

Electrically assisted pedal bicycles

Basic data and selected comparisons

Dr Piotr Kuropatwiński
University of Gdańsk
European Cyclists' Federation

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BSR electric

Agenda

1. Definition and basic features of electrically assisted bikes (pedelecs)
2. Classification of cyclists
3. Structure of urban trips according to their length
4. Differences in dynamics of development of various e-mobility forms
5. Summary and conclusions

Definition

- **Bicycle** – a vehicle **not more** than 0.9 meter wide, propelled with the muscle power of the user; **may be equipped with auxiliary electric propulsion system** activated with the pressure on pedals supplied with a current with the voltage **not higher than 48 volts** with a continuous rated power of **not more than 250 watts gradually being reduced to zero** after exceeding the speed of **25 km/h**”

(Polish Road Traffic Law)



Basic features of electrically assisted bikes

(traditional approach)

Strengths/Advantages

- Shortens the time of cycling trips;
- Allows to ride without sweating;
- Encourages polite attitude to pedestrians and drivers
- Eases elitism and the cult of being fit
- Raises the status of cycling

Weaknesses/Drawbacks

- Much higher purchase price – thus higher storage requirements
- Higher weight;
- More complicated construction;
- Requires recharging
- Less obvious positive impact on user's health;

Basic features of electrically assisted bikes

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Ways of coping with them

- Compare the operating costs with the operating costs of a car
- Provide safe storage at ground level and easy „grab factor”.
- Assure services and/or a BSS
- Make batteries movable
- Motivate to cycle more/longer distances or on a more demanding terrain

Classification of cyclists

- Cyclists are the most varied – heterogenous group of road users as far as their fitness, experience and assertiveness in traffic is concerned
- From athletes training to take part in triathlon events via „mamils” to young girls and elderly ladies

Four groups of „utility” cyclists

Ready to ride on the carriageway or cycle lanes painted on the carriageway

Those who often need a separate – dedicated cycling infrastructure



Often reluctant to pedelecs and/or construction of separate cycleways

Sometimes hostile to any attempt to improve the safety or comfort of cycling or to raise the status of cycling in urban policies

Source: author's own analysis based on research carried out in Portland, Oregon by Robert Geller

Comparisons of e-bikes with... What?

- Conventional pedal bicycles?
- Speed pedelecs?
- Mopeds, scooters or motorcycles ?
- Conventional cars?
- E-cars?
- Conventional cargo bikes?

Comparisons of e-bikes with... what?

Cost of travelling 100 kms

- Conventional pedal bicycle € 0,00
- ecobike (pedelec) € 0,20
- Scooter € 3 i.e. 15 x more
- Bus € 4 19 x more
- Train € 5 21 x more
- Motorcycle € 5.5 29x more
- **LPG fuelled car € 6.5 35 x more**
- **Diesel car € 8.5 45 x more**
- **Petrol fuelled car € 12 62 x more**

Source: <http://www.rowery-elektryczne.pl/korzyści>

Myths used in opposing sustainable urban mobility

- Separated infrastructure always improves traffic safety
- Cycling on pedestrian precincts is a major source of (fatal) road traffic accidents
- Traffic calming is a form of discrimination of drivers
- Drivers cover the costs of infrastructure they use in fuel excise taxes, cyclists should also pay for it
- Parking fees are a form of excessive taxation of rural and suburban dwellers

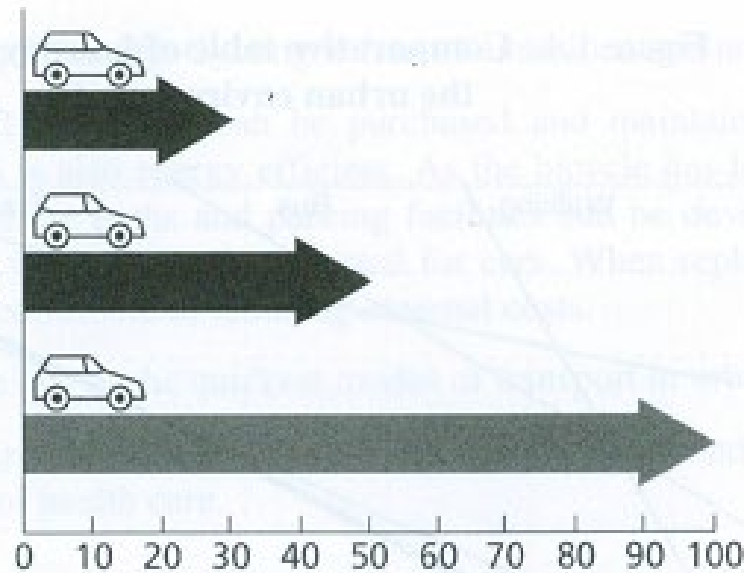
Potential of development of utility cycling in European urban areas 1/2

Figure 1.5. Frequent Car Use

15 EU:

30% < 2 km

50% < 5 km



Source: presentation of B.Ensink, Secretary General of the ECF at the Veloforum III conference in Kiev 2011

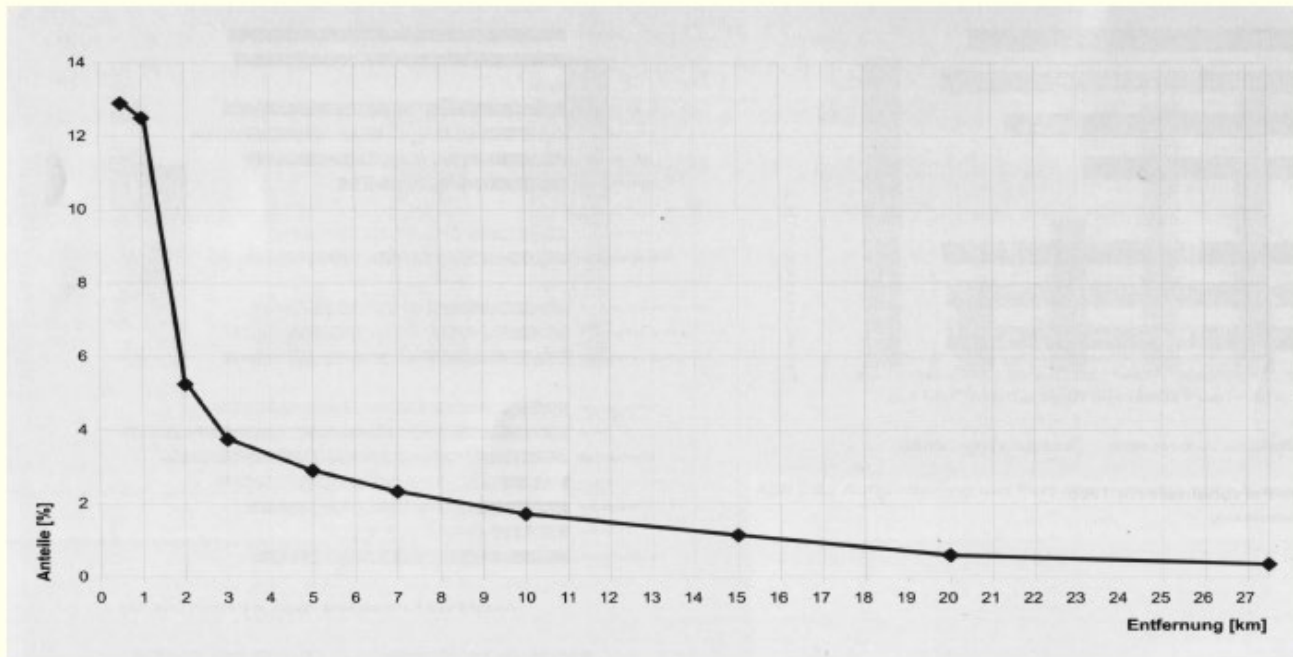
Potential of development of utility cycling in European urban areas 2/2

The Role of the Bicycle in “mobil 2010”, the New Transport Strategy of Berlin

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1. Berlin has Favorable Conditions for Bicycle Traffic

Berlin présente des conditions favorable à la circulation cycliste



✓ 2011

Distribution of Trip Length

répartition des longueurs de trajets à Berlin

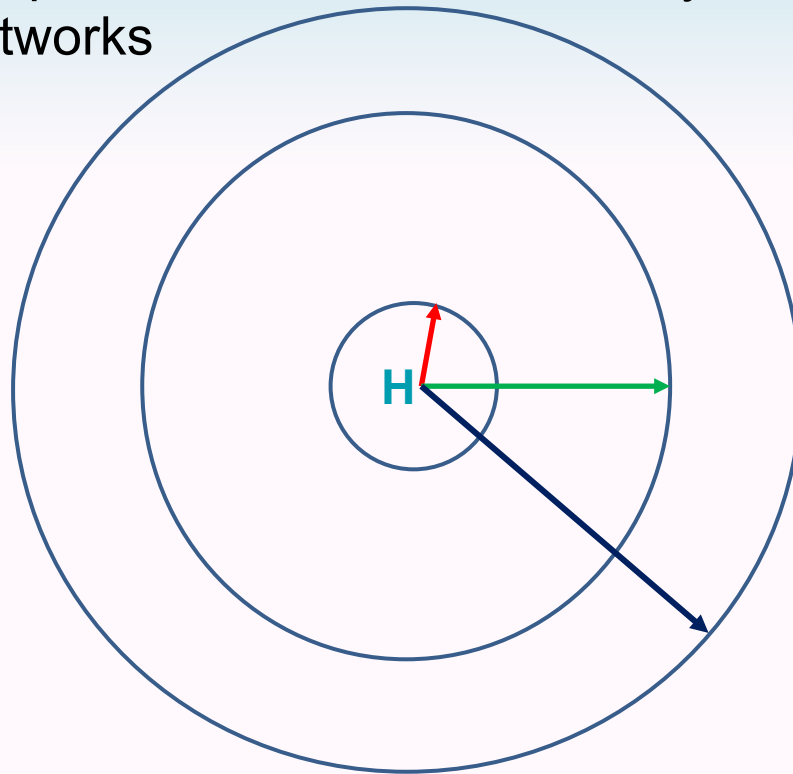
Source: Tilman Bracher (Deutsches Institut für Urbanistik), Dr. Friedemann Kunst (Senatsverwaltung für Stadtentwicklung Berlin)
Berlin: the revival of integrating cycling into a city's Public Transport



Source: Galewski
Program rozwoju komunikacji
rowerowej w Trójmieście

Catchment area of local railway stations within active travel distances of 10 minutes

It's easy and productive to combine e-bicycles and local/regional public railway transport networks



- Walking – 0.7 km, catchment area ca. 1.5 sq.km
- Conventional bicycle – 2.5 km, catchment area ca. 20 sq.km
- Pedelec – 3.6 km, catchment area ca. 40 sq.km

Source: Karl Reiter, 20 good reasons for cycling, www.trendy-travel.eu, 2010; FGM,

Comparison of the e-bicycles and e-car markets

Electric Mobility



600 Million € / 7.000 e-Cars



~ 0 € / 1.3 Million Pedelecs

➔ More money for good infrastructure for Cyclists, more
Subsidy for Change – less for Car-industry

Velo-City 2013, Vienna

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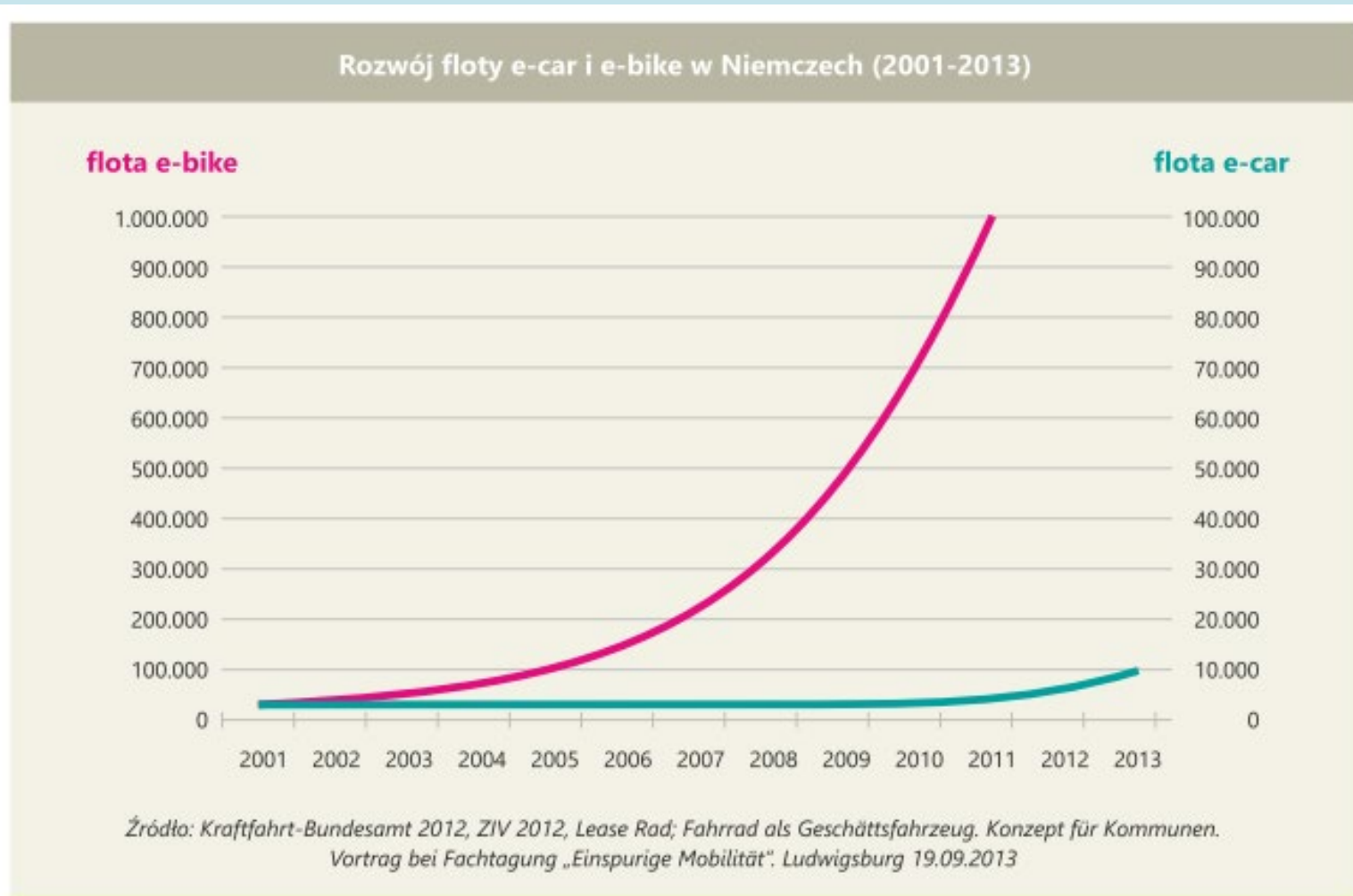
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Comparison of dynamics of development of the e-bicycle and e-car markets



Summary and Conclusions

1. Promotion of e-bikes may meaningfully raise the rank of cycling in the sustainable urban mobility agenda
2. E-bikes may serve as a catalyst of change in the mindset - being a closer substitute for more car journeys for more people
3. E-bikes may become an important element of local bike sharing systems and important partners improving the financial viability of local and regional railway operators
4. Growing popularity of e-bikes may stimulate the development of flagship cycling infrastructure projects: high quality collision free cycling corridors e.g. along rivers and local and regional railway lines

Thank you for your attention 😊



Piotr.kuopatwinski@mobilnosc.org