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Opportunities from Electric Vehicles, Future Mobility & New Transportation Technology

An Overview of the KraneShares Electric Vehicles & Future Mobility ETF (Ticker: KARS)

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## **Introduction to KraneShares**

## **About KraneShares**

Krane Funds Advisors, LLC is the investment manager for KraneShares ETFs. Our suite of China focused ETFs provides investors with solutions to capture China's importance as an essential element of a well-designed investment portfolio. We strive to provide innovative, first to market strategies that have been developed based on our strong partnerships and our deep knowledge of investing. We help investors stay current on global market trends and aim to provide meaningful diversification. Krane Funds Advisors, LLC is majority owned by China International Capital Corporation (CICC).



# KARS

KraneShares Electric Vehicles & Future Mobility ETF

#### Investment Strategy:

KARS seeks to measure the performance of Solactive Electric Vehicles and Future Mobility Index. The Index is designed to track the performance of companies engaged in the production of electric vehicles and/or their components, or engaged in other initiatives that may change the future of mobility. The Index includes issuers engaged in the electric vehicle production, autonomous driving, shared mobility, lithium and/or copper production, lithium-ion/lead acid batteries, hydrogen fuel cell manufacturing and/or electric infrastructure businesses.

#### **KARS Features:**

- Access to global companies that operate in all areas of new transportation methods, passenger and freight, including electric vehicles, autonomous vehicles and shared mobility.
- Exposure to companies that lead the development of vehicle connectivity like Internet of Vehicles (IoV) and Intelligent Mobility.
- Exposure to the growth brought on by increased demand for lithium-ion battery and non-ferrous metals like lithium due to electric vehicle adoption.
- Exposure to equities listed in Mainland China, currently the world's largest electric vehicle market.

#### **Future Mobility Sector Highlights**

- 57% of new car sales and over 30% of the global car fleet are projected to be electric by 2040.1
- The global electric vehicle (EV) market was valued at \$162 billion in 2019 and is projected to reach \$803 billion by 2027.4
- The global electric vehicle (EV) market is projected to command \$2.7 trillion of total investment before 2040.<sup>2</sup>
- Autonomous vehicles and the resulting "passenger economy" are projected to generate a cumulative \$8 trillion in global service revenues by 2050.<sup>3</sup>

<sup>1.</sup> Data from Bloomberg New Energy Finance as of 05/15/2019, retrieved 6/30/2020.

<sup>2.</sup> Morgan Stanley Research. "The EV Infrastructure 55: A Diversified Way to Play a Critical Enabler in the EV Theme." Morgan Stanley. 17 October 2017

<sup>3.</sup> Lanctot, Roger. "Accelerating The Future: The Economic Impact of the Emerging Passenger Economy." Strategy Analytics. June 2017.

<sup>4.</sup> International Energy Agency. "Global EV Outlook 2020." June, 2020.



## **Future Mobility** – We are entering an electrified, connected, autonomous, and shared future.

		Definition		
Electric Vehicles		Electric vehicles (EV) are vehicles which use one or more electric motors for propulsion.		
	Battery and Non-Ferrous Metals	Adoption of electric vehicles dramatically increases demand for lithium-ion battery and non-ferrous metals such as lithium and copper.		
	Vehicle Connectivity	Vehicle connectivity has three main characteristics: the presence of sensors, vehicle connectivity to networks, and the ability to rapidly compute incoming data.		
	Autonomous Driving	Autonomous vehicles, also called driverless cars or self-driving cars, are vehicles that are capable of sensing the environment and navigating without human input.		
	Shared Mobility	Shared mobility allows passengers to share transportation includes carsharing, e-hailing, ridesharing and carpooling.		











## Electric vehicles (EV) are becoming increasingly widespread and economical.

- 57% of new car sales and over 30% of the global car fleet are projected to be electric by 2040.<sup>1</sup>
- China is projected to account for nearly 50% of global EV sales in ٠ 2025.1
- Rising average mileage per vehicle brought on by ride sharing platforms may result in electric vehicles becoming more cost competitive than vehicles with traditional internal combustion engines (ICE).
- The low environmental impact of electric vehicles means that governments may be more motivated to manufacture them, and many have already introduced subsidies for electric vehicles.<sup>2</sup>
- Despite the negative effect of the coronavirus pandemic has had on ٠ car markets, China has not given up on its EV ambitions by any means. The China Automotive Technology & Research Center projects 1.6 million EVs will be sold in the country in 2021 compared to approximately one million in 2020.<sup>3</sup>
- Data from Bloomberg New Energy Finance as of 5/15/2019, retrieved 6/30/2020.
- Moss, Trefor. "China, With Methodical Discipline, Conjures a Market for Electric Cars." Wall Street Journal. 2 October 2017.
- Moss, Trefor. "China Auto Sales Bounce Back from Worst-Ever Quarter," The Wall Street Journal. July 10, 2020.





#### Annual global light duty vehicle sales<sup>1</sup>



## Batteries and Non-Ferrous Metals are an ideal avenue for capturing the potential value of electric vehicle markets.

- Widespread adoption of electric vehicles may dramatically increase demand for lithium-ion battery and non-ferrous metals such as lithium and copper.
- Global lithium-ion battery demand is projected to grow 1829% by 2030.<sup>5</sup>
- The revenue pool for lithium, an indispensable component of electric vehicle batteries, is expected to grow 450% by 2025.<sup>2</sup>
- Copper demand for electric cars may rise nine-fold by 2027.<sup>3</sup>
- Mining companies have already begun to increase production capacity to meet the impending demand. Galaxy Resources recently purchased a mining area in South America's "Lithium Triangle," which is home to around 60 percent of the world's reserves.<sup>4</sup>
- 1. Data from Bloomberg New Energy Finance as of 05/21/2018, retrieved 6/30/2020.
- 2. Desjardins, Jeff. "The Massive Impact of EVs on Commodities in One Chart." Visual Capitalist. 15 September 2017.
- 3. Reuters. "Copper demand for electric cars to rise nine-fold by 2027: ICA" Reuters. 13 June 2017.
- 4. Ben Creagh, "Galaxy raises \$61 million for development of lithium projects", Feb 8 2017.
- 5. Data from Bloomberg New Energy Finance as of 5/15/2019, retrieved 6/30/2020









## The Internet of Vehicles (IoV) connects cars to each other and outside world.

- Nearly all new vehicles sold in China, the European Union, and the United States are projected to be connected to the internet by 2022.<sup>1</sup>
- The growth of the Internet of Vehicles (IoV) may produce \$273 billion in revenue by 2026, according to a report by GSMA.<sup>2</sup>
- 16 million 5G-enabled vehicles will be sold across Europe, the US, and China by 2030, according to PWC.<sup>3</sup>
- Companies including NVIDIA and NXP Semiconductor provide connectivity solutions including Artificial Intelligence (AI), Vehicle-to-Vehicle (V2V) connectivity, and Vehicle-to-Everything (V2X) connectivity.
- Connectivity in personal vehicles and all types of transport is projected to increase steadily, carving out a larger role for data services companies including Alphabet and Baidu in the mobility space.



Share of new cars sold that are connected to the Internet worldwide from 2015 to 2025<sup>1</sup>

IoV is designed to improve traffic management and enhance safety by connecting cars and signals to each other.



- 1. PwC, "The 2017 Strategy& Digital Auto Report", September 2017.
- 2. GSMA, "GSMA Highlights US\$1.8 Trillion IoT Revenue Opportunity for Mobile Network Operators", September 7, 2017
- 3. PwC. "The 2019 Strategy & Digital Auto Report," September 2019.





## Autonomous vehicles could dramatically change the nature of the transportation market.

- By 2035, cars with autonomous features are projected to capture 25% of the new car market and more than 30 million autonomous vehicles are projected to be sold per year globally.<sup>1</sup>
- The advanced driver assistance systems (ADAS) market, a precursor to full autonomy, could reach \$27 billion by 2024,<sup>6</sup> compared to \$11 billion in 2019.<sup>2</sup>
- Alphabet's Waymo has developed autonomous vehicle systems that are already being regularly used in California and Arizona and have amassed over 10 million "self-driven" miles.<sup>3</sup>
- Baidu's Apollo Program is the first open source simulator for autonomous vehicle developers and has already partnered with over 100 partners including Nvidia and Infineon.<sup>4</sup>
- The coronavirus outbreak may have accelerated this trend as autonomous vehicles were used to deliver supplies in China.<sup>7</sup>
- 1. Boston Consulting Group," Autonomous Vehicle Adoption Study", April 10, 2017
- 2. Reuters, "Advanced Driver Assistance Systems (ADAS) Market Share 2019." July 15, 2019.
- 3. Korosec, Kristen. "Waymo's Self-Driving Cars Hit 10 Million Miles." retrieved 6/30/2020.
- 4. Data from Apollo.auto, retrieved 6/30/2020..



### Autonomous vehicle launch timelines based on public announcements<sup>5</sup>

- 5. Data from Bloomberg New Energy Finance as of 07/06/2017.
- 6. MarketWatch. "Advanced Driver Assistance Systems Market 2020 Research," July 15, 2020.
- 7. Baidu. "How coronavirus is accelerating a future with autonomous vehicles," MIT Technology Review. May 18, 2020.



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## Shared mobility is revolutionizing transport systems.

- The rapid rise of ride hailing platforms such as Uber laid the foundation for a major paradigm shift in transportation to a "passenger economy," which is projected to add \$7 trillion to the global economy by 2050.<sup>1</sup>
- Ride hailing companies are capturing market share at an extremely fast pace. 1.4 billion people use of ride hailing services worldwide and that number is projected to increase to over 1.5 billion by 2022.<sup>2</sup>
- Car sharing platforms are also on the rise. These platforms allow users to rent and drive a car for short periods of time. Examples include Baidu's Pand-auto, GM's Maven, Daimler's Car2Go, and BMW's ReachNow.
- Baidu's Pand-auto has the world's first fully electric fleet of shared mobility vehicles. The company had over 15,000 electric cars and over 2,100,000 registered users in 2017.<sup>3</sup>
- The combined trend of Shared Mobility and Autonomous driving has the potential to disrupt vehicle ownership and insurance as transportation becomes a pay as you go service in many cases.
- While ride hailing revenues were hit by the coronavirus pandemic, global revenues are expected to mostly recover by 2022.<sup>2</sup>







- 1. Lanctot, Roger. "Accelerating The Future: The Economic Impact of the Emerging Passenger Economy." Strategy Analytics. June 2017.
- 2. Data from Statista as of 6/30/2020.
- 3. Abnewwire, "Pand-Auto is the Premier Car Sharing Operations in the Area", Dec 12, 2017

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## China possesses unique advantages in future mobility development.

- China is the world's largest electric vehicle (EV) market with nearly 1.1 million EV sold in 2018.<sup>2</sup>
- In 2019, China already had 401,000 public charging stations<sup>4</sup> compared to only 20,000 in the US<sup>5</sup> and was installing stations at a rate of over 1,000 per day.<sup>6</sup>
- The Chinese government already offers subsidies of \$3,500 per EV with a range of over 400 km to buyers.
- China's urban development provides an opportunity to build exterior infrastructure for autonomous vehicles from the ground up.



Global cumulative number of public EV charging points installed<sup>1</sup>

- Data from Bloomberg New Energy Finance as of 05/15/2019, retrieved 6/30/2020.
- International Energy Agency. "Global EV Outlook 2019." retrieved 6/30/2020.
- Justine Lau, "Buffett buys BYD stake", September 29 2008. 3.
- Yuanyuan, Liu. "The number of public charging stations for Evs in China surges 50.5% in May," Renewable Energy World. July 2, 2019. 4.
- Lambert, Fred. "US now has over 20,000 electric car charging stations with more than 68,800 connectors," electrek. July 9, 2019. 5
- Yuanyuan, Liu. "China installed more than 1000 EV charging stations per day in 2019," Renewable Energy World. January 13, 2020. 6.



## KARS constituents contribute to all components of future vehicles.





## **Example Holdings of the KraneShares Electric Vehicles and Future Mobility ETF:**

Theme		Example Holdings	Holding weight in KARS [as of 6/30/2020]*	Future Mobility Service
Electric Vehicles		Great Wall Motors	1.08%	Great Wall Motors has launched product lines of both plug-in hybrids (PHEVs) and battery electric vehicles (BEVs). Some lines are still in the research and development phase.
<b>Q</b> 👳	Autonomous Driving	Alphabet	3.47%	Alphabet Waymo's self-driving cars has achieved millions of miles self-driven.
		Baidu	3.57%	Baidu's Apollo provides an open, reliable and secure software platform for its partners to develop their own autonomous driving systems.
Â	Vehicles Connectivity	Nvidia	3.60%	Nvidia's Artificial Intelligence (AI) technology gives cars the power to see, think, and learn and to drive themselves eventually.
		NXP	2.07%	NXP's Vehicle-to-Everything (V2X) technology enables cars to communicate with their surroundings.
	Shared Mobility	Baidu	3.57%	Pand-auto, owned by Baidu, cooperate with Apollo Project and operates electric vehicles carsharing business in China.
		Daimler	3.49%	Car2Go, a subsidiary of Daimler, offers exclusively Smart Fortwo and Mercedes-Benz vehicles and features one-way point-to-point rentals.
	Lithium-ion Battery	Samsung SDI	1.96%	Samsung SDI manufactures Lithium-ion batteries for electric vehicles.
		Guoxuan High-tech	1.40%	Guoxuan High-tech is a Chinese company manufacturing lithium-ion batteries.
	Lithium and other Non- Ferrous Metals	Albemarle	1.51%	Albemarle became a major lithium producer by owning lithium mines in South America and by acquiring lithium companies in China and globally.
		Southern Copper Corp.	2.12%	Southern Copper Corp. is one of the largest integrated copper producers in the world. They produce copper, molybdenum, zinc, lead, coal and silver.

\*Data from Bloomberg as of 6/30/2020. See page 16 for the Fund's top 10 holdings

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## China, the United States, and Europe are leading the world in future mobility.





KARS is diverse in sector coverage, size, and geography in order to capture value wherever it is being created.

**KARS Sector Breakdown** 



Data from Bloomberg as of 6/30/2020.





Data from Bloomberg as of 6/30/2020.

### **KARS Country Breakdown**



\*Others include Peru, Switzerland, Netherlands, Ireland, Hong Kong, Austria, Sweden, and the United Kingdom. Data from Bloomberg as of 6/30/2020.



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#### KARS Performance History as of 6/30/2020

	Fund Details	As of 6/30/2020		Top Ten H	
	Primary Exchange	NYSE		The Fund'	
	Cusip	500767827		NVIDIA (	
	' Total Annual Fund Operating	0.70%		ANALOG	
	Expense			BAIDU II	
	Inception Date	1/18/2018		TEXAS II	
	Distribution Frequency	Annual		BAYERIS	
		Solactive Electric Vehicles and Future Mobility Index		DAIMLE	
	Index Name			ALPHAB	
	Index Ticker	Bloomberg: SOLKARSN		ΤΟΥΟΤΑ	
		57		ADVANC	
	Number of Holdings (ex Cash)			ΗΟΝΠΑ	

<b>Top Ten Holdings</b> as of 6/30/2020 The Fund's Holdings Are Subject to Change.	% of Fund
NVIDIA CORP	3.60
ANALOG DEVICES INC	3.60
BAIDU INC - SPON ADR	3.57
TEXAS INSTRUMENTS INC	3.55
BAYERISCHE MOTOREN WERKE AG	3.50
DAIMLER AG-REGISTERED SHARES	3.49
ALPHABET INC-CL A	3.47
TOYOTA MOTOR CORP	3.40
ADVANCED MICRO DEVICES	3.35
HONDA MOTOR CO LTD	3.28

		Cumulative %		Average Annualized %		
	3 Mo	6 Mo	Since Inception	1 Yr	3 Yr	Since Inception
Fund NAV	32.39%	6.42%	4.00%	26.71%	-	1.61%
Closing Price	33.99%	6.82%	4.20%	26.39%	-	1.69%
Index	33.69%	7.61%	4.43%	28.31%	-	1.79%

The performance data quoted represents past performance. Past performance does not guarantee future results. The investment return and principal value of an investment will fluctuate so that an investor's shares, when sold or redeemed, may be worth more or less than their original cost and current performance may be lower or higher than the performance quoted. For performance data current to the most recent month end, please visit www.kraneshares.com

Index returns are for illustrative purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index.



#### Important Notes

Carefully consider the Funds' investment objectives, risk factors, charges and expenses before investing. This and additional information can be found in the Funds' full & summary prospectus, which may be obtained here: KARS. Read the prospectus carefully before investing.

Investing involves risk, including possible loss of principal. There can be no assurance that a Fund will achieve its stated objectives. ETF shares are not redeemable with the issuing fund other than in large Creation Unit aggregations. Instead, investors must buy or sell ETF Shares in the secondary market with the assistance of a stockbroker. In doing so, the investor may incur brokerage commissions and may pay more than net asset value when buying and receive less than net asset value when selling. The NAV of the Fund's shares is calculated each day the national securities exchanges are open for trading as of the close of regular trading on the New York Stock Exchange ("NYSE"), normally 4:00 p.m. Eastern time (the "NAV Calculation Time"). Shares are bought and sold at market price (closing price) not NAV. Market price returns are based on the midpoint of the bid/ask spread at 4:00 pm Eastern Time (when NAV is normally determined).

The Fund is subject to political, social or economic instability within China which may cause decline in value. Fluctuations in currency of foreign countries may have an adverse effect to domestic currency values. Emerging markets involve heightened risk related to the same factors as well as increase volatility and lower trading volume Narrowly focused investments typically exhibit higher volatility.

The ability of the fund to achieve its objective is dependent, in part, on the continuous availability of A Shares and the ability to obtain, if necessary, additional A Shares quota. If a Fund is unable to obtain sufficient exposure to limited availability of A Share quota, the Fund could seek exposure to the component securities of the Underlying Index by investment in other types of securities. The fund may in invest in derivatives, which are often more volatile than other investments and may magnify the Funds' gains or losses. The fund is non-diversified.

Indices are unmanaged and do not include the effect of fees. One cannot invest directly in an index.

The KraneShares ETFs are distributed by SEI Investments Distribution Company (SIDCO), 1 Freedom Valley Drive, Oaks, PA 19456, which is not affiliated with Krane Funds Advisors, LLC, the Investment Adviser for the Fund.



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