

# Consumers & electromobility



**Picture 1, left.** Electric bicycle. Photo: Meine Heimat [Chiemgau], CC BY-ND 2.0.



**Picture 2, middle.** Electric fourwheeler. Photo: Les Chatfield, CC BY 2.0.



**Picture 3, right.** Segway. Photo: Chris Brown, CC BY 2.0.

Petteri Repo, Ph.D. (Econ.), Docent  
University of Helsinki, Consumer Society Research Centre  
[petteri.repo@helsinki.fi](mailto:petteri.repo@helsinki.fi)

# Perspectives (!?)

**Foresight and communities:** prosumer, proam, crowdsourcing, open source (Toffler, Leadbeater, Howe, Raymond)

**Innovations:** lead users, mountain bike, rodeo kayak, open source, user communities (von Hippel, Shah, Baldwin, Hienerth, Jeppesen)

**Marketing:** Ikea, consumer quality, exploitation (Wikström, Grunert, Cova, Dalli)

**Political consumption:** forms, action, movement, activism (Micheletti, Hirschman, Kozinets, Handelman)

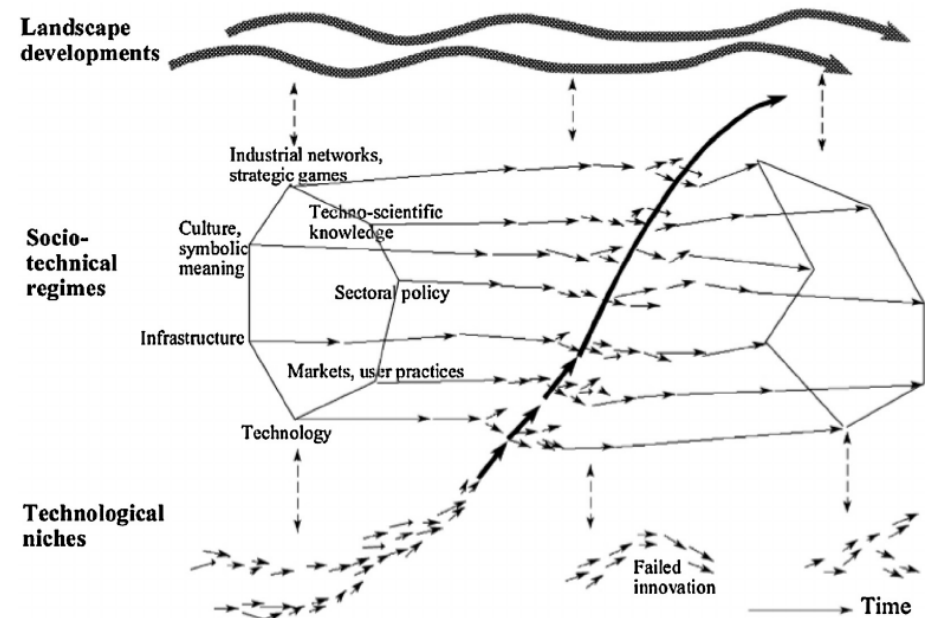
**Participation:** deliberation, interaction, engagement (Dryzek, Habermas, Renn, Irwin)

**The Internet:** facilitates - provides tools for collaboration and sharing at a low transaction cost



# Sociotechnical change

- This presentation assesses the opportunities of light electric vehicles to enter the transport system against the background of sociotechnical change as proposed by Geels (2002).
- The approach emphasizes the existence of competing technologies, i.e. various types of light electric vehicles, and the uncertainty of their success in making the transition from technological niches to parts of an established sociotechnical regime (see Schot and Geels, 2008; cf. Rogers, 1995).
- The presentation investigates how consumers perceive light electric vehicles in their everyday transport as well as looks at the kinds of transport that they would substitute.



# Methodology

- The study is based on the statistical analysis of responses to an internet survey representative of the Finnish population in terms of gender, age, place of residence and household size. The survey's 1030 respondents were selected from a pool of 40,000 Finns recruited by the Finnish market research company Taloustutkimus Oy in 2015. 14% of the respondents had used or tried light electric vehicles.
- The results can be generalized to the population of Finland in respect to gender, age, place of residence and household size.
- The responses were analysed statistically through the use of variance analysis, t-tests and cross tabulations. The significance of the differences between variables was examined with the F-test for variance and the chi-square test ( $\chi^2$ ) at the  $p=.01$  and  $p=.001$  levels.
- Results relate to interest (price; safety in use and storage; usability) - planned use - substitution for other forms of transport + challengers

*Hyvönen, K., P. Repo & M. Lammi (2016). Light electric vehicles: substitution and future uses, Transportation Research Procedia 19, 258-268.*

*Repo, P., Hyvonen, K. & Lammi, M. (2015). Sähköinen liikkuminen murroksessa. Kuluttajat, sosiotekninen muutos ja tulevaisuuden kevyet kulkuneuvot. Kulutustutkimus.Nyt 1, 30-48.*

# Interest in light electric vehicles

**Table 1.** Interest in future use of light electric vehicles (% of respondents, N=1030).

	Using, will continue to use	Plan to purchase, use in the near future	Might purchase, use later	Would like to try to assess features	Do not want to use
Electric bicycle	1	1	28	32	38
Segway	0	0,3	8	35	57
Electric 3- and 4-wheelers	0,1	0	13	7	80
Electric moped	0	0,1	6	13	81
Electric skateboard	0,2	0,1	2	15	83
Electric microcar	0,2	0	3	10	87

Light electric vehicles were seen more as potential modes of future transport than as current forms of transport. The electric bicycle and the Segway attracted most interest in future use. 62% of respondents stated that they were either going to continue using the electric bicycle, planned to purchase and use one or would like to try one in the future, and 43% had similar attitudes towards the Segway.

# Purposes of light electric vehicle use

**Table 2.** Purposes of light electric vehicle use (% of respondents).

	Work, school and college	Shopping and running errands	Leisure activities	Supporting independent mobility
Electric bicycle (n=553)	53	68	47	30
Electric moped (n=196)	47	70	40	32
Electric microcar (n=134)	30	68	37	37
Segway (n=440)	23	44	61	14
Electric skateboard (n=165)	31	50	66	11
Electric 3- and 4-wheelers (n=201)	5	40	12	67

The electric bicycle, electric moped and electric microcar were described as vehicles of a general character. According to the respondents, they were suitable for transport to work, school and college, shopping and running errands, leisure activities, and supporting independent mobility. The Segway and the electric skateboard were seen mostly to belong in the domain of leisure activities, but were also considered useful for shopping and running errands as well as for commuting to work, school and college. Electric 3- and 4-wheelers were mainly seen as vehicles that supported the independent mobility of the physically challenged and the elderly, thereby enabling activities such as shopping and running errands, which constituted the most popular purposes for using light electric vehicles.

# Substitution for existing forms of transport

**Table 3.** Forms of transport that light electric vehicles substitute in the future (% of respondents).

	Bicycle	Car	Public transport	Moped, scooter	Walking
Electric bicycle (n=553)	81	38	32	9	29
Electric moped (n=196)	58	44	35	26	26
Electric microcar (n=134)	31	57	42	23	26
Segway (n=440)	45	15	15	8	69
Electric skateboard (n=165)	54	13	18	7	74
Electric 3- and 4-wheelers (n=201)	38	35	11	9	46

The survey results show that light electric vehicles were primarily considered to substitute for riding bicycles, walking and driving cars. To some extent, they also were considered to substitute for public transport and use of their non-electric counterparts. The electric bicycle and moped substituted for regular bicycles and cars while the electric microcar substituted for cars and public transport. The Segway, electric skateboard and 3- and 4-wheelers substituted for walking and cycling.



# Conclusions

- Consumer responses indicate that the different types of light electric vehicles have their own special characters, and have distinct uses and users.
- Consumers appear to carefully consider how light electric vehicles could substitute for regular vehicles, i.e. provide a competitive advantage to enable technological niches to transit to sociotechnical regimes.
- Electric bicycles form a focal point for approaching future light electric vehicles.
- How about mobility as a service, individualism, demand driven public transport, subsidies and restrictions, and aging societies?



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