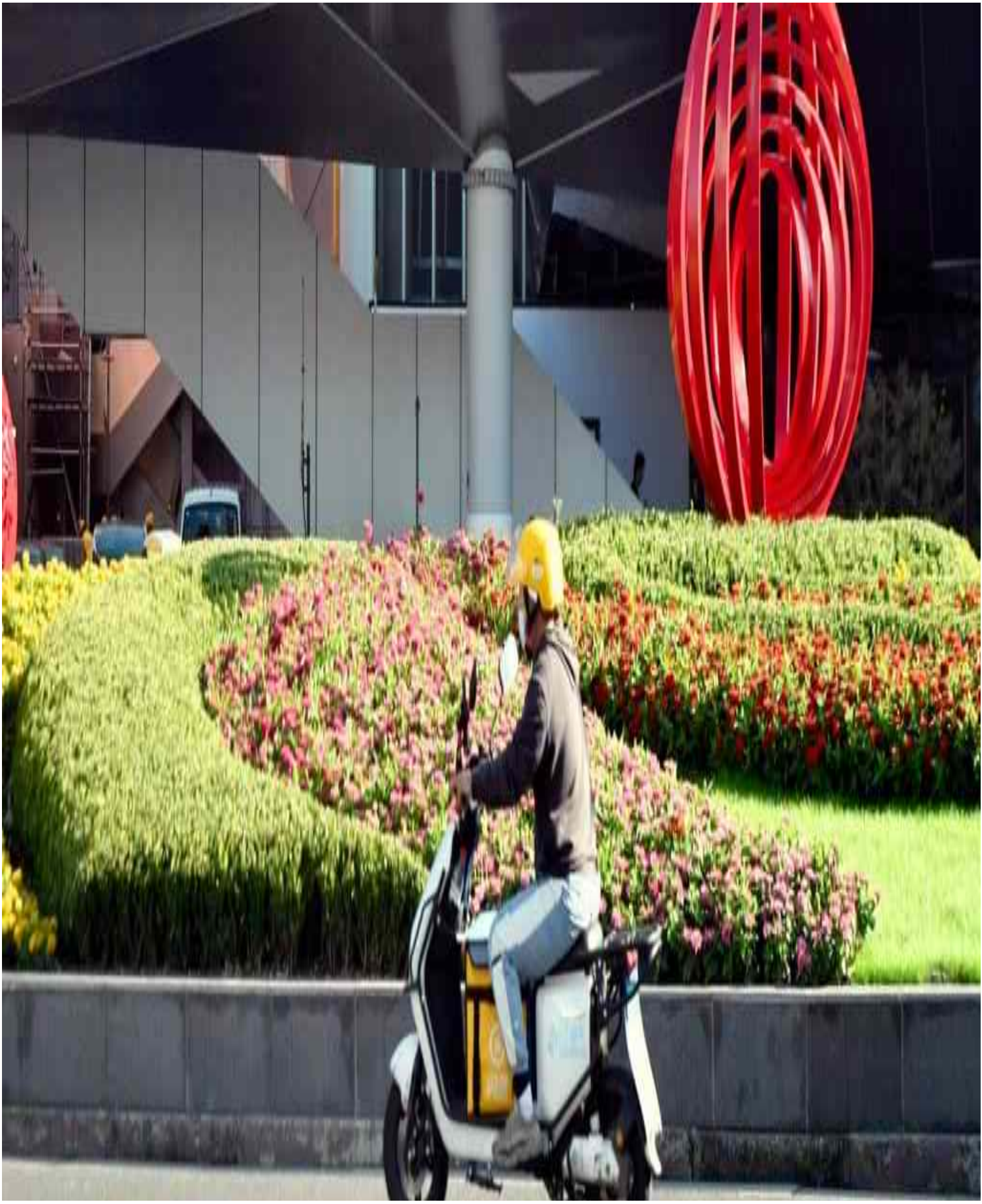
China urges citizens to trade in deadly old lithium e-bikes for newer lead acid electric bikes

 Micah Toll

In what might seem like a headscratcher, China is now urging its citizens to trade in their lithium-ion battery-based electric bikes for newer models with sealed lead-acid batteries (SLAs).

Electric bicycles are an incredibly popular form of travel in urban areas in China. An estimated 350 million electric two-wheelers of various forms travel the roads and bike paths in China.

Most e-bikes in China look more like what we would call scooters or mopeds, and many families as well as young adults rely on these e-bikes for daily transportation. While they technically require pedals and a maximum speed of 25 km/h (15.5 mph) to qualify as e-bikes in China, most users remove the pedals and effectively operate them as scooters.



SLA batteries, usually in the form of Absorbed Glass Mat (AGM) SLAs, have been commonly used in electric bicycles in China for decades. In fact, the technology for lead-acid batteries is over 100 years old, and early electric cars sold at the start of the 1900s were powered by lead-acid batteries.

Over the last decade or so, China has seen a shift from older AGM batteries, which are heavy and bulky, toward lighter and longer-lasting lithium-ion batteries.

However, safety concerns regarding rare yet dangerous lithium-ion battery fires have put a pause on that proliferation. The government instituted new safety standards for lithium-ion batteries in e-bikes last year, but there's also been a major pushback toward AGM batteries for the domestic market. Even major technological leaders in the industry, such as Yadea and NIU, produce many AGM-based e-bikes for the domestic market while exporting primarily lithium-ion battery e-bikes abroad.

Now we're seeing China's Ministry of Commerce (MOC) announcing new policies to further promote trade-ins of lithium-ion battery e-bikes for AGM models. The new MOC policy includes subsidies to help individuals buy eligible new models.

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I don't buy safety being the driving force. It's got to be related to Lithium supply (and needing it for things with higher priority than consumer use... like defense).

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Traded-in e-bikes will be sent for dismantling and recycling, a move the MOC says is intended to help phase out older electric bikes with safety risks.

While sealed lead acid-based batteries do have higher safety margins, they have significantly lower energy density and lifespans. To help solve this issue, some companies, such as Yadea, are pushing for sodium-ion batteries to replace both lead-acid and lithium-ion batteries as the next big e-bike battery chemistry.

Sodium-ion batteries have the safety advantages of lead-acid batteries, yet offer better energy density and lifespans that are beginning to approach that of lithium-ion batteries. The cost remains relatively high for the newer sodium-ion battery technology, but significant investments in the development of sodium-ion battery manufacturing are expected to help reduce the cost in the next few years.