Turning municipalities into focal points for electric mobility – the 6SEK-model

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Stress field: Urbanism ↔ Mobility ↔ Resources

The perspective of a city dweller:

Integrated solutions needed!
Paradigm for more sustainable traffic

Avoid / Reduce
Reduce or avoid the need to travel

Shift / Maintain
Shift to or maintain share of more environmental friendly modes (‘Umweltverbund’)

Improve
Improve the energy efficiency of transport modes or vehicle technology
Paradigm for more sustainable traffic

- Avoid / Reduce
- Shift / Maintain
- Improve

Social Innovations!

Technical Innovations!
The Challenge: E-Mobility in Local Governments

New points of intersection needed
The Approach: 6SEK-Model

“6 Steps to the Electromobile Kommune”

- Coordination & knowledge building
- New forms of mobility
- Charging infrastructure
- Municipal & commercial fleets
- Activation & motivation
- Integrated urban & traffic planning

Relevant municipal mobility issues, e.g.:
- high level of commuting
- parking management
- aging population in certain quarters
- development areas
  → Integration in local aims & strategies
  → Increased chance of realization
1. Coordination and knowledge building

- Coordination
- New mobility
- Charging
- Fleets
- Activation
- Integrated planning
1. Coordination and knowledge building

- Inclusion of external knowledge

Coordination

New mobility

Charging

Fleets

Activation

Integrated planning
1. Coordination and knowledge building

- Inclusion of external knowledge
- Identification of stakeholders
- Implementation of steering committee
- Enabling authorities to decide
2. New forms of mobility

- Coordination
- New mobility
- Charging
- Fleets
- Activation
- Integrated planning
2. New forms of mobility

- **eCarsharing**

Carsharing has high mileage → TCO opportunity for BEV!

New business models, e.g. for property management:

- Closed user group in residential area (100 apartments)
- Site definition: Visibility, Accessibility, Access to electricity
- Procurement: Vehicle & Wallbox
- Vehicle operation: Charging, Service, Cleanup etc.
- Organisation: Keycard, billing & booking system

- **Minimum threshold:** free in 1st year

**DON’T DO THAT.**

- **Better alternative:** Discounts, credits for new registration etc.

Abb.: eCarsharing im Wohnbauprojekt „Stadtgarten“ der WGG Göppingen  (Source: Städtebau-Institut)
2. New forms of mobility

- eCarsharing
- eBiking, Cargo bikes

Source: www.stromrad.com
2. New forms of mobility

- eCarsharing
- eBiking, Cargo bikes
- eScooters

Source: www.stella-sharing.de
2. New forms of mobility

- eCarsharing
- eBiking, Cargo bikes
- eScooters
- **Ridesharing**: Apps AND offline approaches
3. Charging infrastructure

- Coordination
- New mobility
- Charging
- Fleets
- Activation
- Integrated planning
3. Charging infrastructure

- Demand for private and public charging

<table>
<thead>
<tr>
<th>Verteilung Ladevorgänge</th>
<th>Privater Aufstellort 85%</th>
<th>Öffentlich zugänglicher Aufstellort 15%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typische Standorte für Ladeinfrastruktur</td>
<td>Einzel- / Doppelgarage bzw. Stellplatz beim Eigenheim</td>
<td>Autohof, Autobahn-Raststätte</td>
</tr>
<tr>
<td></td>
<td>Parkplätze bzw. Tiefgarage von Wohnanlagen, Mehrfamilienhäusern, Wohnblocks</td>
<td>Einkaufszentren, Parkhäuser, Kundenparkplätze</td>
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<tr>
<td></td>
<td>Firmenparkplätze / Flottenhöfe auf eigenem Gelände</td>
<td>Straßenrand / öffentliche Parkplätze</td>
</tr>
</tbody>
</table>

Source: NOW GmbH (Hg.) (2015). Ladeinfrastruktur für Elektrofahrzeuge in Deutschland. Statusbericht und Handlungsempfehlungen
3. Charging infrastructure

- Demand for private and public charging
- Private charging

Funding of wallboxes etc. (private and/or semi-public)

Parking slots for charging infrastructure

Urban development contracts
3. Charging infrastructure

- Demand for private and public charging
- Private charging
- Public charging
4. Municipal & Commercial fleets

- Coordination
- New mobility
- Charging
- Fleets
- Activation
- Integrated planning
4. Municipal & Commercial fleets

- Fleet analysis
  Company vehicles: Number of covered/uncovered trips per year
  >90% trips covered

- Fleet analysis
  Company vehicles: Number of covered/uncovered kilometers per year
  >75% km covered

Source: Project eCar-Park Sindelfingen, University of Stuttgart, 2016

Substitution potentials:
1:1: 15-20%
with minor adjustments: 40-50%
4. Municipal & Commercial fleets

- Fleet analysis
- Vehicle diversification

Source: www.badische-zeitung.de
Source: wikimedia.org
Source: conrad.de
4. Municipal & Commercial fleets

- Fleet analysis
- Vehicle diversification
- **Fleet management**

Personnel resources

Fleet management software: Car disposition, trip planning etc.
4. Municipal & Commercial fleets

- Fleet analysis
- Vehicle diversification
- Fleet management & **external services:** Sharing & rental, Taxi, public transport

Source: [www.projekt-guest.de](http://www.projekt-guest.de)
Source: [vm.baden-wuerttemberg.de](http://vm.baden-wuerttemberg.de)
Source: [www.stella-sharing.de](http://www.stella-sharing.de)
Source: [wikimedia.org](http://wikimedia.org)
Source: [www.stuttgarter-zeitung.de](http://www.stuttgarter-zeitung.de)
4. Municipal & Commercial fleets

- Fleet analysis
- Vehicle diversification
- Fleet management & external services: Sharing & rental, Taxi, public transport
- Open fleet cars for private use

Source: Concept „Fleet Floating“, Ilm-Kreis (ISME)
4. Municipal & Commercial fleets

- Fleet analysis
- Vehicle diversification
- Fleet management & external services: Sharing & rental, Taxi, public transport
- Open fleet cars for private use
- **Mobility management & procurement**

**Coordinating**

- Fleets
- New mobility
- Charging
- Activation
- Integrated planning

**Company bikes for employees**

- Biking conditions: save sheds, showers, drying room, lockers

**Procurement directive**

**Procurement cooperative**
5. User Activation & Motivation

- Coordination
- New mobility
- Charging
- Fleets
- Activation
- Integrated planning
5. User Activation & Motivation

- Information & questioning

Coordination

New mobility

Charging

Fleets

Activation

Integrated planning
5. User Activation & Motivation

- Information & questioning
- Promotion & advertising

- Ride & Drive
- eBike test runs
- Charging infrastructure
- Family attractions
- Services/Information

Source: www.region-stuttgart.de
5. User Activation & Motivation

- Information & questioning
- Promotion & advertising
- Ticketing & low-threshold

eCarsharing

- Residents get free registration
- No Carsharing basic fee for owners of monthly public transport ticket

Project quartier „Immergrün“ Camburger Straße, Jena (Source: jenawohnen.de)
5. User Activation & Motivation

- Information & questioning
- Promotion & advertising
- Ticketing & low-threshold
- Participation & Co-Creation
6. Integrated Urban & Traffic Planning

- Coordination
- New mobility
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6. Integrated Urban & Traffic Planning

- Planning as a process

- Coordination
- New mobility
- Charging
- Fleets
- Activation
- Integrated planning

Figure 3: Dynamic master plan within the namos project – part 1 (own representation)
6. Integrated Urban & Traffic Planning

- Planning as a process
- Mobility hubs

Project namos – Nachhaltig mobiler Stadtteil Gmünder Sonnenhügel; Source: University of Stuttgart, 2017
6. Integrated Urban & Traffic Planning

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6. Integrated Urban & Traffic Planning

- Planning as a process
- Mobility hubs
- Strengthen the “Umweltverbund”
e.g. bike & pedestrian traffic ways

Source: University of Stuttgart, 2016
6. Integrated Urban & Traffic Planning

- Planning as a process
- Mobility hubs
- Strengthen the “Umweltverbund”
  e.g. bike & pedestrian traffic ways
- **Implementation of renewable energies**
  PV, cogeneration

**Planning as a process**

**Mobility hubs**

**Strengthen the “Umweltverbund”**

e.g. bike & pedestrian traffic ways

**Implementation of renewable energies**

PV, cogeneration

In der Verbindung E-Mobilität mit Photovoltaik kann der Kunde direkt den ökologischen Strom vom eigenen Dach „tanken“.
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Stress field: Urbanism ↔ Mobility ↔ Resources

**Mobility & User**
- Transport mode choices of relevant user groups
- Mobility information/culture
- Participation & Co-Creation
→ Socio-scientific Data

**Traffic & Environment**
- Avoid – Shift – Improve
- Implementation of Renewable Energies
- Energy flow analysis (i.e. Vehicle-Tracking)
→ Natural-scientific Data

**Spatial & urban development**
- Urban development as a process
- Charging infrastructure concepts
- Quarter-Perspective
→ Spatial Data
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