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## **Sustainable Urban Integrated Transport Systems**

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Transferable tools  
for Small-Medium  
local authorities



# Social Impact Assessment of transport measures and systems

## Statement of issue

The overall objective of the H2020CIVITAS SUITS project<sup>1</sup> 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 that helps cities to deliver on their sustainability objectives by outlining the city’s transport and mobility measures.



SUITs’ 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.

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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
Economic issues	Noise pollution
	Connectivity
	Reduction in travel time
Health issues	Equity of economic benefits
	Overall quality of life
	Overall health and well-being
Provider based issues	Health equity
	Primary severance
Social cohesion	Poor maintenance and neglect
	Effects caused by reduced opportunities for interaction
	Social isolation
	Social exclusion
Accessibility	Lack of access to essential services
	Availability and physical accessibility of transport
	Safety and security
	Level of service provided
User based issues	Access to spatially distributed services
	Effects of structural issues on pedestrians
Process based issues	Effects on travel
	Range and quality of engagement

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## 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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