E-Bikes – A Silent Street Revolution

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The massive arrival of e-bikes on streets around the globe has been as silent as the bikes themselves. New aesthetic models appeal to an increasing number of professionals. We'll look into the reasons why this market is booming.

A shift away from the car toward biking is seen throughout many European cities. "Some 80 percent of the European population will soon be living in cities. To avoid gridlocked cities, forward-looking mobility solutions will be key. E-bikes are one of these solutions," says Robert Ruttmann, the founder of the Zurich-based company Urban Connect. The start-up offers a bundled one-stop service for companies including the leasing, insurance and a regular maintenance of a pool of e-bikes. The share of cycling trips in all daily trips does, however, vary greatly across the continent, with 5 to 10 percent of all journeys carried out by bike in Western Europe. The situation may well change in the coming years, as governments increasingly implement cycling strategies including cyclists in the road infrastructure, and as a result of the booming demand for electric powered-assisted cycles, e-bikes. "In addition to new technologies, economic and environmental market forces are also shaping the global e-bicycle environment," says Ryan Citron, a research associate with Navigant Research.

Motor of the Market

For every new passenger car sold within the European Union (EU) each year, almost two bikes are sold. E-bikes are to a large extent behind this strong demand and can be classified as '"the motor' of the market," writes Bike Europe. The sales of e-bikes indeed increased almost tenfold between 2006 and 2013, to more than 907,000, according to the Association of the European Two-Wheeler Parts & Accessories Industry (Coliped, see fig. 1). But why are consumers across the continent embracing e-bikes, which in addition to a traditional bike carry an engine and a small-power chargeable battery?

Evolution of European sales of e-bikes

1.

(Coliped (now Conebi))

in 1,000 units

Faster Travel, Getting You Further

E-bikes users will tell you that there are numerous reasons to switch to a bike with a motor assistance. One good reason is that uphill climbing becomes more bearable. In hilly areas, they definitely make a major difference for the average cyclist. Most users will also reply that the average speeds they can reach are much higher, while still being able to use cycle paths and not have to share the road with cars. An e-bike can typically reach speeds of between 15 and 30 kilometers per hour and in some cases even up to 45 kilometers per hour. A door-to-door journey in a congested city during rush hour is as a result often faster by e-bike than by car. The assistance provided by the e-bike also allows for longer journeys that would previously only have been considered as doable by other means of transport. Cyclists on e-bikes on average cover 6.3 kilometers compared to 3.6 kilometers when riding conventional bikes.

Cheaper and Ecological Travel

From an economic point of view, the running costs are low. The initial acquisition cost is admittedly higher than for a conventional bike, but mechanical wear and tear is similar and the cost resulting from the charging of the battery negligible. The main running costs are potential repairs to the bike's motor and the battery's depreciation cost. The lifespan of an e-bike's Lithium Ion battery is around 1,000 charges. An additional cost saving aspect, which should not be forgotten, is that e-bikes remain bikes from a regulatory point of view even though they are motorized – so there is no driving license, vehicle insurance or tax! There is, of course, also the ecological aspect linked to cycling: There are nearly no CO2 emissions (See fig. 2). "E-bikes are not only fast, clean and healthy. The noise aspect is another positive factor," Ruttmann summarizes.

Greenhouse gas emissions in g per mile

1.

(Dave, S. (2010) Life Cycle Assessment of Transportation Options for Commuters, MIT, Urban Connect)

Western Car Manufacturers Have Shown Some Interest

The great majority of e-bikes produced today stem from China. Japan, Taiwan and Vietnam also supply e-bikes. Switzerland with its numerous challenging uphill climbs has also designed a couple of well-known models such as Stromer, Swiss Flyer, TDS and Smike. "Given the rapidly increasing demand for e-bikes, more aesthetic e-bike models are being developed. These are attracting younger urban professionals," Ruttmann says. It is interesting to note that most Western car manufacturers have shown some interest in the e-bike market over the past decade. Audi, BMW, Ford, Honda, Lexus, Mercedes and Porsche, to cite just a few carmakers have all designed high-quality prototypes. The segment has nevertheless remained largely irrelevant to the sector and is unlikely to take off.

Forecast e-bikes sales in 2018

1.

(Statista)

E-Bike Market Has Wind in Its Sails

"As innovation in engine-powered two-wheel transportation accelerates, the market for e-bicycles is expected to expand," Navigant Research says. The market research firm forecasts global e-bikes sales to exceed 360 million annually by 2023 (See fig. 3). The world's largest market is unsurprisingly China where 32 million e-bikes were sold in 2013. There are actually more electric bikes than cars on Chinese roads, with an estimated total of 200 million e-bikes in circulation. The rest of the world is obviously far behind in absolute figures, but when looking at the number of e-bikes sold as proportion of total bike sales their share is rising. In the Netherlands and Belgium, nearly a fifth of all bikes sold are e-bikes, and they make up for around a 10th of all German, Austrian, Luxembourg and British bikes sold. In Japan, the number of e-bikes sold rose sharply following 2011's earthquake and tsunami, when both train and subway traffic was disrupted and roads were unusable in the Tokyo area. The country's ageing population and cheap e-bikes also attract buyers. "It is often almost as cheap to buy a new e-bike as to pay a parking or

moving violation ticket," Bike Taiwan said. There is one major market where the e-bike trend has not taken hold yet: the US. New York, for instance, has actually banned them altogether for security reasons. Offenders can in theory even face fines reaching up to 1,000 US dollars, but it in practice it seems the ban in place since 2004 is largely unenforced.