Policy measures for the use of e-bikes and their environmental potential

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IST-Side Event: Transition towards light electric mobility: Past dynamics and current challenges
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Decision to use a certain mode (pedelec/others) for a certain trip

Different user groups (mobile people) have different preferences with regard to their modal behaviour

Policy measures have different mechanisms/different influence on user groups
Market development of electric vehicles in Germany

Source: KBA/ZIV
Strategies for sustainable mobility
...and the role of pedelec promotion

Avoid

- compact cities
- mixed land-use

Shift

Examples
- Pedelec promotion measures

Improve

Examples
- emission standards
- fuel tax

Fig. 53: The push–pull approach.

Measures with push- and pull-effects

Redistribution of carriageway space to provide cycle lanes, broader sidewalks, planting strips, bus lanes…,
redistribution of time-cycles at traffic lights in favour of public transport and non-motorised modes,
public-awareness-concepts, citizens' participation and marketing, enforcement and penalizing…

Source: Müller et al., (1992)

Examples
- emission standards
- fuel tax

Müller et al. 1992
## Attitude-based mobility types ...and their pedelec-affinity

<table>
<thead>
<tr>
<th>Mobility type</th>
<th>Motifs for modal behaviour</th>
<th>Pedelec-affinities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status oriented motorists</td>
<td>Safety, comfort</td>
<td>leisure time, little usage</td>
</tr>
<tr>
<td>Autonomic car enthusiasts</td>
<td>Travel time</td>
<td>Commuting, leisure, long distances</td>
</tr>
<tr>
<td>PT fans</td>
<td>Travel time</td>
<td>only for specific situations</td>
</tr>
<tr>
<td>Bicycle fans</td>
<td>Travel time, comfort</td>
<td>supplement for traditional bike, e.g. for long distances</td>
</tr>
<tr>
<td>Self-determined, multimodal persons</td>
<td>Travel time, comfort, cost, Safety</td>
<td>equal usage for different purposes</td>
</tr>
<tr>
<td>Individual transport preferring persons</td>
<td>Travel time, cost</td>
<td>time and money are crucial</td>
</tr>
<tr>
<td>Car-dependent persons</td>
<td>Travel time, cost, comfort, safety</td>
<td>to reduce cost as compared to car, but many restrictions</td>
</tr>
</tbody>
</table>
Pedelec-promoting measures ...and their mode of action

<table>
<thead>
<tr>
<th>Policy measures</th>
<th>Mechanisms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure (cycle ways, junctions)</td>
<td>Travel time, safety</td>
</tr>
<tr>
<td>Speed limit at 30 km/h (spatial comprehensive)</td>
<td>Travel time, safety</td>
</tr>
<tr>
<td>Parking</td>
<td>Travel time, comfort</td>
</tr>
<tr>
<td>Information, campaigns, Promotion, education</td>
<td>(Public) image</td>
</tr>
<tr>
<td>Purchase incentives</td>
<td>Cost</td>
</tr>
<tr>
<td>Increase of costs of motorised transport</td>
<td>Cost</td>
</tr>
</tbody>
</table>
Scenarios for the city Wuppertal... promoting interventions assumed

**BAU** rewarding scheme

**Pedelec promotion** rewarding scheme main routes tax privileges parking
snow clearance rewarding abolition motorbikes
campaigning marketing speed limit 30 km/h

**External factors** more shopping and leisure trips of the elderly
peak oil mobility education
climate change
multimodality

<table>
<thead>
<tr>
<th>2012</th>
<th>2020</th>
<th>2030</th>
<th>2050</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
Mobility type
- Status oriented motorists
- Autonomous car fans
- Public transport fans
- Bicycle fans
- Self-determined, multimodal persons
- Individual transport preferring persons
- Car-dependent persons

Decision to use a certain mode (pedelec/others) for a certain trip (travel time, travel cost, comfort, safety)

Travel demand model delivers information about
- Trip distances
- Trip purposes (working, education, procurement, shopping, leisure, accompaniment)
- Parking management (prices)
- Parking situation (numbers, distances, other circumstances)
- Slopes

1.5 mio. trips per day
Scenario results: modal share

Modal share (trips)

- Walking: 1,5% (2012), 10,1% (BAU 2050), 15,2% (Pedelec promotion 2050)
- Cycling: 24,6% (2012), 25,8% (BAU 2050), 25,8% (Pedelec promotion 2050)
- Pedelec: 20,9% (2012), 21,3% (BAU 2050), 6,2% (Pedelec promotion 2050)
- PT: 56,1% (2012), 53,5% (BAU 2050), 41,6% (Pedelec promotion 2050)

Modal share (distances travelled)

- Walking: 75,2% (2012), 72,4% (BAU 2050), 63,6% (Pedelec promotion 2050)
- Cycling: 3,0% (2012), 3,1% (BAU 2050), 3,1% (Pedelec promotion 2050)
- Pedelec: 20,9% (2012), 21,3% (BAU 2050), 6,2% (Pedelec promotion 2050)
- PT: 3,0% (2012), 2,2% (BAU 2050), 19,6% (Pedelec promotion 2050)

BAU 2050 Pedelec promotion 2050
Scenario results: comparison of measures’ effects (carbon dioxide emissions)

2 decreasing population
3 more shopping and leisure trips of the elderly
4 Peak Oil
5 climate change
6 multimodality
7 main routes network
8 snow clearance
9 campaigning
10 tax privileges
11 rewarding public bodies
12 rewarding local transport operator
13 abolition motorbikes
14 marketing
15 speed limit 30 km/h
16 mobility education for pupils
17 parking
Promotion of pedelecs is worth the efforts, but it needs ambition (not a no-brainer)

most important policy measures are speed limits (spatially comprehensive) and parking

If policy is ambitious, than purchase incentives can play a role

traditional cycling benefits significantly, public transport remains stable

The potential for Wuppertal is high, but policies are important everywhere

Local decision makers are main actors, the transition towards sustainable/low-carbon mobility can be realised independent from car manufacturer‘s activities
Making Utopia possible

Reutter, Oscar; Rudolph, Frederic; Koska, Thorsten (2016): Von der Auto-Stadt zu einer Stadt des Umweltverbunds: zehn Leitlinien zur Verkehrswende in Wuppertal; ein Impulspapier. In Impulse zur Wachstumswende (9). Wuppertal: Wuppertal Institut für Klima, Umwelt, Energie


Hillebrand, Philipp; Hüging, Hanna; Koska, Thorsten; Krüger, Christine; Merten, Frank; Rudolph, Frederic; Schneider, Clemens; Seibt, Claus; Wilke, Georg (2014): Elektromobilität ermöglichen (Drucksache 16/4827) : Stellungnahme ; öffentliche Anhörung des Ausschusses für Wirtschaft, Energie, Industrie, Mittelstand und Handwerk zum Antrag der Fraktion CDU im Landtag NRW am 25. Juni 2014