SOCIAL ACCEPTANCE OF CATENARY HYBRID TRUCKS IN GERMANY

First results from the accompanying research of eWayBW

ERS Conference 2019, Fraunhofer Institute for Systems and Innovation Research ISI, Aline Scherrer
eWayBW is one of three pilot projects in Germany

- Catenary test track in the Murgtal area
- The only pilot route on a federal road
- Trial run 2020-2022
  - Constructional implementation and preparation for trial run in progress
- Central actors associated in the project: 2 logistics companies, 3 paper producers, ...
Dimensions of social acceptance

Acceptance

Socio-political acceptance

- media, opinion leaders, politics

market acceptance
especially forwarding industry / logistics companies and truck producers

Local acceptance
Citizens as residents and traffic participants

Positive reactions to, explicit or tacit agreement with a technology; Behavior and attitudes
Research goals

1. Market acceptance of logistics companies
2. Socio-political climate around CHT → current opinions and argumentation patterns

Acceptance

1. Market acceptance especially forwarding industry / logistics companies and truck producers
2. Socio-political acceptance
   - media, opinion leaders, politics
   - Positive reactions to, explicit or tacit agreement with a technology; Behavior and attitudes

Local acceptance
- Citizens as residents and traffic participants
Methodology

Analysis of market acceptance and socio-political acceptance at two levels:

- Germany
- Case study: field trial project eWayBW

Exploratory nature of the research → Predominantly qualitative approach

Data base

- Survey: 74 representatives of German logistics companies
- 3 interviews with representatives of associated logistics companies and logistics association
- 74 + 40 newspaper articles

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Results I – market acceptance of logistics companies in Germany

Awareness and knowledge

Catenary hybrid trucks (CHT)

- Yes, have heard of it and know something/a lot about it: 48%
- No, have never heard of it: 8%
- Yes, have heard of it but do not know anything/much about it: 44%

Battery-powered truck
- 46.0%
- 47.6%
- 6.3%

Fuel cell truck
- 23.8%
- 65.1%
- 3.2%

Power-to-gas truck
- 20.6%
- 39.7%
- 3.2%

CNG/LNG truck
- 12.7%
- 17.5%
- 68.3%

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Results I – market acceptance of logistics companies in Germany

Acceptance

Catenary hybrid trucks (CHT)

My company is interested in ... 3%

My company has decided to buy ... in the next three years. 6%

None of the given statements. 91%

Battery-powered truck

Fuel cell truck

Power-to-gas truck

CNG/LNG truck

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Results I – socio-political acceptance in Germany

- 2013-2018
- 74 articles
  - 10 articles rated as negative
  - 38 articles rated as neutral
  - 26 articles rated as positive
- Negative articles more upfront about criticizing the technology; positive accounts more subtle
Results II – market acceptance in the eWayBW case study

Logistics companies
- great acceptance towards CHT and openness to contribute
- central need: client satisfaction
  - so far all positive, full support
  - non-existent storage possibilities as a challenge to be tested in the trial (back-up vehicles planned in)

Logistics association
- members open to try new options but costs decisive
- gas as most used alternative, then BEV, PtG, ... then CHT
- mixed view of CHT – around 1/3 positive, 2/3 critical
Results II – socio-political acceptance in the eWayBW case study

- 40 articles
  - 8 negative
  - 17 neutral
  - 15 positive
- Variable article numbers over time
- Matches public announcements

- Five main themes
  - Description of test track and technological details
  - Environmental impact
  - Local residents / communication and dialogue
  - Traffic impact
  - Comparison with other options

Number of newspaper articles over time

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Neutral to positive picture of the social acceptance of CHT

Discussion and outlook

- Focus on associated partners in the interviews: positive bias
- Small sample size (quant./qual.) and no full representativeness (quant.)
- Expectation of changes during the construction and operating phase
  - Especially local acceptance...
  - ... which will be reflected in media (socio-political acceptance)
- Acceptance on the national level dependant on combined trial results
- Challenge of socio-political acceptance vs. other options (e.g. rail)
Thank you!

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Sample description – survey of logistics companies

- **Recruitment paths**
  - Personal contacts + contacts from prior surveys
  - Business association members (through rosters)
  - Newsletters

- **Respondents**: 60.3% CEO; 15.9% fleet manager

- **Size**
  - Number of trucks, \( n = 63 \), mean: 69; median: 35
  - Number of employees: majority 11-200, roughly equal distribution in four categories

- **Goods type**: 59% palletized goods; 11% mass goods (unpackaged)

- **Transport area**: 73% national; 16% regional; 11% international

- **Average mileage**: 54% 400-800km; 33% 100-400km
Sample description – survey of logistics companies

Number of employees

- 1 bis 10: 23,8%
- 11 bis 50: 22,2%
- 51 bis 100: 25,4%
- 101 bis 200: 17,5%
- 201 bis 3000: 9,5%
- über 3000: 1,6%

Types of goods

- No goods: 11,1%
- Mass goods (unpackaged): 14,3%
- Container/swap body: 58,7%
- Palletized goods: 3,2%
- Non-palletized goods: 3,2%
- Other loading forms: 4,8%
- n/a: 1,6%
Socio-political acceptance eWayBW - Coding frequencies

Share of segments with respective code

- Description of test track (development): 19.4%
- Environmental impact (incl. climate): 16.7%
- Residents: 16.1%
- Traffic impact: 11.8%
- Comparison with other options: 11.3%
- Financing: 6.5%
- Relevance for the future: 5.9%
- Innovation history of the region: 4.3%
- Motivation: 3.8%
- Knowledge development: 3.2%
- Security: 1.1%
Socio-political acceptance eWayBW – Code coverage

Share of coding coverage

- Description of test track (development) 30%
- Traffic impact 17%
- Residents 16%
- Comparison with other options 14%
- Environmental impact (incl. climate) 13%
- Motivation 6%
- Financing 6%
- Innovation history of the region 4%
- Relevance for the future 4%
- Knowledge development 3%
- Security 1%