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Sustainable Urban Integrated Transport Systems

Transferable tools
for Small-Medium
local authorities



Sustainable Urban Mobility in Europe – from Planning to Implementation

Statement of Issue

The overall objective of the SUITS project¹ is to enhance the capacity of small and medium local authorities to develop and implement sustainable, inclusive, integrated and accessible transport strategies, policies, technologies, practices, procedures, tools, measures and intelligent transport systems that recognise the end-to-end travel experiences of all users and freight.



SUITS is a CiViTAS project, which is a network of cities dedicated to cleaner, better transport in Europe and beyond. CiViTAS has implemented over 800 innovative urban transport measures and solutions in over 80 cities across Europe since 2002. CiViTAS argues that a “Sustainable Urban Mobility Plan” (SUMP) is an important part of sustainable urban transport innovations. A SUMP is a strategic transport plan which helps cities to deliver on their sustainability objectives by outlining the city’s transport and mobility measures.

This policy brief discusses the importance of SUMP for sustainable mobility. We test the hypothesis that the development of an ambitious plan in itself does not necessarily translate into successful policies and measures and in actual sustainable urban mobility. We find that the existence of a SUMP correlates positively with a higher share of public transport but that the existence of a SUMP does not as yet have a significant impact on the overall share of non-motorised modes of transport.

Subsequently, the potential reasons for this implementation gap are discussed along with plans about how the SUITS project can contribute to bridging the gap. In so doing, this policy brief provides recommendations to cities, national funders and to SUMP funders, i.e. the European Commission.

¹ SUITS has received funding from the European Union's Horizon 2020 research and innovation programme

Policy options

According to the European urban mobility observatory (ELTIS), a Sustainable Urban Mobility Plan (SUMP) is a strategic plan designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life. The concept for SUMPs has been articulated in the European Union's 2013 Urban Mobility Package. The concept describes the main features of a modern and sustainable urban mobility and transport plan. Amongst others, a SUMP comprises the "balanced and integrated development of all modes", implicitly emphasising that sustainable mobility includes reducing individual motorised transport as far as possible.

Consequently, the EU supports the implementation and testing of new urban mobility approaches as part of its CIVITAS initiative, a networking platform which works on thematic areas such as Car-Independent Lifestyles, Collective Passenger Transport, and Demand Management Strategies. The EU also provides financial support for such urban mobility projects through European Structural and Investment Funds as well as other financial instruments. In many EU member states, the transfer of EU funds to cities to support their sustainable transport and mobility measures is contingent on the existence of a SUMP.²

According to the ELTIS city database, there are 542 cities in the EU, Iceland, Norway and Switzerland, which have been involved in SUMP activities and initiatives.³

This SUITS policy brief investigates the extent to which involvement in SUMP activities and initiatives correlates with actual sustainable urban transport and mobility. In other words: it compares ambition with reality. It does so by comparing the actual transport modal split of European cities as indicated by the EPOMM database⁴ which have been involved in SUMP activities with those cities which have not. For the purposes of this policy note, a city, which has a comparatively low share of trips with private cars is regarded as having comparatively sustainable urban transport and mobility. If the city has a SUMP, it should have a more sustainable transport system than an average city without SUMP, as it has a higher ambition and it should have a lower proportion of journeys made by private vehicles.

On the basis of the analysis, the paper provides recommendations to cities as implementing agents and to SUMP funders, i.e. EU member states and the European Commission. In a further step, it discusses potential reasons for existing implementation gaps. It finally concludes by highlighting how the SUITS project can contribute to bridging existing implementation gaps.

² More information for each member state can be found here: <http://www.eltis.org/mobility-plans/member-state-profiles>. The national provisions may discriminate between cities of different size, but in principle even small cities need to develop SUMPs.

³ The level of ambition, activity and action may vary significantly.

⁴ European Platform on Mobility Management (EPOMM), <http://www.epomm.eu/tems/index.phtml>

Sustainable Urban Mobility in Europe: A Status Quo Analysis

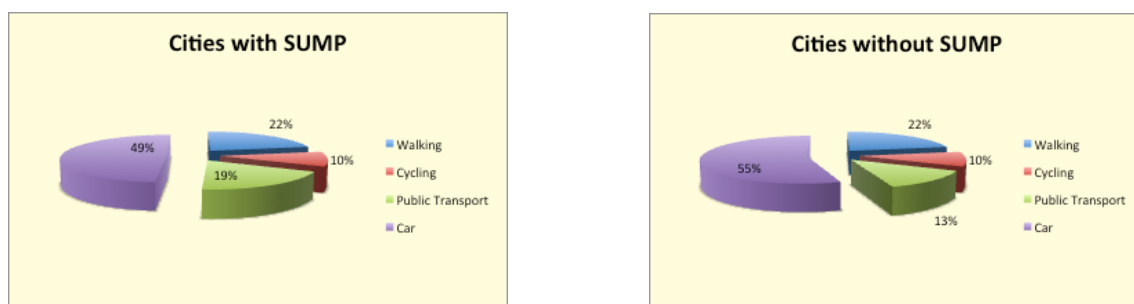
To examine if the existence of a SUMP in a city leads to a more sustainable modal split, data from the ELTIS⁵ and EPOMM websites were combined. The initial data sample consisted of 472 European cities where information about the modal split was available from EPOMM and could be matched with ELTIS. Data older than 10 years was excluded, in order to increase the analysis' reliability. This includes modal split data from 2007 onwards. With these exclusions, 396 cities were left in the sample. As illustrated in Table 1, 55% of the cities have already implemented or are preparing a SUMP, on average, such cities are larger in size compared to cities without SUMP. Figure 1 graphically illustrates the differences in modal splits between cities that participate in SUMP initiatives and those that do not. While the share of pedestrian and bike traffic is almost equal in the two groups of cities, there are significant differences concerning motorized individual mobility and public transport. In cities with SUMP, the share of cars tends to be lower (13% vs. 19%) in favor of an increased percentage of public transport (55% vs. 49%).

Table 1: Descriptive statistics and statistical comparison between cities with and without SUMP

		SUMP						t-test	
		no			yes			t	df
		N	Mean	SD	N	Mean	SD		
Inhabitants		179	172,629	371,698	217	483,966	859,851	-4.51***	394
Modal Split (%)	Walk	179	21.8	9.2	217	22.5	11.01	-0.74	394
	Bike	179	9.5	8.6	217	9.7	9.44	-0.18	394
	PT	179	13.3	11.0	217	18.7	11.52	-4.70***	394
	Car	179	55.5	14.3	217	49.1	13.86	4.44***	394

Note: ***p < 0.001; **p < 0.01; *p < 0.1; SD = standard deviation

Figure 1: Modal split of cities with and without SUMP



⁵ ELTIS, <http://www.eltis.org/mobility-plans/city-database>

The differences in modal shares are confirmed by statistical analyses. The existence of a SUMP is positively correlated with a higher share of public transport and a lower share of car traffic, respectively. Interestingly, however, cities with a SUMP tend to not have a higher bicycle share.

A statistical comparison of the mean share of the transport modes between cities with and without SUMP underpin the differences illustrated in Figure 1. Apart from population size, the results show that the two groups of cities significantly differ with regard to the average percentage of both car traffic ($t = 4.44$; $p < 0.001$) and public transport ($t = -4.70$; $p < 0.001$).

Remarkably, our statistical analyses confirm the results from a survey conducted by the SUMP-Up project (Staelens & Plevnik 2017), a SUITS sister project funded under CIVITAS. The survey found that many cities aim to increase their bicycle share, but experience obstacles for an actual implementation of bicycle measures: In the survey of 441 European cities, 140 cities report the need for support in *selecting* bicycle measures, whereas 264 cities highlight the need for support in *implementing* bicycle measures.

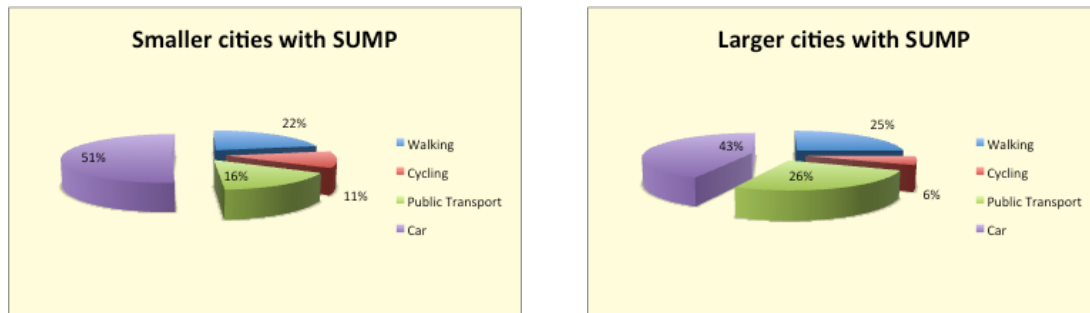
Moreover, our analysis reveals that larger cities are more likely to adopt a SUMP: We compared cities with less than 500,000 inhabitants with cities having more than 500,000 inhabitants and find that larger cities possess a significantly lower share of cars and cyclists, but a higher share of pedestrians and public transport options (see Table 2 and Figure 2). Moreover, while smaller cities' modal split is still dominated by cars (51%), sustainable transport options (walking, cycling, public transport) dominate in larger cities (57%).

Table 2: Descriptive statistics and statistical comparison between smaller and larger cities with SUMP

		City size						t-test	
		Small and medium			large			t	df
Modal Split (%)	Walk	164	21.8	11.0	53	24.9	10.8	1.78*	215
	Bike	164	10.8	9.9	53	6.3	6.9	-3.04**	215
	PT	164	16.4	10.9	53	25.7	10.7	5.41***	215
	Car	164	51.1	13.5	53	43.1	13.2	-3.73***	215

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.1$; SD = standard deviation

Figure 2: Modal split of smaller and larger cities with SUMP



Note: < 500,000 inhabitants = smaller cities; >500,000 inhabitants = larger cities

Policy recommendations

SUMPs are successful

The fact that cities stipulate SUMPs or are involved in SUMP activities positively correlates with a reduction of the share of the private car in the actual transport and mobility patterns of the city. This may be because SUMPs are more likely to be created in cities with successful sustainable transport measures and/or the fact that a SUMP has been developed may be more likely to lead to the implementation of successful sustainable transport measures. In consequence, cities without SUMPs should pursue the SUMP cycle in order to find a successful pathway towards sustainable local mobility. Many small and medium sized European cities have not yet set up a SUMP and they should be supported to do so.

SUMPs are not sufficient

When it comes to supporting cycling, the analysis confirms that developing objectives and planning measures does not necessarily lead to actual change. It appears that more cycling measures need to be implemented successfully in Europe to make a more profound contribution to the objectives of sustainable development. The mere existence of a SUMP does not currently alter the modal share of cycling. Moreover, even after having implemented a SUMP, the results reveal that large cities still lag behind their smaller counterparts with regard to the share of bike traffic. It is proposed that the European Commission and member states should fine-tune their support for cities to actually implement measures fostering non-motorised transport modes. Particular attention should also be given to the creation of support mechanisms for public transport in small and medium sized cities, as cars remain the dominant means of transportation.

Future research is needed to find the reasons of the implementation gap

There are many reasons for the implementation gap, many of which may be well known. However, the fact that this gap still exists points to a lack of knowledge, funding or willingness. The following section outlines some potential reasons why cities may fall short of implementing sustainable transport measures despite ambitions articulated in the SUMP.

Reasons for the implementation gap

This section focuses on the question “why?” cities stipulate SUMP but then struggle to implement ambitious walking, cycling and other sustainable measures. We developed this list based on a literature review of CIVITAS projects. We consider this a non-exhaustive list, but assume the highlighted factors to be significant.

Ring-fenced funds

The EC-funded EVIDENCE project found that local policy makers developing a SUMP found it challenging to make a case at a national level and to influence national decisions on funding streams and priorities. So, whilst initiatives deployed in a SUMP may focus on building a bottom-up consensus around social and environmental objectives, in actuality many aspects of an effective plan may be perceived by those responsible for allocating national expenditure to be less important than directing funding towards major infrastructure schemes (Shergold & Parkhurst 2016). Public transport, alongside individual motorised transport, can be implemented in major infrastructure schemes. There are concerns, that whilst the rhetoric of SUMP is gaining traction, there has been little discernible change in the funding allocated to deliver integrated packages of small interventions with focus on active modes and the management of demand.

Lack of confidence

The EVIDENCE project also highlights the perception of many city authorities that small initiatives do not compete with “traditional” transport infrastructure in terms of delivering economic benefit. As a consequence, potentially fewer of these initiatives or interventions are being made, and the implementation of the SUMP is less effective.

Limited availability of resources and skills

Another reason for the observed gap between planning and action might be that local authorities lack the necessary human and financial resources or skills for implementing SUMP-related measures. According to the EU co-funded CH4LLENGE project, administrations should ideally possess, inter alia, the following skills: process leadership, project management, strategic thinking, and knowledge of possible measures. However, on average, only about half of the skills are at least partially available in the workforce (CH4LLENGE, 2015).

Need for adequate monitoring and evaluation

Monitoring and evaluation represents a key element in SUMP planning and implementation. SUMP measures should be assessed both from an ex-ante and an ex-post perspective to examine their necessity, value for money and effectiveness in increasing the sustainability of urban mobility (Burggraf & Gühnemann, 2015). If appropriate monitoring schemes are not in place, cities might not be able to detect gaps between plans and their implementation. This can lead to an omission of timely interventions and ultimately delay or impede SUMP implementation.

The role of car traffic

Transport network performance and traffic-induced air pollution tends to be less of a public issue in smaller cities and therefore, the pressure for policy makers to implement measures to substitute cars with more sustainable modes of transport may be lower. A high density of inhabitants and working places increases the probability of crowded streets and street segments, which in turn increases the probability of hot spots for congestion and air pollution.

What SUITS project will contribute - a way forward

SUITS takes a sociotechnical approach to capacity building in local authorities and transport stakeholder organisations with special emphasis on the transfer of learning to smaller sized cities, making them more effective and resilient to change in the judicious implementation of sustainable transport measures.

Among other material, SUITS will provide information and learning modules about innovative financing mechanisms and public procurement. The SUITS literature review and analysis of the partner cities found significant need for capacity building in these fields (Diana et al., 2017). The project thereby aims at overcoming the lack of funding for certain measures and the lack of confidence of many local decision makers that small-scale measures do not deliver value for money.

The SUITS approach also aims at improving process leadership, project management and strategic thinking. Working with nine cities to model gaps in their understanding, motivation, communication and work practices, will provide each city with a map of its own strengths and weaknesses with respect to sustainable transport planning. From this, strategies to enhance capacity, based on each authority's needs will be developed and organisations provided with the necessary techniques to increase their own capacity, mentored directly by research partners. Local champions will be trained to continue capacity building after the project.

Finally, SUITS will develop a data analysis methodology, which integrates freight and passenger data. Based on solid data analysis, cities may improve their evaluation of the measures and impact assessment. They may also improve their transport models to fine-tune their measures to reduce congestion and air pollution.

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Please cite this work as:

Frederic Rudolph, Matthias Damert: *Sustainable Urban Mobility in Europe – from Planning to Implementation*. SUITS Policy Brief 1. SUITS project, funded from the European Union's Horizon 2020 research and innovation programme under grant agreement no 690650. Mobility and Transport Research Centre, Coventry University.

Social Impact Assessment of transport measures and systems

Statement of issue

The overall objective of the H2020CIVITAS SUIITS project¹ is to enhance the capacity of small and medium local authorities to develop and implement sustainable, inclusive, integrated and accessible transport strategies, policies, technologies, practices, procedures, tools, measures and intelligent transport systems that recognise the end-to-end travel experiences of all users and freight.

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SUIITS’ outputs support cities developing sustainable transport measures. A key aspect of design and implementation of transport measures is to consider the direct and indirect effects these will have on citizens, in particular vulnerable groups. Vulnerable groups may be defined as those who have difficulty accessing transport through lack of finances, poor mobility, ageing or those with dependents/looking after children, or because their needs are not met through current transport provision. As such, they may not be able to fully participate in the opportunities; living in cities provides (e.g. access to health, social care, education, employment and entertainment). This consideration and the steps taken to mitigate these effects should feed into innovative financing and procurement stages of planning new transport measures.

This policy brief discusses the importance of conducting Social Impact Assessment (SIA) prior to, during, and after the implementation of transport measures. Obviously, all transport measures have a direct impact on transport users, but they can also have an indirect impact on users, non-users, and those living (at some distance) away from the proposed transport measure. These consequences need to be considered as part of the wider cost-benefit/lifecycle of the planned measures. Contingency plans need to be developed to address negative impacts such as breaking of communities, displacement of traffic (and its effects) on poorer neighbourhoods.

¹ SUIITS has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 690650 (www.suits-project.eu).

This policy brief explains the importance of social impact assessment, provides an overview of the groups most vulnerable and at risk to negative social impacts of transport measures, and provides a set of factors which should be considered in the conduct of a social impact assessment.

The policy brief is based on Deliverable 7.3 of the SUITS project, and an expert survey conducted to understand the requirements and barriers towards SIA (conducted in 2018). The intended audience is local authorities, transport planners and consultants, and user groups.

The social and distributional impacts of transport

Transport is used by people to access social interactions, education, services, and employment. As such, the transport system interacts with, and creates the social fabric of cities and communities. Traditionally, the success of investments in urban infrastructure has been measured mainly in terms of economic performance, i.e. established and measurable economic indicators such as time savings for the users of a given infrastructure unit. This narrow understanding of performance has been criticised in terms of sustainability because it does not account for environmental or social impacts and externalities and may be subject to inbuilt biases, valuing more positively the time-savings of mobile-wealthy citizens at the cost of the poor (Martens, 2006). Considering 'urban justice' is a way of examining the social aspects of the transport system, as current systems' focus on motorised private transport is a form of injustice to other users (Gössling, 2016).

This developing awareness of the interaction of transport and urban justice in cities has given rise to analyses of the transport system through the lens of vulnerability related to social aspects and accessibility, especially related to poverty and transport/fuel poverty, transport disadvantage and social exclusion stemming from their transport options (Lucas, 2012; Glensor, 2018). The factors contributing to transport vulnerability are varied. They interact and combine to affect any individual's vulnerability. An individual may have characteristics that, when examined in isolation, do not qualify them as especially vulnerable. For example, a woman may not be a vulnerable user, but her level of vulnerability will increase, for example, if she has to carry a child, has poor eyesight or age related mobility problems. However, when examined as a whole, that same individual may be vulnerable due to the interaction and combination of multiple (perhaps non-severe) characteristics.

Equity may be defined (eg Litman, 2010) in relation to:

- **Horizontal equity** refers to an egalitarian understanding and states that no one individual or social group should be favoured over others.
- **Vertical equality**
 - social class and income refers to the idea of differentiating resources according to purchasing capacity.
 - transportation ability and need, which focuses on individuals' physical ability and access to transportation modes, rather than on their socio-economic conditions.

Current assessment approaches

In many countries across the EU, funding for medium and large-scale transport projects is subject to their assessment, most often using Cost-Benefit Analysis (CBA) and Multi-Criteria Analysis (MCA) (Beria et al, 2012).

Cost Benefit Assessment (CBA)

Cost-Benefit Analysis is the process of quantifying costs and benefits of a project (over a certain period), and those of its alternatives (within the same period), typically in only in monetary terms, in order to have a single scale of comparison. CBA can be extended to include environmental and social costs and benefits if they can be expressed in monetary terms. CBA allows assessment of the economic viability of a project to be assessed and expressed by viability indicators such as benefit to cost ratio (BCR), internal rate of return (IRR) or net present value (NPV).

As an applied social science, CBA is largely based on approximations, working hypotheses and shortcuts because of lack of data or constraints on resources. It needs intuition on not just data crunching, and should be based on the right incentives for the evaluators to do their job in the most independent and honest environment. (European Commission, 2008). Problems with CBA include, amongst others:

- The communication of results may be dominated by a few, easily monetisable indicators.
- Focus on direct user benefits.
- Optimism bias.
- Dominance of travel timesaving.
 - Sceptics believe that there are no time savings in the long run, that higher travel speed just increases accessibility (Metz, 2008) and that Value of Time is not a constant (Ben-Akiva, 2010).
 - The side effects of the time savings is often ignored (e.g. making longer or more frequent trips).
- Modelling of reliability (which can add 8-10% of the benefits).
- Doubt about whether all impacts can be successfully and accurately monetised (Bickel et al, 2006)
- Extensive data requirements resulting from the need to monetise all effects (Browne and Ryan, 2011)

As environmental and social effects are difficult to monetise, CBA is not suitable as a means of performing SIA.

Multi Criteria Analysis

In MCA, a set of criteria is developed to assess measures. The criteria are weighted to reflect their relative importance (Browne and Ryan, 2011). Then the performance of the measure and its alternatives are qualitatively or quantitatively analysed. Multi-criteria analysis enables the simultaneous quantitative and qualitative impact of the achievement of some objectives, not necessarily in monetary terms. Its main advantage is that it can allow for more holistic evaluations through a more participatory approach. However, the weightings have a level of subjectivity, which can lead to bias if not well managed.

Summary

These two techniques, or a combination of both approaches are used as impact assessment tools across Europe, but there is little standardisation. Cascajo (2004)

concluded that there was a preference for ex-ante approaches and a tradition for the use of CBA for the appraisal of public transport infrastructure projects; normally, a global assessment is complemented with a MCA or some kind of qualitative procedure. Hueging et al (2014) concluded that CBA is mainly applied to infrastructure projects – including infrastructure for non-motorised modes – and to projects intended to generate revenue, such as city tolls.

SIA assessment criteria

The following are some aspects that could be considered social impacts of transport measures (Markovich and Lucas (2011)).

- **Causalities and injuries**
- **Noise and nuisance levels**
- **Air pollution/air quality**
- **Poverty**
- **Accessibility** may be defined as “the extent to which land-use and transport systems enable (groups of) individuals to reach activities or destinations by means of a (combination of) transport mode(s)”. (Geurs and van Wee, 2004, p. 128). 4 components of accessibility have been identified: availability and physical access to transport facilities; level of service; transportation choice and option values.
- **Personal safety and security.** The presence and fear of crime affects the decision to use public transport and public spaces.
- **Community Severance.** “The existence of a real or perceived barrier to people's movement through an area that is created by the transport infrastructure (such as roads or railways) or traffic” (James *et al.*, 2005).
- **Relocation.** This may be associated with the construction phase of a permanent move.
- **Visual Quality.** Urban form and the aesthetic character of cities have been radically transformed to accommodate car based and other modes of travel.
- **Physical fitness.** The effect of the built environment on physical activity, although the relationship is not straightforward. An example from the UK showed residents did not spend more time in their streets following the remodelling, despite overwhelmingly citing aesthetic improvements to their neighbourhoods (Biddulph 2010). Additionally, compulsory walking can lead to both physical fatigue and psychosocial stress.

SIA target groups

In contrast to current practice, a social impact assessment should also consider the needs of and impact on groups currently not adequately considered in transport assessments. For the purposes of this document, these groups will be considered vulnerable, as the current system causes or exacerbates their existing vulnerability or vulnerabilities.

In contrast to the common definition of vulnerability based on protection in crashes (pedestrians and (motor) cyclists), a SIA applies vulnerability associated with social aspects, which is closely related to the idea of accessibility, or the lack thereof.

In the assessment portion of the EMPOWER project, the following social definition of vulnerability was developed: “social groups which are disadvantaged in the transport system in general. Generally, this will mean people outside the group of physically and intellectually fit and able employed adults traveling to and from a single workplace on weekdays” (Glensor 2018). Thus the following groups are considered vulnerable: low-income groups; children, youths, and the people caring for them; women; the elderly; people with disabilities; lower education people; people born abroad (for practical reasons, access to and service level of public transport could not be considered). The FP7 METPEX project applied a wider definition, adding those living in rural areas and those with communication difficulties (Tovey, Woodcock and Osmond, 2017).

Methodology and localisation principles of SIA target groups

In line with international standards for measuring social value and stakeholder dialogue (SROI, AA1000SES, etc.), target groups’ (stakeholders’) identification should be based on a systematic methodological approach. There is not a generic list of vulnerable users that can be applied to the development of new transport measures in all cities. These need to be defined in a case-by-case basis based on a thorough analysis of the populations likely to be affected, from which representative samples of transport users, can be drawn up. The following parameters are commonly applied when identifying the affected parties of a particular project:

- **Liability.** Groups and persons for whom a transport measure/project may have legal, financial or operational obligations.
- **Influence.** Groups and individuals who could influence the construction and effective operation of the transport project. This influence depends on the ability of each group to exercise this power (legal, economic, sociopolitical).
- **Proximity.** Groups and individuals who will have the greatest interaction with the transport project during the construction phase or its day-to-day operation, including the inhabitants of the surrounding area and the area of the probably existing older transport system/infrastructure.
- **Dependency.** Groups and persons most dependent on the operation of the transport system, such as companies, vulnerable groups and more generally residents and visitors of the city, whose prosperity, safety, business activity, health depend on the uninterrupted supply of robust transport system, and/or as the contractor.
- **Representation.** Persons who, either because of an institutional position or are legally entitled to represent others, such as the heads of the commercial or business associations of city, the elected local (neighborhood) rulers, the members of the local environmental associations of vulnerable groups or even informal community representatives close to the infrastructure/project under construction.

SUITS advocates a more ‘transport user’ centred, consultative approach, to ensure vulnerable users’ representation in the planning and construction of new measures and the development of SUMP. The principles of gender and diversity sensitive mainstreaming should guide consultation and discussion, ensuring true representation. This can best be achieved through local events, in the community, at a time and place convenient for local residents or transport users and active listening/recording of views and follow-ups.

SIA benefits

Full, active, and engaged citizens requires a build-up of social capital within localities, and a commitment on the behalf of LAs to not only support lifelong development of this, but to also involve and listen to underrepresented voices and follow through with actions. Mobility and transport are crucial issues for all citizens. However, the needs of vulnerable and hard to reach users, frequently those most dependent on public and active forms of transport are sometimes not heard loudly enough. Social Impact Assessment (SIA) can be used as a means of ensuring that these voices are heard throughout the process. Doing this increases the likelihood of creating new transport measures that are inclusive and fit for purpose.

Mobility is a multidimensional concept that includes not only movement in physical space, but in psychological space (Zeigler and Schwanen, 2011). VanZerr and Seskin (2011) suggest a set of quality of life and liveability factors affected by transport planning.

Table 1. Overview of quality of life and liveability factors

Affordability/disposable income	Property values	Noise impacts
Air quality	Community cohesion/severance	Landscape
Heritage/historic resources	Physical activity	Safety
Transportation choice/option value	Security	Accessibility
Travel time	Streetscape/journey ambiance	Distribution of impacts/amenities among vulnerable populations

SUITS survey of opinions regarding SIA

The SUITS project undertook a short survey to gain a snapshot of attitudes towards Social Impact Assessment. The results are based on 28 responses from consultants, LAs, HEIs and research institutes from EU countries including Italy, Greece, UK, Lithuania, Germany, Romania, Belgium, and Spain. This section contains key results of this survey. Detailed results can be requested from the SUITS project team (Woodcock et al, 2019) (quotes from the survey are in *italics*).

80% of the respondents thought that both ex-ante and ex-post SIAs should be conducted. 20% considered ex-ante to be essential, as there was a *'clear need to consider these in the planning stage, and then measure ex-post as well'*.

Distributed Social Impact Assessments were regarded as useful for understanding wider impact assessments. *Distributed SIAs are useful for understanding which types of people are most affected by the scheme. CBA is good for an all-round economic assessment, and generally considers different types of scheme users. In transportation, we include spatial impact as the movement of transport not only involves the area but also outside of the site, outer movement (out-out), in and out.*

Although many believed that SIAs would have some influence on the implementation of the transport measure with one respondent commenting that *'social aspects are really*

important in transport decision making', 42% indicated that the SIA was just used to inform the public of what was planned, and it was a prerequisite of funding that they had to go through. This was confounded by difficulties in citizen engagement, interest, and ability to understand technology. Time and resource availability curtailed SIAs, and its overall impact was attenuated by economic and political considerations. This is a worrying trend with regard to citizen engagement, which is not limited just to the field of transport.

The following table summarises the responses on ways in which SIA could be made more effective.

Table 2. How SIA could be made more effective.

Response
Closer cooperation between technical staff running the analysis and stakeholders, especially local authorities
Considering those seeking employment, young people and commuters would help make the assessment more effective with the desired outcome.
To ensure key decisions and evaluations are informed by the results of the survey(s) pre and post. Inform key stakeholder groups at each stage. Translate findings and impacts into laypersons language / different languages based on minority groups in the region. This will hopefully garner further interest and buy-in to the process whilst empowering at the citizen level.
By engaging a big number of citizens to be involved and empowered
SIA can help in assessing the ways urban transport can be used as a tool for social inclusion of all groups in a society.
Make it simple and easy to use
SIA is very important when assessing the importance of different routes and technologies to be used in urban transport as it should evaluate the way people have real access to services
Focus on environmental impact and economic assessment (e.g. motives for buying electrical or hybrid cars)
Include land use planning
Much deeper and better well-funded ex-ante SIA's to get objective idea of the potential impacts
Takes into consideration the views of all stakeholders including users and looks at aspects that are not the most obvious - direct for transport measures (e.g. education performance of pupils, effects of cleaner transport on health of citizens etc.)
Incorporation of longer vision horizon, visioning not 5 but 15 years ahead

Policy recommendations

The social impact of transport is a key and growing area of concern. Therefore, an immediate outcome of this survey must be how SIA can be transformed from a transport-planning tool to one that engages people and can be used **as a tool to reduce transport poverty** in line with integrated master plans.

Although not touched upon in this survey, the literature suggests a need and **trend to move away from quantitative approaches, to more direct community engagement** (e.g. Varlier and Özçevik (2015)). There was some support for using alternate methods. However, the feasibility of using limited resources on ex-ante and ex-post evaluations

that are not recognised at national and EU level must be considered. Already the usefulness of the SIA is perceived as being influenced by time and the aspirations of the promoter, and ultimately by economic and political considerations. In terms of community engagement, SIA was not recognised as acting at the level of citizen empowerment (Arnstein, 1969), but did on occasion move towards collaboration.

Given the amount of investment in SIAs and cross disciplinary knowledge in mapping the effects of transport on the one hand, and a call for greater citizen engagement and awareness raising by local authorities, there is a **clear opportunity to use and design participatory activities around SIA**, and use this in the **wider context of urban transport planning** – linking transport to environmental, health, social and economic master plans. This document could form a basis to design training material focussing on the elements, which were rated most highly by respondents.

Respondents raised many issues regarding how SIA could be more effective. These can be grouped into two broad categories: **process based issues** (e.g. flow of information, extent of consultation, use of language, size of sample, survey design and integration with city plans); and issues around the **depth and content of the SIA**. WebTAG, for example, has attempted to look at some forms of quantification of less tangible elements, but acknowledges that these might be of limited accuracy. As an example of a CBA approach, this gives credence to the idea to use CBA+MCA approaches in SIA, which was popular with at least half of the respondents.

Clearly, the breadth of the items that could potentially fall under SIA is daunting, especially if merged with environmental, economic and health impacts. All of these have their own measurement criteria and an equally broad set of factors that need to be considered. The movement towards considering **liveability and quality of life as superordinate categories** accords well with **new procurement regulations**, which need to consider wider implications than initial cost.

The responses to issues about the inclusion of **privacy impact assessment**, showed that the respondents were unfamiliar with this concept. They answered the question in terms of the privacy afforded to people whose data is included in SIAs rather than thinking about the social impacts that could arise when mobility data is not securely handled by new entrants in MaaS ecosystem, such as CAV and ride share providers.

The factor that was raised most spontaneously by all participants to be included in a SIA assessment was related to quality of life. As an overall concept this could be used to measure not only the transport measures, but also the impact of the project in **improving the quality of life** for those associated at all levels with the planning, implementing and use of transport. Although **transport poverty** was not mentioned per se, this might be a factor that could be considered as many elements map on to this.

Using the results from the survey and literature review, the following items scored most highly and could be incorporated into a template for use in key informant interviews, focus groups and other qualitative measures.

Category of criteria	Criteria
Quality of life/ liveability issues	Improved accessibility to education, health, employment and other services
	Overall community satisfaction
	Overall personal satisfaction
	Ability to take advantage of opportunities
	Quality of the journey
Environmental features	Visual quality of the public realm
	Overall quality of the public realm
	Air quality
	Noise pollution
Economic issues	Connectivity
	Reduction in travel time
	Equity of economic benefits
Health issues	Overall quality of life
	Overall health and well-being
	Health equity
Provider based issues	Primary severance
	Poor maintenance and neglect
Social cohesion	Effects caused by reduced opportunities for interaction
	Social isolation
	Social exclusion
	Lack of access to essential services
Accessibility	Availability and physical accessibility of transport
	Safety and security
	Level of service provided
	Access to spatially distributed services
	Effects of structural issues on pedestrians
User based issues	Effects on travel
Process based issues	Range and quality of engagement

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Please cite this work as:

Andree Woodcock & Kain Glensor (2019). Social Impact Assessment of transport measures and systems. SUITS Policy Brief 2.

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Sustainable Urban Mobility in Europe – Implementation Needs Behavioural Change

Statement of issue

The overall objective of the H2020CIVITAS SUITS project¹ is to enhance the capacity of small and medium local authorities to develop and implement sustainable, inclusive, integrated and accessible transport strategies, policies, technologies, practices, procedures, tools, measures and intelligent transport systems that recognise the end-to-end travel experiences of all users and freight.

SUITS is a CIVITAS project, which is a network of cities dedicated to cleaner, better transport in Europe and beyond. CIVITAS has implemented over 800 innovative urban transport measures and solutions in over 80 cities across Europe since 2002.

SUITS' outputs support cities developing sustainable transport measures. A key aspect of the development and implementation of transport measures is to consider organisational factors such as organisational structure, climate and human behaviour and expectations of the implementation process. When local authorities are fostered to implement sustainable transport measures they first of all have to become a learning organisation to be able to plan and implement such measures successfully. What does this mean?



The field of mobility has undergone major changes in recent years. People's mobility needs are constantly rising, mobility behaviour is changing and numerous innovative transport services are entering the market. Mobility has become a central social topic receiving public attention, especially with regard to the general discussion on climate change and environmental protection. Many local authorities are facing extremely challenging situations, affecting and disrupting their business model and their institutional logic, which threaten public sector employees in a number of substantive ways. To meet these challenges, local authorities have to increase their organisational capacity. Special attention has to be paid to the employees in the local authorities, as they are the ones who have to deal with the challenges and have to develop themselves and their organisation further in order to pursue a more sustainable mobility planning in the future. Thus, the employees have to trust that the required changes are important for the future (Nienaber et al., 2016). Local authorities are faced with major obstacles when it comes to people that have to adopt new sustainable transport measures. First: people are not

¹ SUITS has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 690650 (www.suits-project.eu).

able to adopt and implement sustainable transport measures as they lack important knowledge and/ or skills. Training will help to overcome these competency-related obstacles. Second and even more important: people are not willing to adopt and implement new sustainable transport measures since they are not convinced about the importance and the benefits or they are rather sceptical (distrustful) towards the ongoing changes in their local authority in relation to the implementation of new sustainable transport measures (see for innovation and trust, Nienaber & Schewe, 2014). Thus, they are not willing, to change their routines and prepare themselves for the challenges connected to the implementation of sustainable transport measures. So, what can be done to cope with these challenges?

With this policy briefing, an answer will be given to this question. First, the necessity to take people on board when it comes to implementing change will be highlighted. Second, this policy brief demonstrates what a successful implementation process in local authorities may look like when it comes to the implementation of new sustainable transport measures in the local authority (an eight-step procedure is proposed). The policy brief is based on the work of Work-package 6 of the SUITS project during the implementation process of sustainable transport measures in nine local authorities: Alba Iulia (Romania), Dachau (Germany), Kalamaria (Greece), Palanga (Lithuania), Rome (Italy), Stuttgart (Germany), Torino (Italy), Valencia (Spain), West Midlands (UK). The intended audience are local authorities, transport planners and consultants, and user groups. The Work-package 6 team applied a very interactive approach to work with the nine local authorities during the implementation process to foster learning and knowledge exchange between the different cities. 11 different workshops have taken place that guided the different local authorities through the needed organisational change together with face to face meetings, individual phone calls, emails and discussions. Furthermore, an online forum was developed to foster the knowledge exchange of experiences between the different local authorities in-between the face-to-face workshops.

Implementation requires organisational change: Bridging the technical and social side

“There is nothing as unchangeable as the change”. This quote based on Heraclitus of Ephesus (around 500 years BC) highlights the most important aspect of change. Change is a continuing process but due to recent challenges regarding sustainable mobility it will become even more important in the future. The global climate change requires change in particular in local authorities as it calls for a critical examination and reorientation of the goals and strategies in the field of mobility. The accelerating pace of technology is constantly bringing new challenges to local authorities and transport planners. Local authorities and transport departments have to become more effective and resilient to organisational change when developing and implementing transport measures. In this context, it is imperative to develop the capacity building of local authorities making sure they take advantage from developments in areas such as innovative transport schemes, innovative procurement, urban freight measures, safety and security measures in transportation, among others. However, for transport measures to be successfully implemented it is not enough to change the technology or the technical aspect. Most change programmes that focus solely on technological and/or technical change, ignoring the importance of social and behavioural aspects, end up by failing.

By bringing technological/technical and social/behavioural change together, organisations can achieve better operational performance. Recognising the importance of these two facets of change, a socio-technical approach to change throughout the entire SUITS project was adopted, with especial emphasis during the implementation stage. Socio-technical systems combine the human, social, organisational as well as technical factors when designing organisational systems (Baxter and Sommerville, 2011). The leverage of the knowledge and capabilities of employees results in better operational performance as they become in a better position to deal with technological uncertainty, variation and adaptation (Pasmore et al., 2019), and makes them more resilient when there are organisational changes. Ultimately, bringing together social and technical change will help to reduce the gap between social and technical capability (see Figure 1).

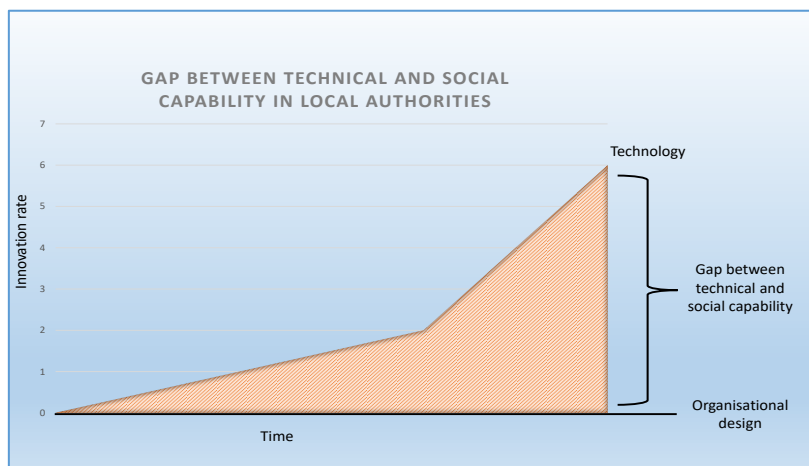


Figure 1. Gap between technical and social capabilities in local authorities

When implementing socio-technical change, it is important that local authorities are open to the input of people into the design of both social and technical systems. There is evidence that employees not only do a better job than those farther removed but also benefit from the challenge, variety, feedback, and teamwork involved in the development of the system (Pasmore et al., 2019). Thus, as long as employees are not willing to support the organisational change, new technology will not be adopted and used and innovation opportunities are lost. Therefore, it is most important to get the people on board in an organisation when organisational change is required. Based on the experiences from guiding nine different European cities through their change processes, some key learnings will be highlighted in the following summary.

The 8 steps approach to implement sustainable transport measures in local authorities

For the implementation of sustainable transport measures, the process for organisational change outlined by Kotter (1995) is applied and adopted according to the needs of local authorities. This process of organisational change is divided into eight different steps

(see figure 2) which will be now briefly discussed before highlighting the three key learnings during this process with the local authorities in Europe.

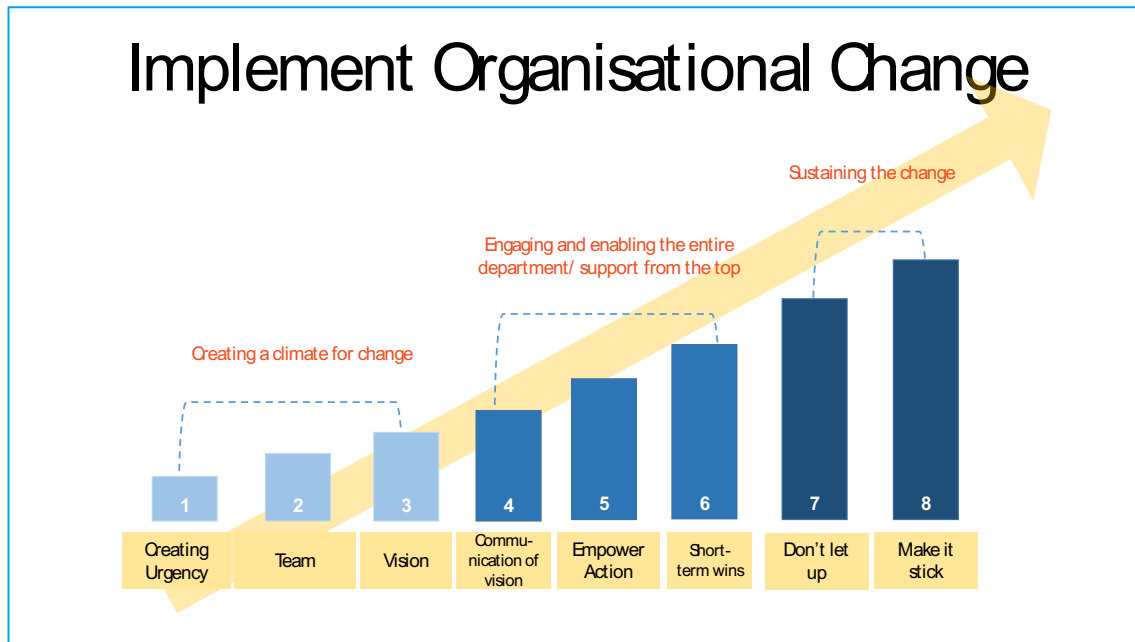


Figure 2: Implementation process (based on Kotter, 1995)

Step One: Create Urgency

First of all, the urgency of the idea of developing and implementing sustainable transport measures has to be created. This idea can be very powerful. This step creates the 'need' for change. It is not just a 'want' for change. Change has to be understood as needed by the local authorities' employees otherwise it will not be fully supported.

Step Two: Form a Powerful Coalition

Most important is the coalition to support the organisational change. This coalition has to be built by employees with a range of skills, a range of experience and different areas of departments in the local authority, to maximise its effectiveness. The task of this coalition is to drive the change, meaning it has to become a role model for the wider organisation, helping to spread messages throughout the organisation, delegating tasks and ensuring support for the change organisation-wide.

Step Three: Create a Vision for Change

The development of a vision is often underestimated or not well understood. A vision has to be easy to understand to ensure support from the whole organisation, and it also has to be 'inspirational' to have maximum effect.

Step Four: Communicate the Vision

A vision that is developed but not communicated will be not known. Thus, it is very important that the vision is communicated throughout the whole local authority and later even wider to the whole society in the city. It is important to continuously communicate this message as it is likely that competing messages are also being spread.

Step Five: Empowering broad-based action

Whether due to individuals, traditions, legislations or physical obstacles, it is most likely that barriers will pop up to block the organisational change. These barriers have to be identified as early as possible, if they are to be overcome. Intensive employee involvement is important when it comes to operationalising the vision and to defining concrete starting points for change at the work level. Therefore, it is very important to rely on available resources to break down these barriers, without disrupting any other areas of the business, otherwise employees will not be empowered to take broad-based actions.

Step Six: Create Short-Term Wins

While organisational change needs time, and thus, rewards may be not seen in the beginning, it is most important to create and celebrate short term wins to keep the employees motivated to support the ongoing change processes. Shorter term targets are useful tools for motivation and direction. Using these wins to justify investment and effort can help to re-motivate staff to continue backing the change.

Step Seven: Build on the Change

Many organisational changes fail in the end as they are not finished properly. It is mandatory that every local authority should keep setting goals and analysing what could be done better for continued improvement along the change process.

Step Eight: Anchor the Changes in Corporate Culture

For a change to be sustainable and successful, it is crucial that it becomes anchored in the corporate culture. The implemented sustainable transport measures, as well as changed procedures and principles have to be anchored within the organisational culture of the local authority, for example through Guidelines that are known about and utilised. The changes have to become part of the core way of working within the local authority to have a lasting effect – meaning an organization has become a “learning organization”.

Policy Recommendation: What is most important to implement sustainable transport measures in local authorities?

In the following, three most important aspects are highlighted, learned from the implementation process of sustainable transport measures in the nine local authorities.

(1) Identify the “correct” change agent to turn a local authority into a learning organization

Most important for all cities has been the identification of the “ideal” change agent. A change agent may be identified internally within the local authority or coming from outside, but most important is that the identified change agent has **strong relationships with the decision makers** in the local authority. Based on the experiences of our nine cities, the most important reasons for a rather slow change process or huge barriers to get the change initiated have been missing direct relationships with the chief executive or chief executive’s department. The rather bureaucratic organisational structure in most of the local authorities was identified as a big obstacle to get senior management attention for the SUITS project. Thus, a change agent should have the power to get in contact with the top management in a local authority and even more important the change agent has to have the power to get the support of the top management when it is needed, e.g. changing organisational structures, implementing guidelines

Beside this power, a change agent has to be **flexible**, very **positive towards change**, and possess the necessary social skills in working with the affected employees **to be open for innovation**. He or she has to be understood as a role model for other employees and thus, has to **be respected** and **well known** within the local authority.

Furthermore, it seems that it is very useful when the agent has a clear **focus on the results**. In creating change, it is often helpful to tie specific priorities to the overall goals. As people respect courage and accountability a change agent has to take responsibility for his or her local authority. It may be the case that the chief executive has to make decisions that go against dissenting opinions and this can cause conflicts, but doing so with conviction and being ready to handle the consequences will ultimately demonstrate that the local authority's intentions are motivated by the best interests of the city, thus gaining the trust of their employees and wider society.

Finally, the change agent has to be able to **explore perspectives** and take them into account when looking for solutions. This will help in getting buy-in to a change; people want to feel that others are listening to their ideas. Those who do will develop stronger relationships with their people by gaining trust.

The change agent functions as a role model for the whole local authority, first for his or her team, then the department and finally for the whole local authority, such that over time the local authority will be turned into a learning organization. A learning organisation is "an organisation skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights" (Garvin, 1993 p.3). It is crucial that local authorities continuously re-invent themselves in order to adapt to constant technological, social, political, economic and legal change. They have to make sure that they "learn to learn" which will not only make them more adaptable to changes but also facilitate the emergence of innovation. During SUITS the local authorities learned to become learning organisations.

So it is most important is: **get the "correct" change agent on board!**

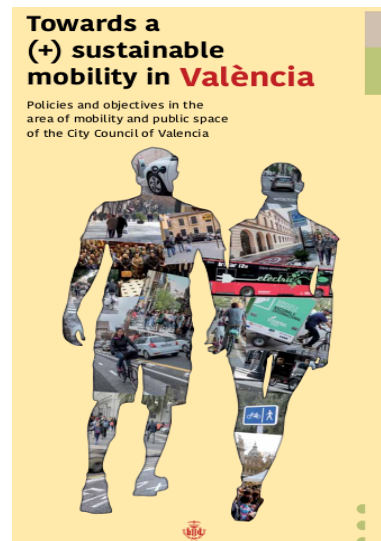
(2) Communication (understand and reflect)

Once the vision for change has been developed, the big challenge is to communicate this vision to all those involved in implementing the change processes. A general awareness must be created. Everyone must understand the need for change as well as the long term target. The support of all employees is important for the definition of concrete activities aimed at achieving the big goal. Everyone is invited to participate and to consider which concrete steps can be implemented at work level to achieve the big goal. The development of mobility measures usually involves several departments in the authority, and the vision must also be communicated among them. The vision as such must be clear and transparent so that it can be easily understood. Other departments should not be expected to fully support the vision and will give priority to the goals set on their own agendas. The lack of support from other departments can become a major barrier in the change process.

*The **City of Alba Iulia** for example, partner in the SUITS project, is working with the procurement department to trial innovative procurement practices for the purchase of new buses. The responsible procurement department was initially not too open-minded about the application of new practices. So far, the lowest price criterion still applies in most cases. A big hurdle was the lack of willingness to engage intensively with the comprehensive guideline on innovative procurement, developed in the SUITS project. In a number of internal meetings, the change manager has worked out the principles of the guideline, showed the benefits and proposed concrete recommendations for action, and thus was able to get the procurement team on board. (Change agent: Tudor Dramborean; Alba Iulia Municipality, Romania)*

Especially when other departments and politicians have to be convinced of certain projects, it is always good to work ‘evidence-based’ - through the provision of good practice examples, feasibility studies, data collected through surveys or through cooperation with interest groups and citizens.

Valencia (Change agent: Angel Navarro, Las Naves, Spain) for example communicated its vision also to the wider society with the following posters or brochures:



Figures 3a-c: Documents from the city of Valencia

(3) Celebrate little steps

The word change may sound very fundamental and quickly cause uncertainty, but the change will take place in small steps, all of which follow a big goal. In order to keep the motivation of all participants high, small steps that lead to short-term success are meaningful and important.

The organizational change must be initiated with concrete, target-oriented activities that can achieve clear results. The goals must correspond to the capacities of the departments, they must be achievable and, above all, measurable.

A sustainable mindset is not a thing that can be dictated from leadership - it has to develop among the staff, for which time and many small impulses are needed. The topic must be given priority on the agenda and for each new project it must be examined which concrete activities can contribute to achieving the big goal. Only this way can the changes in routine ways of working, that are important for change, occur.

Working with cities, it became clear that one of the biggest challenges is to **keep up the momentum**. Very often daily based operations overlap with the long-term strategy. The implementation of sustainable transport measures requires a lot of discipline and stamina.

*To improve cooperation between the various departments, the **city of Stuttgart**, for example, has set up a steering committee. Representatives of the departments meet about once a month to discuss ongoing projects and to shape the cooperation. (Change agent from City of Stuttgart, Germany)*

As part of the change process, the **West Midlands Combined Authority (UK)** organizes in-house workshops, on the one hand with external trainers, but also internal workshops in which staff jointly try to develop ideas for concrete activities. Furthermore, employees are encouraged to use a special teamwork software to share and discuss issues they have found on specific topics of sustainable mobility. Weekly Newsletters are created and sent to employees. These contain, for example, news about ongoing projects, or give more transparency about concrete team activities, what challenges need to be tackled, what knowledge is available and what is needed. This creates a general awareness for specific topics as well as the entire change process. (Change agent: Keelan Fadden-Hopper, West Midlands Combined Authority, UK)

The knowledge to carry out change processes is often limited in the departments. Especially at the beginning, an effective strategy can be to purchase external consulting services.

What SUITS project will contribute - outcomes and learning

SUITS takes a socio-technical approach to capacity building in local authorities with special emphasis on the transfer of learning to smaller and medium sized cities, making them more effective and resilient to change in the judicious implementation of sustainable transport measures.

The SUITS approach to organisational change demonstrates impressively how important it is to be aware of the social/behavioural side of organisational change in local authorities. Without the support of the employees no change will be successful. This policy brief describes the different steps a local authority has to take to enhance their local authority's resilience when coping with change and highlights three key learnings from the implementation process of sustainable transport measures. Most important for other small and medium sized local authorities in Europe are:

- (1) Identify the “correct” change agent as a decisive driver for successful change in your local authority
- (2) Communicate your vision authority-wide if you want to become effective and resilient to change
- (3) Celebrate little successes in your local authority to keep your employees motivated to support the change over the long term

It becomes very clear, that the behavioural side of change, while often underestimated, needs more attention in the future, when it comes to prepare more local authorities in Europe to become more effective and resilient to change in the judicious implementation of sustainable transport measures.

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Please cite this work as:

Nienaber, A., Spundflasch, S., & Soares, A. (2020). Sustainable Urban Mobility in Europe: Implementation needs behavioural change. SUITS Policy brief X. SUITS funded from the European Union's Horizon 2020 research and innovation programme under grant agreement no 690650. Mobility and Transport Research Centre, Coventry University.

Organizational Resilience. How SUITS' local authorities were prepared to cope with the COVID-19 pandemic

Statement of issue

The overall objective of the H2020 CiViTAS SUITS project¹ is to enhance the capacity of small and medium local authorities to develop and implement sustainable, inclusive, integrated and accessible transport strategies, policies, technologies, practices, procedures, tools, measures and intelligent transport systems that recognise the end-to-end travel experiences of all users and freight.

To this end, SUITS shares best practice and develops a range of materials to enable, in particular, small and medium-sized cities to implement sustainable transport measures or Sustainable Urban Mobility Plans (SUMP) that support mobility transformation. A key aspect in the support of local authorities to develop and implement more sustainable transport and mobility measures has been to work on organisational change.



Photo: (c) Frederic Rudolph

When local authorities are encouraged to implement sustainable transport measures they first of all need to become a learning organisation that is able to discover what is effective by reframing its own experiences and learning from that process (see Nienaber et al. 2020a, Policy Brief No. 3). This becomes an enormous advantage in turbulent times such as the recent pandemic.

During SUITS, all of the nine SUITS' local authority partners were trained to become such learning organizations and were made familiar with different tools to support knowledge transfer, to establish an organizational culture of trust, and to reduce individuals' perceived vulnerability (Nienaber et al., 2015a and b; Schewe & Nienaber, 2014). In sum, the organizational capability of the partner cities in SUITS was enhanced together with their organizational resilience. While the urgency of change was sometimes missing in normal times to accelerate the transformational process, the recent pandemic created this sense of urgency – an opportunity for all SUITS city partners to discover in practice the value of being a learning organization and how useful their experiences have been during the SUITS project.

¹ SUITS has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 690650 (www.suits-project.eu).

European cities (similarly to cities in other continents) faced unprecedented challenges and had to reshape themselves to meet the needs of their citizens amid the pandemic. From the pedestrianization of streets to the repurposing of public spaces, cities have actuated a lot of activities, many of which had a direct impact on urban transport and mobility. But as lockdowns ease, the legacy of the coronavirus - and the changes it has inspired in urban spaces - remains unclear. Will this pandemic inspire a new blueprint for urban planning?

This final SUITS policy brief aims to highlight how the transformational process of the nine local authorities involved in SUITS into learning organizations made these cities far better prepared to cope with the challenges due to the pandemic than they would otherwise have been. Due to the higher levels of organizational resilience and the awareness of individuals' importance during such external crises, the nine local authorities were not just trying to react to the unforeseen challenges, but were able to act with a clear pathway and to use their experiences to facilitate their learning from recent years. Of course, the pandemic could not have been foreseen, but as SUITS local authorities are becoming learning organizations, they are enhancing their organizational capacity. In so doing, they have been learning a required resilience to reduce the „complexity and confusion – of what to do best“ in the beginning of the crisis and to cope with the challenges. This advantage was of enormous relevance for the local authorities.

This policy brief will pave the way for more cities to understand the relevance of becoming a learning organization and to understand the big advantages of such resilience to be able to cope with internal and external challenges in the future. Firstly, it will outline the theoretical basis of a learning organization and organizational resilience and demonstrate the relevance of individuals' ability to enhance the organisation's capacity. It will outline the decisive role *trust* can play in an organization to allow for organisational learning and resilience. In the next part, the process of organisational change that was needed to transform the cities into learning organizations will be briefly described (for more information see Nienaber et al., 2020a; Policy Brief No. 3). Afterwards, the article compares the effects induced by the work of the SUITS project with the necessities of the changing urban environment. In so doing, it shows how organisational change aiming at more sustainable urban transport and mobility increases the cities' resilience. Several best practise examples will allow other cities to learn from SUITS partners' experiences for the future.

Organisational resilience

Resilience is defined as the ability to cope with challenges through recourse to personal resources and at the same time to use them as an opportunity for (further) development. In an organizational context, the meaning of the term “resilience” goes beyond individual capabilities (Sutcliffe & Vogus, 2003). Not only individual employees, but also executives, teams or entire organizations can be resilient. Organizations are considered resilient if they not only master challenges such as changes, upheavals or crises, but at the same time emerge from them stronger (Weick & Sutcliffe, 2010). According to Philipsen and Ziemer (2013), resilience in organisations is related to three levels: to the employee, management and organizational level.

1. Individual (employee) resilience

Through targeted employee development, personal resilience can be strengthened. With the help of mindfulness training, employees learn, for example, how to perceive situations appropriately and consciously accept them, which helps them to control their actions more when unexpected events occur. During SUITS the public servants from the transport or mobility departments of the nine local authorities have been trained to learn how to benefit from a set of skills and competencies, such as becoming resilient, communicating trust, avoiding knowledge hiding, building trust inside the organization (e.g. Nienaber 2011; Nienaber et al., 2015a and b). Trust, for example, has been identified as an important trigger for individual resilience (Nienaber et. al., 2015b). The more a public servant or employee trusts their colleagues, supervisors and organization or local authority the more resilient an employee will be. Trust has been shown to be the basis for resilient employees (Nienaber et al., 2015a and b).

2. Resilience leadership

According to Philipsen and Ziemer (2013), the most important linchpin is leadership that strengthens resilience and “supports” the other two resilience levels. Resilient leadership is characterized by the fact that it promotes and challenges resilience as well as living it. This means that executives act as role models with their resilient behavior and enable their employees to strengthen their strengths, for which they receive recognition from the local authorities’ management. Resilient leadership fosters also team resilience. According to Rolfe (2019), resilient teams are flexible, capable of conflict and tolerant in cooperation. Decisive for this are, among other things, the creation of caring relationships, mutual trust, and the shared conviction that you can cope with unpredictable tasks as a team (Nienaber et al., 2018).

3. Organizational level

At the organizational level, the design of the infrastructure and the material, technical and personnel equipment, as well as the organizational structure and culture have an influence on whether the organization as a whole is resilient. When local authorities or organizations in general are faced with crises and emergencies, resilience is the ability to master them successfully. In connection with municipalities, the main focus is on protecting and restoring infrastructure and security.

In the process of finding a solution, the organization develops its ability to deal with difficult challenges. The change of an organization into a learning organization is the mandatory basis for becoming resilient (Nienaber et al., 2020a). Local authorities have to learn from mistakes, coping with the crisis through quick feedback, flexible knowledge transfer and a new combination of existing resources; resilient organizations learn to focus on the perception of unforeseen threats; an expansion of the scope for action, the ability to improvise and identify the field of action; promoting diversity of perspectives in problem solving; allowing doubts about existing, established knowledge; and learn to activate internal and external social resources or networks.

To put it briefly: an organizational resilience can be seen when

- an organization is flexible and has a high willingness to learn and a culture of adaptability

- an organization knows its weaknesses, is aware of the unpredictable, and anticipates threat scenarios
- an organization can react quickly: through suitable structures, clear processes, vigilance for changes from outside or inside, rapid internal reaction (decisions)
- an organization can mobilize reserves: financial and human resources, network resources

Thus during the recent pandemic, a resilient local authority is able to overcome the crisis through the targeted and flexible use of resources in clear processes. Local authorities have to provide open and proactive information, structures that allow flexible change and the exchange of expertise and resources, the delegation of decision-making power and the approval of alternative courses of action. The nine partner municipalities in SUITS were all able to show their competencies in coping with this crisis and to demonstrate resilience through their transformation to learning organizations over the last three years.

The concept of SUITS to change local authorities into learning organizations that are resilient towards external crises

SUITS' target has been to support local authorities to cope with the new and ongoing challenges regarding future mobility. The transport sector is undergoing a major transformation globally as the emphasis is shifting towards mobility as a service, intermodality and sustainable transport and greater recognition of the role which transport plays in the health, economy and quality of life of cities and their citizens. This requires local authorities to work in new ways, with new partners, regulations, new modes of transport and innovative information and communication technologies.

They need to create far-reaching plans that will bring economic and environmental benefits to all sectors of society, at the same time increasing accessibility and inclusivity for all. In order to do this, they must evolve as an organisation to become more resilient, flexible and adaptive so that they can apply their first-hand knowledge of their city to the development of transformational mobility plans that will reshape their city.

Behavioural changes need to accompany information provision and training. Learning organizations are characterized by individuals who are willing to change their behaviours and attitudes. They are creative and willing to break new ground. However most local authorities (LAs) face difficulties when it comes to change, as it is associated with risks and uncertainty. People typically prefer to stick to old ways of working and may fear higher workloads especially if change is imposed from the top, by those not familiar with and sensitive to their organisation. Quite simply developing the best mobility plans for a city requires behavioural change.

SUITS therefore, adopted a very interactive way to work together with the local authorities over three years. The following examples are based on the work of Workpackage 6 of the SUITS project during the implementation process of sustainable transport measures in nine local authorities: Alba Iulia (Romania), Dachau (Germany), Kalamaria (Greece), Palanga (Lithuania), Rome (Italy), Stuttgart (Germany), Torino (Italy), Valencia (Spain), West Midlands (UK). The intended audience are local authorities, transport planners and consultants, and user groups. The SUITS team applied a very interactive approach to work with the nine local authorities to foster

learning and knowledge exchange between the different cities. Eleven different workshops took place that guided the different local authorities through the needed organisational change together with face to face meetings, individual phone calls, emails and discussions. Furthermore, an online forum was developed to foster the knowledge exchange of experiences between the different local authorities in-between the face-to-face workshops.

Alongside these workshops, SUITS has pursued an eight-stepped approach to implement sustainable transport measures in local authorities: (based on Kotter's model (Kotter, 1995), see for more details Nienaber et al., 2020a; Policy Brief No. 3).

1. Create urgency: the urgency of the idea of developing and implementing sustainable transport measures has to be created. This idea can be very powerful.
2. Form a powerful coalition: This coalition has to be built by employees with a range of skills, a range of experience and different areas of departments in the local authority, to maximise its effectiveness. The task of this coalition is to drive the change.
3. Create a vision for change: A vision has to be 'inspirational' to have maximum effect.
4. Communicate the vision: It is very important that the vision is communicated throughout the whole local authority and later even wider to the whole society in the city.
5. Empowering employees to take broad-based action to eliminate barriers: It is most likely that barriers will pop up to block the organisational change. These barriers have to be identified as early as possible, if they are to be overcome.
6. Create short-term wins: As rewards may be not seen in the beginning, it is most important to create and celebrate short-term wins to keep the employees motivated to support the ongoing change processes.
7. Build on the change: Many organisational changes fail in the end as they are not finished properly. It is mandatory that every local authority should keep setting goals and analysing what could be done better.
8. Anchor the Changes in Corporate Culture: The changes have to become part of the core way of working within the local authority to have a lasting effect – meaning an organization has become a "learning organization".

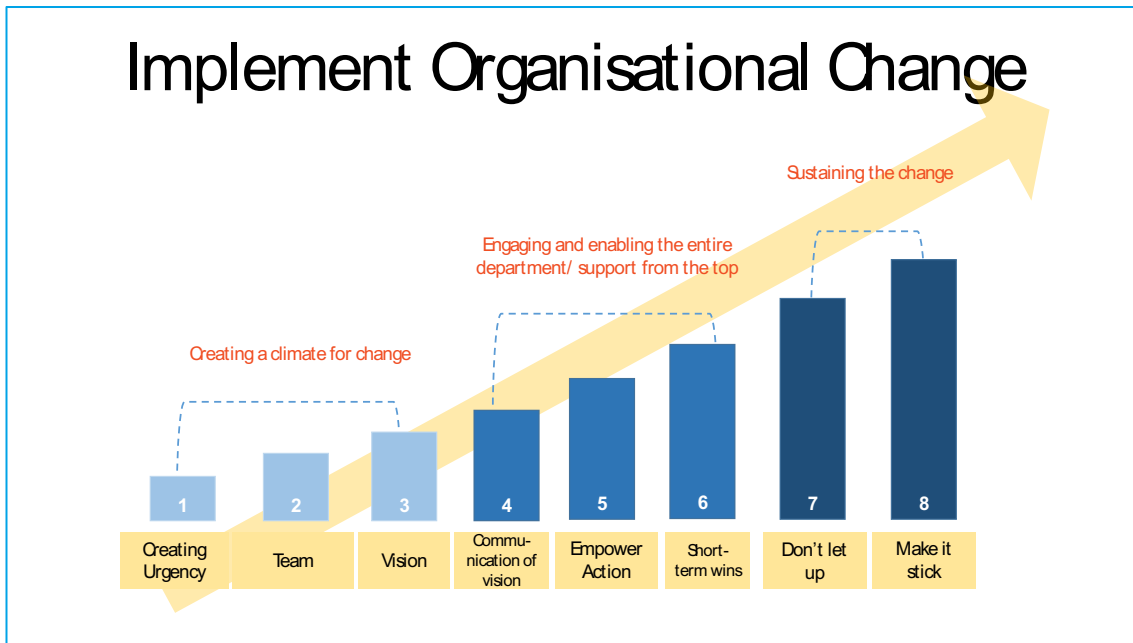


Figure 1: Organisational Change for becoming a learning organization

The SUITS project concept was holistic in the sense that the project did not only work on organisational change as outlined above, but training was also provided on cutting-edge topics for more sustainable urban transport and mobility, namely data-driven decision making tools, innovative financing and public procurement, mobility sharing (e.g. bikes or cars), and others.

How SUITS cities were able to cope with the pandemic's challenge

SUITS worked on a Capacity Building Programme (CBP), which included the role of mobility sharing (e.g. bikes, cars or scooters) and mobility as a service in sustainable urban mobility strategies which was of great help for the cities to cope with the circumstances during the pandemic (see SUITS website to access the CBP). Many cities have introduced digital appointment booking systems at short notice in order to enable access to administrative services despite COVID-19, but the partner cities of SUITS had already discussed the acceptance of such technologies over recent years in detail and were able to identify their particular requirements individually (Nienaber & Schewe, 2014; Nienaber et al., 2020b). Many citizens of necessity began to seek digital means of clarifying questions and applying for services via the city portals. Even though not all administrative services are digitally accessible due to requirements for legal presence or written forms, our cities reported that quite a number of citizens were surprised that they could access many city services online e.g. in the West Midlands, Torino, Valencia, Stuttgart or Dachau. For example citizens do not longer have to “go to the office” for the resident parking permit, they can report infrastructure problems via portals and the administration not only has emails and contact forms, but actually answers.

Interactive platforms had been already discussed before the pandemic as a great opportunity to enhance the citizens' engagement. For example, two years ago, Valencia and Dachau presented their interactive webpages to get complaints and requirements from their citizens about their mobility needs, e.g. the need for a cycle route; more traffic lights or more security around "kids" places such as playgrounds, nurseries or schools. Most important is the interaction with the citizens to keep such portals alive. Mobility department staff explained that citizens generally expect immediate answers. During the recent pandemic, the cities could build on their experiences with these kind of interactive platforms and think about adopting such formats to interact with their citizens in relation to other topics also, such as the need for medicine or food in particular to elderly citizens.

Other examples of new opportunities in the field of public service can be found easily. Palanga helped to bring together the city's taxi companies to develop new services. Due to the recent pandemic taxi companies in Europe have had "probably at least 80 percent" fewer orders and to compensate for the financial damage, taxi companies have started to expand their range. In Palanga taxis began deliveries of prepaid groceries and medicines with everything organized electronically. Furthermore, SUITS had identified already that capacity is needed regarding the legal framework to establish pop-up bike lanes and to bring in ideas for the tactical usage of public space - and this became more obvious during city responses to the pandemic. These developments do not contradict the possibilities to make service more efficient by incorporating expertise and ability of the private sector, because effective public-private partnerships benefit from an experienced public counterpart such as the Palanga example demonstrates.

Finally, as the development of data-driven approaches to facilitate efficient delivery of goods was an important part of SUITS, we can show a further example how well prepared the Greek city of Kalamaria has been. SUITS' work had focussed on easing additional time pressure from congestion (Pirra & Diana 2019; Fotis et al. 2020) adopting the concept of crowdsourcing. Such crowdsourcing could easily be extended and incorporate more information, depending on the willingness of the user to share data. So for example mobile users could indicate their shopping trips with the purpose of helping vulnerable people, i.e. co-buying food and medical equipment for residents who wish to stay or are forced to stay at home.

The pandemic made local authorities aware of the imperative need for further change for crisis resistance and resilience of the administration. The financing - from technical equipment to e-files, document management systems to the introduction of new media discontinuity-free procedures - is a considerable hurdle in view of tight budgets.

The motivation for digitization is currently higher than ever. During the peak phase, the cities showed what they are capable of: namely, to react flexibly and quickly and to deploy staff, knowledge and experience in a targeted and needs-based manner. We must now use this momentum and the funds from the federal stimulus package together with our partners from the federal and state governments to make the administrations resilient and future-proof.

The transport innovation team at the West Midlands Combined Authority, UK (WMCA) explained for example that their efforts to digitalize processes and structures in the organization were the baseline for successfully coping with the challenges of the recent pandemic and pave the way for their future work life. While electronic software for example was only used by the innovation team a year ago, the pandemic increased the acceptance and more importantly, the use of this kind of software to a maximum.

Nowadays, every employee at WMCA uses this kind of software to interact with each other. The innovation team itself increased from 5 people at its inception a year ago to more than 25 members. Furthermore, WMCA implemented 'learning organisation' principles as a regular feature to all their events due to the recent challenges along the pandemic. For example quarterly directorate meetings are now virtual which allows for flexibility in general, such as the availability of the directorate team regarding time and place. Furthermore representatives from the innovation team are now part of all major boards, raising the profile of the team and of projects around digitalization.

Furthermore, some aspects have become central to the top management of the city partners that pushed SUITS' team efforts to enhance the cities' capabilities to cope with future mobility needs. Rome for example became aware of the need to better use city resources and to avoid "rush hours" – "Better regulation of city timing". Rome also pushed also the "active modes" when it comes to mobility such as bikes or scooters. Rome's top management now tries to limit predominance of cars and supports alternatives for mobility. Rome also became more aware of the need for a better lifestyle for its citizens and is currently recovering local open spaces to improve the environment.

In general all of SUITS city partners underlined the importance of bicycles for their cities. In times of COVID-19, the bicycle has been and is a useful means of transport for the essential trips. It is a good alternative to public transport and more environmentally friendly than the car. Also the World Health Organization has underlined the benefits of cycling and walking as a means of transport as they both allow for physical distancing and enable exercise. The City of Stuttgart for example supports cyclists since April 2020 with free access to the Bike Citizens navigation app. The Bike Citizens app offers map displays and route planning especially for cyclists. Maps can be downloaded and routes can be announced using voice control. Cyclists can download the Bike Citizens app in Stuttgart for one year free of charge; there are no additional costs for longer-term use. A similar development can be seen in Valencia. While Valencia was already very active to promote cycling in their city, the recent pandemic increased these efforts dramatically.

As local authorities prepare almost for a relaxation of lockdown measures, plans to reshape mobility are beginning. The Spanish city Valencia has created a budget to finance many kilometres of new bike lanes and pavements.

SUITS cities adopted the new standards and demonstrated their ability to anticipate future developments

Organizational change within local authorities requires technical equipment. Cities that already had sophisticated electronic systems in addition to laptops and secure access, had an advantage, such as the West Midlands Combined Authority or Alba Iulia. End-to-end digital administration is only conceivable with shared e-files, a document management system and resilient network infrastructures. Our city partners told us that changes to the law are also necessary in order to exploit the potential of digital procedures in compliance with data protection regulations and to reduce bureaucracy, speed up and improve service. Recent efforts by the European Commission to get more clarification of the ownership of data or the protection of data shows this development (see recent report Citizen-generated data for public policy 2020).

All of the city partners went through an extreme change regarding the digitalization process. As all employees had to work from home for a particular time, quick and efficient solutions were necessary. Thus, while in the past home working was usually not an option for local authorities, they had to change their standards as soon as possible to provide at least a minimum of service to their citizens. The technical equipment was a key issue for many cities. Not every employee could be equipped with the required technical support to be able to work remotely. While the WMCA could benefit enormously from their “transport innovation team” which had already introduced “software to work with each other virtually”, other cities could not build on such tools. To use the words of Rome’s mobility head: “Smart working and digitalization: it’s a structural revolution and not only a passenger phenomena!” The city of Rome wants to redesign its infrastructure according to the requirements of the recent pandemic and future tendency to work remotely and in particular smart working.

In addition, the COVID-19 crisis is revolutionizing classic work structures. The “home office” is only the external appearance. What is important is what work will look like in the future, which skills will be important and how we will shape this path together with the employees. Vocational education and training is central here, and close cooperation between municipalities, states, federal government, academia, educational institutions and trade unions is needed. The SUITS cities became learning organisations through the close cooperation with academia and educational institutions. Following on from the SUITS project, the cities decided to build on close relationships with academia. Several “cross-learning sets” have been set up with the support of Coventry University which are designed as informal communication groups to discuss recent trends, developments and activities. For example Valencia, Coventry and WMCA are building a group that want to keep their knowledge exchange on mobility topics for the future. Another example is the close cooperation between Rome and Valencia. Experts and researchers bring new insights, but SUITS also fostered peer-to-peer learning. Rational learning approaches suggest that actors that face similar problems may turn to their peers in search for suitable and proven solutions. Understanding which solutions worked well in other municipalities reduces costs and efforts for the identification of adequate and effective measures and may avoid potentially costly negative lessons from trial and error learning (see SUITS CBP).

Finally, to make those changes last, cities will need to develop new strategies for their future. SUITS highlighted the need for a vision and presented different tools to develop and communicate a new vision. The relevance of a vision and the challenge to develop and communicate a vision was part of three interactive workshops during SUITS. Furthermore, the “new” or “adopted” visions of the cities that were developed 3 years ago together with the SUITS team already pave the way for a “more digital” and “flexible” mobility future and as such provide a good start to prove whether these visions will cope with the new challenges or have to be redesigned.

Overview of SUITS achievements to support local authorities to cope with the recent pandemic challenges

Following the seven points of the Wuppertal Institute (Schneidewind et al. 2020) we summarize the effects of the pandemic on local authorities and highlight how SUITS cities were able to show how they coped with it due to their organizational resilience.

Effects of the pandemic on cities

How the SUITS approach increases the cities' resilience

Helping the neighbour in times of social distancing	<p>An important part of SUITS was to develop data-driven approaches to facilitate efficient delivery of goods. This work had focussed on easing additional time pressure from congestion (Pirra & Diana 2019). Such crowdsourcing could easily be extended and could incorporate more information, depending on the willingness of the user to share data.</p> <p>E.g., mobile users could indicate their shopping trips with the purpose of helping vulnerable people, i.e. co-buying food and medical equipment for residents who wish to stay or are forced to stay at home.</p>
City centres will need new building use concepts	<p>SUITS highlighted the need for a vision. For city officials it is now virtually mandatory to discuss the future of the city centre. An existing vision facilitates this process. If a vision needs to be updated, then the experience with developing the initial one will be helpful.</p>
The importance of public services	<p>It is at the heart of learning organisations to attain and to ensure the capacity of staff members. Such capacity is needed in times of a crisis. For instance, capacity was needed about the legal framework to establish pop-up bike lanes and to bring in ideas for the tactical usage of public space.</p> <p>This does not contradict the possibilities to make service more efficient by incorporating expertise and ability of the private sector, because effective public-private partnerships benefit from an experienced public counterpart.</p>
The role of digital services	<p>The role of digitalisation in transport is eminent. SUITS has worked on a Capacity Building Programme (CBP) which includes the role of sharing mobility and mobility as a service in sustainable urban mobility strategies. The CBP also includes a module on urban freight transport measures. The training material focuses on challenges of small and medium-sized cities.</p>
Mobility becomes multimodal	<p>Multimodal mobility behaviour was a cross-cutting issue in the SUITS CBP. It is at the heart of a SUMP to develop strategies that include all modes of transport. Such</p>

	<p>knowledge was conveyed to the cities in workshops, guidelines and other formats.</p> <p>For instance, SUITS has developed a guideline for innovative financing mechanisms including ways to finance public transport. This guideline was an integral part of the partner authorities' discussions in their eight steps towards a learning organisation.</p>
Involving stakeholders and citizens	<p>The development and implementation of a SUMP needs to be based on a high level of cooperation, coordination and consultation across different levels of government and between institutions (and their departments) in the planning area (see SUMP guidelines, Rupprecht et al. 2019).</p> <p>The challenges of the COVID-19 pandemic are very similar. Parts of the organisational change process of the West Midlands Combined Authority (UK) are exemplary: The authority organizes in-house workshops, on the one hand with external trainers, but also internal workshops in which staff jointly try to develop ideas for concrete activities. Furthermore, employees are encouraged to use teamwork software to share and discuss issues they have found on specific topics of sustainable mobility. Such activities have helped the authority to cope with the challenges of the pandemic.</p>
Cities benefit from researchers and experts	<p>The SUITS cities became learning organisations, because they had shown an initial interest. Experts and researchers bring new insights, but SUITS also fostered peer-to-peer learning. A widespread insight for participants of the workshops, webinars and e-learning courses was that cities all over Europe were confronted with comparable issues. Rational learning approaches suggest that actors that face similar problems may turn to their peers in search for suitable and proven solutions. Understanding which solutions worked well in other municipalities reduces costs and efforts for the identification of adequate and effective measures and may avoid potentially costly negative lessons from trial and error learning.</p>

Table 1: How the SUITS approach increases the cities' resilience

Outlook

The COVID-19 crisis has shown that cities with learning authorities are more resilient than without such efforts. Sustainable urban mobility and the ability to react to a pandemic don't have much in common at first glance. But in fact, there are many ways in which transport departments were and are able to contribute to mitigating the effects of the pandemic. A change in the organizational culture changes the organisation's operation and functioning. Cities' departments should strive to become learning organisations. In so doing, they will become resilient cities.

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Please cite this work as:

Nienaber, A., & Rudolph, F. (2020). Organizational Resilience. How SUITS' local authorities were prepared to cope with the pandemic. SUITS Policy brief No. 4. Mobility and Transport Research Centre, Coventry University.

Supporting local and national authorities to improve the quality and uptake of Sustainable Urban Mobility Plans

Nine cities from seven countries have committed to SUITS, by providing the test bed for the development and use of SUITS capacity building material.

These cities will share best practices, and through exploitation of project outputs will directly improve the effectiveness of their planning, financing, implementation and evaluation of new transport measures and will develop or update their Sustainable Urban Mobility Plans.

The SUITS consortium consists of twenty two partners from eleven EU countries and is coordinated by the Centre for Mobility and Transport of the Coventry University, UK.

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SUITS project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 690650.



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