CYCLING

E-BIKE CHARGING INFRASTRUCTURE

KEY ISSUES

- E-bike users are older than the average population (Cherry & al., 2016).
- E-bike users travel further than regular bike users (Plazier, Witkamp, 2017).
- E-bike buyers tend to be non-cyclists (Fyhri, 2017).
- E-bike users lack access to parking and charging infrastructure. It is the main perceived reason for not using one (Astegiano, Tampere, Beckx, 2015).
- Users prefer not to store their e-bike at home or to leave it parked outside, fearing theft (Cycle BOOM report, 2016).
- Lack of public charging is slightly less of an issue than for EVs due to the battery lasting longer. Providing secure residential charging is therefore important (*Ibid*.).

POSSIBLE SOLUTIONS

- **Integrating e-bike parking requirements in private and public planning agreements to increase their uptake.**
- **There is a potential for mixed charging infrastructure allowing both for e-bikes and electric cars.**

LONDON CONTEXT

The uptake of e-bikes in London is slow, but interest has been developing. The Mayor of London has developed a platform dedicated to their promotion. Boroughs are currently trialling schemes: LB Greenwich launched a borrowing scheme in January 2019, allowing residents and workers to borrow an e-bike for a month for a fee of £10. Boroughs in west London are running a trial to loan e-bikes to businesses. The American firm Lime launched its private e-bike fleet in Brent and Ealing in December 2018, and in Islington in March 2019. Such initiatives could have an influence on an increased uptake in London.

Cycle parking is a challenge for all types of bikes, with often poor-quality facilities provided, however e-bikes raise new questions of parking space because of their worth and their need to be charged. London currently has no regulations governing the implementation of e-bike parking and charging infrastructure for new developments but could use European and British legislation to do so.

The 2018/844 EU Directive explicitly mentions the necessity for Member States to consider 'holistic and coherent urban planning as well as the promotion of alternative, safe and sustainable modes of transport and their supporting infrastructure, for example through dedicated parking infrastructure for electric bicycles' (paragraph 28).

Section 106 of the Town and Country Planning Act could create a set compulsory number of charging infrastructure points in new buildings, as it allows councils to require 'specified operations or activities to be carried out in, on, under or over the land' or 'the land to be used in any specified way'. If space were to make the integration of bicycle parking in the development impossible, the Community Infrastructure Levy (CIL) Regulations 2010 could be used instead to build appropriate infrastructure on borough grounds.

London guidance on bicycle parking does not include specific guidance for e-bikes, but the London Plan provides planners and developers with minimum standards for cycle parking (Parking Addendum to Chapter 6, Table 6.3). This was established following a Transport for London evidence base (published in December 2017). It is in accordance with recommendations set by the European Cyclists' Federation. Similarly, some London boroughs have developed with other local authorities a Cycle parking guidance for developers. The guides can be adapted to e-bikes by adding further requirements for bike parking in new developments.

The London Cycling Design Standards also sets out recommendations, with an

emphasis on visitor's parking for residential development (see Chapter 8.5.3). WestTrans, the West London sub-regional partnership produced a guidance document on cycle parking requirements in 2016. The document provides detailed insight on necessary parking requirements according to development types. Charities like Sustrans have also developed standards. Countries with an embedded cycling culture have also developed guidance that can be used elsewhere, for example the Danish Cycling Embassy.

Charging for electric bikes in public space is not yet widespread but could be feasible. Imposing e-bike facilities in new residential developments is an option. The creation of visitor parking for short-term stay is slightly more complicated but could, in theory, be done. CIL is a particularly suited tool for visitor parking, allowing local authorities to fit new e-bike parking spaces into their wider Cycling plan. The parking could benefit residents beyond inhabitants of the new development or users of the amenity, thus bringing wider advantages. One of the barriers to a generalised uptake is the lack of knowledge about e-bikes. By constructing infrastructure, local authorities could also increase the public visibility of e-bikes.

INSPIRATION FROM ELSEWHERE

Across the EU, some major cities have been promoting e-bikes with systems of grants for the acquisition (Paris) or public for-hire fleets (Madrid). Yet privately-owned e-bike parking standards have not yet been developed to the extent that bike parking standards have. Most charging is done at home or in the workplace since the battery of an e-bike is removable. Some users use a method called 'guerrilla charging': they plug-in at various locations where electricity is available outside (shops, petrol stations), by asking for permission.

Municipalities, researchers and companies are still at the early stages of experimenting to achieve standardised e-bike parking guidance. Some universities have led the development of e-bike parking and charging stations, as they often internally have the skillset to test out solutions. In the Netherlands, the TU Delft built, as part of a research project, a wireless off-grid solar e-bike station. The station was based on the design of one student and was accompanied by a research paper, which is still being developed. Solar powered stations are of interest as they solve the issue of the origin of electricity that could slightly shade the image of e-bikes as eco-friendly (even though e-bikes' environmental impact is very low). Other experiments have taken place, like a standalone station in Eindhoven (NL) to research the feasibility of such models.

Wireless charging is widely researched. A French business school based in Lyon collaborated with a company to put in a charging hub for its students. Charging stations using the electric grid have also emerged, by various players.

Charging for hire e-bike schemes have developed across the whole of the EU: in Madrid, with the BiciMad scheme (2028 e-bikes to hire) or Paris with the relaunched Vélib' Métropole (30% of the fleet is electric bikes). The interoperability is none existent though as for the moment, charging stations are solely for the schemes' bikes.

Some dockless e-bike private companies are also taking interest in charging stations. After acquiring the dockless electric bike company JUMP, Uber started a partnership with Sacramento (US) to test the roll-out of charging stations across the city. It is working with the city's Regional Transit District. They are expected to develop these stations at 23 of the system's 52 light rail stations. Like with other solutions, the challenge with such practices is the interoperability of the system: for this pilot project, only JUMP bikes can use the charging stations.

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