SI-DRIVE
Social Innovation: Driving Force of Social Change

FINAL REPORT: SOCIAL INNOVATION IN MOBILITY AND TRANSPORT

MAIN RESULTS

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I. INTRODUCTION

Social innovation initiatives of alternative mobility flourish. Surely, the most prominent example is car-sharing diffusing all over the world in diverse forms. But there are many more ideas around: walking school busses, citizen initiated public transport, the critical mass movement, car free days, etc. Some of them are well-known, some of them are niches. Their commonality is engagement of actors different from those of the traditional mobility and transport system. Motivation of actors within these initiatives is to realize their idea of innovative mobility and/or to address social problems of the immediate or wider environment by offering mobility solutions. An important driver is to initiate change of the current state of play, be it at local, national or global scale.

Little is known about these initiatives in terms of actor constellations and roles, drivers and barriers, and the dynamics related to the innovation process from idea generation to implementation of the concept. Against this background this report of the EU-funded SI-DRIVE project summarizes central findings of the work package "social innovation in mobility and transport". Its main objective is to analyse how these initiatives generate social change by studying their actors and networks; resources, capabilities and constraints and process dynamics. To obtain an improved understanding of the relation between social innovation and social change is the overarching objective of the SI-Drive project and this report strives to contribute from the mobility and transport perspective.

The report is structured as follows. The next section introduces the SI-DRIVE project and its methodological approach of data generation. Subsequently, central challenges and social needs of mobility and transport will be introduced and the role of social innovation in central policy documents will be recalled. Thereafter, empirically based findings of social innovation initiatives in mobility and transport will be discussed and reflected against the question how they generate change. The report finalizes with a conclusion part formulating issues of further research and policy recommendations.

II. MISSION OF THE SI-DRIVE PROJECT AND METHODOLOGICAL APPROACH

SI-DRIVE extends knowledge about Social Innovation in three major directions:

- Integrating theories and research methodologies to advance understanding of SI leading to a comprehensive new paradigm of innovation.
- Undertaking European and global mapping of social innovation, thereby addressing different social, economic, cultural and historical contexts in eight major world regions.
- Ensuring relevance for policy makers and practitioners through in-depth analyses and case studies in seven policy fields, with cross European and world region comparisons, foresight and policy round tables.

Based on these three pillars SI-DRIVE contributes to a deeper understanding of social innovations. Based on a comprehensive definition of Social Innovation and a theoretical framework for understanding social innovations empirical knowledge generated through global mapping and case studies will help to understand the role of social innovations in mobility and transport.

2.1. THEORETICAL FRAMEWORK

Social Innovation is a ubiquitous phenomenon, characterised by a high variety, diversity and plurality of concepts and understanding. Therefore, the SI-DRIVE approach is going beyond pure social entrepreneurship being in the focus before. The former strong focus on social entrepreneurship excluded other key aspects and the potential of a comprehensive concept of social innovation and its relationship to social change (Howaldt, Kaletka, and Schröder 2017, p. 108).[1] SI-DRIVE elaborated (building blocks of) a theory of social innovation by integrating existing theories and research methodologies to advance understanding of Social Innovation - leading to a comprehensive new paradigm of innovation.

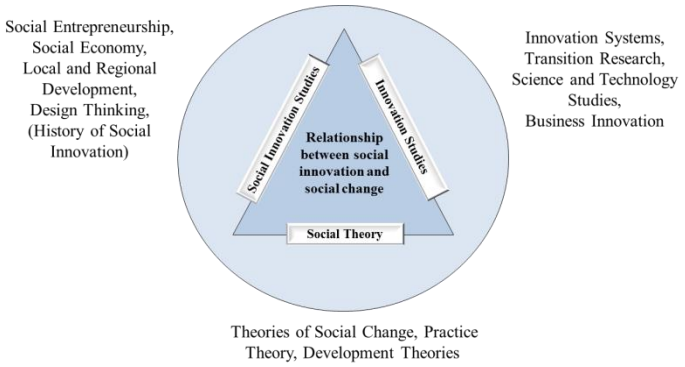


Figure 1: Building Blocks towards a Theory of Social Innovation

Starting point of the development of such a theoretical framework was a review of existing theories relevant for Social Innovation (Howaldt et al 2014): Social Theory, Innovation Studies and Social Innovation Studies form the three building blocks (including the main approaches of each block) for developing a Social Innovation Theory and the relationship of Social Innovation to social change (see figure 1). Based on this critical literature review of existing theories, Howaldt et al. (2016) developed a theoretical framework for the empirical mapping of social innovations based on mainly four pillars: (1) a comprehensive definition of social innovation and (2) practice fields combining similar initiatives, (3) five key dimensions and (4) mechanisms of social change.

The comprehensive **definition of Social Innovation** is focusing on "*new social practices* defined as a new combination or new configuration of social practices in certain areas of action or social contexts, prompted by certain actors or constellations of actors in an intentional targeted manner with the goal of better satisfying or answering needs and problems than is possible on the basis of established practices; at the end socially accepted and diffused (partly or widely) throughout society or in certain societal sub-areas, and finally established and institutionalised as social practices. …This working definition also foresees that, depending on circumstances of social change, interests, policies and power, successfully implemented social innovations may be transformed, established in a wider societal context and ultimately institutionalised as regular social practice or made routine" (Howaldt et al., 2016: 4f).

[1] "What is needed is a differentiated perspective of the role of social entrepreneurs within the different phases of the social innovation process and the cross-sector collaboration with actors from the different societal sectors (private, public, universities, and civil society)." (Howaldt, Kaletka, and Schröder, 2017: 95).

Based on this definition SI-DRIVE is differentiating between the macro level of policy fields and the meso level of "**practice fields**" and related "projects/initiatives" (micro level):

- "practice field" is a general type or "summary" of projects and expresses general characteristics common to different projects (e.g. micro-credit systems, car sharing).
- "project/initiative" is a single and concrete implementation of a solution to respond to social demands, societal challenges or systemic change (e.g. Muhammed Yunus' Grameen Bank which lends micro-credits to poor farmers for improving their economic condition, different car sharing projects or activities at the regional-local level).

Main theoretical frame for mapping and analysing social innovation cases are the operationalization of the comprehensive definition of Social Innovation through **five key dimensions**:

1. concepts and understanding (analytical concept: social practice)
2. addressed to social demands, societal challenges (and systemic changes, if feasible)
3. resources, capabilities and constraints including capacity building and empowerment and conflicts
4. governance, net-working and actors (functions, roles and sectors) for social change and development
5. different phases of the process dynamics (mainly: mechanisms of diffusion: imitation, social learning; relationship to social change).

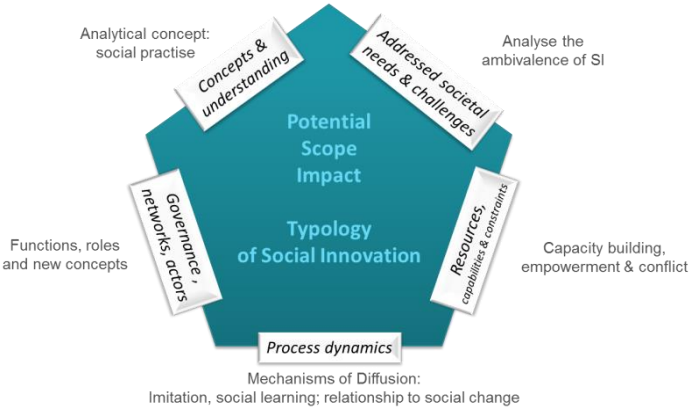


Figure 2: Key Dimensions of Social Innovations

In a fourth perspective, the process of social innovations is characterised by **mechanisms of social change** (Howaldt and Schwarz, 2016: 59f, based on Wilterdink, 2014): learning, variation, selection, conflict, competition, cooperation, tension and adaption, diffusion, planning and institutionalisation of change. To illustrate some of these mechanisms, *learning* is e.g. illustrating the mechanisms of cumulative knowledge improvement, capacity building and empowerment: Within mutual learning processes social innovators and other actors of the initiatives realise mistakes, apply new ideas and engage in processes of learning, leading to tacit and codified new knowledge (Cowan, David, and Foray, 2000). *Selection* incorporates processes of adoption, diffusion and imitation, but also processes of decline and death of initiatives. *Institutionalisation* could be a planned or unplanned or even a not intended process, in congruence or in difference with existing institutions, interfered by unforeseen events.

2.2. METHODOLOGY / EMPIRICAL BACKGROUND

SI-DRIVE is aiming at a comprehensive and systematic analysis, focusing on the main societal challenges reflected by different policy fields and mapping social innovations all over the world. The developed methodology is combining qualitative and quantitative research fulfilling the gaps and constraints of each methodology in a complementary and interrelated way: Beneath qualitative research (more than 80 in-depth-case studies) SI-DRIVE conducted - for the first time - a quantitative mapping of more than 1,000 social innovation cases all over the world.

The SI-DRIVE methodology[2] is constructed as an iterative research process characterised by two empirical phases based on and feeding the three central research pillars of SI-DRIVE: theory, methodology and policy. Starting with a first theoretical, methodological and policy and foresight framework the empirical phase 1 lead to a global mapping of Social Innovation: comparative analysis of 1,005 cases worldwide, seven policy field reports, global regional report, external database screening, and eight first policy and foresight workshops. These results led to the improvement of the three pillars and set the ground for the second empirical phase:

[2] A detailed description can be found in Howaldt et al. 2016, chapter 3.

the in-depth case studies in each of the seven policy fields of SI-DRIVE and the second round of policy and foresight workshops. Finally, the results of both empirical phases are summarised in each of the policy field and across, contributing to the final theoretical framework, the methodology and the policy and foresight recommendations of SI-DRIVE.

Thus, the chosen triangulation and combination of quantitative and qualitative methods has also a sequential aspect: While the quantitative approach is more appropriate for the analysis of 1,005 mapped social innovation cases, the qualitative methodology is more relevant for the 82 conducted in-depth case studies (based on the quantitative and qualitative analysis of the first empirical phase).

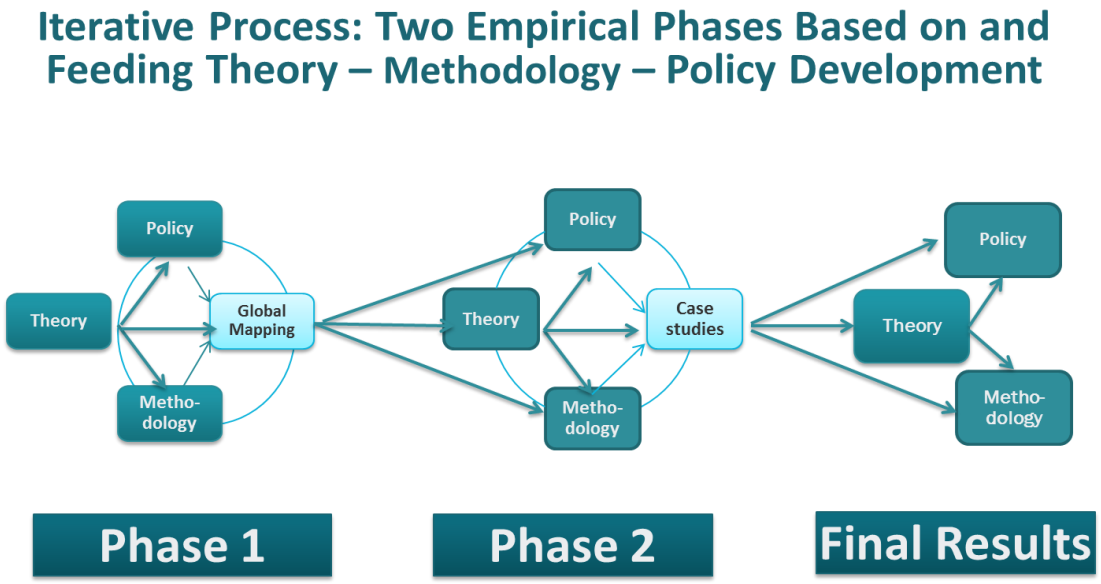


Figure 3: Continuously Updated Research Cycle

While the focus of the global mapping was on exploring the multifaceted world of Social Innovation the focus of the subsequent qualitative research was on the dynamic interrelation between social innovations, the practice field and various mechanisms of social change: Related to the five key dimensions of SI-DRIVE the case studies explored further Governance, Networks and Actors as well as Process Dynamics, mainly asking for factors of success (and failure) and considering mechanisms and degree of social change: diffusion in society, degree of institutionalisation, and importance of the practice field and initiative for everyday life and local communities.

Based on the global mapping of 1,005 social innovation initiatives all over the world 82 case studies were selected from the database (with some additional cases of high recent relevance) and performed. The cases were nominated on the background of given theoretical framework, the results of the mapping and the partners' knowledge and experience. Beneath practical points like access to and willingness of the initiatives to participate a general regional variety were taken into account. The (strategical) relevance of the practice fields, the representativeness of the single case for the practice field showing its variety in terms of social demands and regions and an advanced development phase (cases that are already in the implementation, impact phase) were additional selection criteria.[3]

[3] Detailed information about the case study methodology and selection could be found in Schröder/Kuschmierz 2016, chapter 1.

III. SOCIETAL NEEDS AND CHALLENGES IN MOBILITY AND TRANSPORT

Two central challenges make mobility and transport a fundamental field for studying social innovation. Firstly, the challenge of overcoming the currently high CO2 emission, air pollution, congestion, and noise levels. There is potential to reduce these negative effects by developing social innovations addressing more sustainable mobility practices. Secondly, mobility is a key characteristic of a modern society in order to give access to places, goods and services and thus it is central for getting access to societal life. Ensuring the mobility of all groups of society is a crucial step for moving towards a socially inclusive society and a territorially cohesive European Union.

Social consequences of the current state of play are highly impactful and cause a number of serious disadvantages for the society as a whole as well as for social groups. They can be exemplified by a number of pressing issues:

- Especially within urban areas, the effects of transport go hand in hand with a reduction of quality of life. This includes the low quality of air impacting human health and the environment. Around 70 million people living within urban areas in Europe are affected by noise levels caused by road transport that exceed 55dB and about 32 million of these are exposed to very high levels of 65 dB (EEA 2017). Furthermore, the built environment is car friendly in many European cities. Walking and cycling space is limited, affecting health and safety of pedestrians/cyclists.
- With a share of 24% of total CO_2 emissions in 2014 road transport is among the major emitters in the EU (EEA 2016). This should massively decrease in order to reach the goal of cutting 20% greenhouse gas emissions compared to the 1990 levels by the year 2020 (cp. the 20-20-20-targets).
- Costs caused by negative transport effects can be calculated in a monetary sense. To take an example, polluted water, diseases and economic damages caused by congestion and delays summed up to 80 Billion Euros in Germany in 2005. 96% of the costs relate to road traffic (Umweltwirtschaftsbericht 2009).
- Especially in Europe's remote and sparsely populated areas affordable and available public transport is a bottleneck resulting in disadvantages for inhabitants.

Broadly accepted objectives referring to mobility and transport systems being sustainable and inclusive have been formulated to tackle the challenges and to reduce societal consequences.

3.1. SUSTAINABLE MOBILITY AND TRANSPORT SYSTEMS

A key objective of the European Union's council of Ministers of Transport is establishing sustainable mobility and transport systems characterised by low energy consumption and improved mobility for users through better transport times and routes. Next to congestion and high noise levels, the argument for the current mobility and transport system being not sustainable is the significant oil dependency and high causation of CO2 emissions (EC 2011, p. 4f.).

An important strategy for realising a sustainable transport system is the avoid-shift-improve (ASI) approach: If possible, trips should be avoided, shifted towards non-motorised or public transport modes, and technological advancements should improve transport modes in terms of energy efficiency (Koch et al. 2005, Bakker et al. 2014). The ASI approach was developed two decades ago in Germany and by now has experienced diffusion through major policy programs (though it is sometimes labelled differently or followed without direct mentioning). At EU-level, emphasis is put on shifting transport towards non-motorised or public transport and on improving technological components in order to achieve high energy efficiency. For example, the European Commission's communication on 'A sustainable future for transport' supports an integrated, technology-led and user-friendly transport system (cf. EC 2009). This shall be realised through maintenance of infrastructure, safety and security issues, technologies that accelerate the transition to a low-carbon society, market opening and

fostering competition. The development of social innovations supporting achievement of these objectives is of high relevance.

This emphasis on an integrated, technology-led and user-friendly transport system is also reflected in eight different thematic themes within the CIVITAS Plus programme for clean and better transport in cities: (i) alternative fuels and clean and energy-efficient vehicles; (ii) high quality energy-efficient passenger transport; (iii) economic based demand management strategies; (iv) mobility management, communication and education; (v) safety and Security; (vi) mobility services for energy-efficient vehicle use; (vii) energy efficient freight distribution; (vii) innovative transport telematics systems (Lindt/Emmert/Kruijff 2013).

Similar emphases can be found in other programs, e.g. within the transport chapter of the Intergovernmental Panel on Climate Change (IPCC) where improving energy efficiency and shifting towards less energy intensive modes is dominant over other approaches.

What is clearly less prominent is the avoid-part of the ASI approach, and it seems that transport avoidance is well regarded as a principle but not put into practice. An explanation could be that policy-impact of transport measures in order to shift and improve is expected to be higher as compared to transport avoidance measures. The first measures can be influenced by setting political priorities (e.g. on energy efficiency, related funding programs, tax reduction) and through the public sector itself being an important target group (public transport, infrastructure). In contrast, transport avoidance requires a radical change of mobility routine behaviour of individuals. It is therefore connected to a level at which public intervention strategies are expected to be less influential.

3.2. INCLUSIVE MOBILITY AND TRANSPORT SYSTEMS

The second major challenge is ensuring mobility of all groups of society in order to give access to places, goods and services. The objective resulting from this challenge is achieving inclusive mobility and transport systems that do not exclude parts of society through limited transport options. Church and Frost (1999, cited from Gaffron et al., p. 8f.) concretise social exclusion connected to transport by defining the following often intertwined categories:

- "physical exclusion – barriers that inhibit accessibility of services; such barriers affect many groups of people such as children, the elderly, people with shopping or prams, the mobility or visually impaired, people with hearing impairments or those who do not speak English [or other countries' languages, the authors]
- geographical exclusion – peripheral, poor transport provision and resulting inaccessibility can create exclusion not just in rural areas but also in areas on the urban fringe or in smaller towns and cities
- exclusion from facilities – distance of facilities (shopping, health, leisure, education) form people's homes, making access, especially without a car difficult; this problem is exacerbated by the growing popularity of out of centre facilities and "flight" of facilities (post-offices, banks, shops and supermarkets) form problem areas
- economic exclusion – high monetary and temporal costs of travel can prevent or limit access to jobs and thus income time-based exclusion – difficulties pertaining to the organisation of childcare and other caring commitments while allowing adequate time to travel given transport network constraints
- fear-based exclusion –worry, fear and even terror influence how public spaces and public transport are used, especially by women, children and the elderly
- space exclusion –security and space management strategies can discourage socially excluded individuals from using public transport spaces".

A widely accepted strategy for achieving the objective of inclusive mobility systems is the 4A-approach that is also of relevance for other policy fields such as health and education. Mobility and transport should be available, accessible, affordable, and acceptable (see UN 2013, p. 108). A transport mode must be existent where people live and work (available). Its usage should be convenient in terms of waiting time, the provided

information, and should not exclude some groups (e.g. people with reduced mobility) (accessible). It should be financially affordable for all. Last but not least, it should be designed in a way that people can use a transport mode without fear and concerns. This means it should be adjusted to cultural values and norms of its societal context (acceptable).

In the following we will introduce the social innovation initiatives studied in SI-Drive as concrete practices generating and doing social innovation in the policy field of mobility and transport.

3.3. MOBILITY AND TRANSPORT INITIATIVES STUDIED IN SI-DRIVE

Most of the social innovation initiatives in mobility and transport studied during the SI-DRIVE project explicitly or implicitly refer to one of the two approaches (ASI, 4A). Following the SI-DRIVE overall methodological approach, a total of 128 social innovations in mobility and transport have been quantitatively analysed on the global scale but with a focus on Europe. Figure 4 indicates the projects/initiatives that have been studied.

Figure 4: SI-DRIVE Global Mapping in Mobility and Transport

In-depth qualitative analysis was conducted on the nine cases shortly presented in the following (cf. table 1). Findings of the analyses will be presented in the following.

Short description of the in-depth case studies[4]

Aha!Car, Bulgaria: The platform Aha!Car in Bulgaria is a platform for carpooling. It supports a webpage and a mobile application for direct connection of people travelling in the same direction. Started in 2013 the platform is seen as a pioneer in the field of formal organized carpooling in Bulgaria (Interview with the founder). It was born from the personal demand of the creators to travel in an area where there is a lack on public transport connections. The business model in the beginning was to make the platform free to use, gain

[4] Extended summaries on the in-depth case studies can be found in the report: "Social innovation in mobility and transport: case study results. SI-DRIVE Deliverable 8.3" (Rabadjieva/Butzin 2017).

critical mass of users and sell banner space for advertisement. Mainly due to context specifics however this strategy did not have the expected success. Still, since the very beginning the creators formalised the platform as a stock company, implemented a strategy for marketing, for non-profit business model, for clean environment, reduction of CO2 emissions; they put the social aspect at the core of the project and started communicating with non-profit organisations and movements with the same values. On a forum with different stakeholders in 2014 the idea was born to adapt the platform to be easy useful from visually impaired users. A new initiative they called "Vodachi" (Guides) became the social part of the platform. Today the platform offers services as well to common users, as to visually impaired people and develops solutions for corporate carpooling.

Liftshare.com, UK: Liftshare.com is a ride-sharing service based in Norwich, UK. It is available on a webpage, where users can offer or find a ride, travel together and share costs for a trip. Even though it is an online service now, Liftashare started in 1996 as a pin-board service at the University of Bristol. The idea emerged from a personal demand of affordable transport experienced by the founder and was also based on his experience of similar services in other countries. Two years later, as a part of a student project, the service went online and is growing ever since. The company operates as a carpooling platform and also develops solutions for sustainable transport together with municipalities or private companies. In its 18 years of existence, Liftshare.com has changed strategies multiple times and worked with local authorities, companies and schools to minimize congestion and CO2 emissions. The founder's objective is to raise awareness about the positive effects of ride sharing and help incorporate the idea in the daily life of communities, cities and business.

MyWheels, the Netherlands: My Wheels is a platform for sharing cars based in the Netherlands that offers as well peer-to-peer car-sharing (private households sharing their car) as 'classic' car-sharing (offering cars owned by My Wheels or another professional car rental organization at specific locations). The idea was born from one man in 1993 who started sharing his car with his neighbours and has organically grown since then. The business model of My Wheels is that they gain a share of the rides that people book on the platform. Currently My Wheels is a cooperative association and it is officially registered as a social enterprise. It is a not for profit organisation, which means in practice that revenues are used to strengthen the company. The company is community oriented and works with local coordinators (volunteers) to identify communities with demand for car-sharing. Important goals they say to strive for are reducing CO2 emissions produced by cars and reducing the amount of cars parked in the streets.

CARUSO, Austria: CARUSO Car-sharing Cooperative is a social business for providing sustainable mobility services to its members. The project operates both as a peer-to-peer car-sharing model and since recently as a traditional car-sharing model with electric vehicles in Vorarlberg, Austria's most-western Province. In addition, they also provide „equipment only" for smaller private car-sharing groups across Austria. CARUSO is particularly aiming to bring car-sharing also to rural areas and smaller towns where car-dependence prevails. Main characteristic of Caruso Car-sharing is that their vehicles, offered by very different partner types – businesses (real estate developers, construction companies, etc.), public institutions (municipalities, hospitals, etc.) as well as private persons – can be booked through various participation and contracting models. The current model of CARUSO operates since 2015; however it grew and changed for the past 10 years and was further developed in different research projects to become the car-sharing cooperative running today.

Uber, USA[5]: Uber, Inc. started as a limousine service provider in California, USA in 2009 and grew to be a worldwide known mobility service provider with various services as SUV on-demand transport, peer-to-peer rides and even food-delivery. The most popular and controversial Uber-service in the past years is the mobile application for peer-to-peer services where drivers and passengers can connect in real-time to ride together on a short notice. Therefore, in the literature Uber is usually described as a real time ride-matching service (Cohen & Kietzmann, 2014). All transactions in this process (connectivity, request, answer, payment, feedback) are managed by the company. 'In return' Uber takes a percentage of the price for a ride. This type of organization became a reason for legal debates all over the world and raised the question for regulating new, internet based services, for connecting peers.

[5] Due to geographical location and the inability to reach a contact person, the case study on Uber is based on desk research.

Heimwegtelefon, Germany: Heimwegtelefon (walking home phone line) is a phone line, created in 2011, which people could call and on which they could talk to someone while they are walking home at night. This gives a sense of security. Through a nice phone call the person has the feeling she/he is not going home alone. Because of that feeling she/he is not just feeling safer but also gives an impression of security. This should help to prevent attacks on the streets because people come out of their victim-role. If there is indeed an attack, the other person on the phone line is in the position to act and call the police. The idea was born from the personal experiences of the founders who frequently called friends or family members when walking home alone at night. They knew about similar initiative in Sweden and decided to start one in Germany too. However, since both founders did not have any experience as entrepreneurs the beginning was hard and for a long time nothing happened. With time new partners and volunteers came along to support and further develop the initiative.

She Taxi, India: She Taxi is a taxi service exclusively for women, as well as drivers as passengers. The core idea of the initiative was to come up with safe transport options for women within the city and to create a standard of transport services delivered in cities of Kerala, in order to further help gender equity. Women's safety and security are at risk while commuting in the city and especially during night times it is not possible for them to travel alone. Gender-based violence against women is highly prevalent in the state of Kerala, despite its superior levels of women's educational achievement. In addition women face a lot of barriers when they try to start their own business: lack of information, technology, training, innovative schemes, concessions, alternative markets, etc. Limited ownership of physical assets by women is yet another constraint for them to become a successful entrepreneur. She Taxi promotes women entrepreneurship, as the fleet is owned and operated by women as entrepreneurs and at the same time addresses the conflicts around urbanization and persisting gender gap in the cities of Kerala.

MOOSDORF Dorfmobil, Austria: The core idea of "MOOSDORF MACHT MOBIL" is to provide accessible and affordable local mobility services for citizens with reduced mobility (physically, financially, etc.). The service was initiated and is still run by a group of engaged citizens on a voluntary basis. The need for such a solution rose after public transport options and private taxi services ceased their services in the area of Moosdorf. Vital trips to doctors, pharmacies, local stores, but also to church and community events in the municipality became increasingly difficult to realize. The local administration and the mayor of Moosdorf play a key role for the start and the further development of the project. Due to the mayors effort the project received public funding from the state of Upper Austria through the regional Agenda 21 Network action program which made the purchase of a vehicle possible. The solution works as a registered association MOOSDORF MACHT MOBIL (= "Moosdorf mobilizes") where all commuters need to be members. It was officially found at the end of 2012 and has now 315 members, representing approx. 20% of total population of the community.

Childe in a chair in a day, UK: 'Child in a Chair in a Day' is an initiative of the organisation Whizz-Kidz, initially existing to provide wheelchairs for young disabled people. At the beginning volunteers ran marathons to raise money for wheelchairs. In the past, the wheelchair problem was vast with people not having access to the equipment they needed. Today, Whizz-Kidz is the biggest provider of paediatric wheelchairs outside NHS (National Health Service), UK. Their initiative 'Child in a Chair in a Day' provides wheelchairs to children in only one visit. There are two elements to the solution. Firstly, there is some procurement and secondly, there is some clinical input. Whizz-Kidz has a team of clinicians, so when a user contacts the service requiring a piece of equipment, they do an initial telephone assessment. Whizz-Kidz then reads user notes, understands their requirement, and speaks with healthcare professionals. This pre-work allows Whizz-Kidz to make clinical decisions upfront, before they even see the individual user. When the user turns up, they have fair knowledge of their needs. This massively helps the part of work with the supply chain. The organisation works closely with wheelchair manufacturers to achieve free consignment stock and limit the time for delivery of new chairs. They have agreed on a matrix of equipment from which the therapists can prescribe. Their approach from referral through assessment has a knock on effect in terms of monitoring and maintenance. The choice of chair incorporates future growth of the child, reducing the need to order new chairs in the future. They also operate a proactive check-up policy to review the child's progress with the chair. This helps to better predict when a new chair will be needed and plan accordingly, which feeds back into assessment and provision.

Table 1: In-depth case studies

Shared car usage		
Case studies	*Country*	*Model*
Aha!Car	Bulgaria	Ride sharing on long distance
Liftshare.com	United Kingdom	Ride sharing platform; traditional carpooling
My Wheels	The Netherlands	Car-sharing website; peer-to-peer and business-to-consumer
CARUSO	Austria	Car-sharing scheme (traditional and peer-to-peer)
Uber	USA / Europe / Worldwide	Ride-sharing platform for the urban area; Real time matching; Other services for on demand mobility in cities worldwide

Mobility of Vulnerable Groups				
Project name	*Country*	*Target group*	*Demand*	*Solution*
Heimwegtelefon (phone line for people walking alone at night)	Germany	Pedestrians walking alone at night	Safety	Service
She Taxi	India	Women (entrepreneurs and commuters)	Safety and accessibility	Service
MOOSDORF Dorfmobil (car service for people from a village area)	Austria	Rural area commuters	Accessibility and affordability	Service and equipment
Childe in a chair in a day	United Kingdom	Children in a wheelchair	Accessibility	Equipment and service

IV. SOCIAL INNOVATION IN MOBILITY AND TRANSPORT

The diversity of actor constellations in mobility and transport initiatives, the related drivers, barriers and funding sources as well as the dynamics of the innovation process will be discussed in this chapter. By reflecting policy documents, current large-scale EU strategies to foster sustainable and inclusive mobility and by introducing the mobility practice fields of SI-Drive, current concepts and the understanding of social innovation in mobility and transport will be approached. This is followed by discussing the range of actors involved in the social innovation initiatives, drivers and barriers and process dynamics. As regards the latter, results are presented based on the quantitative global mapping and the in-depth case studies.

4.1. CONCEPTS AND UNDERSTANDING: SOCIAL INNOVATION IN POLICY DOCUMENTS AND RESEARCH PROGRAMS

According to the SI-Drive working definition, social innovation "is a new combination of social practices in certain areas of action or social contexts with the goal of better satisfying or answering social needs and problems than is possible on the basis of existing practices. [...]. In this sense, social innovations encompass new practices and regulations that are developed and/or adopted by citizens, customers, politicians etc. in order to meet social demands and to resolve societal challenges in a better way than existing practices" (Howaldt 2014, p. 3).

An entry point to analysing the role of social innovation in EU Mobility and Transport policy documents and projects, are considerations related to the strategies (ASI, 4A) developed in order to achieve sustainable and inclusive transportation systems. In order to be successfully implemented, both strategies include behavioural change as an integral part and there is thus space for social innovation. The strategies can only be implemented in an integrated approach including different actors from civil society, public authorities, the private sector, as well as from research and development.

However, what we see is that the term social innovation does barely appear literally in key EU policy documents (cf. OECD 2012, EC 2016a, EC 2016b). Social innovation is also not part of the 10 Commission Priorities for 2015-19[6]. However, we notice that especially in recent policy initiatives and research programs there is explicit attention for social innovation strategies. Some examples:

Europe on the Move - The Commission is currently setting out an agenda to make clean, competitive and connected mobility a reality for all. This action is geared to strengthen the competitiveness of the European mobility sector with a view to boosting jobs, growth and investment while addressing the pressing social dimension of mobility and ensuring high levels of safety and security for the travelling public. It aims to make a critical contribution towards the Commission's ambition to deliver a Europe that protects, empowers and defends and to meet the EU's energy and climate targets for 2030. It will help to improve public health and the quality of life of all citizens in the EU. **They state that this requires a comprehensive and integrated approach with all actors working together at the different levels – EU institutions, Member States, cities and other local authorities, industry, social partners, and all stakeholders** (European Parliament 2017).

EU Research and Innovation, Commission outlines new strategy for transport research and innovation - The European Union's investment into research and innovation for a greener and more efficient transport will follow a new strategy. The blueprint, entitled "Towards clean, connected and competitive mobility", is part of a "mobility package" adopted by the European Commission. The strategy focuses in particular on two main areas: automation and connectivity, and electrification of transport. These areas bring about disruptive innovation and significant opportunities for European industry and its competitiveness. **The document highlights the need to focus on users and citizens in shaping a transport research and innovation strategy, as well as to mobilise stakeholders across all sectors** (EC 2017).

[6] European Commission: Priorities: https://ec.europa.eu/commission/priorities_en [Last accessed 29.06.2017].

The requirements for a new governance model in the field of mobility and transport seem to point away from insular models and more in the direction of decentralized but networked, multi-level and multi-stakeholders' governance models as better suited for the future of the sector (Chen/Bodea/Huijboom 2016).

4.1.1. Projects stimulating social innovation in the field of Mobility and Transport

EU DG Mobility and Transport - Directorate-General for Mobility and Transport manages the work on a series of inter-modal transport issues: European strategies (EC 2011), Passenger rights, Security & Safety, Clean transport &Urban transport, Sustainable transport, Infrastructure - TEN-T - Connecting Europe, Intelligent transport systems, Research and Innovation, International relations, Public service obligations, Logistics and multimodal transport, Social issues.

Regarding individual transport issues, we see that only the issue of Clean transport & Urban transport[7] explicitly focus on social innovation strategies in their programs and projects. An extensive range of research, applied research and demonstration activities have been financed over recent years. Some examples:

- The **CIVITAS** Initiative helps cities across Europe to implement and test innovative and integrated strategies which address energy, transport and environmental objectives.
- **European Mobility Week**. This is an annual campaign running from 16 to 22 September every year, which aims to encourage European local authorities to introduce and promote sustainable transport measures and to invite their residents to try out alternatives to car use.
- **Do the Right Mix**. The campaign bears the slogan "Do the Right Mix" and aims to promote the fact that by using different travel modes for each journey as appropriate, people can improve their health, their finances and the environment.

The Transport Research & Innovation Portal (TRIP), formerly known as the Transport Research Knowledge Centre (TRKC), is the one single portal for information on all transport research and innovation conducted at European and national levels. TRIP contains a vast amount of in-depth information on large programmes and specific projects across Europe and at national level. On this site, projects and initiatives can be found on the search term 'social innovation'.

Mobilizing Sustainable Transport for Development, In 2014, United Nations Secretary-General Ban Ki-moon appointed an independent High-Level Advisory Group on Sustainable Transport to provide a focused set of recommendations on how the transport sector can advance sustainable development with poverty eradication at its core, promote economic growth, and bolster the fight against climate change[8]. The outcome of this effort is Mobilizing Sustainable Transport for Development, the first ever Global Sustainable Transport Outlook Report (2016), addressing all modes of transport, in developing and developed countries. This report highlights examples of social innovation initiatives.

Policy strategies and projects are an important pillar for achieving sustainable and inclusive transport systems. However, in order to be successful, they need to be transformed into concrete actions and initiatives. In order to grasp initiatives, practice fields have been applied in SI-DRIVE which bundle similar social innovation initiatives, as outlined in the following chapter.

4.1.2. Practice Fields of Social Innovation in Mobility and Transport

Altogether, 17 global practice fields of social innovations in mobility and transport have been defined in SI-DRIVE through both, a deductive (expert discussions) and inductive approach (generated from data of 128 cases of small scale social innovation initiatives).

All practice fields have in common a very local perspective. They concentrate on neighbourhoods, cities or regions. Long distance transport seems to be not an area of action for the studied social innovations. The defined practice fields of social innovations can be grouped into three clusters that describe commonalities.

[7] European Commission DG Mobility and Transport: Programmes and projects: https://ec.europa.eu/transport/themes/urban/programmes_projects_en [Last accessed 29.06.2017].

[8] UN High-level Advisory Group on Sustainable Transport (2016).

These clusters also show high consistency with the transportation related policy goals to tackle the societal challenges.

There is a considerable inclusiveness/access dimension assigned to social innovation in mobility and transport in order to establish or increase access to basic needs and societal life. Practice fields address people with reduced mobility, new transport possibilities realised by citizen initiated public transport, gender sensitive transportation, etc.

Greening mobility and transport includes social innovation in fostering co-modality, e.g. through sharing initiatives implementing new practices related to usership rather than ownership. It furthermore includes social innovation facilitating usage of electric mobility and multi-modality, i.e. the usage of different transport modes on the same trip.

Many social innovation projects and practice fields are based on slow transportation. There is no case striving for high speed transport or long-distance trips. Instead, projects have walking or cycling as their starting point and strive to integrate walking/cycling in daily activities and make it more comfortable (e.g. in terms of safety). In consequence, slow mobility has a strong local emphasis. The 17 practice fields of social innovation in mobility and transport have been labelled as follows.

Citizen initiated public transport
Citizen initiated public transport is a rather loose term encompassing mostly community-based initiatives to fill gaps in mobility service provision in public passenger short-haul transportation, mainly in rural or peripheral areas due to lack of profitability for private enterprises. Planning, implementation and administration is usually based on private-public co-production for collective good and sometimes fostered by ICT innovations.

Managing multi-modality
Computers, electronics, satellites and sensors are playing an increasingly important role in transport systems. The main innovation is the integration of existing technologies to create new services. Intelligent Transport Systems (ITS) apply information and communication technologies (ICT) to transport organize mobility needs. ITS include telematics and all types of information and communication technologies in vehicles, between vehicles (e.g. car-to-car), and between vehicles and fixed locations (e.g. car-to-infrastructure).[9] ITS can be applied in every transport mode (road, rail, air, water) and services can be used by both passenger and freight transport.[10]

Smart Working, Smart Commuting
Smart Working, Smart Commuting aims at diminishing traffic jams / congestion by new ways of organizing work in a more profitable way for companies and better way for the employees. This can be achieved by a sustainable change in mobility behaviour.

Most initiatives will focus on (combinations of) flexible working times (including working at home), avoiding rush hour, using other (combinations of) modes of transport. Information technology is playing an important role in the registration of commuters and the providing travel information.

The behavioural change can be achieved by regulations, including financial penalties, and / or stimuli like gifts, financial rewards, etc. In the initiatives local governments, public transport providers, research institutes, business, trade unions and representatives of travellers often are working together. The exact form of cooperation depends on the nature of the initiative.

Safe roads to school
In many countries education is not accessible simply because there are no transport facilities available. In other countries, the (public) transport is insufficient to provide a suitable linkage between less population areas and the education facilities. Both situations can lead to social exclusion and / or unsafe situations. Many

[9] European Telecommunications Standards Institute (ETSI): Automotive Intelligent Transport Systems: http://www.etsi.org/technologies-clusters/technologies/intelligent-transport [Last accessed 23.11.2014].
[10] European Commission DG Mobility and Transport: Intelligent transport systems: http://ec.europa.eu/transport/themes/its/index_en.htm [Last accessed 23.11.2014].

schools in urban areas are surrounded by unsafe places in terms of traffic or the roads to schools are far too dangerous for cycling and walking. Many projects therefore are concentrating on mitigating the consequences of unsafe situations and / or are arranging innovative types of transport to school. Here the parents are playing a major role, together with the school management. In a number of cases businesses like automobile companies / garages or public transport companies are sponsors, providing the 'hardware', like vans or small busses. Parents and school management also are playing an important role as pressure groups to the local authorities to adjust the unsafe places or to adjust the regulations.

Shared car usage

The practice field is broadly understood and includes all variations of organised car clubs, car-pooling, ride sharing, lift schemes, co-voiturage, peer-to-peer car-sharing, Mitfahrgelegenheit, volunteer driving schemes etc. The practice field is defined by a shared use of a car/vehicle by persons (members) with similar travel needs for a specific journey. The initiatives are suitable for the occasional use of vehicles or use of different types of vehicles according to specific needs. The proclaimed benefit is that cars can be used without needing to bear costs and responsibilities of car ownership. Users can rent a car, book it online or arrange to be picked up from a certain place by other participating drivers. The initiatives in this practice field complement individual car transport, taxi schemes and the lack of public transport and are more flexible and cheaper as compared to traditional rent-a-car schemes, for example.

Car-free housing

Individual streets or whole residential areas are designed in favour of walking and cycling with strict speed limits, no parking places, broader cycling ways and pedestrian zones. Planning techniques include shared spaces, traffic calming devices, and low speed limits. Car-free areas require a change in the standard community/city planning and accessibility of alternative transport modes. In these areas opportunities for children to play are improved. Furthermore, there is less noise and air pollution. Car-free areas are often combined with car-sharing schemes and additional public transport connections or large parking places outside the community/street.

Gender-sensitive transportation

Initiatives or services focused on transportation needs of a specific gender (mostly women). Initiatives aim at increasing safety, comfort, accessibility, affordability etc. In many cases, the other gender (mostly men) is excluded from the use of the service. Services are complementary to public transport by offering additional, more specialised services, for example – "Woman Only" taxis or busses aiming at lowering sexual harassment, emergency apps or the like.

Walking school busses

A walking school bus is a group of children walking to school with one or more adults. Initiatives can be informal as two families taking turns walking their children to school, as well as formal structures with a fixated route and meeting points (bus stops), a timetable and a regularly rotated schedule of trained volunteers. A variation on the walking school bus is the bicycle train, in which adults supervise children riding their bikes to school. A walking school bus is complementary to complementary to standard pupil transport forms like school busses or parents' cars. Walking school busses are proclaimed as having a high socializing factor for children and adults; they furthermore are carbon-free and sustainable. However, they are only suitable for pupil living close to school.

Transportation for people with reduced mobility, vulnerable groups

Transport services focused on the needs of people with disabilities or elderly, who are not able to afford or simply use existing transport modes, or are built to increase socialisation and health of both groups. Most services are based on volunteer schemes and require registration, provision of a disability certificate or a certain age (for example +60 years). Services are complementary to public transport by offering additional, more specialised services, focused on the needs of people with disabilities and elderly. Services are increasing accessibility and affordability of other services and goods for this group or offer possibilities for socialisation and better healthcare.

Parking place spotting
This practice field summarizes initiatives aiming at making motor vehicle parking in cities efficient in terms of time and effort. The solutions are strongly technology enabled and based on real time information delivery either through sensors or users feedback. The general idea behind all initiatives is to make searching, finding and reserving/booking a parking spot in the city more flexible and easy. In this way, the empty spaces in cities are more efficiently used and the drivers spend less time in searching for a parking space. The initiatives in this practice field can be implemented as well from public bodies offering additional infrastructure and services, as from private companies in the form of online platforms for sharing of privately owned parking spots.

Freight bikes
Freight bikes gain in importance again, after they have almost disappeared from streets due to the heavy industrialisation and car-centred development of post-world war decades. Freight bikes are a response of managing inner city logistics to the ever increasing car traffic. Apart from being far more sustainable as compared to cars or trucks, their second advantage is speed and flexibility in the inner cities' transport systems. In many times, delivery/logistics by freight bikes is faster than delivery by car.

Shifting towards electric mobility
This practice fields summarises all kinds of initiatives supporting electric mobility. It is a broad field combining different actors and transport modes. Public sector actors at municipal level have an important position as a lead customer and main implementer of systems fostering electric mobility. An integrated, systematic approach is crucial in this practice field, as well as infrastructural equipment. Market penetration of electric cars is low, partly caused by missing infrastructure.

Car-free tourism
Travel and tourism influence everyday lifestyles impacting our modern leisure society. When innovations in transportation are considered from tourism frame, it denotes the creative and productive ways that shape the mobility of tourists from their place of living to the place where they are introduced to the touristic elements. Apart from the technical aspects of innovation, there has also been an attempt to innovate in terms of collectivisation and acclimatising to social needs of the host community in the travel and tourism sector.

Jugaad
Over time, the term jugaad has come to refer to a particular type of vehicle; it has also come to mean grassroots innovation to overcome any difficulty or obstruction. One of the best examples of adaptation and creative repair is jugaad, a Hindi word that has received a lot of attention lately in the field of social innovation. In a generic way, the term refers to the process of engineering or repairing through frugal means. One could also understand it as using whatever you have at your disposal for an innovative fix.

A popular approach in jugaad transportation is to use those materials that were not designed for the task at hand as substitutes such as an amalgam of a wooden cart, a diesel water pump and makeshift steering. Jugaad repair is most common in India. In jugaad, scarce resources clubbed with creativity are applied to fix social problems. Of late, jugaad is projected as a movement (with considerable share of criticism as well) as a new way of thinking about our approach to engineering, repair, and much more.

Jugaad as a noun is referred to a quadricycle, which is most affordable and accessible means of transportation in north India, made of wooden planks and old jeep parts, variously known as kuddukka and pietereda. Usually, it can be seen carrying up to 35 people, or huge loads of cane from nearby sugarcane fields to local sugar factories. Fitted with makeshift steering and braking mechanisms, these jugaad vehicles are used for everything such as for transporting people from one village to another, for trips to regional markets and for transporting the pump itself. Farmers share or rent these pumps, and this arrangement lets the pump actually transport itself to wherever it's needed next. The three-wheeled cousin of the Jugaad is called the Chhakda, and is prevalent throughout Gujarat, parts of south Rajasthan and north Maharashtra. It was originally based on adapting and modifying ancient Harley Davidson motorcycle frames, but usually shares the same engine(s) with the Jugaad.

It would be difficult to pinpoint the exact time when jugaads came to be manufactured. Some say that farmers in Punjab put together their carpentry skills to attach a pumpset engine to a steel frame, and 4 wheels to cart around agricultural loads without using livestock. Others say the jugaad industry started in Meerut in the 1950s, with the scrap dealers there having widespread & cheap access to Jeeps being discarded by the Army. The initial chassis, engines and gearboxes were sourced from these Jeeps, and as demand grew, the jugaad stepped in to fill the gap. It therefore continues to bear more than just passing resemblance to an old Jeep, shares similar mechanicals, and for economical running, now has a single cylinder diesel engine powering it.

Fostering alternative transport modes

Global field of social innovation is picking pace with strong commitments from practitioner networks and policymakers. Public sector services, particularly, public transit and public roads have witnessed the success of initiatives involving demand responsive transit and community transport. Public agencies are inextricably associated with urban transportation and are assuming leadership roles in developing and introducing technologies and plans that will remarkably affect public movement through the cities. Pedestrian split cycle offset optimization, parking bay sensors, and innovative diagonal crossings are establishing mature grounds for urban transport and mobility planning.

Bike sharing

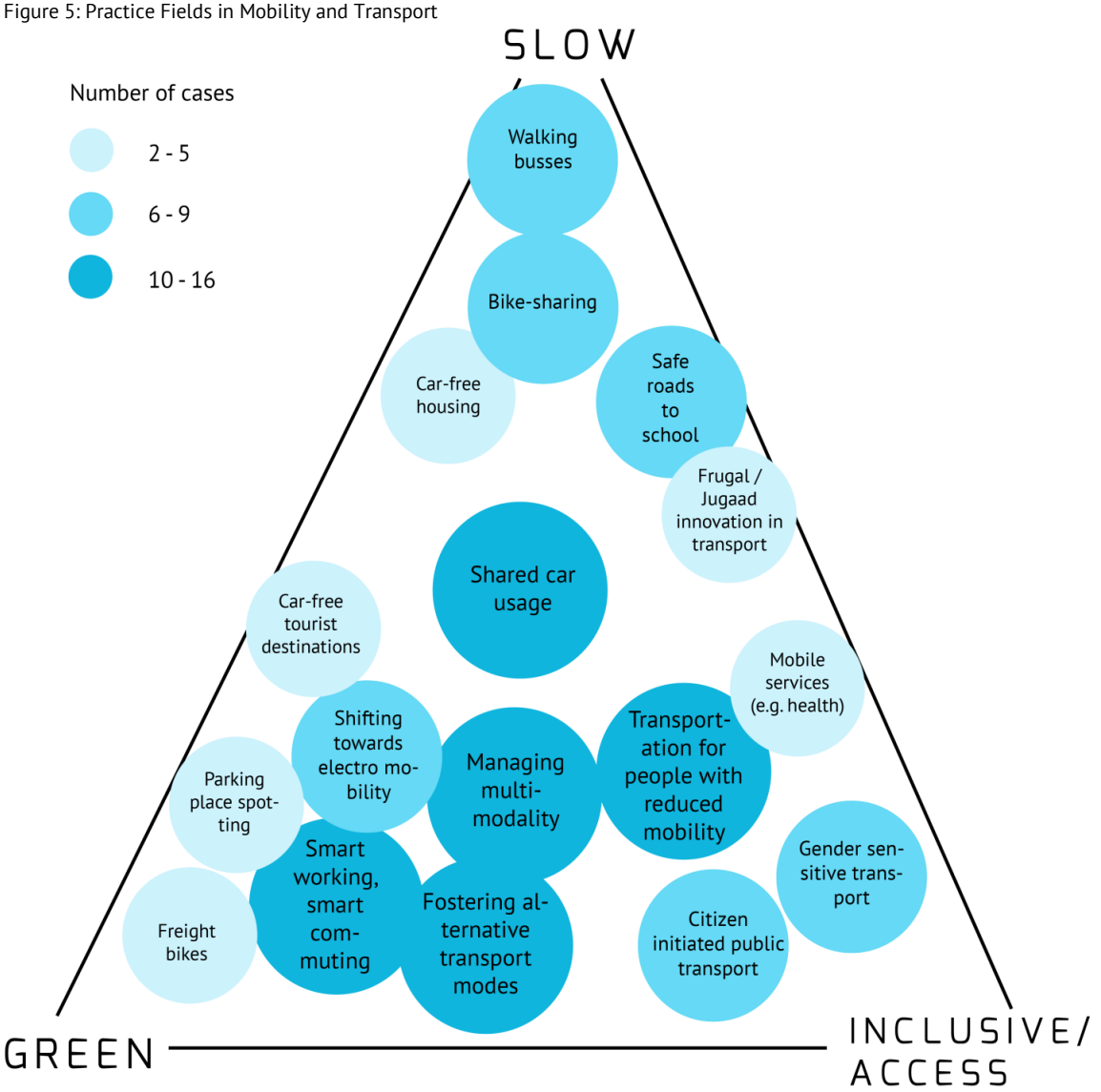
Also called bicycle sharing system, public bicycle system, or bike share scheme. It is a service for sharing or renting a bicycle for a short time (from some minutes to several hours). It allows people to pick up the bicycle from point “A” and leave it at point “B”. One bicycle serves many users per day. Bike sharing can be funded/implemented by public authorities or private investors or a combination of both. Bike sharing is complementary to public transport by allowing people to get faster around the city and solving the problem with the often unconnected “last mile” transportation. It is substitutive for using the own bicycle. Users do not have to worry about theft or parking facilities for the bicycles. However, bike sharing is not as flexible as compared to using one’s own bicycle since there is no option for door-to-door transportation; and there is high dependence on the pick-up and drop-off facilities.

Mobile services, e.g. health

This practice field is rapidly growing, mainly caused by technological developments. A very rapid growing part of this practice field is the so called mHealth. According to the WHO mHealth is a component of eHealth. To date, no standardized definition of mHealth has been established. The Global Observatory for eHealth (GOe) defined mHealth or mobile health as medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices. The four most frequently reported mHealth initiatives were: health call centres (59%), emergency toll-free telephone services (55%), managing emergencies and disasters (54%), and mobile telemedicine (49%). With the exception of health call centres, emergency toll-free telephone services, and managing emergencies and disasters, approximately two thirds of mHealth programs are in the pilot or informal stage. mHealth involves the use and capitalization on a mobile phone’s core utility of voice and short messaging service (SMS) as well as more complex functionalities and applications including general packet radio service (GPRS), third and fourth generation mobile telecommunications (3G and 4G systems), global positioning system (GPS), and Bluetooth technology. Generally speaking, the higher income countries are showing a focus on cost savings, tailor made healthcare and empowerment of patients; in the lower income countries mHealth is often being applied in maternal and child health, and programmes reducing the burden of the diseases linked with poverty, including HIV/AIDS, malaria, and tuberculosis (TB) (WHO, 2011). Secondly, thanks to the latest technologies there are growing opportunities to bring (high standard) health care to people by mobile clinics and practices. Not only in remote areas, but also in urban areas aiming at healthcare for elderly, low income groups like homeless people, etc. The overall aim is to make healthcare accessible for everyone and to improve the quality of life.

Figure 5 structures the practice fields according to the clusters while showing the influence of the other clusters at the same time (according to the position of the practice field within the triangle).

Figure 5: Practice Fields in Mobility and Transport



Crucial part of all practice fields are single initiatives shaping a practice fields. Characteristics of these initiatives will be discussed in the following chapters by drawing on quantitative data of 128 mobility and transport initiatives and nine in-depth case studies. Focus is on the kinds of actors and networks involved in social innovation initiatives (eventually generating a practice field). Drivers, barriers and process dynamics of the initiatives are discussed subsequently.

4.2. ACTORS & NETWORKS

Focus of main results as regards actors and networks is on the main implementing bodies of the social innovation initiatives, network size of the initiative and on forms of user involvement.

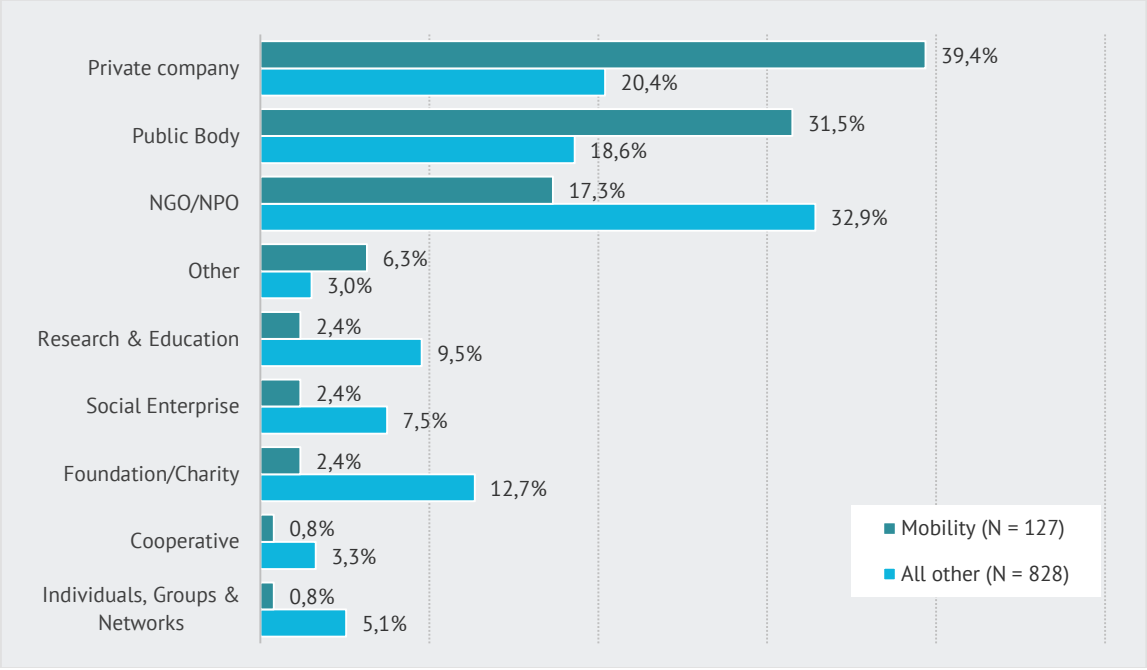
Actors & Networks in Mobility and Transport at a Glance:

- The studied social innovation initiatives in mobility and transport rely strongly on actors of the private sector.
- Second most important actors come from the public sector, especially from the municipal level.
- Users are often involved in order to provide solutions to evolving problems/questions arising during the initiative's development process.
- The initiatives are developed based on social networks with diverse actor constellations.
- "Traditional" actors of the mobility and transport system, e.g. from car manufacturing, logistics, or passenger transport, play a minor role in the social innovation initiatives.

4.2.1. Main Results of the Global Mapping

The main engaged **actors** in social innovation initiatives of mobility and transport are private companies, public bodies and NGOs (cf. figure 6). These actors are also the most frequent in all the other analysed social innovation initiatives (the sum of initiatives studied in the policy fields of education, health, poverty reduction, energy, environment, employment). However, public bodies and private companies are more actively engaged in mobility and transport initiatives as compared to the other cases (47% against 45% and 42% against 36%). There is economic interest for example in many car and bike sharing initiatives, but many companies are also engaged in smart working, smart commuting approaches as part of their CSR (corporate social responsibility) strategies. Another difference to be mentioned is the low engagement of NGOs as compared to all the other studied cases (29% against 49%). One explanation could be that NGOs act people-oriented rather than means-oriented and do not consider mobility and transport as an important area of action.

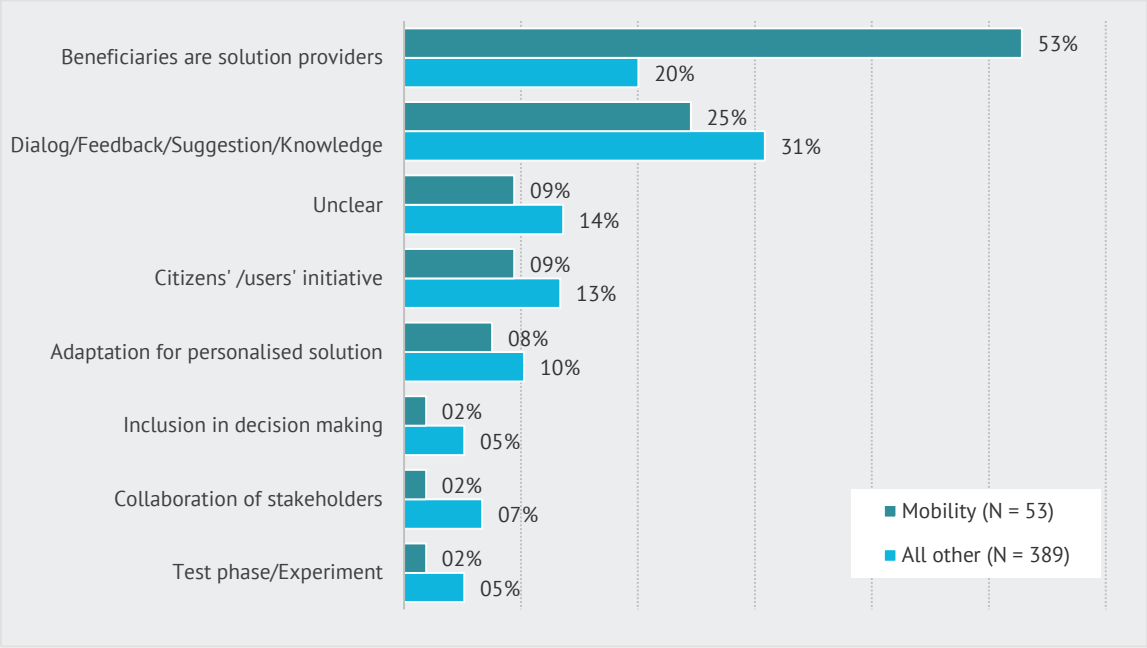
Figure 6: Main Implementing Body



Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 955.

Users have been involved in 41% (53 initiatives in absolute terms) of the mobility initiatives (cf. figure 7). User involvement is slightly higher than in all other initiatives (38% have involved users). In more than half of the mobility and transport initiatives with user involvement, users have provided the solution. This role was ascribed to users in only 20% of all other initiatives involving users.

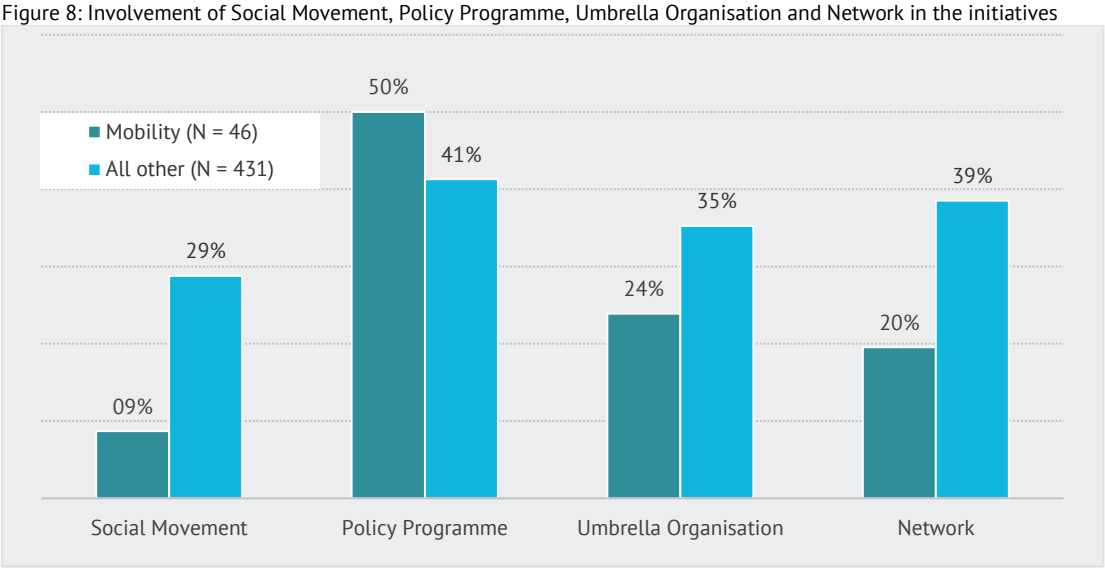
Figure 7: User Involvement



Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 442.

Alignment to social movements, higher-level interest groups, superior programs or associations of the mobility and transport social innovation initiatives is less relevant for the initiatives as compared to all other initiatives studied in SI-DRIVE. The exception is interlinkage to policy programmes: half of the initiatives for which reporting as regards superior alignment was possible have interlinkages to policy programs. This underlines importance of the public sector. Social movements, umbrella organisations or dedicated networks are clearly less influential for the initiatives' development (cf. figure 8).

Figure 8: Involvement of Social Movement, Policy Programme, Umbrella Organisation and Network in the initiatives



Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 477.

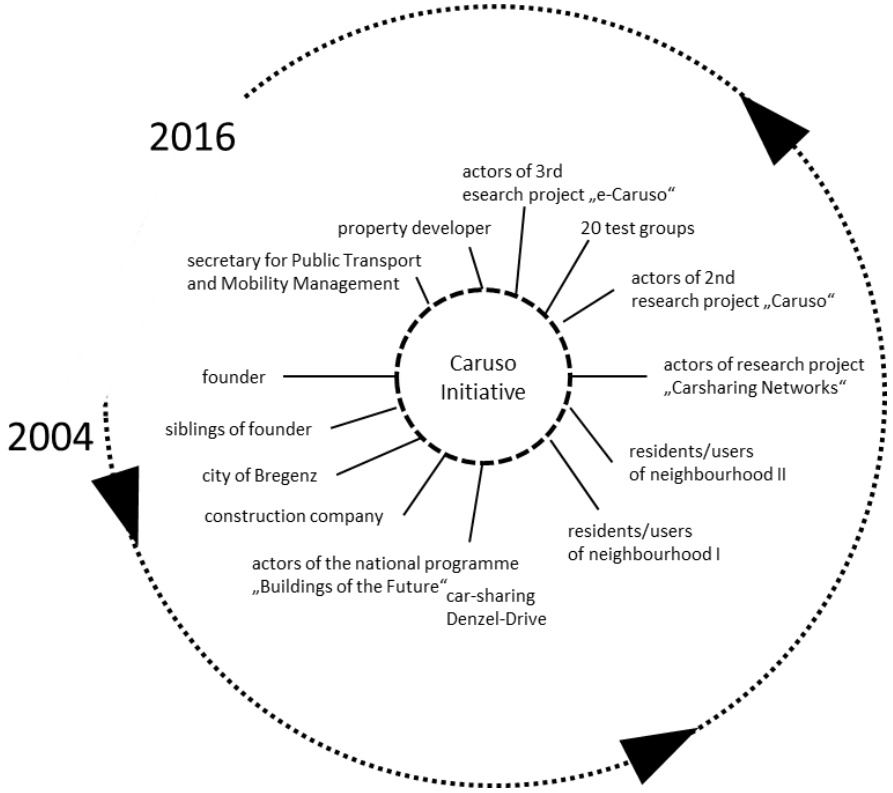
4.2.2. Main results of the Case Studies

The comparison between the two practice fields of shared car usage and mobility of vulnerable groups was a main analytical focus of the in-depth case studies and will be discussed in the following. An extensive comparable analysis of all case studies is published in the report "Social innovation in mobility and transport: case study results. SI-DRIVE Deliverable 8.3".

Shared car usage

Founders of the initiatives have the role of the initiative's leader. However, their work is complemented by additional actors with a specific role and a vast network. This means that networks analysed based on the in-depth case studies do not confirm results of global mapping which indicated small network size of mobility and transport cases. An example of the variety of network partners is illustrated in figure 9 based on the in-depth case study of the Caruso initiative.

Figure 9: Network Evolvement of Caruso Over Time



All cases have strived for getting support regarding the technological part of the solution. While Aha!Car and Liftshare relied on IT specialists to develop and support the online platforms, My Wheels went even further by cooperating with companies developing specific automobile technologies (e.g. board computers). Uber is known to cooperate with different technology developers in order to improve services and develop new ones. Another set of actors cooperate in order to achieve a critical mass of users. Cooperation partners for extending the community of users are intermediates providing access to larger crowds of people, e.g. festival organisers, local authorities, local firms, social movements representatives, etc.. Even though these are often short-term partnerships, they are crucial part of the initiatives' networks.

None of the cases of shared car-usage had organisational affiliation to a dedicated umbrella organisation, specific networks or professionalised organisations for sharing cars. However, the four national projects report close work with other umbrella organisations and social movements in different areas. These are for example 'Social Enterprise NL' in which My Wheels is participating and a social movement for sustainability and environment friendly initiatives as the social movement "Gorichka" which works together with Aha!Car in

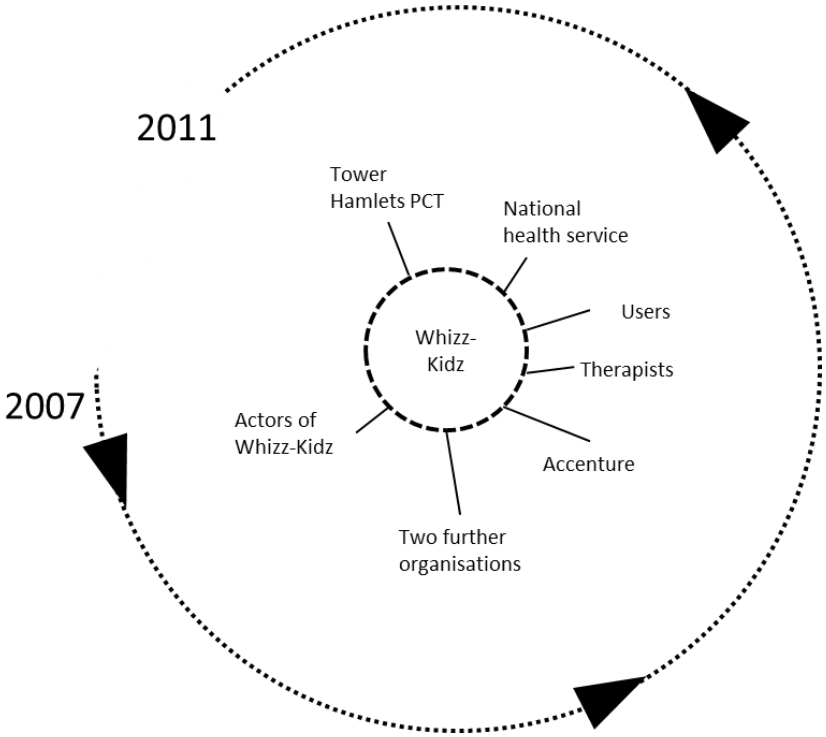
Bulgaria. This cooperation underlines the self-defining and organisational logic of the projects as social enterprises, identifying themselves as actors contributing to social welfare.

Social values are main criteria for choosing partners in the four case studies. Aha!Car and Liftshare even report to have refused to work together with big competitors following mainly commercial objectives. Corresponding objectives for creating social welfare between the partners is a factor for cooperation.

Mobility of vulnerable groups

For the initiatives aiming at mobility of vulnerable groups, again broad actors' constellations are important (cf. the example of Child in a Chair in a day illustrated in figure 10). In all cases, there are actors from different sectors and areas of expertise involved in the solution. The initiatives are based on close cooperation between public bodies and civil society and there is strong division of tasks depending on the partners' specialization:

Figure 10: The Evolving Network of Whizz-Kidz



- Child in a Chair in a day is developed from Wizz-Kidz, an organization with long history in providing wheelchairs to people in need, in close cooperation with the National Health Service (NHS), which even recognizes the initiative as a "high impact innovation". In addition, they rely on different partners for investments, supply chain and manufacturers, research and their own team of experts.
- She Taxi is an initiative implemented by Gender Park, an organization created from the government to enforce gender equality. In this manner, it operates on its own; however, it is under government's jurisdiction. Since it is a public lead social innovation, Gender Park found its other partners through an open contest: one to deliver the service part of the solution (call centre, booking and payment management) and another to provide vehicles and training for the taxi drivers. They also work in cooperation with banks open to support women entrepreneurs. All women drivers are considered actors, implementing the solution, since without them, it cannot exist.
- Moosdorf Dorfmobil was created by the initiative of the towns' mayor, who recognized the demand and put in motion actions to answer it. The solution was financed by a regional program for development from the state of Upper Austria. For the solution to be implemented successfully, it is registered as an association with all users as members.

- Heimwegtelefon was created by two women with no support of public authorities, which makes it the one initiative of the four, which is citizen lead only. Since the founders did not have any entrepreneurial experience, they needed support for the concept development, technical implementation, popularization and most importantly legal aspects. In all areas, they cooperated with people and companies (e.g. Sipgate, a phone line company, secured their phone line account, acquaintances and friends helped with popularization and training etc.), who helped them for free.

The initiatives rely strongly on **volunteers' and pro bono work**: all operators on the Heimwegtelefon phone line are volunteers and the two founders manage the solution in their spare time, since both have full time jobs; all drivers of Moosdorf Dorfmobil are volunteers from the community; Chair in a day is on the one hand developed from a charity organisation (WizzKidz) and on the other their partners provided their work for free to support the solution. The only exception is She Taxi, where the idea of empowering women to become entrepreneurs and earn money is part of the solution, therefore they work as classical taxi drivers.

The initiators and implementing body of the initiatives are not necessarily part of the vulnerable target group, however if they are not, they are working close with it for a long time. Heimwegtelefon and Moosdorf Dorfmobil are carried out by people personally experiencing the demand for the solution, while Chair in a day and She Taxi are organized and implemented by organizations with long history in the field. As already elaborated, there is **expressed demand** for the solutions recognized, which drives their development.

All initiatives stress out that there are no umbrella organizations or special networks in the fields they are operating in. They are however often developed as a part of or supported by a **policy programme**: Chair in a day works close with NHS to influence the policy for wheelchair services in the country; She Taxi is developed out of the governments' goal to ensure gender equality, which is being made a priority since the mid. 90s and the 2000 Millennium Development Goals; Moosdorf Dorfmobil was financed by the policy programme "Agenda 21" for supporting communities to transition toward sustainable transport and "klimaaktiv", a national initiative by the Austrian Energy Agency, which helped with developing a business plan and publicity (klimaaktiv, 2015). Heimwegtelefon received only indirect support, by participating in a competition for social enterprises under the auspices of German Chancellor Angela Merkel.

4.3. RESOURCES, CAPABILITIES AND CONSTRAINTS

Next to the actors involved, resources social innovations rely on include human capital, funding, context dynamics favouring or hindering social innovation development, and conflict as a driver. The following chapter elaborates on the most important resources for SI in mobility and transport, as well as main drivers and barriers of the initiatives.

Resources, Drivers and Barriers in Mobility and Transport at a Glance:

- Social innovations in mobility and transport rely strongly on volunteers;
- Strong economic focus of the initiatives;
- Political support can be a valid driver, while
- absence of participants and lack of personnel are common barriers;
- technology plays complementary role for almost all initiatives and
- context specifics influence implementation of a solution even though the demands may be the same.

4.3.1. Main Results of the Global Mapping

The global mapping aimed to get information on the people like employees, volunteers, external advisors involved in the initiatives and on the budget and funding sources. In both groups of analysed cases (mobility and all others), it was possible to get the information for 30% of the cases. Nevertheless, some results are still encountered. From the comparative analyses of the SI-DRIVE global mapping (Howaldt et al. 2014: 61) is visible that volunteers play a greater role in mobility and transport than in all other cases. Table 2 provides information on the persons involved in the initiatives in all policy fields.

Table 2: Involved Persons (Policy Fields)

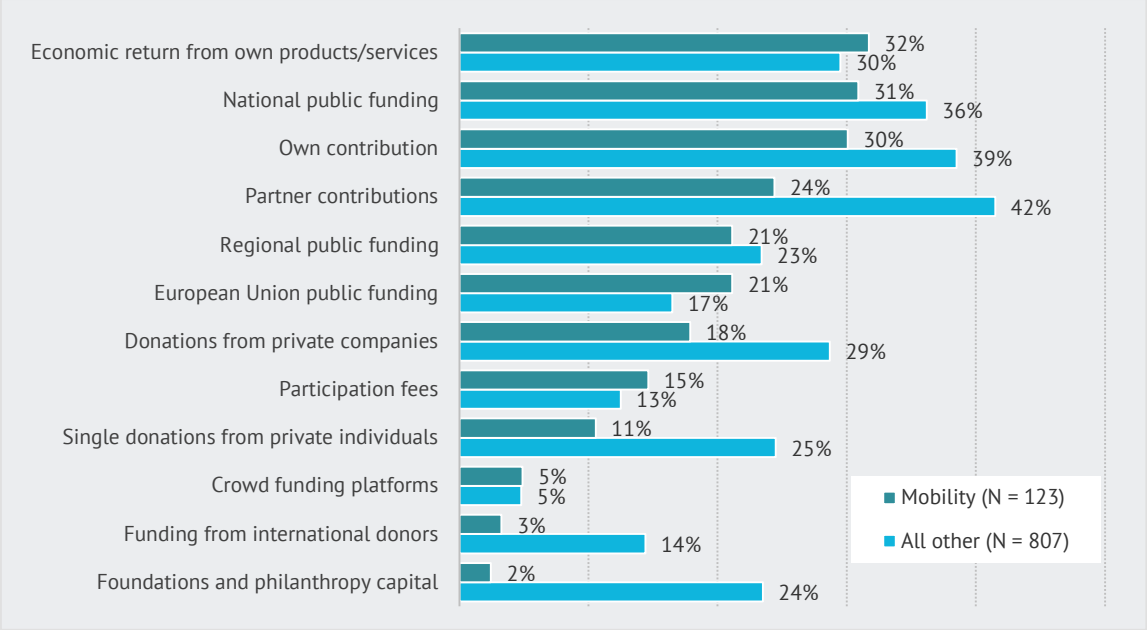
	Education	Employ-ment	Environ-ment	Energy Supply	Transport & Mobility	Health & Social Care	Poverty Reduction
	∅	∅	∅	∅	∅	∅	∅
Employees	211	63	23	39	85	53	587
Volunteers	758	62	2.355	25	4.384	1119	1.434
Expert, Advisors	124	8	3	21	7	14	19
Others	227	102	25	173	25	408	5.505

Ø: average number (Howaldt et al. 2014: 61).

Similar to the people involved in the social innovations, the information on the size of the initiative's budget is too limited to be put in comparison; nevertheless, there are some interesting findings about the sources where the funding comes from.

It is clear that in both groups the financial sources are quite diverse and often the financial models consist of more than one funding source. In mobility and transport there is strong economic focus in comparison to the cases of other policy fields. Economic return from own investments is the most important financial source, directly followed by national public funding and own contributions from members of the initiatives. Philanthropic capital, foundations and different kinds of donations play only a marginal role for the mobility and transport initiatives, which is a striking difference in comparison to the other cases (cf. figure 11). In the other cases, the latter funding sources are actually a substantial part of the social innovations' funding models. One explanation for this difference may be that in policy fields such as poverty reduction or education it is easier to make the immediate link to peoples' needs (and thereby to philanthropic capital) as compared to the field of mobility and transport.

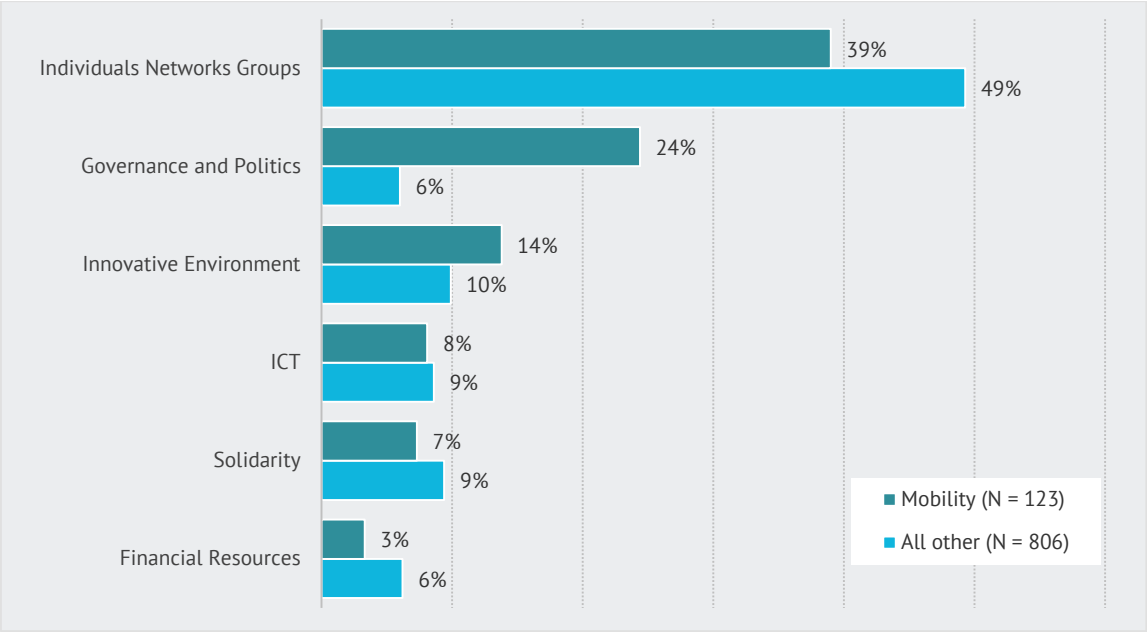
Figure 11: Funding Sources



Source: own calculation based on SI-DRIVE global mapping. Total number of cases 930.

Looking at the most important driving forces for the development of social innovation initiatives however, financial resources are at the very bottom of the scale. Other factors seem to play a greater role and these factors are also slightly different for mobility and transport than for all other cases (cf. figure 12). Networks and individuals are the most important driving force of both groups of cases (39% in mobility and transport 49% all other cases). However, governance and politics is much more important in mobility and transport (24%) than in all other cases (6%). This corresponds to the large share of public sector actors engaged in the initiatives. In addition, innovative environment also seems to be slightly more important for mobility and transport than in all other cases (14% in contrast to 10%), which points out that general openness to innovative solutions could also be a relevant driver.

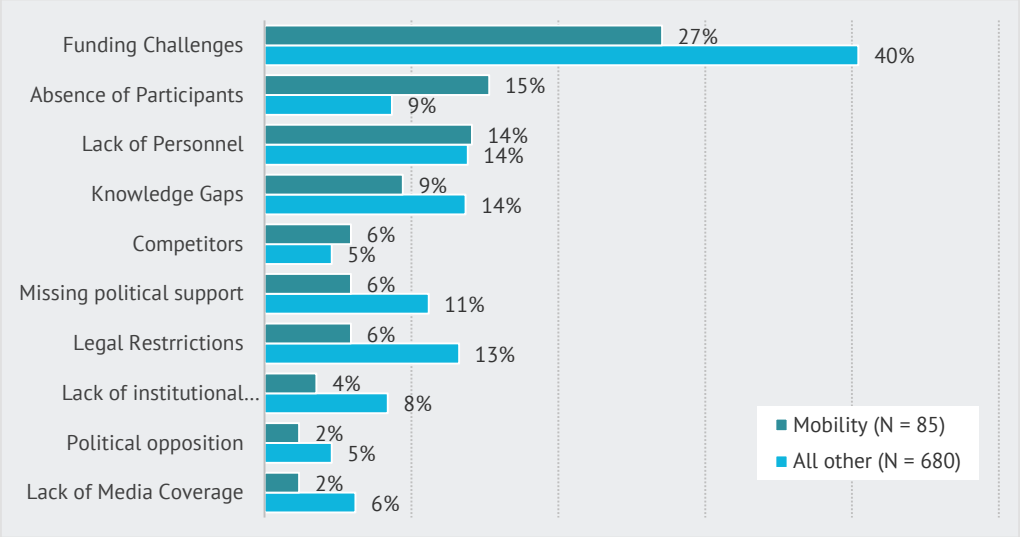
Figure 12: Drivers



Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 929.

As concern barriers, funding is a topic for all initiatives. Mobility and transport cases also recognize absence of participants and lack of personnel as important points (15% and 14% respectively). Considering the high number of volunteers in the mobility and transport initiatives, it is understandable that if there are not enough reliable people available, the initiatives will experience difficulties. This is confirmed by the in-depth case studies, where the interviewees underlined importance of voluntary work as a cornerstone of the initiatives.

Figure 13: Barriers



Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 765.

Results of quantitative analysis of drivers and barriers were underlined by the in-depth case studies. However, in addition to underlining the importance of individual engagement, volunteers and funding, the in-depth case studies allowed studying further resources discussed in the following.

4.3.2. Main Results of the Case Studies

Besides the resources illustrated above, the in-depth case studies concentrated on studying the importance of technology and the role of context and conflict, in order to analyse in which way the social and economic environment influenced social innovations.

Role of technology

ICT and Social media were mentioned as the most important cross-cutting theme for mobility and transport initiatives in the SI-DRIVE global mapping (cf. figure 18 in the annex). In addition, the case studies underlined that technology plays an important role. Next to ICT and internet based services, technological solutions such as GPS tracking, electrical vehicles, board computers for car-sharing vehicles, computation in wheelchair delivery systems and others were mentioned as valid factors that contribute to acceptance, growth and spread of the initiatives. In this manner, technology may not always be the first incentive or trigger for starting an initiative (see the chapter below), but nevertheless it plays a valid complementary role and in some cases even made it possible to develop a certain social idea, e.g. spread of car-sharing and carpooling initiatives over the globe or reducing the waiting time for receiving wheelchairs through digital solutions (cf. Rabadjieva/Butzin 2017).

The role of context

The in-depth case studies underline that the social innovations in mobility and transport are developed first and foremost because of personal demand of the founders (see chapter below). Considering the spread of the practice fields and the results of the case studies, it seems that demand is not context specific, i.e. demands for safe or green transport options can be found in different parts of the world. However, implementation of the solutions dealing with the demands is very context dependent. This is true for technologically enabled practice fields as shared car usage as well as for practice fields focusing on safety and inclusiveness issues.

The different degree of acceptance and implementation of the solutions depends on the development and institutionalization of the practice field in general. Overall, the lack of awareness about the positive effects of a solution (e.g. car-sharing) leads to absence of participants, as discussed above. In addition, there is also a different degree of acceptance and importance of private companies as an implementing actor which contributes to the general acceptance of the solutions. While in some countries formal organization of the initiative is an important factor contributing to establishment and confirmation of objectives, formal organizations face mistrust of the broader public in other countries (e.g. Bulgaria). In such countries, the "solutions" (e.g. sharing a ride) provided from informal groups (in this particular case a formal platform for shared rides is less popular than informal Facebook groups) find more societal acceptance, even though they may bring also more risks. In other countries, the opposite is true – private companies are seen as a main driver and supporter for SI (e.g. Austria). These context specifics lead to different implementation of the same idea, i.e. similar demands, same solution, but context dependent implementation.

Furthermore, politics can be driver or barrier for SI. In mobility and transport, a division in the role of politics for process dynamics was encountered, depending on the political level. Therefore, the next chapter elaborates more on the influence the different political levels may have. Another driving or hindering factor is conflict and tension, coming from specific political or economic characteristics.

The role of conflict

Conflict and tensions play different roles in the different initiatives in mobility and transport. Where the innovations are bordering or even entering an already existing transportation market (as is the case with shared car usage), there are tensions and sometimes conflict with the established market and regulations. In this case conflict is a constraint that has to be overcome in order for the social innovation to further exist. When the SI is complementary to the existing system (as is the case with bike sharing or fostering alternative transport modes), or it is presenting a solution to a social problem existing inside the established system, conflict can be a push and a driver for the SI. Such cases are encountered in the practice field of gender sensitive transportation where the main driver is ensuring safety and empowering certain vulnerable groups to be more independent in their daily lives. A prominent example of such developments from the case studies is in India, where women are often restricted in using safe mobility options. After a savage rape crime, an initiative was developed that provides taxi transport by female taxi drivers exclusively for women. These particular services tackle gender inequalities in the transport system and in the labour market by providing women with an opportunity to drive taxis as entrepreneurs (cf. Rabadjieva/Butzin 2017).

Tensions caused by economic factors are on a broader and often global scale of a practice field, e.g. Uber is a reason to rethink the urban transport system and legal framework all over the globe. Social tensions/conflicts such as the one in India are context specific and contribute stronger to defining practice fields on the national level. Such factors are very important also for the dynamics of acquiring and putting resources to work for social innovations. That includes developing and implementing strategies and business models for long-term solutions, which are further elaborated as process dynamics in the following.

4.4. PROCESS DYNAMICS

In SI-DRIVE the approach to study process dynamics is that "any actor has a motivation, intention and a strategy. Thus, the result of the process is neither predictable and nor is it the result of a rational (political) discourse. Rather the process is often driven by not intended and self-enforcing dynamics." (Howaldt et al. 2016: 120). Therefore, this chapter addresses the dynamics in the development of social innovations in mobility and transport by focusing on the motivations, the degree of novelty and spread of the solutions and the role of policy for the development of solutions. The analysis of in-depth cases focusses on most important success factors to achieve social change.

Process Dynamic in Mobility and Transport at a Glance:

- Personal local demands are the most common trigger for starting a social innovation, however
- policy also plays an important role as the most important supporter.
- Adoption of existing solutions and copying are most common mechanisms of diffusion of social innovation in mobility and transport, according to the cases studied.
- Most important success factors are the ability to change strategies, to develop sustainable business models and communication strategies.
- Learning is the most valid mechanism of change.

The chapter starts out by quantitatively comparing process dynamics of mobility and transport cases against all other cases mapped in SI-DRIVE. Furthermore, results of the in-depth case studies are presented and discussed to further analyse the most important mechanisms of social change in the field.

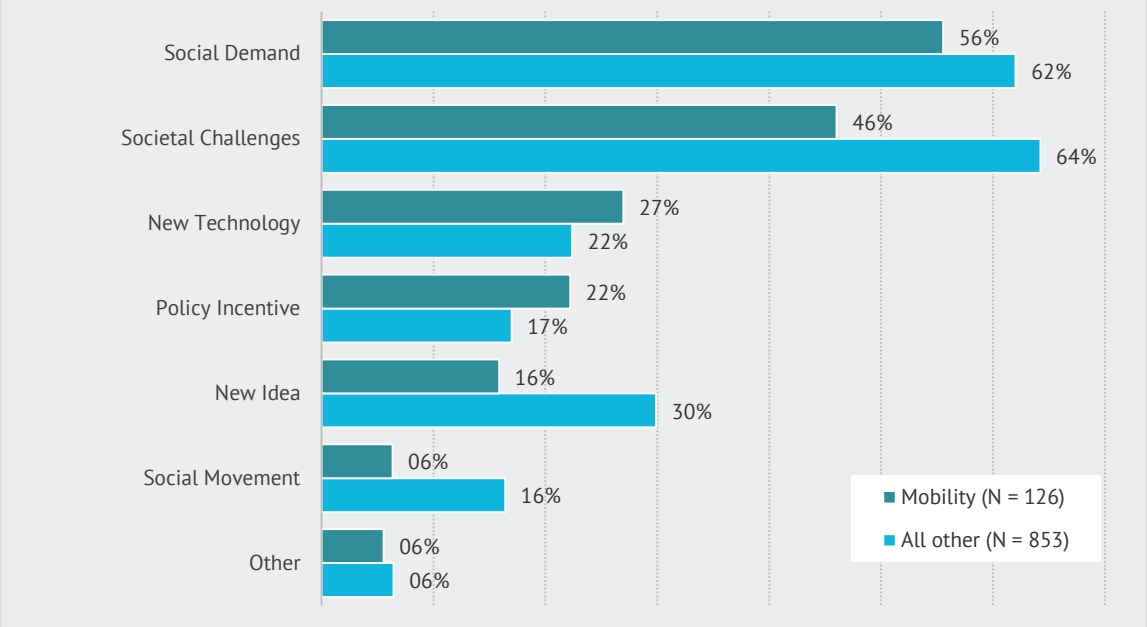
4.4.1. Main Results of the Global Mapping

In the SI-DRIVE global mapping the process dynamics are analysed through various questions related to motivations of the implementing actors for developing the solution; the spread of the initial idea and the strategies for diffusion. Comparing the cases in mobility and transport to all other cases mapped, some interesting differences appear.

In both groups of initiatives social demands and societal challenges are main incentives for starting the initiatives, even though less important for mobility and transport than for all other cases (56% to 62% and 46% to 64% respectively). However, politics once more shows to be more important for mobility and transport than for all other cases (22% to 17% respectively), which means that political actions are not only an important driver for social innovations in mobility as mentioned in the previous chapter, but can also be a valid incentive for implementing a solution. On the contrary, social movements, which are recognized as a trigger in 16% of all other cases, play a marginal role for starting an initiative in mobility and transport (6%).

Another difference is the importance of new technology. As elaborated in the previous chapter, technology plays a complementary role for social innovations in mobility and transport. Nevertheless, in almost one third of the cases (27%), new technology is seen as an incentive to start an initiative, while in the group of all other cases the percentage is slightly smaller (22%). As already mentioned, ICT and social media are also the most common cross-cutting theme for mobility and transport (46% of the cases) while for all other cases they rank. This underlines the importance of technology for the development of SI for mobility and transport.

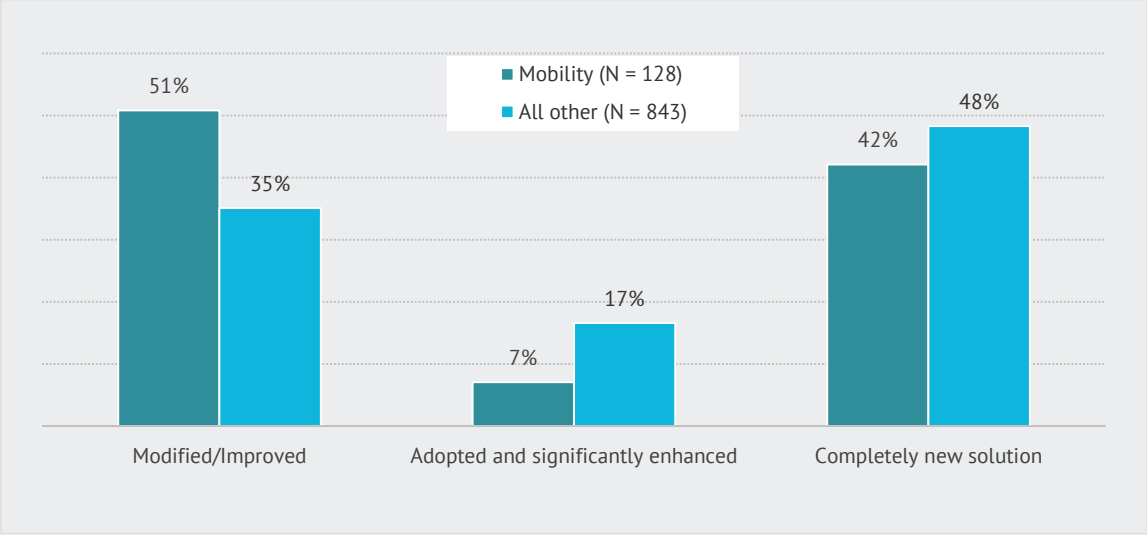
Figure 14: First Motivation / Trigger



Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 979.

The question where the initial ideas of an initiative came from was asked by the answering options existing ideas was 1) modified/improved, 2) adopted and significantly enhanced, 3) completely new solution (cf. figure 15). The minor importance of new ideas for starting an initiative (16% mobility and transport to 30% in all other cases, figure 14) corresponds to the degree of novelty of the solutions. While both groups show similar numbers on completely new solutions (42% mobility and transport and 48% all other initiatives), there are differences in the solutions adopted from other initiatives. While in mobility and transport there are more initiatives that have been adopted and moderately modified (51% in contrast to 35% in all other cases), there are more significantly enhanced solutions in the group of all other initiatives (17% in comparison to 7% in mobility and transport). These results suggest that existing social innovations in mobility and transport are more applicable to different contexts and societies than social innovations in other areas. As elaborated in the previous chapter, similar demands are encountered in different contexts, nevertheless the implementation differs. This shows that due to context specifics there is a need for adaptation of the existing solutions, however the core solution stays the same.

Figure 15: Degree of Novelty

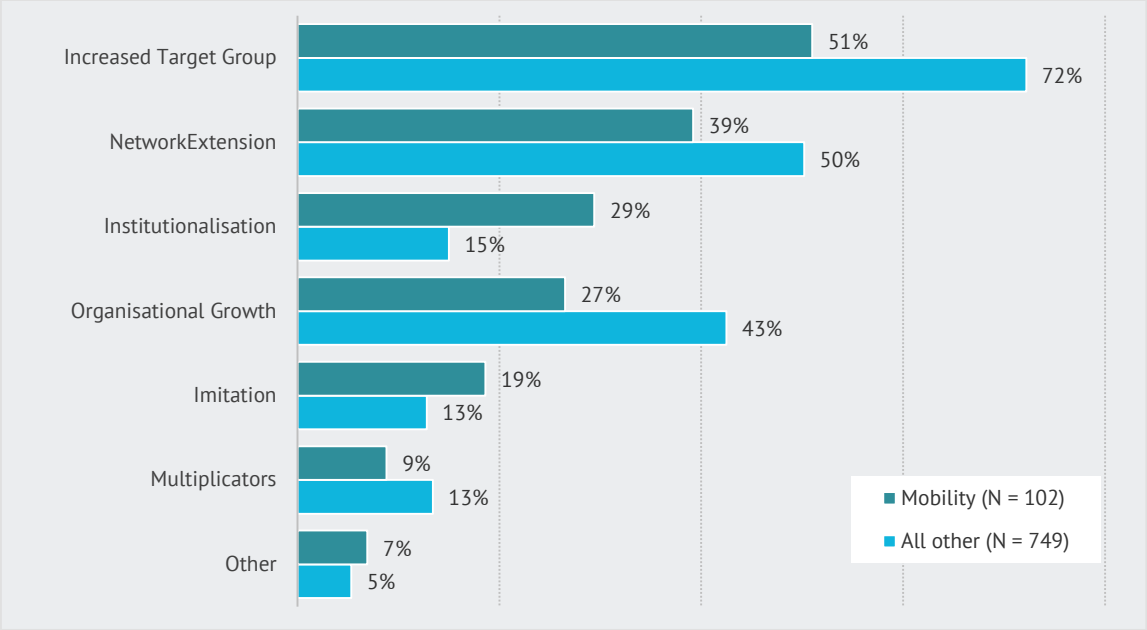


Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 971.

Imitation is a relevant mechanism for scaling social innovation in mobility and transport, even though this is not explicitly supported by quantitative data. In 19% of the mobility and transport cases imitation was mentioned as a mechanism of scaling, in contrast to 13% in all other cases (see figure 16 below). Other results underpin imitation as a scaling mechanism: there are, for example, practice fields where the initiatives are local and small. However, the same or very similar solution exists in many different parts of the world; an example is the walking school bus. In technology enabled practice fields such as shared car usage, sharing of parking spots or bike sharing, it is very easy to spread the idea using the internet and other available technology. This might be an explanation for the larger international spread of mobility and transport solutions as compared to all other mapped cases (34% to 23%, see figure 19 in the annex).

Findings underline the high degree of institutionalization of initiatives in mobility and transport. In 27% of the mobility cases institutionalization is recognized as mechanism of scaling the solution as compared to 14% of all other cases; see figure 16 below. One reason might be the relatively large global spread of specific social innovations in mobility and transport

Figure 16: Mechanisms of Scaling

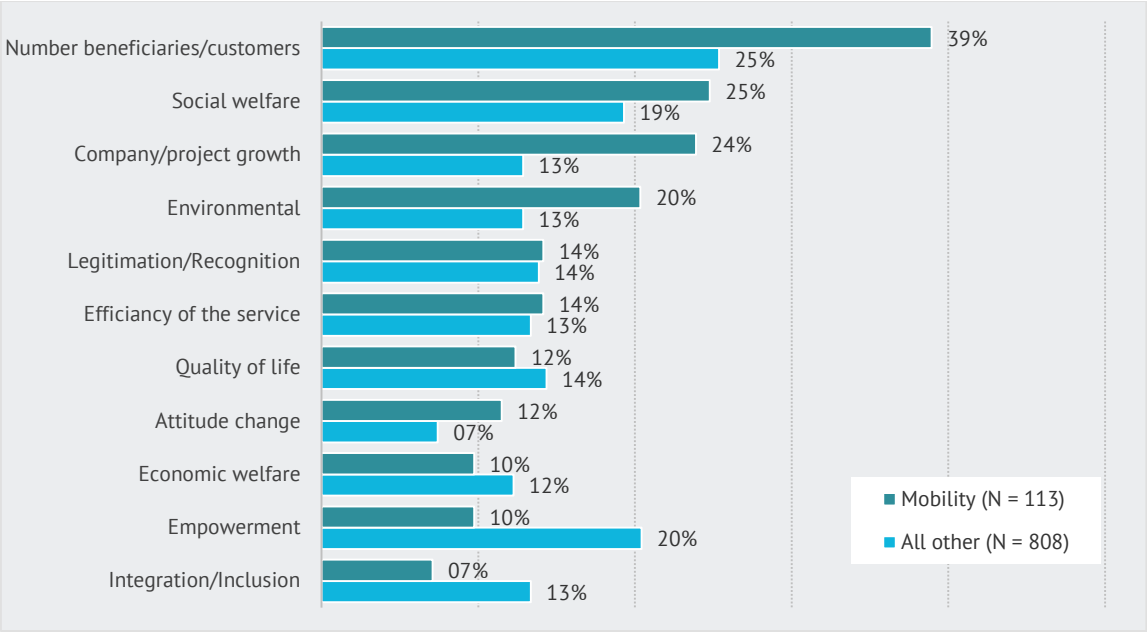


Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 851.

Another aspect for analysing the process dynamics in SI-DRIVE are outcomes of the initiatives. Differences between mobility and transport and all other cases are encountered. Increasing number of beneficiaries/customers is much more common strategy in the policy field of mobility and transport than in all other cases (39% to 25%). Company/project growth is an outcome in about one fourth of all mobility cases (24%), in comparison to 13% in all other cases. Empowerment seems to be less common as an outcome in mobility and transport than in all other cases (10% to 20%). The same is true for integration/inclusion (7% to 13% respectively).

One explanation might be that solutions in mobility and transport are more developed for the broader public rather than for one particular group, as may be the case in education and poverty reduction. And even for the practice fields concentrating on a specific vulnerable group, the goal is often to reach more people, which would mean that increasing the number of beneficiaries is on not only a desired outcome but also it is easier to be measured. There is more research in mobility and transport needed to elaborate in how far solutions contribute to empowerment.

Figure 17: Outcomes



Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 921.

4.3.2. Main Results of the Case Studies

The in-depth case studies allowed get information on questions about the interplay between implementing actors, policy and social movements. Furthermore, success factors and mechanisms for achieving social change could be discussed. The further elaboration follows these points.

Personal demand of the founders is pointed out as a starting point for almost all initiatives analysed, underlining the evidence of the global mapping. Those demands include lack of public transport connections, accessibility issues, high travel costs or safety risks. The only exception are cases connected to big system challenges as the waiting time for receiving a wheel chair in UK or gender inequality in India.

In their implementation phase actors of the cases often interact with political actors. In the cases of UK and India national policy plays a substantial role in supporting the initiatives, however in general there is some division of the political interaction. Often local policy supports local social innovation initiatives; however, initiatives remain unnoticed and even neglected when it comes to national policy. All initiatives express the necessity of national level support to raise awareness about the benefits of social innovations in mobility and transport. This is an area where policy could be a driver and supporter of further development.

On the other hand, a purposeful expansion strategy is not put in place right from the beginning. Among the in-depth cases there is one internationally spread case, namely the platform Uber. This is also the only case that followed a commercial, profit-oriented strategy from the beginning. All other cases are of national importance and put social value on a first place. That does not exclude the development of a business model and objectives for growth, but the cases studied point out their role for creating social value explicitly.

A business model and a communication strategy are mentioned as being crucial for the survival and further development of the initiatives. They are usually developed through learning by doing and organizational change. In some cases (mostly in car-sharing and carpooling initiatives) strategies include creation of value chains based on participation fees, commissions for using a certain service or other revenue sources that fund further development of the project. In other cases (mostly focused on vulnerable groups) the successful "model" is not based on revenue sources but on cooperation between different actors – citizens, NGOs and/or authorities, as elaborated in the previous chapters.

V. CONCLUSIONS

It is one of the central challenges within European mobility and transport to realizing the potential of merging technological solutions and new social practices. First successful attempts underline the scope of possibilities: the practice of car-sharing is continuously further developing in light of solutions provided by smartphones and apps (one-way car-sharing); technologies of intelligent transport systems increasingly include human decision-making and behaviour in order to achieve higher efficiency. Massive change of power structures and re-orientation strategies are related to these latest developments. For example, does the practice of car-sharing, namely to use a car on demand rather than having permanent ownership of it, heavily affect the business model of many established car-manufactures, namely selling cars to individuals.

Support of social innovation initiatives as a driver of change in the mobility and transport system implies support of different kinds of actors. Understanding of mobility and transport actors needs to be broadened and go beyond the established sectoral boundaries in order to spread the many ideas developed in social innovation initiatives. Right now, the transport and mobility system is characterised by high path dependency. Path dependency is continuously reinforced by hard infrastructural settings (roads, rail system), the established transport modes, extremely powerful actors (e.g. automotive companies), and the regulation and tax system. Achieving change towards a more sustainable and inclusive mobility system means to support actors who follow a different logic and who act in niches on a much smaller scale.

These actors generate change through a constant learning process. In light of trends such as digitalisation, changed consumer behaviour, and the sharing economy, there is a high dynamic in mobility and transport, constantly requiring adaptation and change of organisational set-ups, technologies, behaviour, business models, etc. The broad and diverse application of new technologies by providers and users underpins enormous absorptive capacities of all actors in the practice field. This includes a considerable learning-by-doing component. It roots in a high amount of grassroots-initiatives driven by social values and by high engagement of individual founders/initiators. Generating social change also means variation by setting apart from what is commonly known and practiced. Variation is high in the mobility practice fields. Not least has the practice field of shared car usage its roots (dating back to the 1940s) in the conscious choice of an alternative mobility which included social and societal aspects rather than individual freedom which still is the mainstream model. Other variation factors are different kinds of formal organisations (profit making companies, social enterprises, associations, etc.) who represent the initiatives, different ways of practicing, or engagement of different actors.

Social innovation can be supported by creating incentives for companies, schools and other actors to support alternative transport modes. There are many approaches fostering alternative transport modes that need be better communicated in order to spread more broadly. Furthermore, local decision makers can actively promote social innovation by engaging in the implementation of ideas in their municipalities that originally have been developed elsewhere (imitation of good ideas). Action research is an important means to accompany these ideas.

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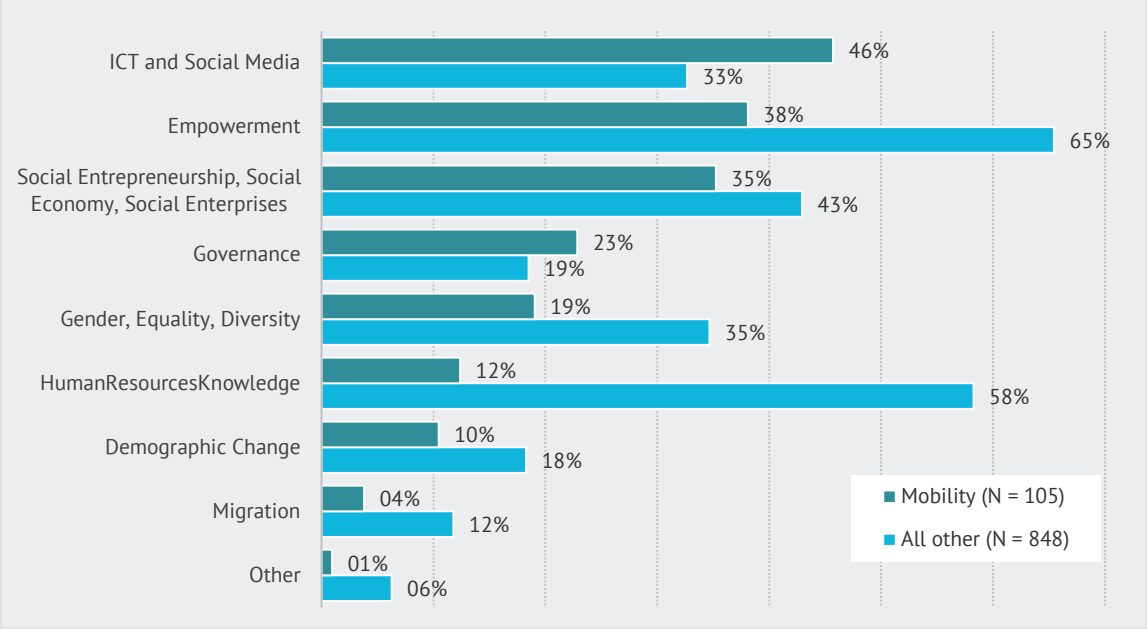
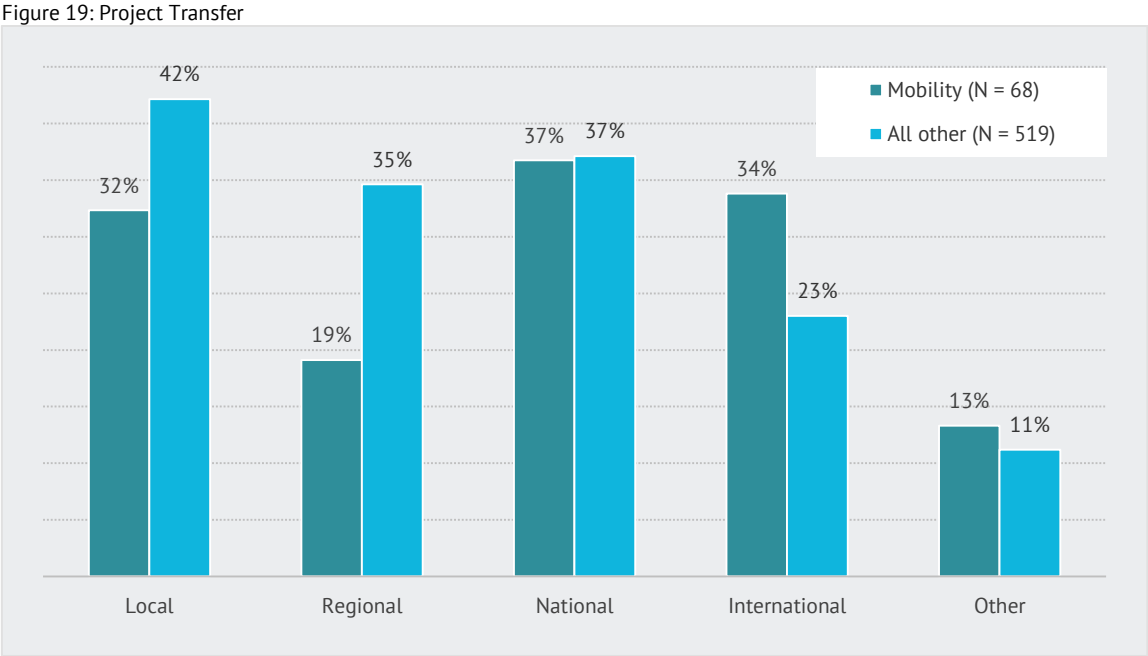
ANNEX

Figure 18: Cross-cutting Themes



Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 953.

Figure 19: Project Transfer



Source: own calculation based on SI-DRIVE global mapping. Total number of cases: 587.