

Electric Bikes Keep People Mobile



**Fact sheet on the potential of
electric bikes for sustainable mobility
presented by**



Introduction: what is an electric bike?

There are two different types of electric bikes:

1) Bicycles with an electric auxiliary engine (E-bikes)

- Bicycles equipped with an electric motor, which can be propelled by their motor only, are subject to the European type-approval for mopeds and motorcycles. They enjoy the “special regime” for so-called low-performance mopeds, i.e. mopeds with pedals with an auxiliary engine of power not exceeding 1 kW and a maximum design speed not exceeding 25 km/h.
- Directive 2002/24/EC relating to the type-approval of two- or three wheel motor vehicles stipulates that for these low-performance mopeds specific requirements will be laid down for a number of type-approval aspects.

2) Pedal Electric Cycles (Pedelects)

- Pedelects have an electric motor that assists pedalling. These bicycles cannot be driven by the motor itself. The motor only functions provided the cyclist pedals himself.
- Pedelects also fall within the scope of Directive 2002/24/EC. Following Article 1.1.(h) the Directive does not apply to “***cycles with pedal assistance which are equipped with an auxiliary electric motor having a maximum continuous rated power of 0.25 kilowatts, of which the output is progressively reduced and finally cut off as the vehicle reaches a speed of 25 km/h, or sooner, if the cyclist stops pedalling.***”
- Pedelects however with a motor output exceeding 0.25 kW and/or assistance beyond 25km/h are still subject to the type-approval for mopeds and motorcycles.

Directive 2002/24/EC is now up for revision. ETRA is in contact with the European Commission to discuss the review of regulations governing Pedelects and E-bikes in this framework.

Since the European Union considers E-bikes and Pedelects with a power of more than 0.25 kilowatts and assistance beyond 25 km/h as mopeds, they are subject to possible national regulations about helmets, insurance, age limits, driving licences, etc.

Recently for Pedelects with a maximum power of 0.25 kilowatts and of which the output is cut off at 25 km/h, a European standard, EN 15194, has been implemented. This did not result in a European type-approval procedure or in compulsory certification, but in harmonized European guidelines for the quality and the safety level that Pedelects should comply with.

This fact sheet only concerns Pedelects.

Advantages of pedelecs

- No emissions
- No noise
- Very limited energy use
- Low cost use, charging the battery only costs Euro 0.03
- Causes no “external costs”
- Avoids congestion and parking problems
- Assures mobility of elderly people and people with health problems
- Benefits public health
- Avoids medical costs
- Contributes to sustainable tourism

Who Uses Pedelecs?

For a number of years, sales of Pedelecs have been steadily increasing. In 2008, almost 140,000 electric bikes were sold in Holland, thus generating 1/3 of the total revenue from sales of new bikes. Until a few years ago, Pedelecs were mainly purchased by the elderly and physically impaired. Today the type of consumer interested in this ecological and efficient means of transport has become much more varied.

1) Commuters

Commuters opt for the car rather than for the bike as soon as they have to travel more than 7 kilometres. The average speed of an electric bike is 24 km/h, compared with 17 km/h on a traditional bike. Since electric bikes make rides easier (no transpiration) and quicker, commuter trips up to 15 km one way are within reach

2) Parents and Shoppers

Carrying a child and/or full shopping bags on a bike can be quite arduous. The pedelec solves this problem. What's more, riding off with pedal assistance saves the rider a lot of effort and therefore energy. Pedelecs also allow parents and shoppers to avoid parking problems in town.



3) Elderly people

In 2006, 16.8% of the population in the EU-27 was aged 65 and over, that is almost 83 million people (source: Eurostat). Many of them become less mobile as they age. As a result of failing strength and a deteriorating condition, they are no longer capable of cycling. Pedelecs allow this age group to remain mobile and fitter for a longer time. There are models, which are specifically designed for this group, for instance Pedelecs with a step-through frame and electric three wheelers.



Source: www.elektrischefietsen.com

4) People with health problems



For people who suffer from ailments such as asthma, rheumatism, arthritis, MS, lung diseases, heart diseases, muscle diseases, obesity, ... cycling is often too difficult. Since riding a pedelec is a lot easier, cycling becomes possible again for this group. Allowing these people to cycle again has a beneficial effect on their health. A 2005 study commissioned by the Swiss Ministry for Public Health has shown that for each pedelec sold more than € 1,800 medical costs can be saved. That amount equals the price of a quality pedelec. (source: www.newride.ch)

5) 50+

A growing number of people in this age group cycle for leisure. However, some of them have difficulties to do longer distances. With a pedelec, 50 km becomes feasible for everybody again.

6) Tourists

Cycling tourism in Europe is becoming increasingly popular. The Dutch polders, the Loire region or the cycling path along the Danube are suited for the overall majority of cyclists. The Alps, the Scottish Highlands or the Tetra mountains however are reserved to the very well trained cyclists or ... to those who enjoy pedal assistance.

Little by little tourist businesses in hilly or mountainous regions discover the potential of pedelecs to achieve sustainable tourism. They put Pedelecs up for rent, develop specific cycling routes and create spots where cyclists can charge their batteries.

7) Postmen, civil servants and politicians

The Deutsche Post is currently the largest Pedelec fleet operator with 8,000 vehicles. However, the British Royal Mail may be on its way to take over that position. Some time ago, Royal Mail announced the procurement of 14,000 Pedelecs. The Japanese mail has some 3,000 Pedelecs on the road, Posti Finland about 2,000. In quite a few other countries such as Holland, Denmark, France, Italy, Austria and Switzerland, smaller numbers are in use.

Pedelecs are also very well suited for civil servants and politicians who regularly have to travel short distances for work. Pedelecs allow them to ride without getting out of breath and without sweating, regardless whether the ground is flat or hilly. Moreover, the fact that they opt for sustainable mobility will have a positive influence on public opinion.



The EMAS working group of the European Parliament has decided to supplement this year the service bicycle fleet with one pedelec in Brussels and 1 in Luxembourg as a test.

Since 1996, the city of Basel regularly takes initiatives to decrease the use of energy. One of the projects is New Ride, aimed at supporting the introduction of pedelecs. They use some 5 to 6 kWh per 100 kilometre, compared with 80 to 100 kWh for a middle class car. As a result, each pedelec on the road allows avoiding on average 900 car kilometres per year and with that 80 litres of petrol.

TNO Research

At the request of BOVAG-TWB, the trade association for Dutch bicycle dealers, TNO¹ has studied the possible effects of more people using the electric bike on mobility, public health and environment. This is a summary of the TNO findings:

Mobility

- Today Dutch bike commuters travel on average 6.3 km to and from work. With an electric bike, that distance increases to 9.8 km.
- Also, today for more than half of the trips up to 4 km, Dutch people use a bike. With an electric bike, people will choose the bike for more than half of the trips up to 6 km.
- As a result, the total distance cycled in Holland is expected to increase by up to 10%.
- The total distance cycled by commuters in Holland is expected to increase by up to 20%
- The use of electric bikes will to a considerable extent substitute short car trips.
- The decrease of car usage will not have an influence on the queues, but accessibility within cities may well improve

Public health

- Today 25% of the Dutch commuters go to work by bike. One third of the commuters live 5 to 15 km from their work, which is a distance that can be easily covered by bike. As a result, the number of bike commuters could still increase.
- The current use of electric bikes in Holland may result in +1.5 % of the population achieving the Exercise Standard (= *a least 30 minutes moderately intensive exercise a day for at least 5 days a week*).
- If the use of electric bikes is further promoted and if the availability of these bikes improves, the above-mentioned improvement may well be multiplied by 2 or even by 4.
- The improvement in achieving the Exercise Standard for people over 65 is estimated at 2.5%. Again, promotion and better availability may well push that result further up.
- The number of Dutch people who are overweight may decrease as a result of stimulating the use of electric bikes. The exercise involved comes down to additional burning of calories. Among commuters, a decrease of 0.1 to 0.2 kg a year is possible, whereas the bodyweight normally increases by 0.5 kg a year. Conclusion: stimulating the use of electric bikes may contribute to keeping a healthy bodyweight.

Environment

- Evidently, every km travelled by electric bike instead of by car, means less CO² emissions, more precisely 90 gram less per km cycled. The total result is approximately 150 to 500 kiloton less CO² emissions. Although this result is limited, it is not negligible. The more electric bikes are used to substitute car usage, the bigger the effect will be.

Elements that will need monitoring

- The higher speed may result in more accidents thus less road safety
- The cyclists are exposed to air pollution
- More electric bikes may have effects on the infrastructure.

¹ Elektrisch Fietsen - Marktonderzoek en verkenning toekomstmogelijkheden: Ingrid Hendriksen, Luuk Engbers, Jeroen Schrijver, Rene van Gijlswijk, Jesse Weltevreden (BOVAG), Jaap Wilting (BOVAG) - 2008

General Conclusions

- People will cycle more often and up to an older age, but this will probably not result in less queues.
- Electric bikes stimulate healthy behaviour: more people will achieve the Exercise Standard and will suffer less from overweight
- A reduction of CO² emissions will have a positive effect on climate change
- The size of the effects will be determined by the success of the electric bike and will also depend on who will be using the electric bike.

Obstacles for the full development of the Pedelec market

- Legal status determined in the framework of Directive 2002/24/EC relating to the type-approval of mopeds and motorcycles
- Standard VAT rate of at least 15% instead of reduced rate of minimum 5%
- EU clean vehicle procurement obligations do not include electric bicycles
- No European framework for financial incentives for Pedelecs
- No European promotion of the development of a clean vehicle market that includes electric bicycles

Conclusions

Today, millions of people suffer from air pollution, traffic congestion, failing traffic safety, noise, bad health, ... while our entire planet is under threat as a result of climate change. These are major problems for which cycling can be part of the solution; a part, which so far, has been greatly underestimated. Just one example: findings of the Dutch Cyclists' Federation show that if all car journeys up to 7.5 km would be replaced by cycling trips, CO² emissions would decrease by 2.4 million tons per year. That is 6% reduction of Dutch car traffic emissions and 1/8th of the Dutch objectives in the framework of the Kyoto Protocol.

A huge part of transport not suited for urban areas can be very easily avoided. According to the European Commission's Statistical Pocketbook 2001 "EU Energy and Transport in Figures", every European makes circa 3 trips per day of which about half are up to 3 km. Moreover, about half of all car trips are 6 km or shorter. These figures clearly demonstrate that the potential for substituting car trips by cycling, walking and public transport is huge.

The electric bike is particularly appropriate for convincing die-hard car drivers to leave their vehicle aside for short distances because it overcomes a number of "popular" objections against cycling. Nevertheless, the electric bike concept still needs to be made widely known, for instance in the European institutions. That is why ETRA regularly organises promotional events for the European institutions. Electric bikes for these events are supplied by the following ETRA associated members: the [Accell Group](#), [Gazelle](#), [Giant](#), [Flyer](#), [Ultra Motor](#) and [Wattworld](#).

This year, the European Commission has made an important step in acknowledging the potential of electric bikes by granting subsidies to two projects involving electric bikes: Presto and Evarim. Presto, which received 1.4 million euro is aimed at promoting cycling and transferring knowledge on cycling policies between 5 cities: Bremen, Grenoble, Tchev, Zagreb and Venice. ETRA's task in this project is to promote electric bicycles in these cities as well as to make local bicycle dealers aware of the need for an appropriate bicycle offer for urban mobility.

Further details

Should you have any further questions or require any additional information, please contact the ETRA Secretary General Annick Roetynck - Tel. + 32 9 233 60 05 - E-mail etra@pandora.be - www.etra-eu.com