VIENNA 2018 TRA TRANSPORT RESEARCH ARENA

A digital era for transport

solutions for society, economy and environment

Can *disruptive* innovations help stimulate end-user demand for a low carbon transition?

The SILCI Team

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SILCI

Social Influence and *disruptive* Low Carbon Innovations

This project has received Funding from the European Union's Horizon 2020 research and innovation programme

disruptive low carbon innovations – fulfil both consumer need and a social need

- *Disruptive*
  - Displaces an existing product and/or service
  - Offers a new set of attributes to the consumer
  - Example – Car Clubs give consumers flexibility no maintenance or care obligations
- *Attributes determine adoption rates* – Rogers (2003)
- Potentially strengthen market demand and reduce greenhouse gas emissions if adopted at scale

disruptive low carbon innovations – Mobility

Table 3. Potentially *disruptive* low carbon innovations relating to mobility. Note: * *d*LCIs included in survey of innovation experts, see below; + other *d*LCIs; ~ denotes additional low-carbon mobility strategies).

type of innovation or strategy		potentially disruptive low C innovations or low C strategy	displaced incumbent
alternative fuel or vehicle technology	*	electric vehicles (EVs)	conventional ICE vehicles
	*	autonomous (self-driving) vehicles	conventional ICE vehicles
	*	fuel efficient ICEs	conventional ICE vehicles
	*	hydrogen fuel cell vehicles	conventional ICE vehicles
	*	advanced biofuels	conventional ICE vehicles
alternative form of auto-mobility	*	car clubs, car sharing	car ownership & use
	*	mobility-as-a-service (MaaS) [a]	car ownership & use
	*	ride-sharing	car ownership & use
alternative to auto-mobility	*	e-bikes	bikes, motorbikes
	+	neighbourhood EVs	walking, public transport
	~	modal shift to public transport	car use
	~	active modes (walking, cycling)	car use, public transport
reduced demand for auto-mobility	*	telecommuting, video- or teleconferencing	commuting
	+	interactive virtual reality [b]	commuting, teleconferencing
	~	disappearing traffic [c]	road infrastructure
	~	car-free communities	car-dependent suburbs

‘Most disruptive’ and ‘lowest C’ mobility:

Electric vehicles

Mobility-as-a-Service

Car Sharing

Wilson, C. (2018) Disruptive low-carbon Innovations. Energy Research and Social Science 37: 216-223

Mobility as a Service – Transforming how people in cities commute

- Planning, ticketing and payment in one single app
- Regional trials across Europe
- Early Adopters? Novel Attributes to the end user? Lower GHG emissions?

disruptive low carbon innovations – Studies that quantified emission reduction potentials

- International Transport Forum Studies
  - Replacing all motorised road trips with shared services
  - CO_2 emissions fell by 62% in Lisbon
  - CO_2 emissions for Helsinki Metropolitan Area fell by 28%

ITF (2016) Shared Mobility: Innovation for Liveable Cities. Paris, France International Transport Forum (ITF)
ITF (2017) Shared Mobility Simulations for Helsinki. Paris, France International Transport Forum (ITF)

- RethinkX (US) study
  - Mobility as a Service using autonomous electric vehicles
  - Reduce CO_2 emissions by 90%

Arbib & Seba (2017) Rethinking Transportation 2020-2030. RethinkX.

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