

PRO-E-BIKE

Promoting electric bikes and scooters for delivery of goods and passenger transport in urban areas



Summary WP 2; D.2.1.

Authors:
Ronald Jorna, Jaap Sytsma
Mobycon BV



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Summary

Bikes have been around for a long time, for transporting both passengers and cargo. Traditionally, transporting cargo was done with normal bikes, on which for instance a crate was added. In The Netherlands, the so-called ‘bakfietsen’ were and are very popular. These bikes have a large cargo hold at the front of the bike. In the past few years, a large range of different types of cargobikes was developed. The introduction of electric pedal power meant a shift in thinking. E-bikes can travel greater distances and carry more load than normal bikes, at an equal energy level. This has been a breakthrough in using bikes for cargo transport. Other factors that play a role are the focus on more sustainable forms of transport to reduce pollution (noise, CO₂, fine particles), the fact that bikes can outperform cars in dense urban areas (city centres) and the fact that bikes are not restrained by delivery-windows (timeframes) that are often in place for vans and trucks.

In the search for initiatives in Europe that are focussed on either transport of cargo, passengers or providing services, the majority of cases that are found are about cargo transport. Passenger transport is a much smaller group, as is using E-bikes for providing services.

Several examples of e-bikes used for cargo, transport or providing services are found. This paragraph provides an overview of the gathered initiatives. This section is split in three subsections (passenger, freight, providing services) and per subsection the cases are grouped per country (alphabetically). The focus is on the countries where the PRO-E-BIKE partners are located, i.e. Belgium, Croatia, Italy, Netherlands, Portugal, Slovenia, Spain and Sweden. Sometimes also other examples are mentioned, e.g. from Germany and France. An overview of the examples can be seen below. Annex 1 of the report holds detailed information on the most interesting cases mentioned below.

Table 1: Overview of E-bike initiatives in Europe

	Transport of cargo	Transport of passengers	Providing services
Pedelec	bPost (Belgium)	wheelchair bike, Duo-bike (The Netherlands)	Home care (Germany)
	Pizzeria Broadway (Croatia)	City of León (Spain)	Police in city of Lisbon (Portugal)
	Deutsche Post (Germany)	City of Valencia (Spain)	Home Care service for elderly in the municipality of Nynashamn (Sweden)
	Domino’s Pizza (The Netherlands)	City of Burgos (Spain)	
	New York Pizza (The Netherlands)	City of San Sebastián (Spain)	
	Posta Slovenia (Slovenia)		
	PostNord (Sweden)		
	Internal transport at BASF (Switzerland)		
E-cargobike	TNT Express, Brussels (Belgium)	BSO De Bieënkorf, Wijhe (The Netherlands)	City cleaning (Croatia)
	La Petite Reine, Bordeaux,	BSO De Notedop, Houten (The	Handyman service (France)



	Toulouse, Paris, and Lyon (France)	Netherlands)	
	Danish Post (Denmark)	BSO Struin, Nijmegen (The Netherlands)	Tree care (The Netherlands)
	FedEx (Paris, France)		
	Vert chez Vous (Paris, France)		
	Ich ersetze ein Auto (Germany)		
	Ich far Lastenrad (Germany)		
	Joey's Pizza (Germany)		
	Rotrunner (Germany)		
	TRICLO (Italy)		
	Quick COOP (Italy)		
	BiciLogistica (Italy)		
	DHL (The Netherlands)		
	FietsXpress, The Hague (The Netherlands)		
	City of Breda (The Netherlands)		
	Marleen Kookt (The Netherlands)		
	Binnenstad Service Nijmegen (The Netherlands)		
	Drogisterij Piet, Purmerend (The Netherlands)		
	CTT (Portugal)		
	TNT Express, Barcelona (Spain)		
	EROSKI (Spain)		
	VANAPEDAL (Spain)		
	TXITA (Spain)		
	SD Logistica (Spain)		
	MoveByBike (Sweden)		
	CycleLogistics (Sweden)		
	TNT Express, London (UK)		
	Gnewt Cargo, London (UK)		
E-scooter	Pizzeria Mona Lisa (Croatia)	City Bird, e-scooter taxi in Paris (France)	Lighting maintenance in City of Valencia (Spain)
	De bezorgbeer, Spijkenisse (The Netherlands)		
	CTT (Portugal)		
	Gnewt Cargo, London (UK)		

E-bikes for passenger transport



E-bikes for passenger transport are typically used for services such as a taxi (rickshaw, e-scooter-taxi), transport of children at childcare centers and special services for elderly/disabled people.

E-bikes for freight transport

E-bikes for freight transport are typically used for services such as parcel delivery, last mile delivery, home delivery of meals and internal transport in factories.

Worth mentioning is the *Cycle Logistics Federation*, which has been established (as a spin-off from the CYCLELOGISTICS project) to develop and help implement a strategy, for transferring as much as possible of the freight/goods being moved within the urban environment in Europe, from motorized vehicles to bicycles/trikes/quads/HPV's and/or electrically-assisted (pedelec) cycles/trikes. In addition it will support any business or social enterprise, which uses or intends to use a bicycle to deliver its operations or services. More information: <http://federation.cyclelogistics.eu/>

E-bikes for providing services

There were also several examples found of e-bikes used for providing services. Under 'providing of services' we understand the use of E-bikes where the main purpose is to get to a place, but at the same time offering the opportunity to carry stuff, such as materials needed for a job, a nurse in home-care bringing some of her materials, repair services, etc.

E-bike modes

Looking at the modes used, pedelecs and E-cargobikes are very popular, while E-scooters are much less used. Cost of purchase plays an important role, as do the maintenance costs.

In general, it seems that mainly Germany and The Netherlands have a much more supporting government and positive mind-set towards pedelecs than other European countries. In the other countries initiatives are started more by single companies or persons. Although also here cities and larger corporations can be found that stimulate or incorporate E-bikes more and more in their logistical systems and daily routines.

Apart from all the E-bike initiatives, in the deliverable 2.1 four main topics were described: Technical overview, economic sustainability, service management and favourable conditions.

There are not too many different systems used on pedelecs concerning the electrical parts. Lithium-ion batteries are used most, as they are generally the best performing types. A disadvantage of these batteries however is that refurbishing is not yet widespread. (Re)charging batteries can normally be done between 2,5 and 9 hours. Regarding speed there's a distinction between normal pedelecs and Speed-pedelecs. The first supports speeds up to 25kph, the latter up to 45kph. For the Speed-pedelecs there is not yet proper legislation in most countries, as it is in fact a moped. In the near future that will most likely be changed, which might restrict the use of those types. Developments in technology are focussed on lowering recharging times, extending capacity for increased range and general weight reduction of parts. New developments can also be found in IT-extensions, such as adding standard navigation, charging mobile phones, etc.

Economic sustainability can be divided in three parts: financial-economic, socio-economic and the product life cycle. Pedelecs are cheaper than cars and mopeds on a lot of different areas. Purchase



cost, maintenance and insurance are all cheaper, and in addition E-bikes neither cost extra road taxes nor use expensive fuel. Logistically speaking, bikes are faster than cars in dense (urban) areas, they do not suffer from delivery restrictions in the form of time windows, are easier in use because no driver's license is needed and have a better image than cars or mopeds. Less congestion, less pollution, less noise and a lower impact on the use of space all contribute to a lower impact on the environment. All in all pedelecs, e-cargobikes and e-scooters seem to be a much more sustainable form of transport.

In order to successfully integrate E-bikes into a logistical system first the characteristics of the supply chain have been identified. As an overview, three different markets can be identified on which cargo is delivered. Firstly there is the high volumes and low prices seen in letter and small parcel deliveries on the mass market. A common example is a postal company. Going up to the medium and high-end markets, priority increases, as do variations in goods dimensions and product values. (Cargo)pedelecs can play a role on all three markets, as long as new logistical concepts are thought out. Three delivery models can be derived from it: the home-delivery model (business to consumer directly), the bike messenger model (producers do not have their own delivery mode but hire companies to do that) and the big delivery company model (the bike is an integral part of the supply chain).

Then there is also a distinction in the type of trip that is made: a round trip model (one trip with a length of for instance 30 kilometres and 15 stops) or a take-away model (trips are much shorter and fewer stops per trip are made, but there are more trips per day).

Transporting passengers mainly happens in larger cities, where rickshaw-type vehicles bring people from site A to B, or make site-seeing trips. These are common nowadays in a number of big cities around the world. Having electric pedal support greatly increases operating range for the drivers, giving them a larger potential of customers they can provide service to. A specific market for e-cargobikes can be found among the child-care centres, for which E-bike producers have now developed e-cargobikes that offer seats for up to 8 children.

In order to benefit from the clear advantages bikes can have for the environment over vans and trucks, governments can play a role in making policies and regulations to create favourable conditions for the use of pedelecs, e-cargobikes and e-scooters. One way to do so is lower the cost of ownership and usage for bikes and at the same time to raise these costs for the other competing modes of transport. Examples are the introduction of low-emission zones or introducing a congestion charge for polluting vehicles. Also, specific subsidies for bike-friendly programs are a great addition to creating favourable conditions. Lastly there's the focus on the built environment, where specific bike infrastructure makes the use of E-bikes in dense (urban) areas much easier.

