



Annual Report 2016

ENSCC Smart and Mobile Work in Growth Regions

Smart Commuting



© Andreas Schwarzkopf 2015

available at: https://upload.wikimedia.org/wikipedia/commons/7/70/Grenz%C3%BCbergang_Basel-Kleinh%C3%BCningen_-_Weil_am_Rhein-Friedlingen.jpg



Zurich University
of Applied Sciences



Date: 16.12.2016

Town: Bern

Publisher:

Swiss Federal Office of Energy SFOE
ENSCC Research Programme
CH-3003 Bern
www.bfe.admin.ch

Agent:

ZHAW Zurich University of Applied Sciences
School of Engineering
INE Institute of Sustainable Development
Technikumstrasse 9
CH-8401 Winterthur

Authors:

Dr. Merja Hoppe, ZHAW, merja.hoppe@zhaw.ch
Fabian Härri, ZHAW, fabian.haerri@zhaw.ch
Tobias Michl, ZHAW, tobias.michl@zhaw.ch

SFOE programme manager:

Anne-Kathrin Faust, Swiss Federal Office of Energy (SFOE), anne-kathrin.faust@bfe.admin.ch
Hermann Scherrer, Swiss Federal Office of Energy (SFOE), hermann.scherrer@bfe.admin.ch

SFOE contract number:

SI/501403-02
SI/402394-01

The author of this report bears the entire responsibility for the content and for the conclusions drawn therefrom.

Swiss Federal Office of Energy SFOE

Mühlestrasse 4, CH-3063 Ittigen; postal address: CH-3003 Bern
Phone +41 58 462 56 11 · Fax +41 58 463 25 00 · contact@bfe.admin.ch · www.bfe.admin.ch



Project goals

The “Smart Commuting” project explores new ways of combining work and life with new intelligent transport system services and new concepts for supporting sustainable commuting. The mobility of workforce is increasing due to technology development, commuting and the nature of work. This pan-European trend can also be observed in Switzerland and has many consequences as intensive commuting may decrease the productivity of work and leaves less time for recreation and other needs. Cities like the City of Basle also have to address commuting in their transport strategy when deciding about technical solutions, developing services and calculating finance schemes. Smart Commuting aims for providing knowledge about mobility behaviour and the potential of behaviour change related to new mobility services as well as to support the implementation of new sustainable mobility solutions.

Thus, the first objective of the project is to *identify the changing needs* of mobile workers. The second objective is to *increase the sustainability of mobility* by supporting the implementation of *sustainable and intelligent transportation services*. The consortium collects data by observations, surveys, interviews and workshops in Austria, Finland and Switzerland to evaluate how these new services could meet the evolving needs of mobile workers. In addition, simulations are used to provide decision support for stakeholders address urban planning and governance structures challenges. Implementations in large commuting areas help to scale up our partners’ operations, get experiences about the needs of users and discover some common ground for governance and city planning policies, in order to transfer project results to other European cities.

The project was approved within the ERA-NET Cofund Smart Cities and Communities (ENSCC) call. The consortium consists out of seven practice partners and the three academic partners Zurich University of applied sciences ZHAW, Austrian Institute of Technology AIT and Aalto University Helsinki, which has the overall project lead.

Summary

“Smart Commuting” wants to find out how new types of mobility concepts, such as Mobility as a Service (MaaS), could meet commuters’ needs and support sustainable mobility strategies of cities at the same time. Our goal is to assist different stakeholders to implement new innovative mobility services – to help them implementing new sustainable commuting strategies.

As the project aims to identify the theoretical background for creating new mobility services and strategies applicable all over Europe, international cooperation and exchange is crucial. Comprehensive investigations on commuting behaviour and potential for mobility services like MaaS will take place in three different case-study areas in Finland, Switzerland and Austria. The work in 2016 provides the basis for these studies – in order to get comparable data, a common commuter-survey was designed, which will be performed in each case study area. By asking end-users about mobility behaviour and satisfaction with the current mobility situation, we are obtaining a profound picture of commuter’s needs and their openness to change their commuting habits. By foreseeing trends and game-changers in mobility we create strategies and measures supporting behaviour change and to implement future-oriented mobility solutions. To ensure the feasibility and practicability of these new concepts, stakeholder characteristics will be assessed through social-network based analysis. Expert interviews will complement our study and give more detailed insights concerning trends relevant for future mobility and commuting strategies. Finally, the developed services and strategies are implemented by practice partners. The implementation will be supported and observed, which allows to evaluate the acceptance and positive effects on sustainability and on everyday live.



Work undertaken and findings obtained

The following report shall explain the realized work and obtained results in the “Smart Commuting” project for the year 2016. For each work package with ZHAW involved, the actual work status is presented and the most important findings are pointed out.

Work package 1 – Identification of future needs of mobile workers

Identification of current and future needs of mobile workers.

Work package 1 aims to provide data for identifying changing needs of mobile workers by utilizing both qualitative and quantitative data. This is achieved by gathering and analysing existing data and by performing an end user survey in each case study area. ZHAW is in charge of performing the two mentioned tasks in the area of Basel.

Data gathering

For the Swiss case study, large amount of data was procured and analysed aiming to assess the current mobility behaviour in Switzerland. The Swiss microcensus on mobility and transport offers comprehensive data for mobility in Switzerland, which can be evaluated for the city of Basel. Additional figures could be obtained from the Statistical Office of the canton Basel-Stadt. They offer a comprehensive evaluation of commuting indicators in the Basel area, based on the annual structural survey performed by the Swiss Federal Statistical Office. Additionally, the Office for Mobility of the canton Basel-Stadt could provide non-public data useful to the “Smart Commuting” project like cordon surveys or results concerning their parking management. The evaluation of this extensive amount of data is an ongoing and iterative process depending on the findings and research methodology of the subsequent work packages. Already evaluated data supports the relevance and importance of the “Smart Commuting” project: Every year, the number of inward commuters to Basel-Stadt increases by about 2%. In 2014, almost 100'000 people were commuting to a workplace inside the canton Basel-Stadt. This amount of commuters results in various challenges, which will be addressed in the following work packages.

Commuter survey

The commuter survey was designed together with the academic partners AIT und Aalto University as well as with tbw research. The survey setup is based on a profound research approach, also created in extensive international exchange. The survey was completed including the implementation in an online survey tool. The pre-test took place in December 2016 and the distribution of the survey is scheduled in early 2017.

The “Smart Commuting” project aims at changing commuting patterns by providing better opportunities and services for sustainable transportation and by affecting people's decision making towards sustainable mobility. Therefore, the survey needs to provide data to better understand the mechanisms and forces forming these commuting patterns. Thus, following main issues are addressed in the survey:

- Current commuting/mobility behaviour
- Satisfaction with the current situation
- Potential for sustainable commuting: options/conditions for behavioural changes
- Individual/household-specific amenities
- Spatial and locational attributes
- Demographic and socio –economic attributes
- Employment and work arrangements



Sample definition and survey execution in the case study Basel

The target population for the survey is defined as the entity of working commuters (people, who are periodically travelling between their homes and their place of work) commuting to or within the city of Basel. It needs to be stressed that all kind of commuters independently of their mode of transport, occupation or social stratum need to be interviewed. As most subjects work in a company this offers an opportunity to approach our test candidates. Also the Federal Statistical Office maintains a database of companies registered in the city of Basel. Thus the survey will be distributed via companies, mainly online; alternatively, a paper and pencil version is available to include less digital affine commuters.

Work package 2 – Individual behaviour & decision making

Development of strategies and measures supporting behaviour change towards sustainable mobility of individuals and supporting in policy and planning

Initiating sustainable transition in a social system like commuting always requires insights of the subject area and its surroundings. To gain this understanding existing transition models were assessed: Geels and Kemp (2012) are offering a comprehensive approach in transition studies with the multi-level perspective (MLP) on socio-technical transitions.[1] The methodology in work package 2 is oriented on Geels and Kemp (2012) and creates an applied basis for the theoretical approach in work package 3 (“Identification of the changing socio-technical regimes in participating countries”). The MLP is based on the premise, that transitions are resulting from the interplay of the three analytical levels “innovations”, the “socio-technical regime” itself and the surrounding “socio-technical landscape” [2, p. 472]. We therefore aim to understand the socio-technical system as a whole in a first step. Secondly, we are going to identify trends and innovations aiming at gathering insights on potential regime-changing forces and influences.

Identifying the relevant framework conditions for new mobility strategies

Work package 1 provides quantitative and qualitative statistical data which is used to determine changing needs of mobile workers. Especially data gathered with the country survey covers various aspects concerning commuter characteristics or mobility behaviour and assess their openness for change. These aspects will be gradually assessed with progress in WP1 and represent the basis for creating new sustainable mobility measures and strategies. The next step is the trend-inquiry. The process is designed in different phases: First we created our own trend-assembly by desk-research. This allows us to develop ideas about relevant trends and gain a basis for the upcoming steps. Subsequently in 2017, interviews with experts and key-stakeholders will be performed to complete our trend and innovation catalogue. The interview method will be based on a combination between a SWOT-analysis and a Delphi-assessment.

Putting the strategies into action – stakeholder analysis and decision-making assessment

In order to give recommendations for the implementation of new mobility services, we need to understand the processes of stakeholders’ decision-making. In this context stakeholders are defined as actors in the field of commuting, which have enough influence and decision-making power to change the commuting system in a comprehensive and sustainable way. To determine decision-making paths and to identify decision-making power of individual stakeholders, an own research methodology was created. This method combines social network analysis (SNA) [3] with sample-based stakeholder interviews:

1. **Creation of a formal stakeholder-network by desk research.** By analysing relevant legal texts and case examples, formal decision-making paths are identified. This reveals official ways on how decision-making is happening for commuting topics in Basel and how stakeholders are related through these processes.
2. **Sample-based social network inspection of the formal network by interviewing several stakeholders.** In this step the formal stakeholder-network (step 1) will be examined. If any ties or individual stakeholders had remained hidden, they are going to appear at this point.



Through this stakeholder network inquiry and the above-mentioned data analysis, the required systems-insights («socio-technical regime» and «landscape») can be assessed. By combining these system insights with the trend and innovation catalogue, we have the needed information for developing strategies, policies and measures supporting behaviour change towards a more sustainable commuting system.

Work package 6 – City of Basel

Putting sustainable commuting policies and planning into practice.

Based on results from work package 1 and 2, work package 6 will analyse the concepts and policies for commuting from the canton Basel-Stadt and other best-practice examples. Also the findings of the previous work packages will be put into action through different application concepts. As work packages 1 and 2 are still ongoing, work package 6 isn't yet ready for implementation. However, first discussions took place and application possibilities were already evaluated. E.g. the city of Basel addresses mobility management in companies as a part of their general mobility strategy. An ongoing project from the Chamber of Commerce of the two cantons Basel-Stadt and –Land aims explicitly at this topic. The gathered know-how, the collected best-practice examples and the conclusions out of the precedent work packages can support and enrich this project. Possible applications could be workshops together with the canton Basel-Stadt and companies or the implementation support of new mobility services for companies. Referring to this possibility, some discussions with companies are already being held.

National cooperation

Within the framework of the project, ZHAW is working together closely with the canton Basel-Stadt, especially concerning work package 6. This intensive exchange enriches the project and meets with the objective to integrate practical experience and best-practice examples. Also the case study Basel offers the opportunity to accompany the implementation of new mobility services and, at the same time, to study their acceptance and potential.

Other national exchanges in 2016 for the “Smart Commuting” project occurred at various meetings. The project was mentioned at different events with focus on sustainable mobility, e.g. at the VöV Podium in Zurich on the 15th of November (lecture “How to break public transport traffic peaks?”) and the 54. ITS Techno-Apero in Schaffhausen on the 5th of September.

Another important national exchange is happening within the Smart Cites platform Switzerland. Synergies between the “Smart Commuting” project and other ENSCC projects have been identified. We aim to maintain this dialog and to intensify this exchange.

International cooperation

As the “Smart Commuting” project is an international project funded by the ERA-NET Cofound Smart Cities and Communities (ENSCC), an intensive exchange and cooperation with our international project partners is crucial. Regular board- and coordination meetings are taking place. This is particularly important as many of the project tasks are interacting and/or relying on each other's findings.

At international conferences, the “Smart Commuting” project could generate positive feedback on the 13th UIC Sustainability Conference in Vienna from the 12th to 14th October in bilateral discussions. Participating transport and railway companies expressed their interest concerning the project results. These contacts will be further established and used to disseminate project results.



Evaluation 2016 and outlook for 2017

2016 was not only the start of the “Smart Commuting” project, but also delivered a very foundation for the upcoming tasks. Intensive cooperation with the Swiss and European partners characterised the work in 2016. The methodological base for most of the work-packages has been elaborated, project scopes and study plans have been discussed and refined; data has been gathered and analysed. Various tasks are now ready for implementation as the methodology and data sources had been created: The commuter-survey will take place in beginning of 2017, the stakeholder and trend analysis is expected to provide first results in the same time period. For the case study Basel, some promising ideas and concepts have been identified as well as potential implementation partners.

References

- [1] F. W. Geels and R. Kemp, ‘The Multi-Level Perspective as a New Perspective for Studying Socio-Technical Transitions’, in *Automobility in Transition? A Socio-technical Analysis of Sustainable Transport*, New York: Routledge, 2012, pp. 49–79.
- [2] F. W. Geels, ‘A socio-technical analysis of low-carbon transitions: introducing the multi-level perspective into transport studies’, *J. Transp. Geogr.*, vol. 24, pp. 471–482, 2012.