Policy instruments for sustainable accessibility and mobility in urban areas

A review

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Relevance

Digitalization has an enormous potential to radically transform the whole transport sector and substantially contribute to the fulfillment of climate goals according to the global agreements decided at the COP21 meeting in Paris (GeSI, 2015). At the Swedish national level the target for the transport sector is to reduce carbon emissions by 70 % until 2030 compared to 2010 (Naturvårdsverket, 2019). There is also a target that the public transport shall double the amounts of trips from 2006 to 2020 (Dickson & Wretstrand 2015, TU 2013). At the local level, City of Stockholm has a target to reduce the number of cars despite the increased number of citizens (Stockholms stad, 2016).

In this research, the focus is on policy instruments concerning different types of services for sustainable accessibility and mobility in urban areas that are provided through a digital platform where users can plan, book, pay and get access to the different services. The digital platform is a platform for combined Accessibility as a Service (AaaS) and Mobility as A Service services (MaaS) (Kramers et.al. 2018) that is tested in the Mistra SAMS program Living Lab “Work close – Travel Smart” in Tullinge, Botkyrka municipality, Sweden during 2019.

The focus is on policy instruments that firstly can reduce the need for transport, and secondly that also can lead to a transition to more energy efficient transport modes, such as walk, bike and public transport. The focus is thirdly on instruments that can optimize the use of the current infrastructure, which consist of both road infrastructure as well as public transport. This focus coincides with the to the first two steps in the Swedish Transport Administration's four-step principle for planning of new infrastructure (Trafikverket, 2018). Step three and four has to do with refurbishing and building of new road infrastructure, which is not in focus here. The potential to use digitalization for reduction of fossil fuel lies in the two first steps.

Aim

The aim of this research is to provide a review of policy instruments that can be used to achieve an environmentally friendly accessibility and mobility in urban areas that meets the climate targets. The aim is also to understand which are the most promising instruments in a short time frame (during 2019) that can be tested in a specific Living Lab environment in Tullinge in Botkyrka, Sweden, to later on provide recommendations for public authorities as well as for private companies.

Methodology

Data collection has been made by literature review and a brainstorming workshop.

Extended Abstract for CIT2019 Anna Kramers

The literature review looked at public documents at a national and regional as well as local level in a Swedish context as well as scientific articles found in Scopus and in Google Scholar.

A brainstorming session were held together with stakeholders from the Swedish National Level; the Swedish Transport Administration, The Regional Public transport operators represented by the National Swedish research center for Public Transport; K2, the municipalities level were represented by City of Stockholm and Municipality of Botkyrka, representatives from the company perspective with personnel employed by Ericsson and from a digital platform provider for accessibility and mobility services, Smart Resenär.

Results

The results of the review of Policy instruments are structured around a couple of questions:

1) Which service categories is the policy instrument connected to?
   The categories that were chosen are private car, carpool, taxi, public transport, bicycle and distance work.
2) Which stakeholder in society has the authority to decide on the policy instrument?
   For each service category, policy instruments have been collected on different levels in society, both on a national, regional and local level as well as from private companies.
3) How shall the instrument be provided?
   They can be informative, economic and administrative as well as influential, supportive, encouraging, deterrent, limiting or compelling (Grip, 2013).
4) Which types of incentives can be used?
   Rewards, Punishment, Pricing, Competition, Prestige/Image, being liked, Getting recognition, Do-good, Clean conscience, Comfort/well-being, Part of higher cause
5) How shall the policy instrument be constructed?
   Nudging, Gamification, Information, Trust & empowerment, Group or individual, Many or few, Often or seldom, Pre-or post
6) How do we get data to decide when to use the different policy instruments?
   Local or global level, automatically or manually, effect data or usage data, AI-powered data analysis, continuously or intermittently, hidden or candid

No single instrument will most likely automatically lead to effects in the form of significantly decreased use of fossil fuel. Instead, packages of interlocking instruments and actions, are more successful ways of changing the modal split. A successful approach might be to combine instruments of that has the character of "carrots and sticks".

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