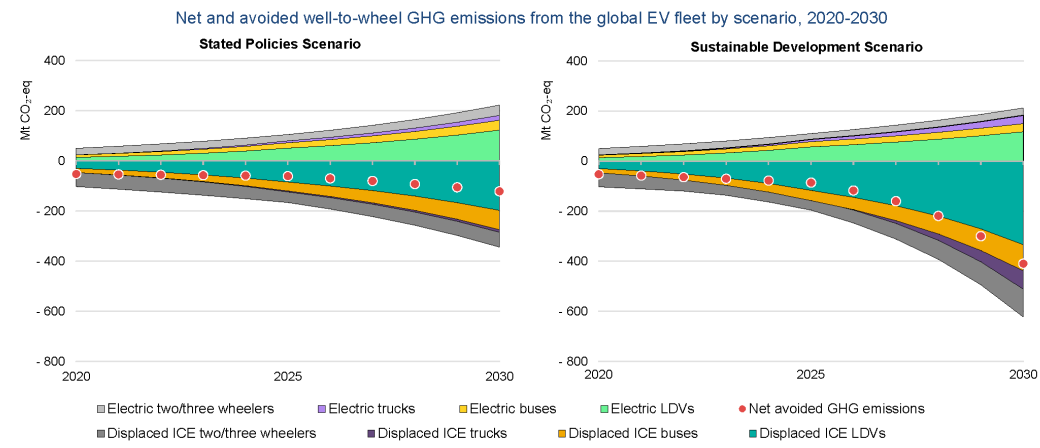


Note: PLDVs = passenger light-duty vehicles; BEV = battery electric vehicle; LCVs = light-commercial vehicles; PHEV = plug-in hybrid electric vehicle. The figure does not include electric two/three wheelers. For reference, total road EV stock (excluding two/three wheelers) in 2030 is 2 billion in the Stated Policies Scenarios and 1.9 billion in the Substantiable Development Scenario. Projected EV stock data by region can be interactively explored via the Global EV Data Explorer.

Source: IEA analysis developed with the Mobility Model. Graph shows projections. Actual outcomes may differ materially from projected outcomes.

According to the IEA, this degree of switching from internal combustion engines to electric powered vehicles by 2030 could reduce emissions from car use by up to two thirds (under their SDS scenario).

Net reduction of GHG emissions from EVs increases over time



Note: Mt CO2-eq = million tonnes of carbon-dioxide equivalent; LDVs = light-duty vehicles; ICE = internal combustion engine. Well-to-wheel emissions include those from fuel production and vehicle use, but not vehicle manufacturing. Positive emissions from the global EV fleet (BEVs and PHEVs). Negative emissions are those that would have been emitted by an equivalent ICE vehicle fleet. The red dot denotes GHG emissions savings from EVs in comparison with an equivalent ICE fleet. Regional well-to-wheel GHG emissions data can be interactively explored via the Global EV Data Explorer.

Source: IEA analysis developed with the Mobility Model using the carbon intensity values from Energy Technology Perspectives 2020 for both scenarios. Graph shows projections. Actual outcomes may differ materially from projected outcomes.

Technological improvements in passenger comfort and safety

Parallel to the climate-induced need to transition to lower emission modes of transport, technological innovation is also on the cusp of delivering passengers vastly improved comfort and safety features.

The most obvious improvement in this regard is the transition towards fully automated (driverless) car technology, which would avoid the safety problems associated with driver fatigue or error – and free up time for leisure and work activities whilst in transit.

Indeed, the car cabins of tomorrow may well evolve into mobile offices or lounge rooms, equipped with the latest in communications and entertainment technology. These opportunities will likely see even greater use of semi-conductors and increasingly sophisticated high-tech component parts throughout the cars of the future.

According to Goldman Sachs estimates, for example, the average value of semiconductors used within the standard car could grow by a factor of seven in the transition to fully-automated driving.

Hardware and Software Evolution towards Autonomous Driving

	L1	L2	L2+/L3	L4/L5
Degree of Autonomy	DRIVER ASSISTANCE	PARTIAL AUTOMATION	CONDITIONAL AUTOMATION	HIGH/FULL AUTOMATION
Sensors	1 – 2 Sensors + Optional Sensor Fusion Box	5 – 8 Sensors + Sensor Fusion Box	7 – 12 Sensors + Sensor Fusion Box, Driver Monitoring	15 – 24 Sensors + Sensor Fusion Box, Driver Monitoring
# of MCUs	2 – 5 MCUs	5 – 8 MCUs	10 – 16 MCUs	18 – 24 MCUs
Total semis content per vehicle (ex-GPU) (GSe)	$44 – $98	$110 – $260	$253 – $610	$705 – $1,381

RAPIDLY INCREASING SENSORS AND CONTENT PER VEHICLE (HARDWARE & SOFTWARE)

Some premium car makers are already integrating less advanced LiDARs (Light Detection and Ranging) at lower levels of autonomy.

Source: Company data, Goldman Sachs Global Investment Research.

In turn, Goldman Sachs estimates the market for semiconductors within the automotive industry could grow from around $2.5b by 2030, implying annualised growth of 25%.

A related opportunity is the shift to shared mobility schemes or pay-to-drive systems that reduce the need for individual car ownership. Improved convenience and affordability could see more intensive use of the stock of cars over time. Current ride-sharing companies such as Uber are already well placed to move into these areas, and innovative car manufacturers such as Tesla could develop shared mobility systems of their own.

Exposure to leading global automotive innovators

The index which the DRIV ETF aims to track provides exposure to up to 50 of the leading automotive technology companies around the world.

To quality for index inclusion, companies must derive significant revenue from at least one relevant industry segment, such as batteries and alternative fuel, innovative driving technology, or hydrogen power.

As evident in the table below, the index constituents as at 30 November 2021 include many well-known and successful companies such as Tesla and Uber, along with some equally innovative but lesser-known names such as Aptiv, NIO and Paccar.

Top 10 Companies in DRIV's Index: November 2021

Name	Headquarter	Category	Weight
TESLA INC.	United States	Future Transportation	10.3%
NIO INC - ADR	China	Future Transportation	7.3%
APTIV PLC	Ireland	Smart Auto Components	6.0%
UBER TECHNOLOGIES, INC	United States	Passenger Transportation and Future Trucks	5.6%
VOLKSWAGEN AG PREF	Germany	Future Transportation	4.9%
VOLVO AB CLASS B	Sweden	Passenger Transportation and Future Trucks	4.6%
BYD CO LTD	China	Future Transportation	4.5%
LI AUTO INC	China	Future Transportation	4.2%
XPENG INC - ADR	China	Future Transportation	4.0%
PACCAR INC	United States	Passenger Transportation	3.9%

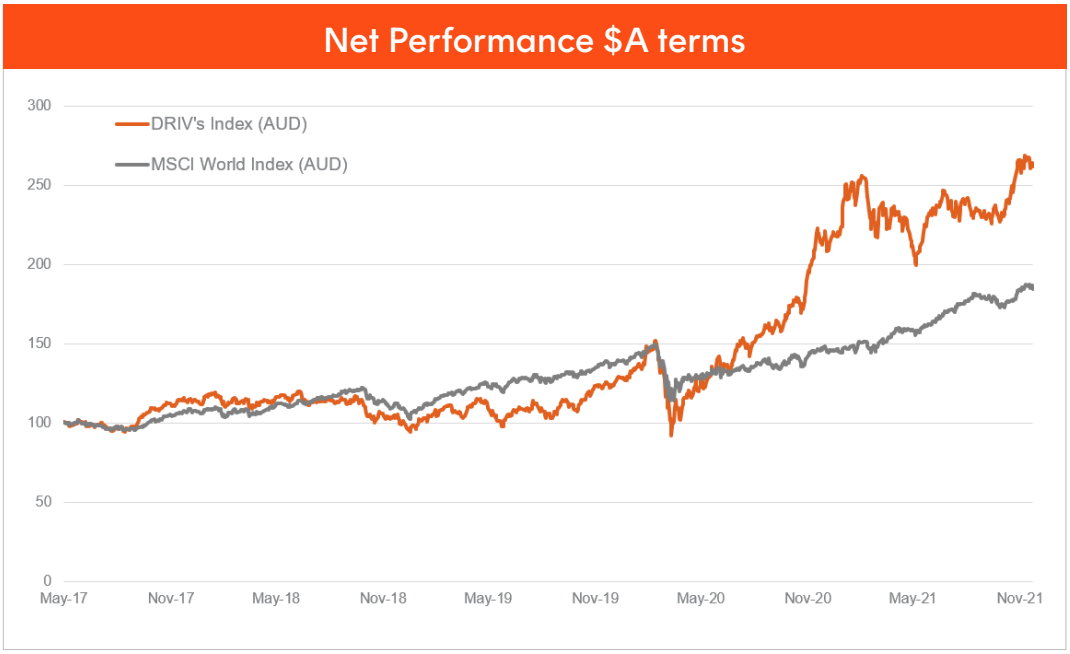
Source: Bloomberg. No assurance is given that these companies will remain in the index or will be profitable investments.

Moreover, the benefit of weighting companies by their free float market-capitalisation within the Index is that it will provide exposure to many of the up and coming automotive players of the future as they gain market value – while reducing exposure to companies facing tougher times[2].

[2] To ensure sufficient diversification across sub-sectors and companies, there are limits on maximum exposure to any one stock and specific areas of automotive technology. For more information, please review the Product Disclosure Statement or PDS.

As might be expected, given the strong growth in areas such as electric cars and ride-sharing, the historical investment performance of DRIV's Index has been relatively good.

From inception in May 2017 to end November 2021, the Index which the DRIV ETF aims to track has delivered annualised $A returns of 23.5%, compared with 14.3% for the MSCI World Ex-Australia Index.



Source: Bloomberg, Betashares. DRIV aims to track the Solactive Future Mobility Index before fees and expenses. Past performance is not an indicator of future performance. Does not take into account ETF's fees and costs. You cannot invest directly in an index. The Index's returns can be expected to be more volatile (i.e. vary up and down) than a broad global shares exposure, given its concentrated sector exposure.

Summary

Climate change and technology are two key dynamics that seem likely to drive major investment opportunities in the automotive sector in coming years. Electric powered driverless cars available anywhere anytime could be the future of motoring, making travel not only more convenient and pleasurable, but also better for the environment.

With this in mind, Betashares is pleased to offer the DRIV ETF, which aims to provide a cost-effective and easily accessible way to gain exposure to some of the leading innovators in automotive technology.

There are risks associated with investment in the Fund, including market risk, sector risk, international investment risk and concentration risk. The Fund's returns can be expected to be more volatile (i.e. vary up and down) than a broad global shares exposure, given its more concentrated exposure. The Fund should only be considered as a component of a diversified portfolio. For more information on risks and other features of the Fund, please see the Target Market Determination (TMD) and Product Disclosure Statement, available at www.betashares.com.au.