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Abstract

CIVITAS ECCENTRIC work package 4 comprised nine measures aiming to increase the safety and the share of walking and cycling in Madrid, Munich, Ruse, Stockholm and Turku.

This report focuses on presenting lessons and recommendations for upscaling and replication from the cluster of five measures that aimed to increase the safety of walking and cycling. The report contains short descriptions of each measure; an overview of general, shared conclusions from the cluster of five measures; and specific experiences, lessons and recommendations for three themes – safety management systems and methods; provision of high-quality infrastructure; and maintaining service quality during periods of disruption.

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Project Partners

Organisation	Country	Abbreviation
Ayuntamiento de Madrid	Spain	AYTOMADRID
Grupo de Estudios y Alternativas 21 SL	Spain	GEA21
Consortio Regional de Transportes de Madrid	Spain	CRTM
Empresa Municipal de Transportes de Madrid SA	Spain	EMT
Universidad Politécnica de Madrid	Spain	UPM
Avia Ingeniería y Diseño SL	Spain	AVIA
FM Logistic Corporate	Spain	FM LOGISTIC
Stockholms Stad	Sweden	STO
Kungliga Tekniska Högskolan	Sweden	KTH
Flexidrive Sverige AB	Sweden	FLEXI
Carshare Ventures BV	Sweden	CARSHARE
Ubigo Innovation AB	Sweden	UBIGO
Mobility Motors Sweden AB	Sweden	MM
Cykelconsulterna Sverige AB	Sweden	CYKEL
Gomore APS	Sweden	GOMORE
Landeshauptstadt Muenchen	Germany	LHM
Münchner Verkehrsgesellschaft mbH	Germany	MVG
Domagkpark Genossenschaft EF	Germany	DOMAGK
Green City EV	Germany	GC
Green City Projekt GMBH	Germany	GCP
Technische Universität München	Germany	TUM
City of Turku	Finland	TUR
Varsinais-Suomen Liito	Finland	VSL
Turun Kaupunkiliikenne OY	Finland	TUKL
Western Systems OY	Finland	WS

Turun Ammattikorekeakoulu OY	Finland	TUAS
Gasum Biovakka OY	Finland	GASUM
Obshtina Ruse	Bulgaria	RUSEMUN
Club Sustainable Development of Civil Society Association	Bulgaria	CSDCS
ICLEI European Secretariat GMBH	Germany	ICLEI
FM Logistic Iberica SL	Spain	FMLOG

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List of Acronyms

ACM	Adaptive City Mobility
ca	<i>circa</i> (around)
CO ₂	Carbon Dioxide
D	Deliverable
EC	European Commission
EU	European Union
EFV	Electric Freight Vehicle
EV	Electric Vehicle
FCEV	Fuell Cell Electric Vehicle
e.g.	<i>exempli gratia</i> (for example)
H2020	Horizon 2020
i.e.	<i>id est</i> (that is to say)
LEV	Light Electric Vehicle
MIT	Motorised Individual Transport
ML	Measure Leader
NGO	Non-Governmental Organization
NOx	Nitrogen Oxides
TCO	Total Cost of Ownership
SM	Site Manager
WP	Work Package
WPL	Work Package Leader

Executive Summary

CIVITAS ECCENTRIC Work Package 4 comprised nine measures aiming to increase the safety and the share of walking and cycling in Madrid, Munich, Ruse, Stockholm and Turku.

This report focuses on presenting lessons and recommendations for upscaling and replication from the cluster of five measures that aimed to increase the safety of walking and cycling. The report contains short descriptions of each measure; an overview of general, shared conclusions from the cluster of five measures; and specific experiences, lessons and recommendations for three themes – safety management systems and methods; provision of high-quality infrastructure; and maintaining service quality during periods of disruption.

Findings from the cluster include:

- The need for active and continuous involvement of stakeholders;
- The need to use diverse sources of information and identify new forms of data collection and management;
- The importance of selecting locations for trials, establishing clear baselines and gathering qualitative and quantitative data for evaluation;
- The need to allocate sufficient time to enable processes to evolve;
- The need for political engagement and development of long-term strategic approaches to road safety;
- The value of external financing to stimulate transitions.

1. Introduction

1.1. Purpose of this document and target group

Purpose of the document

In CIVITAS ECCENTRIC, five cities (Madrid, Munich, Ruse, Stockholm, Turku) have implemented 50 innovative sustainable urban mobility measures. The measures addressed a variety on urban mobility challenges, organised in different thematic work packages and clusters. This document is intended to equip practitioners and decision makers with the information needed if they want to replicate measures of the thematic cluster “Measures to make walking and cycling safer”.

Replicability refers to the possibility of transferring results from a pilot case to other geographical areas, whilst taking into account different local contexts and conditions. When a specific measure is proven to be successful in one European city, it should be possible to transfer it (in whole or in part) to another city (or upscale it within the original city).

Target group

This document is aimed at providing practical support to project developers and planners / technical staff from cities to develop innovative measures, to consider potential barriers, and to be able to select the appropriate solutions to match their contexts. This document provides evidence that particular measures have been successfully implemented in a city and have a good replicability potential.

2. Summary of the Cluster: Measures to make walking and cycling safer

2.1.CIVITAS ECCENTRIC and the importance of safe walking and cycling for sustainable urban mobility

In the last decade European cities have made significant steps forward in the delivery of sustainable urban mobility policies, proving that major impacts in terms of congestion and reduced emissions can be achieved through ambitious measures. At the same time, peripheral districts remain largely unaddressed, with the effects of flagship projects being rarely transferred to these areas. Urban growth processes are posing additional pressure to peri-central areas.

A key challenge is to increase the attractiveness and sustainable mobility of peripheral districts, as well as to relieve central areas through clean and efficient urban logistics. To tackle these challenges and demonstrate the potential and replicability of measures aiming to enable sustainable urban mobility and transportation, the cities of Madrid, Stockholm, Munich, Turku and Ruse formed the CIVITAS ECCENTRIC consortium. Six thematic work packages are included in the project, one of which focuses on a major strategic challenge for communities across Europe – how to achieve conditions that enable safe walking and cycling and increase levels of walking and cycling.

Increasing levels of active mobility is essential for sustainable urban mobility. CIVITAS ECCENTRIC worked to enable active mobility through demonstration of multiple approaches in two clusters, one focusing on making walking and cycling safer, and the other on increasing modal share for walking and cycling by increasing availability and quality of infrastructure and cycles. This report presents results from the thematic cluster addressing safer walking and cycling.

2.2.ECCENTRIC measures to foster the increase of walking and cycling levels

Safety issues are reported to be one of the major obstacles for increased cycling and walking. To increase actual and perceived safety, this cluster demonstrated five measures including a range of physical interventions and policy alternatives that can improve the safety of pedestrians, cyclists and other road users (see Table 1).

Table 1 Overview of measures in WP4 cluster “Safer walking and cycling”

Measure	City	Partner(s)
Innovative and participative approach to traffic safety (4.1.)	Madrid	City of Madrid
Software-controlled safety management in the road network (4.2.)	Munich	City of Munich
Providing secure pedestrian crosswalks (4.3.)	Ruse	City of Ruse; Club Sustainable Development of Civil Society Association (CSDCS)

Safe sidewalks with cycling capability towards the city centre (4.4.)	Ruse	City of Ruse; CSDCS
Policy for re-routing cyclists during construction works (4.5.)	Stockholm	City of Stockholm

2.3. Madrid and Munich: methodological improvements to safety management systems to identify and mitigate actual and perceived risks

In Madrid and Munich, the cities have implemented new safety management systems that include spatial, modal, temporal and social analysis of accidents to identify real and perceived risks.

In Madrid (measure 4.1), the system incorporates information gathered from stakeholder such as citizens and police to illustrate both reported and unreported incidents, enabling geo-referencing with GIS.

In Munich (measure 4.2), inventories of traffic data and incidents have been analysed to develop a programme for actions that can improve road safety. Interventions at hotspots are being made and monitored to assess outcomes, and the City administration has continuously involved stakeholders, such as residents’ associations and schools, in the process. This approach informs and complements the wider Vision Zero programme for Munich approved by the City Council in April 2018, meaning lessons learnt during CIVITAS ECCENTRIC will be integrated into ongoing road safety work across the city. Common challenges for these measures have included the issue of data quality and management (including staff competencies), and the difficulty of balancing different perspectives (e.g. concerning impact versus costs or feasibility).

2.4. Ruse: provision of high-quality infrastructure to enable safe walking and cycling in suburban district

The safety of pedestrians and cyclists is a major concern in Druzhba, a suburb of Ruse. The general quality of pavements is poor and many residents, particularly people with disabilities, avoid walking. This results in higher use of motorised transport than necessary, with resultant conflicts between road users exacerbating the aforementioned problem.

In CIVITAS ECCENTRIC (measure 4.3), the quality of pedestrian crossings in Druzhba has been analysed and improvements made, including use of LED lighting and elevated crosswalks, along with surveillance cameras to monitor performance and increase citizens’ perceptions of safety. In addition (measure 4.4), Ruse is investing in improving the quality of sidewalks and introducing designated bike lanes alongside several main roads. Both of these measures are supported with wide-ranging capacity-building and dissemination activities involving stakeholder groups such as citizens, non-governmental organisations, urban planners and transport professionals.

2.5. Stockholm: ensuring accessibility to high-quality infrastructure during temporary road works

The final measure in the cluster is demonstrated in Stockholm and involves the development of guidelines and product tests to improve safety around construction sites (measure 4.5). Temporary diversions due to works create disruptions for pedestrians, cyclists and other road users, often resulting in conflicts and in the worst case, accidents. This measure aims to increase safety for unprotected road users and enforce the “order of priorities” for sustainable mobility by ensuring seamless travel for pedestrians and cyclists (as opposed to motor vehicles, which have often in the past received priority during diversions).

In addition to the development and implementation of guidelines for construction companies concerning road layout, signage, lighting, safety equipment, etc. the measure also involves collaboration with a business association, the Swedish Standards Institute and two other cities to test, evaluate and develop standards for innovative safety products. This includes, for example, use of soft materials and protective nets adapted from ski slopes instead of metal or concrete barriers.

2.6. Demonstration, evaluation, validation, exchange, upscaling and replication: collective actions in CIVITAS ECCENTRIC

CIVITAS ECCENTRIC has not only enabled the demonstration, evaluation and validation of the five measures, but has also included a range of activities enabling exchange between the project partners and with other interested cities and stakeholders. These activities have focused on dissemination of project results to enable capacity-building, upscaling within CIVITAS ECCENTRIC cities and replication in other locations.

These actions included two CIVITAS ECCENTRIC cross-fertilisation workshops in Munich and Madrid, an international workshop prior to the 3rd Global Ministerial Conference on Road Safety in Stockholm during February 2020, conference presentations at e.g. CIVITAS Forum 2018 and 2019 and Transport Research Arena 2020, hosting of study visits by CIVITAS ECCENTRIC cities, internal peer review of measures by other CIVITAS ECCENTRIC cities, public webinars and local events, publications, as well as intra-project activities such as telephone conferences.

To further assist other cities and stakeholders in learning from and replicating the CIVITAS ECCENTRIC measures enabling safer walking and cycling, this report proceeds by outlining drivers and barriers, the results and impact general conclusions, lessons learned and recommendations from the implementation of the cluster of five measures, followed by key lessons and recommendations for three themes – safety management systems and methods; provision of high-quality infrastructure; and maintaining service quality during periods of disruption.

3. From ECCENTRIC cities to replication in other places

The following chapter identifies the kinds of barriers and drivers that influence demonstration of measures to increase the share of walking and cycling, and indicates ways in which these have influenced implementation in the ECCENTRIC cities. The assessment reflects both the qualitative experience of the Work Package Leader and Measure Leaders, as well as qualitative and quantitative analysis from the Project Evaluation Manager.

3.1. Evaluating the replication potential of measures

Drivers and barriers to be expected

In order to make implementation possible, an in-depth analysis is required to understand the existing barriers that obstruct effective and successful implementation. Finance and governance aspects are addressed within Chapter 5, as these are closely connected to the particular types of actions demonstrated.

- **Barriers**
 - *Political/Strategic-Problem related:* The barriers include a general concern that key institutional stakeholders and decision-makers do not focus on the implementation of the measures, since they have other priorities in the municipalities or because they lack mandate or are dependent on other stakeholders for implementation. It was sometimes perceived that there was a mismatch between high-profile political statements advocating walking and cycling and actual prioritisation of efforts to increase the share of walking and cycling. In some cases, this creates uncertainty about the continuity of measures after the ECCENTRIC funds run out, since some measures require political decisions about investments. This is quite related to the next barrier.
 - *Financial:* Experiences included limited budget or restrictions on the use of other funds to enable infrastructure improvements or bureaucracy to use funds for the implementation phase, and unclear justification for funding of other investments (e.g. those favouring cars). It was also pointed out that the funding scheme is sometimes inconvenient; planning and implementation should be flexible and/or separated to match political discussion and agenda.
 - *Planning:* In general, this was perceived as lack of a clarity about how to proceed after identifying necessary actions. Some examples include a lack of guideline-process on how conduct part of the pilot projects (road closure), difficulty to find convenient places to implement the measure or to test the pilot project. In some cases, not all potential problems were identified during the planning stage.

- *Institutional*: The complexity of administrative structures slowdown a fast implementation of projects related to infrastructure, due to the long decision-making processes of institutions.
- *Positional*: Some measures struggle to position their product in the market due to insufficient partner arrangements, or lack of involvement of stakeholders in the living lab and changes in ML over the project.

Other barriers included high segmentation of users, needs, preferences, and capacities. To overcome such barriers, on the political/strategic side, suggested actions included to approach key decision-makers and stakeholders at all stages of the measure, as well as to identify other potential partners that could support the measures.

To increase financial security for the implementation, measures should be embedded in the city's SUMP. Moreover, there should be good communication with stakeholders. To overcome positional barriers, it was suggested to increase visibility by partnering with measures or similar projects, as well as to implement marketing strategies to promote the measure.

- **Drivers**

- *Organizational/Involvement*: This driver was described as the good cohesion and high commitment within the teams of the organizations that coordinate the measures, as well as their leadership, and a clear segmentation of users.
- *Political & strategic/Institutional*: The measures are aligned with current policies and city strategies. They are meant to ease some cities' problems that pose political pressure, since they depend on the public opinion. This translates in a favourable regulatory framework and environment towards the WP.
- *Positional*: The measures support the goals of some SUMP and provide additional benefits to walking and cycling users. This creates a favourable attitude towards them and makes them more visible. In some cases, it has speeded up their progress.
- *Planning*: Good ex-ante analysis, technical planning and involvement of users in the planning process.

Other drivers include financial drives, acknowledging the funding provided by CIVITAS and in some cases a good involvement and communication with stakeholders.

Foreseeable Impacts

It is fair to expect an increase in cyclist and pedestrians where measures represent a moderate increase in the quality of the current infrastructure, and use of infrastructure is perceived as safe by the user (particularly for cycling).

An improvement on the mobility conditions is to be expected, particularly for regular users of public transport or those dependent on public transport as their sole means of transportation. Multimodality is enabled, and door-to-door accessibility is nothing but better. For car users though, there is little prove that these measures alone can do

much to have an impact on car dependency or change their mobility behaviour. Only in combination with other (most likely car-restrictive) actions this could be expected.

An increase in the acceptance of actions providing more and better space for cycling and walking is not necessarily to be expected, particularly if these actions endanger the status quo of the private vehicle. Depending on the local context, reactions from citizens and decision makers can vary widely for reasons that have probably nothing to do with the actual impact of the actions but rather reflect other political or social concerns.

Measures for increasing cycling and walking require to have safety as one of its central elements. Failing to do so will not only fail to support non-motorized mobility, but even worst, result in more injuries and deaths, and a backlash in the acceptance of such investments.

It is fair to assess the impact of these measures using indicators linked to the number of users and activities in the street. Also qualitative and quantitative indicators measuring the visibility, perception of the measure and its users are appropriate. Also safety indicators are relevant, and are particularly useful if these can be associated to a spatial variable.

Modal split, mode shift, vehicle-kilometre travelled, energy consumption/savings and other indicators commonly associated to urban mobility and transportation patterns are adequate only if they make part of a complete study that considers other modes and changes in the medium-to-long terms (5+ years). Car ownership, location preferences, impact on sales and other indicators measuring economic, long-term mobility and location impacts require large datasets (in time range and sample size) and fall beyond the isolated scope of transportation planning.

Policy Recommendations

Managing the impact of cycling and walking measures in road congestion¹ and other forms of resistance to the free flow of motorized individual transport, and its further impact in public opinion and acceptance is vital to ensure the raise of active mobility. At the same time though, both opinion and acceptance are influenced by forces which might have little or no relationship with the actual effect of walking and cycling infrastructure. Not because congestion is tackled successfully (e.g. by shifting users from private vehicles) means acceptance will always go on the rise, and not because congestion increases (e.g. due to a reallocation of space) means that acceptance has to decline.

Acceptance is to be managed strategically, considering a wide spectrum of variables falling beyond the field of transportation and mobility planning (Social, economic, politic, etc). Similarly, impact in capacity constraints is rather the result of a strategy anchored in different aspects of the urban realm, than the result of measures in cycling

¹The concept of congestion in this context extends beyond its common connection to traffic flow. It also involves other forms of resistance to the use of private vehicles e.g. for parking manoeuvres.

and walking (or even transportation alone). Solving capacity constraints in different forms (e.g. congestion) should not be one of the objectives of investments in cycling and walking. Capacity constraints are rather a tool to regulate the use of space in cities.

Cities should aim to achieve a balance of walking, cycling and public transport as these modes complement each other and improvements in connectivity, accessibility and safety provided by actions in this field will improve the overall quality and sustainability of the transport system. Nevertheless, achieving modal shifts from private cars to sustainable modes seems to require additional actions (e.g. through push-pull strategies) addressing particular needs of private vehicle users.

Safety should be at the centre of any action focused in active mobility. With an increase in the number of pedestrians and cyclists, there is the need to provide safe solutions to keep accidents at bay, if not to eliminate them completely. In the long term, and as part of joint strategies, the potential reduction in road traffic can bring an even more positive perspective into accident figures.

Visibility of the infrastructure and its users, together with effective communication are key elements to address acceptance, safety, and ensure a raising number of non-motorized users of the street. The infrastructure alone can provide a safer environment, but its benefits have to be visible and communicated to attract more users. Once there, users can only attract more users, which again require to be visible for safety and strategic reasons.

Actions supporting active mobility are currently lacking the tools and support for project delivery. From weak cases for financing, to lack of guidelines for planning and approval, CIVITAS ECCENTRIC demonstrated the need to improve governance and robust risk management around this types of measures.

SUMPs are one of the tools to increase the significance of cycling and walking projects, and support its delivery. SUMPs were identified in CIVITAS ECCENTRIC as a positive driving force, but they still need to find its way into a more permanent form in the formal planning procedures of each city. This is true particularly for non-central locations where the benefits of active mobility almost always yield to car-centric planning philosophies. CIVITAS ECCENTRIC itself was found as a driving force supporting the acceptance and delivery of related projects.

4. Measures

4.1. Methodological improvements to safety management systems to identify and mitigate actual and perceived risks



Figure 1: WP4_ MAD 4.1 ECCENTRIC Municipal guide on Safety

These two ECCENTRIC measures are considered together in this chapter:

- Innovative and participative approach to traffic safety (MAD 4.1)
- Software-controlled safety management in the road network (MUC 4.2)

Introduction

These measures aimed to influence the mobility cultures of Madrid and Munich by increasing actual and perceived levels of safety. To do so, the cities adopted new methods to map and analyse information from multiple sources concerning actual and perceived risks within their cities. By increasing the quality of information, the cities gained new insights into road safety management and identified locations for interventions to reduce risk of accidents. This helps to increase confidence among pedestrians and cyclists and thereby facilitates adoption of sustainable, active forms of mobility.

Implementation

The specific steps used by Madrid and Munich to implement each measure are described in the Factsheets developed by the project for Madrid ([here](#)) and Munich ([here](#)).

Below is an aggregated checklist of steps which can inform other cities about how to replicate the approaches used.

- *Identification of problem/challenge and its scope. Key questions include:*
 - What are we trying to influence? Do we aim for e.g. a local impact in a specific location or a city-wide strategy promoting Vision Zero? How can we shift from reactive planning (i.e. responding to fatal accidents) to proactive, preventative planning (i.e. identifying and mitigating all risks, both actual and perceived)?
- *Identification of possible sources, both formal/official and informal/unofficial. For example:*
 - Official records, e.g. police accident reports
 - Other formal sources not normally included in official statistics, e.g. insurance company records, hospital records
 - Informal sources, e.g. neighbourhood associations, schools, social media
 - Develop forms of cooperation to increase the range of data available! Contact relevant stakeholders and set up simple processes for data input, e.g. social media pages for concerned residents
- *Analyse your data: make use of digital tools such as GIS to geo-reference information.*
 - Identify clusters and hot spots, as these are ripe for improvement!
 - Think about the impacts of clusters and hot spots – pedestrians and cyclists may be forced to use other, informal routes because of these risks – consider this when planning interventions!
- *Use your data and communicate your results!*
 - Inform politicians and other stakeholders about investment needs
 - Plan and implement interventions to improve actual and perceived safety
 - Inform citizens and educate all road users about how to share public space and ensure safe and sustainable travel
 - Work for continual improvement!

Business model and contractual partnerships

There may be no need for a business model or contractual partnerships. However, there may be costs or conditions related to the use of private data, or there may be a need to procure support from consultants for e.g. process management, analytical support or technical systems. For example, in Munich consultants were procured to assist the city in preparing inventories, identifying objectives and appropriate measures, and to develop a monitoring programme.

The budget for the measure was 57.117 € to set up the tool and do the test in the Living Lab. This unique investment is public in this case. To be able to maintain this tool over time, including the part of campaigns in social media and analysis of citizen participation, a yearly budget of 15.000 € will be required. This tool has been embedded in the normal tasks related to road safety of Madrid City Council.

Critical challenges and success factors

The collection and coding of data presents both a critical challenge to implementation and is a key factor for successful implementation. As noted above, it is important to identify multiple sources of information and to develop a comprehensive approach to compile and analyse data. Keywords or codes are thus important and need to be selected carefully. Similarly, geo-referencing is essential, but has not historically been used in accident reporting; resources must be allocated to enable a shift from manual, unsystematic reporting processes to digitalised, structured reporting. Such resources concern both human users, who may require training in e.g. GIS or qualitative data coding, as well as the required technical systems, to ensure high quality data is collected and analysed appropriately.

Other important success factors include:

- The need for political support and to involve a wide range of stakeholders;
- The need for in-depth (and continual) assessment of road safety in the target area(s) using all possible sources;
- Clearly linking outcomes of analysis with interventions to improve road safety – develop a list of priorities based on effectiveness, cost and feasibility, and work systematically to address them;
- Look for “unseen” trends or patterns and find ways to address these too. Be creative and keep increasing your level of ambition!

Lessons learned and recommendations

Common challenges for these measures have included the issue of data quality and management (including staff competencies), and the difficulty of balancing different perspectives (e.g. concerning impact versus costs or feasibility). However, these challenges can be overcome through adoption of a structured and systematic approach, as outlined above. It is essential to tailor the process to the local context to ensure that, for example, staff work with tools they understand and can generate useful output from; that politicians understand and accept the need to address key priorities;

that stakeholders are engaged and can provide supporting input in a format that suits them.

CIVITAS ECCENTRIC strongly recommends that other cities adopt similar approaches as part of comprehensive city-wide strategies to support Vision Zero and enable safe walking and cycling. Such strategies should not be stand-alone documents, but integral parts of Sustainable Urban Mobility Plans and explicitly linked to both measures (e.g. reductions in speed limits) and other strategic objectives (e.g. fulfilment of Sustainable Development Goals, attainment of attractive urban environment, etc.). By doing so, cities can place safe walking and cycling at the heart of sustainable urban development.

4.2. Provision of high-quality infrastructure in suburban Ruse

These two ECCENTRIC measures are considered together in this chapter:

- Providing secure pedestrian crosswalks (RUS 4.3)
- Safe sidewalks with cycling capability towards the city centre (RUS 4.4)

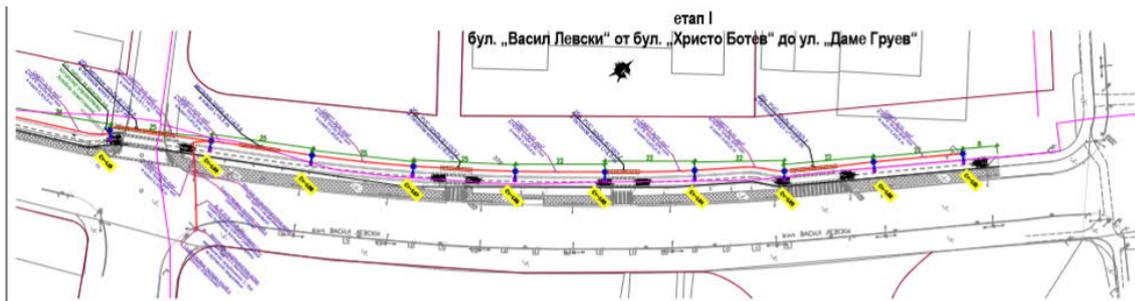


Figure 2: WP4_ RUS 4.4 Safe sidewalks



Figure 3: WP4_RUS 4.3 Secure crosswalk at night

Introduction

These measures addressed the need for urgent improvements to pedestrian and cycling infrastructure in the densely-populated suburban district of Druzha, Ruse. Poor quality pavements and an absence of bike lanes were among the factors influencing high levels of car use, and contributed to restricted accessibility for marginalised groups. These measures combined physical works – the installation of new sidewalks, crossings and bike lanes – with extensive engagement with key stakeholders.

Implementation

The specific steps used by Ruse to implement each measure are described in the Factsheets developed within the project for Ruse 4.3 ([here](#)) and Ruse 4.4 ([here](#)). The checklist below combines these steps to inform other cities about how to replicate the approaches used.

- Identify and analyse the potential of relevant best practices;
- Involve local stakeholders through workshops, social media, etc. Make use of all available data to identify critical locations for interventions – for example, crossings may be needed close to schools, shopping areas, or at other risk spots;
- Thoroughly analyse the neighbourhood to identify potential for low-cost, high-impact solutions;

- If necessary, plan and commission physical works – consider issues such as land ownership, or the specific requirements that could be included in a call for tenders;
- If necessary, use the process as a pilot to develop technical standards for future works.
- Disseminate information in the neighbourhood and carry out follow-up evaluations to ensure objectives are achieved and residents are satisfied – beware unintended consequences, where safety improvements at one site lead to behavioural changes that negatively affect safety at other locations!
- Work for continual improvement!

Business model and contractual partnerships

There may be no need for a business model or contractual partnerships, except in the case of procured services (as in Ruse) or in instances where private land is used. In such cases, it may be possible to split costs with property owners who benefit from increased safety and accessibility in and around their premises. Physical investments in infrastructure are always resource-intensive, so it is worthwhile exploring all possible measures to improve safety that do not involve construction – for example, speed limits or other traffic calming measures.

Critical challenges and success factors

The main challenge – and a key criteria for success – has been to design a process that enables maximum engagement of the local community, in order to identify and select desirable locations for crossings, sidewalks and cycle paths, and to ensure acceptance and use of the new infrastructure. To achieve this, Ruse analysed the behaviour and preferences of residents of Druzhba and organised its process to ensure citizens had multiple opportunities to engage, e.g. at workshops, interviews, through social media or by responding to questionnaires.

Lessons learned and recommendations

Key lessons from this measure include the value of wide-ranging analysis to inform and improve project design and decisions. Ruse benefitted from European benchmarking, thorough analysis of the local situation, and the extensive and early input from its citizens into the planning process. CIVITAS ECCENTRIC strongly recommends that cities replicating these measures adopt a similar approach and try to blend local knowledge and the experiences of other cities in Europe to maximise the impact of physical works on local traffic safety.

4.3. Ensuring accessibility and quality during temporary road works

This ECCENTRIC measure is considered in this chapter:

- Policy for re-routing cyclists during construction works (STO 4.5)



Figure 4: WP4_ STO 4.5 Safety flexible fence

Introduction

Construction works often lead to temporary diversions or road works that disturb the flow of traffic for all road users and in particular, for pedestrians and cyclists. Despite ambitions to enable active and sustainable travel, cities often make little or no effort to ensure the journeys of pedestrians and cyclists are not disrupted by construction works. Special efforts are often made to ensure seamless movement of buses, cars and trucks, whilst pedestrians and cyclists are forgotten or squeezed into narrow strips with low levels of safety. This measure aimed to counteract this by developing technical standards that promote undisrupted walking and cycling at construction sites; test and evaluate implementation of diversion methods and innovative safety materials; and to develop national standards for safety materials used at constructions sites to minimise risks to cyclists and pedestrians.

Implementation

The approach used by Stockholm to implement this measure is described in the Factsheet on Stockholm ([here](#)). Below is a summary of important steps which can inform other cities about how to replicate the approaches used.

- Analyse specific practices and other important factors influencing risks at construction sites or temporary diversions. Identify potential for improvement through introduction of new practices, materials, etc.
- Consider the current requirements issued by the city when planning temporary diversions or road works; what is demanded and what is not, and how do these demands relate to the risks?
- Develop updated technical standards and integrate these into regular routines;
- Carry out awareness-raising activities to ensure construction companies and their employees are aware of the reasons for new procedures;
- Monitor and follow-up on implementation;
- Use clear signage and monitor levels of walking and cycling before, during and after construction works;
- Work to continually improve the process!

Business model and contractual partnerships

The costs of implementing the measure should be integrated into contractual partnerships with construction companies; the practice should become business-as-usual and may result in cost savings at some locations (as the approach indicates less disruption to all traffic and was accepted and appreciated by construction workers as it reduced risks and confusion). The Swedish Standards Institute owns the content of the work to develop national product standards for safety equipment tailored to the specific challenge of urban, low-speed crashes involving cyclists (as opposed to equipment designed for high-speed collisions on motorways). The use of new materials may result in higher costs in the short-term.

Critical challenges and success factors

This measure has been challenging to implement, as it involves the introduction of new planning methods and working practices to live construction sites in real traffic conditions. The first demonstration of the methods and materials was conducted in a simulated environment, i.e. on pavements and cycle paths but without an actual construction site. Feedback from this test was positive with regard to the methods and materials, but not concerning the disturbance to pavements and cycle paths (which users perceived as unnecessary, in the absence of a clear reason).

The second demonstration was therefore conducted at a site of major construction with a clear need for diversion. It was however difficult to identify test sites, as the City administration often receives information on temporary road works at fairly short notice, whereas the planning and implementation of a pilot action requires longer periods of time. Moreover, the site needed to be “useful”, in the sense of having a high throughput of pedestrians and cyclists; a high impact on those users, in the sense of a clear need for diversion; and provide good opportunities for baseline measurement and evaluation;

space to interview users; and characteristics enabling comparison with similar sites in the city. Interpreting results is another challenge, as there is a general tendency to receive user feedback on aspects that function less well than those things that work; similarly, there is an absence of information about some kinds of data, such as non-reported minor injuries and perceived risks.

Having said this, the demonstrations are considered successful and have enabled the City of Stockholm to develop its policy and guidance for construction companies; to demonstrate new methods and materials; and to initiate a process for standardisation of an entirely new class of road safety products. The measure results were in line with the project objectives, as the temporary diversions led only to a 5.19% reduction in the number of cyclists using the affected route, suggesting that the widespread adoption of the approach can help maintain the prioritisation of walking and cycling during temporary disturbances and enhance safety for users.

Lessons learned and recommendations

As noted above, it is essential to carefully select the location of a demonstration and collect strong baseline data, including information on e.g. the availability and use of possible alternative routes. Find ways to gather positive and negative feedback, and make strong use of qualitative research methods such as interviews to acquire information on user experiences. Work collaboratively with other cities to get new ideas and develop common approaches, as this will help accelerate the adoption of methods by stakeholders such as construction companies.

5. Conclusions

The experiences of four cities in CIVITAS ECCENTRIC that implemented five measures to enable safer walking and cycling highlight various important factors that may be relevant to other cities. The examples from CIVITAS ECCENTRIC indicate the importance of:

- involving stakeholders from an early stage of project design and on an ongoing basis throughout projects, as this can add significant value to most demonstration projects. This relates not just to the process or technique in question, but also to:
- carefully selecting locations for trials and pilots to ensure appropriate and high-impact demonstrations;
- giving sufficient time to the process, particularly when trying to address trade-offs between issues such as the feasibility, affordability and effectiveness of different safety measures. Negotiations, priority setting, and alignment at political and administrative level are an important and time-consuming part of the process.

Moreover, the cities' experiences show digitalisation is a valuable strategic tool but quantitative data and official records provide only a partial impression of the actual and perceived challenges to be addressed. Thus it is essential to:

- ensure processes are designed to enable collection and management of high-quality data – both baseline and for monitoring – ideally from multiple formal and informal sources, collected using different methods, and with citizen input;

Each of these factors have been essential when demonstrating the development of safety management systems in Madrid and Munich; the provision of high-quality infrastructure in Ruse; and the new methods and materials used to maintain service quality during periods of temporary disruption in Stockholm.

The importance of external funding and support from local stakeholders, in particular local politicians, is also clear. The measures demonstrated in CIVITAS ECCENTRIC may not have been realised without project funding, and have in each case resulted in strong results that have consolidated political will to address traffic safety and ensure safer conditions for active forms of mobility. Thus:

- external funding can facilitate action and add value to work in cities with pre-existing commitments and clear strategies.

Individually and collectively, the CIVITAS ECCENTRIC partners have illustrated pathways to safer walking and cycling in European cities; and where CIVITAS Eccentric has taken the lead, other cities should follow.

Sources /References

- “D4.3. Implementation of measures to make walking and cycling safer”.
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