Transnational evaluation report of piloting activities

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Interreg Baltic Sea Region
Co-funded by the European Union
SMART GREEN MOBILITY
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Table of Contents

1. Introduction 4
1.1 Background 4
1.2 Aim and outline 5
2. Approach to development and testing of toolkit/guides 6
2.1 Diagnostics-Interventions Toolkit Development 8
2.2 Monitoring Guide Development 10
2.3 Citizen Activation Guide Development 13
3. Insights from testing and adjustments of components 17
3.1 Insights from Diagnostics-Interventions Toolkit Development 17
3.2 Insights from Monitoring Guide Development 20
3.3 Insights from Citizen Activation Guide Development 23
4. Conclusions 27
4.1 Transnational value 27
4.2 Overall lessons learned 27
5. References 30

Acknowledgement
This report is a part of the project titled "Baltic Sea region Active mobiliTy Solutions - in darkness and all-weather conditions" (BATS). The project is co-funded by the European Union, through the Interreg Baltic Sea Region (Programme 2021-2027, Priority 3. Climate-Neutral Societies, Objective 3.3 Smart Green Mobility).

1. Introduction

1.1 Background

Year-Round Active Mobility (YRAM) and is a central aspect of urgently needed sustainability transitions in urban mobility systems worldwide (Malin et al., 2020; Mladenović et al., 2021; Mladenović et al., 2022). So far, there is a plethora of evidence that increasing the share of active mobility in urban mobility systems requires cultural-behavioural change across a range of residents as well as packaged policy and infrastructural interventions within and outside of the transport sector. However, during **autumn and winter months in the Baltic-Nordic region**, YRAM see a marked decline, due to additional environmental constraints related to at least three user aspects (Mladenović, 2024). One challenge is the reduced friction and stability in the contact with the streetscape surface, caused by such phenomena as ice formation, high snow amount, surface water accumulation and combination with other materials such as leaves and dirt. The second challenge is the direct bodily discomfort while moving, caused by such phenomena as reduced temperature, precipitation intensity or wind conditions. Lastly, the third challenge is reduced visibility as in users seeing the environment and other users, and being perceived by other users in the mobility system, caused by reduced daylight hours and overall weather conditions that reduce visibility. In contrast to these challenges, there is a lack of research focusing on the Baltic-Nordic region, which has specific policy, design and management requirements.

Below the behavioural and cultural change on the one hand, and the policy and infrastructural change on the other hand, research in recent years has shown that there is an underlying multi-layered institutional change challenge (Eräranta & Mladenović, 2021; Mladenović et al.,, 2021; Mladenović, 2024; Verma et al., 2023). For example, those challenges manifest as the lack of financial capacity to invest in YRAM and the lack of strong political support. Moreover, within the planning organizations, there is a need for changes in planning norms, beliefs and values, as well as specific skills of planners. To some extent, some of these institutional challenges have been addressed by a recent surge in the development of specific digital decision-support methods and tools focused on active mobility planning (Glavić et al., 2019; Mladenović et al., 2021; Pönkänen et al., 2025).

Despite the in-depth understanding of institutional challenges across different contexts, and the development of specific decision-support methods, there is still a need to enable urban and transport planners to be effective communicators, mediators, collaborators and leaders (Mladenović, 2022). Such development requires a shift from understanding planners as traditional instrumental rationality experts towards the role of the planner as a communicative expert with technical knowledge (Eräranta & Mladenović, 2021). Such a communicative planning expert plays multiple roles beyond narrowly defined technical roles, including process design, mediation, development and dissemination of knowledge within the planning organization. As such, the purpose of planning is not finding the best solution to a fixed and known set of ends but rather reaching an understanding that facilitates action while increasing capacity for reasoned deliberation and democratic

decision-making. Moreover, the process of planning is recursive and not linear, where facts, values and discovery are interlinked, while the emphasis is on organizational learning and consensus building. Thus, communicative processes are a substantial part of the planning process, where planners seek to improve the validity with which the claims are made, e.g., truthfulness, legitimacy, and trust.

With all that in mind, this project has aimed to develop practical and transnational tools to enable various levels of communicative actions, such as those ranging from a meeting within a planning team to develop technical guidelines for a specific city, to those including a public participation meeting with diverse residents. Such tools should enable civil servants to improve their diagnostics and interventions decision-making within their institutional work.

The first solution is a Year-Round Active Mobility Technical Toolkit (Year-Round Active Mobility Toolkit) containing three components diagnostic, intervention and monitoring guidance. **The second solution is the complementary Citizen Activation Guide** that will support cities in how to successfully engage differed end users in more YRAM. This development has been done by three universities, with Aalto University team being responsible for Diagnostics-Interventions Toolkit (DIT), Gdańsk University of Technology team being responsible for the Monitoring Guide (MG), and TalTech - Tallinn University of Technology being responsible for the development of Citizen Activation Guide (CAG).

The BATS project partners that have been closely involved with these tools come from the following seven organizations, from seven different municipalities across seven Baltic-Nordic countries: Free and Hanseatic City of Hamburg, Municipality of Umeå, Municipality of Gdynia, Municipality of Kalundborg, Union of Harju County Municipalities, City of Porvoo, and Klaipėda Public Transport Authority. In addition, BATS project partners have included Swedish Cycling Advocacy Organization and Gate21. In this report, we use interchangeable terms city and municipality, to refer to public sector BATS project partners, exemplifying the focus on target groups at the local governance level.

1.2 Aim and outline

This report aims to describe the development, testing, and refinement of three key tools: the Diagnostics-Interventions Toolkit, the Monitoring Guide, and the Citizen Activation Guide. Following this brief introduction, the report first outlines the overall approach to the design and piloting of these toolkits and guides. It then presents insights gained from testing and adjusting each component in practice. The final chapters summarise the transnational value of the work, highlight overall lessons learned, and formulate recommendations for future research and development activities.

2. Approach to development and testing of toolkit/guides

The BATS project has been implemented having in mind three types of cross collaborations (Figure 1). One, there has been a collaboration between developing toolkits and guides and piloting local experiments in each of the seven BATS municipalities. Two, that has been a collaboration between a range of practitioners (mainly planners from local and regional public authorities) and academia (from different fields of engineering and social sciences), with their own distinct approaches (Mladenović & Eräranta, 2020). Three, there has been transnational collaboration, between seven different municipalities across the Baltic-Nordic region, with their contextual commonalities and differences, such as weather conditions, maturity of the mobility system, and planning cultures. **The most important target group for BATS is local public authorities** as they are the ones with the main responsible for active mobility planning. Regional public authorities and Infrastructure and public service providers are secondary target groups.

Our approach was based on having the two transnational toolkits (their components/deliverables from WP1) tested in all seven pilot cities (Figure 2). The aim was for the cities to deploy the toolkits' methods to develop and improve the practical experiments they implemented locally to address YRAM. This increased the capacity to address YRAM in a structured and systematic way over the long term and created more strong examples of how to address YRAM issues in practice. The practical experiments addressed common themes across the cities covered in four main tracks: infrastructure, traffic management, road maintenance, and citizen activation.

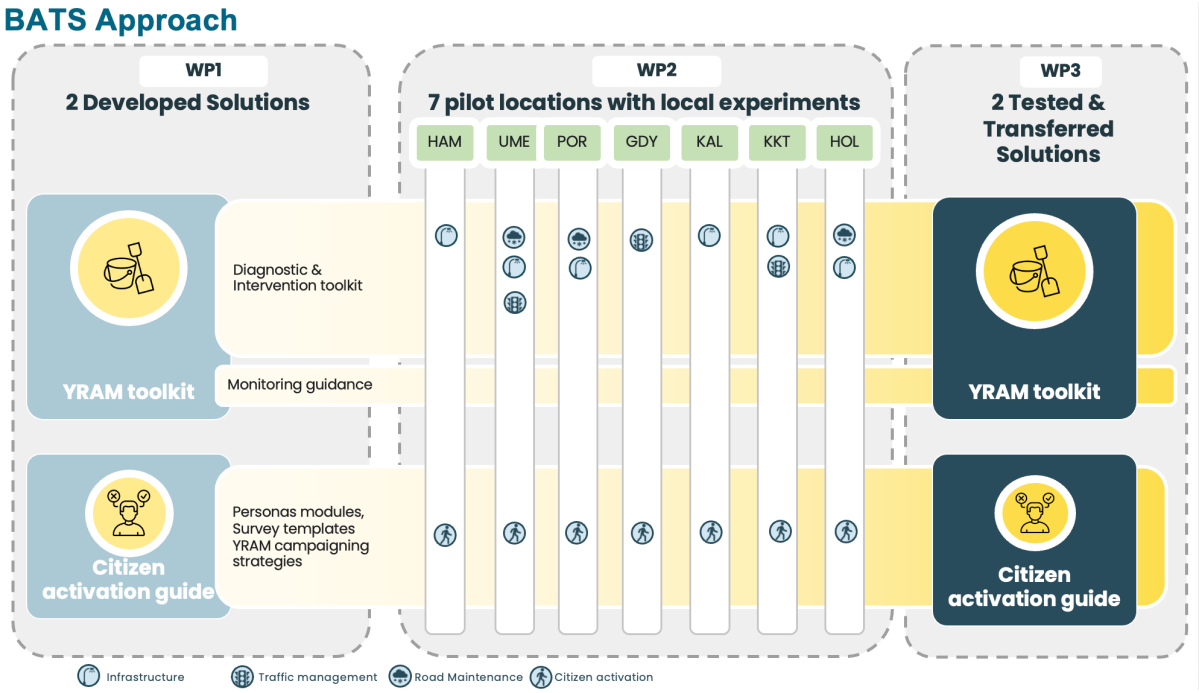


Figure 1: Overall project approach for cross-collaborations

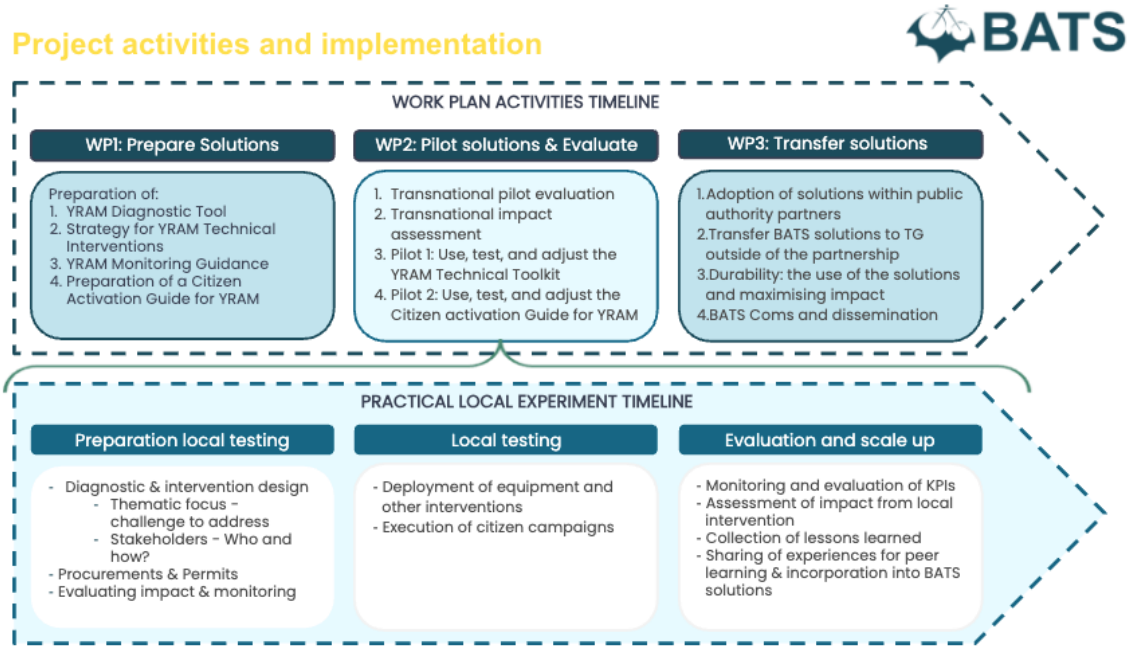


Figure 2: Overview of project activities and implementation

2.1 Diagnostics-Interventions Toolkit Development

Development of DIT has involved a series of tasks related to design and gathering various types of related insights. The overall phases are depicted in the following Figure 3.

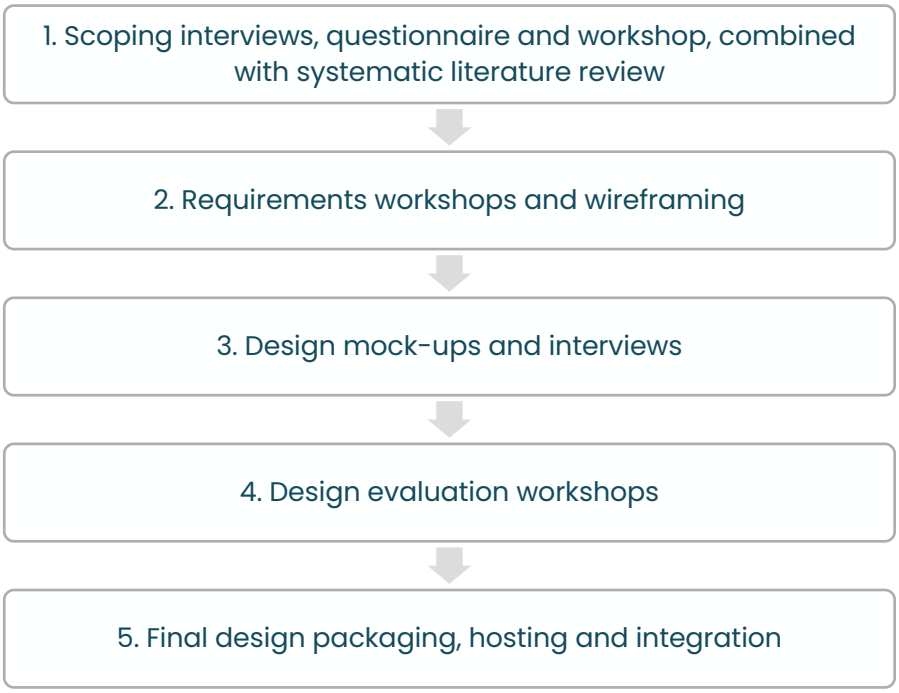


Figure 3: Development and testing of the Monitoring Guidance

Scoping interviews, survey and workshop, integrated with systematic literature review
The first phase has involved a triangulation of methods in order to establish a solid baseline for what are institutional capacity barriers and developmental needs. This has been achieved by a combination of expert interviews and questionnaire, which have in combination with systematic literature review, been a basis for the first project workshop with BATS partner municipalities.

The expert questionnaire has focused on broad understanding of challenges related to advancing YRAM. The questionnaire was distributed to municipalities across the Baltic-Nordic region, during January 2024, and has received 50 answers. To complement the questionnaire with more in-depth findings, semi-structured expert interviews have been conducted with at least one representative of the BATS partner municipalities. These interviews have further dwelled into barriers and potentials for institutional capacity development. All this empiric has been triangulated with relevant documents from BATS partner municipalities, as well as with a large sample of academic literature, covering also research across the world. This empiric has then been brought to a workshop with BATS partner municipalities (Partner meeting 2 at Umeå), where the findings have been validated and further discussed, to understand the interplay of geographic, climate, societal, policy, and organizational factors.

Requirements workshops and wireframing

In the second phase, complementary workshops with BATS partner municipalities (during partner meeting 3 in Tallinn) and with a set of peer experts (at VeloFinland 2024, with local and regional planners across Europe and North America) have been implemented to feed into requirements formulation and wireframing activities. These workshops have used toolkit wireframes. Wireframes are a straightforward visual representation of a toolkit which illustrates the layout and structure of the user interface, without focusing on design elements such as colours, images or typography. Wireframes are used in the early stages of the design process, to plan and communicate the overall structure and functionality, before more detailed work begins. The outcomes of these two phases have been summarized in the project report from the end of 2024 (Mladenović, 2024).

Design mock-ups, interviews and workshops

Starting in 2025, an iterative process focused on DIT design has been implemented, hand in hand with a series of expert interviews from peer municipalities, and a workshop with partner municipalities. Specialist designer consultants have been engaged to focus on the interplay of visual design details and toolkit functionality. The first series of interviews has focused on target group representatives from Baltic-Nordic region (i.e., Germany, Finland, Sweden, and Lithuania), in order to further understand end-user needs and expectations from the toolkit. In addition, the workshop conducted during partner meeting 4 in Porvoo has focused on usability options, with examples of visual components from other existing toolkits, feeding the requirements into DIT design process.

Design evaluation workshops

In this phase, once DIT design mock-ups have been available and ready for use, they have been tested with both BATS partner municipalities (during partner meeting 5 in Gdynia and partner meeting 6 in Klaipeda) and with a set of peer experts (at VeloFinland and VeloCity 2025, with municipal and regional planners across Europe and North America). In addition, BATS partner municipalities have piloted the use of the DIT on the elaboration of their local experiments (e.g., street design, traffic signal control, lighting installations, winter maintenance), for evaluating its usefulness in planning processes. These target groups were also presented with alternatives for visual design and technical setup of the toolkit, for evaluating usability aspects in dealing with YRAM-related activities.

Final design packaging, hosting and integration

The last phase has focused on the remaining technical setup details regarding the design package, its online hosting and integration with MG and CAG. This has been implemented taking into consideration the Interreg BSR website constraints. These discussions have been held during the partner meeting 7 in Kalundborg.

2.2 Monitoring Guide Development

The implementation and testing of MG involved a number of activities aimed at optimally adapting this tool to the needs of end users, i.e., cities. This process is illustrated in the Figure 4.

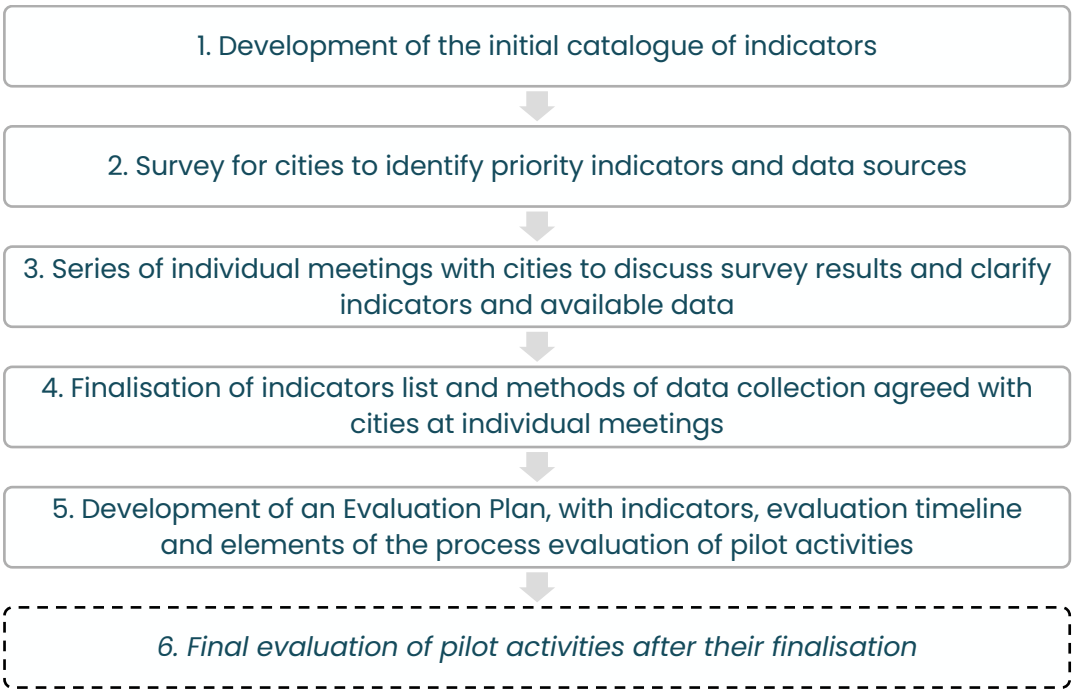


Figure 4: Development and testing of the Monitoring Guidance

Development of the initial catalogue of indicators

The development of the initial catalogue of indicators within the BATS Monitoring Guidance followed a structured, multi-phased methodology combining expert knowledge, literature review, and practical testing. The indicator catalogue went through iterative refinement through practical case studies in local experiments. Testing in real-world scenarios allowed validation of KPI applicability and refinement of recommendations. Feedback from these case studies guided adjustments to the overall structure and content of the indicator set applied by each city to evaluate their pilots. The final set of indicators, as well as a detailed timeline for evaluation, was included in the Evaluation Plan designed individually for each pilot case.

The indicators were carefully selected based on three primary criteria: relevance to active mobility, suitability for various weather and lighting conditions, and data availability. The development process explicitly recognized that different cities have varying capabilities in terms of data access and analytical resources, ensuring the catalogue could accommodate diverse municipal contexts.

The content of the indicator table was developed through a comprehensive review of scientific literature, research articles, and reports from other EU projects. This evidence-

based approach ensured that selected KPIs reflected established best practices in active mobility monitoring.

The resulting indicator catalogue serves as a crucial tool within the Monitoring Guidance. The table systematically organizes KPIs into categories by Community Goal, including Travel Performance, Safety, Environment, and other relevant aspects. This categorization ensures comprehensive coverage of multiple dimensions of active mobility beyond simple usage numbers.

For each indicator, the table specifies essential information including required data types, calculation methods, appropriate data sources, and whether the KPI is weather-dependent or lighting-dependent. This standardized structure ensures data consistency and facilitates comparison across different locations and time periods.

The development methodology emphasized leveraging existing city data sources to minimize extensive new data collection requirements, in line with the needs of the target group. Surveys were conducted among partner cities to identify existing databases, GIS data, and transport models as primary data sources. Based on survey findings, a data audit template was proposed to help cities identify gaps and resource limitations in their monitoring processes.

Survey for cities to identify priority indicators and data sources

A survey conducted to gather information about the current situation in partner cities regarding monitoring. The specific objectives of the survey included evaluating the use of data, indicators, and estimation methods in decision-making processes and monitoring interventions. The collected information was crucial for tailoring the Monitoring Guidance to the diverse needs of the cities and ensuring its usefulness.

Piloting of the first version of indicator selection through a series of individual meetings with cities

The consultations aimed to facilitate collaborative KPI selection that aligns with both the specific objectives of local experiments and the cities' existing data collection capabilities. These sessions included a discussion of survey results as well as indicators and available data. Rather than imposing a standardized monitoring approach, these sessions enable cities to adapt the indicator catalogue to their operational realities while maintaining consistency with the broader YRAM monitoring framework.

These consultations served multiple functions: they helped cities realistically scope their monitoring efforts based on available resources, ensure methodological consistency across different local experiments within the broader project, facilitate knowledge exchange between technical experts and local practitioners, and create documentation that supports implementation and later comparative analysis across cities.

A distinctive feature was the use of structured questioning to clarify monitoring needs before indicator selection. Questions explored how weather conditions affect outcomes, what detection or communication methods work best, what barriers exist, and how

effectiveness varies across contexts. This questioning framework ensured the selected indicators genuinely address the experiment's core evaluation needs.

The sessions focused on identifying 1-2 main indicators that directly measure the intended impact of each experiment, supplemented by additional indicators that provide a comprehensive picture of intervention effects. This focused approach prevented cities from being overwhelmed by excessive monitoring requirements while ensuring meaningful evaluation. The consultations systematically worked through main and additional indicators, specifying calculation methods, required data sources, and baseline/post-intervention data needs.

A critical component involved identifying available data resources and gaps. The template documents what preliminary data already exists, what can be collected internally, and what challenges might arise. For instance, the Gdynia consultation noted that while comfort surveys (TB.18) would be valuable, conducting surveys during adverse weather conditions presents practical implementation challenges.

Finalisation of indicators list and methods of data collection agreed with cities at individual meetings

Based on the results of individual meetings with cities, a final list of indicators and related data sources was developed. The list was accepted by the cities during individual meetings as a tool for ongoing monitoring of the pilot solutions being implemented.

Development of an Evaluation Plan, with indicators, evaluation timeline and elements of the process evaluation of pilot activities

The Evaluation Plan represents the operational implementation tool that translates the previously developed monitoring guidance and city consultations into actionable project management instruments. Building upon the YRAM Monitoring Guidance framework and the collaborative indicator selection process, this template serves as a practical roadmap for cities to systematically manage pilot activities while ensuring proper data provision for selected indicators.

The template completes the progression from general framework (monitoring guidance) through collaborative adaptation (city consultations) to practical execution (evaluation plan), ensuring consistent, feasible, and meaningful measurement of pilot interventions. The Impact Evaluation Table systematically documents each indicator's operational requirements. For every KPI, the template specifies the data collection method (surveys, observations, measurements), identifies the data source and responsible owner, notes special requirements and schedules baseline data collection dates. This structured approach ensures cities anticipate resource needs, secure necessary permissions, and allocate responsibilities before implementation begins.

The Impact Evaluation Schedule provides a timeline that phases evaluation activities alongside measure preparation, implementation, and operation. The schedule explicitly sequences indicator definition, data availability assessment, baseline data collection, post-intervention data collection, and final evaluation across quarterly periods. This temporal

structure helps cities coordinate data collection with intervention milestones and ensures baseline measurements occur before infrastructure changes.

Process Documentation
Beyond quantitative impact measurement, the template includes Process Evaluation sections that capture qualitative implementation experiences. Cities document barriers encountered during preparation, implementation, and operation phases. Similarly, the template records drivers that facilitated success.

This barrier-driver documentation serves dual purposes: it helps cities' project teams reflect on their experiences for adaptive management, and it generates recommendations for measure replication that benefit other cities considering similar interventions. The template provides reference examples of potential barriers and drivers to guide cities in identifying relevant factors in their own contexts.

2.3 Citizen Activation Guide Development

The CAG was developed through an iterative process of drafting and updating the toolkit, BATS partner feedback and validation, pilot testing and refinement (Figure 5). The CAG was tested and revised throughout the project by several rounds of feedback collection and suggestions from the BATS partners, based on which new elements and practical examples from BATS cities were added to the guidelines to make it more operational and practical.

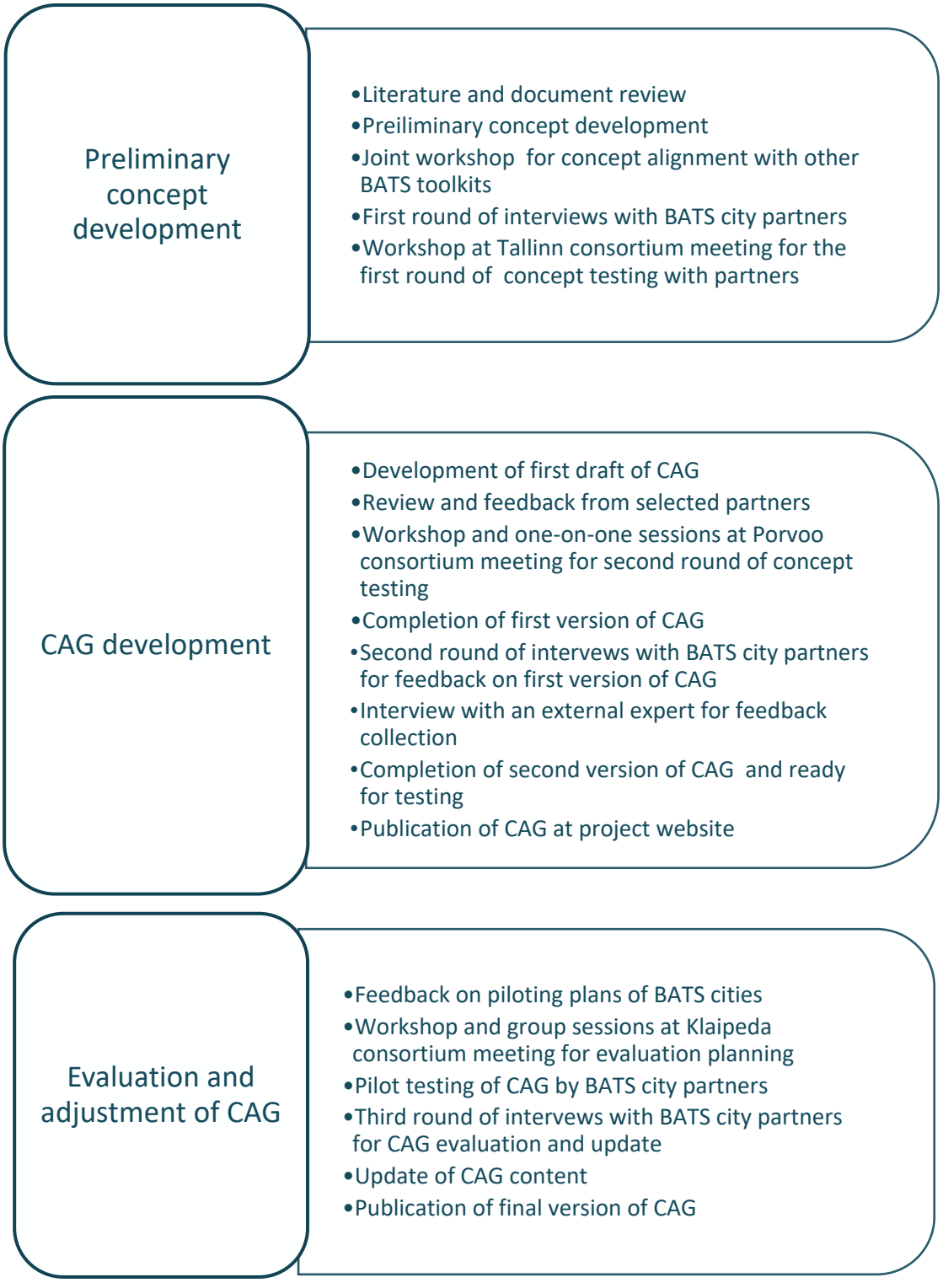


Figure 5: Citizen Activation Guide development and validation process

Preliminary concept development

The first stage of the CAG development process was the preliminary concept development, which started with evidence collection through a comprehensive review of literature, various project reports, toolkits and guidelines examples. The aim was to synthesize best practices and identify gaps in order to build a solid foundation for the preliminary concept, which was developed through an internal brainstorming session by TalTech team. This was followed by a co-design workshop with Aalto university to align the development and concepts of the BATS toolkits. The workshop focused on comparison of proposed approaches for the solutions, agreement on terminology, methodological approach and design, useful recommendations (e.g. demonstrating user centred methods such as persona-based approaches).

The aim of the first-round interviews with BATS partners was to ensure that the CAG would be practical and grounded in the real municipal practices and experience. The semi-structured interviews focused on the cities' needs, current practices, experience and expectations towards the citizen engagement and activation. The interviews resulted in clarification of the planned experiments, CAG initial user segments and contexts, requirements and practical considerations such as resources, timelines, seasonal factors, potential challenges for citizen engagement. This was followed by a workshop for first concept testing that was held at the Tallinn consortium meeting in which the city partners tested the key components of CAG preliminary concept (WHY, TO WHOM and HOW) for their engagement plans. The aim was to validate if the core structure of CAG works in practice and to identify missing elements and needed templates.

CAG design

The second stage was the development of CAG document. The TalTech team expanded the preliminary concept and integrated the evidence and insights from first-round of interviews and workshop prepared the first draft of guidelines along with practical templates and canvas. Two of the BATS partners provided detailed reviews for the draft, along with additional recommendations on useful techniques (e.g. nudging example) that could be integrated. The feedback for first draft from all partners was collected during a workshop at the consortium meeting at Porvoo. TalTech team introduced the structure, core concept and layered approach, canvas; followed by a structured discussion and a round of one-on-one feedback with each partner. Based on feedback and new recommendations (e.g., adding practical advice on campaign structure) first version of CAG was completed by the fall of 2024. The second round of semi-structured interviews with BATS city partners focused on gathering feedback and going over the first version of the CAG. In addition, TalTech invited an external expert from an associated organization to review the guidelines in-depth and conducted an interview with the expert. Based on this feedback, the second updated version of the CAG was finalized and ready for pilot testing in May 2025. The CAG was also published on the project website.

CAG evaluation and adjustment

The third phase of the CAG evaluation and pilot testing started in the fall of 2025 with a feedback survey for the BATS city partners on their experiments and related citizen engagement activities and plans for pilot testing. CAG piloting and evaluation was

addressed at the workshop and group sessions at the Klaipeda consortium meeting focusing on a multi-way exchange, including TalTech's recommendations on how and which parts of the CAG to test, as well as feedback from city partners on how to further improve it. The CAG was pilot tested by BATS city partners in the fall and winter 2025 and 2026. A third round of semi-structured interviews with the BATS city partners were conducted in the beginning of 2026 to evaluate how the BATS city partners implemented their citizen engagement activities, to evaluate their experience, CAG usability and the gaps and to update good practice examples. CAG was finalized together with updated real life case descriptions from BATS cities and lessons learned from the city partners' experiments in March 2026 and the final version of the tested guidelines were published in April 2026.

The pilot testing by BATS cities in the fall 2025 and winter 2026 was heavily focused on the practical implementation of citizen engagement activities for YRAM (HOW part of CAG), especially campaigns, participatory methods, nudging strategies; the successes and challenges experiences; KPIs and tracking citizen activation; and assessment on the usability and usefulness of the CAG for city planners and content gaps.

3. Insights from testing and adjustments of components

3.1 Insights from Diagnostics-Interventions Toolkit Development

The following Figure 6 depicts the list of DIT modules established at the end of 2024, after the first phase of development, as well as the final list of modules, in the final toolkit design. This depicts clearly both the scope and size change in the toolkit design.



Figure 6: Diagnostics-Interventions Toolkit initial version vs. final version

Challenges

First, it is important to underline a set of broader institutional barriers among the case municipalities identified during toolkit development. One set of barriers relates to **major structural challenges**. First, there are often no explicit goals or objectives set to foster year-round active mobility within the municipal or regional strategy, or then the implementation is not monitored and enforced. Second, there is not enough budgetary resources dedicated to active mobility. This also includes lack of dedicated staff responsible for active mobility, which is related to the lack of clear responsibility to one actor for implementation, while the work often requires coordination of many actors across organizational siloes. Third, even if some solutions exist in policy documents or design materials, there is a lack in commitment to implementing this intervention with adequate quality. Fourth, there are various legal and contracting challenges for such aspects as maintenance implementation and quality monitoring.

On the **intraorganizational and individual planner level**, there is a set of additional challenges. First, there are often either obsolete guidelines, such as those for street design, or no available design guidelines and associated practices. Second, planning processes and procedures are not developed with year-round active mobility in the focus, but instead for motorized transport in the focus. This also relates to limited public involvement in both understanding mobility problems and developing solutions. Third, there are limited quantitative and qualitative data collection procedures and datasets available. Fourth, there is limited evidence available within the organization about new and untested solutions, without developed organizational culture to experiment and learn. Fifth, individual planners have limited cognitive capacity and memory so cannot keep always all the possible aspects in mind, especially under time pressure and lack of organizational memory.

The development process established as set of functional requirements for the DIT, showcasing the **diversity of communicative planning needs**. The tool shall enable the elaboration of a specific persona tailored to the case at hand and keep track of different types of users within the mobility system. It shall support the understanding and analysis of the various aspects shaping the broader mobility system, as well as the detailed design of the intervention. Furthermore, the tool shall maintain a structured catalogue of different types of interventions, provide capabilities to evaluate the intervention's effectiveness and implementability, and support the packaging or bundling of interventions to improve these dimensions. In addition, it shall define and track the required steps, actions, and responsible actors, and facilitate the elaboration and documentation of underlying organizational culture aspects. All these are also so that the toolkit can be used in different communicative planning contexts, such as onboarding new colleagues, discussion within the planning team, discussion with external stakeholders, developing data collection process, development of planning process, or broader organizational change discussion.

In addition to this diversity, the toolkit development has shown that there are **different usability needs** relevant for the toolkit use in practice. For example, the toolkit should provide more concrete examples of outcomes generated by its components, such as the application of COM for a specific persona in the implementation phase, or the effectiveness

evaluation of specific intervention packages. It should also clearly articulate how the toolkit relates to existing planning activities, including data collection and analysis, solution design, and solution evaluation, so that it can be more easily integrated into current practices. In addition, the toolkit should include examples of personas that should be avoided—such as generic categories like "pedestrians" or "cyclists"—because these can shift the discussion in an unhelpful direction and reinforce oppositional framings, for example by positioning them in conflict with "car drivers." Beyond these, the development process has identified that there are detailed challenges, such as with hard-to-understand wording, order of elements on the page, or too much text or not enough details in some modules.

Solutions

One of the main outcomes of this project part is that there is a need and potential for this kind of communicative planning toolkit. This toolkit provides **added value at both individual and group level planning activities**, in several different aspects. On the one hand, the toolkit allows planning practitioners to gain deeper insights into the nature of the planning case as well as other stakeholders' perspectives. This added value also includes improved interaction and cooperation among the different planning stakeholders. On the other hand, the toolkit affords more efficient use of time to complete planning tasks, as well as critical reflectivity about the need to invent new planning tasks.

Several developments have been undertaken **to enhance the usefulness of the toolkit** for right kinds of planning activities. The development process has enabled that the toolkit content is continually progressing in the right direction, with a continuous iteration on the toolkit modules. In addition, the development has also identified a need for an improved user guide, with refined structure and clarity. Further development of the toolkit and its use guidelines have been done to support more consistent and effective application in planning practice. Lastly, the toolkit is being shaped to actively help users think "out of the box," encouraging more creative and innovative approaches to YRAM challenges.

Regarding the usability, the **overall usability design** of the toolkit is evaluated as very good, and the canvases are perceived as meaningful and coherent. Further refinement during the development process has focused on the numbering and alignment of canvas elements, improving the transitions between canvases, and optimizing both the textual and visual components. In addition, providing per-canvas instructions for facilitators have been added to support more consistent and effective use. Lastly, practitioners have mostly evaluated the toolkit as visually appealing, with a simple interface, easy access, and the flexibility to be used both stepwise and in a non-linear manner.

Another key aspect for the long-term usability of the developed toolkit was to ensure **open accessibility** to the module elements in the toolkit files, comparable to an open-source code that can be used, modified and shared over time. The initial design in rich picture diagramming methods enabled a prompt to this accessible usability and usefulness over time. However, this requirement cannot be guaranteed as a direct result of the toolkit creation process but furthermore requires additional research on the requirements for

open-access, long-term use, such as documentation, moderation or instruction needs in form of an open-source repository.

3.2 Insights from Monitoring Guide Development

Figure 7 depicts the initial and final approach in MG, the first one being desk-centric while the later one being canvas-centric, and sustainably more streamlined for practical use.

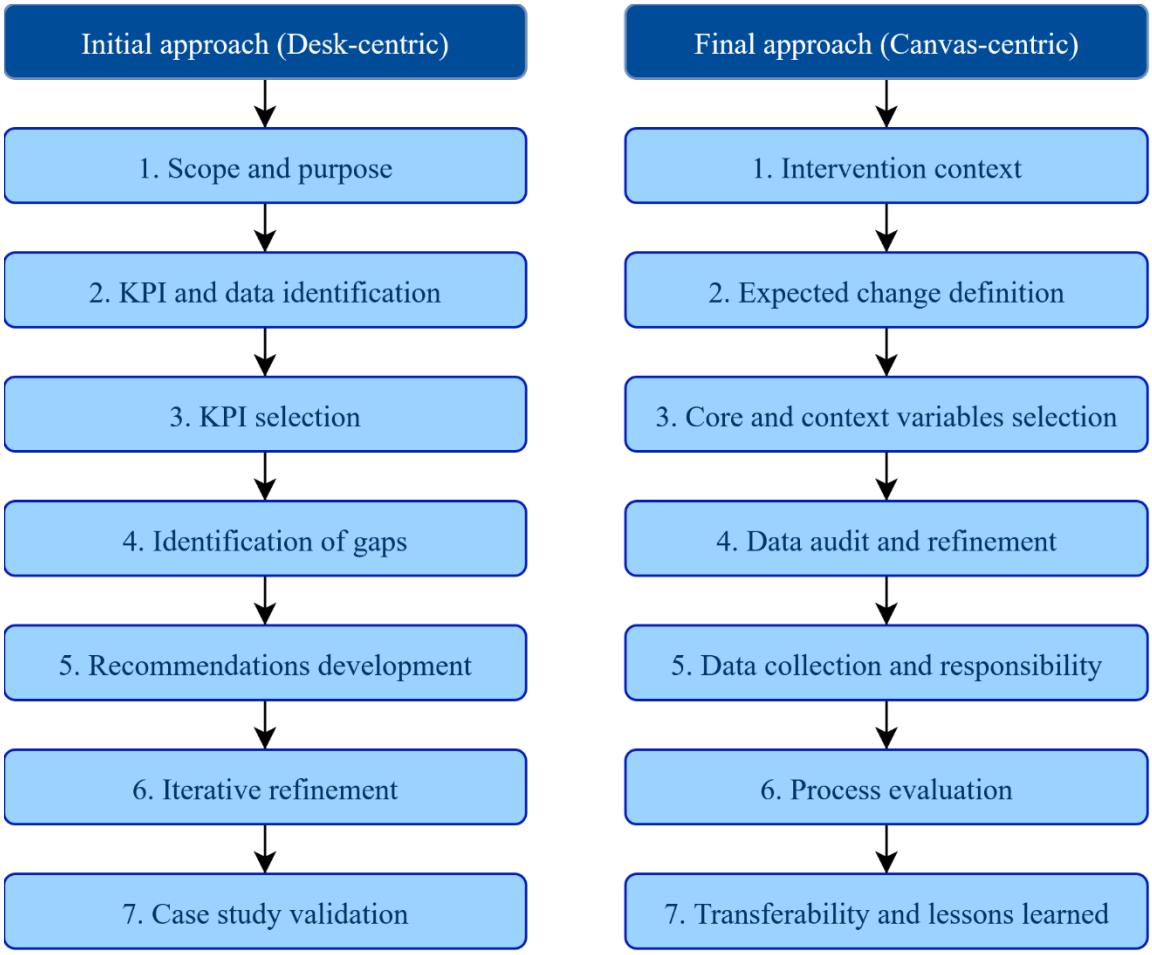


Figure 7: Monitoring Guide initial version vs. final version

Challenges

The following where the various barriers identified for the development of the MG.
Initially, a set of barriers hindering cities from implementing monitoring have been identified with the expert survey. A key element of the survey was the identification of. The most critical barrier identified was "Financial factors - lack of funds", which 5 respondents rated as "Very Important". Other significant barriers include:

- "Lack of persons" (3 respondents rated as "Very Important", 3 as "Fairly important").
- “Lack of political will” (2 “Very Important”, 3 “Fairly important”, 1 “Important”)
- "Lack of access to data" (1 "Very Important", 3 "Fairly important").
- “Lack of tools” (3 “Fairly important”, 3 “Important”)

These findings clearly indicate significant **resource and capacity constraints** faced by partner cities, which were addressed in the subsequent stages of developing the Monitoring Guidance, particularly during individual meetings with the cities.

The second set of barriers relates to **weather and lighting considerations**. Preliminary survey results also showed that most partner cities (5 out of 6) have established policy objectives to increase active mobility. The use of performance indicators in planning and decision-making processes is also common (4 out of 6 cities). However, the integration of YRAM factors is inconsistent. Half of the respondents (3 cities) stated that their objectives consider varying weather/seasonal conditions and lighting conditions, while the other half consider neither of these factors.

Similarly, cities are evenly split (3 yes, 3 no) on whether they have a formalized **process for selecting indicators**. In addition, the survey assessed both the current use and perceived importance of indicators. It was found that six indicators are currently in use by more than half of the partner cities (4 or more cities). These include: Vehicle Operation Costs (EC2), Traffic accidents (SF1), Road deaths (SF3), Greenhouse gas emissions (GHG) (EN1), Motorization Rate (TB10), and Street trees (TB12). The abbreviations refer to the categories and numbers of indicators identified in the table attached to the Monitoring Guidance, e.g., SF refers to indicators from the Safety group and TB refers to indicators from the Traffic Behaviour group. Based on a weighted sum analysis, which accounted for importance ratings assigned by cities (from "Very Important" to "Not important"), four indicators were identified as top priorities: Traffic accidents (SF1), Volume of pedestrians/cyclists (TP14), Modal split (TB11), and Traffic safety active modes (SF2).

Moreover, **data collection** practices vary. Most cities (4/6) have access to road accident data and conduct travel behaviour studies. At the same time, cities are split equally (3 yes, 3 no) on conducting user perception surveys and having seasonal modal split data. In cities that do conduct surveys, YRAM factors are partially included: all of perception and behaviour surveys cover weather dependencies, but lighting conditions are considered less frequently. The most commonly used data collection methods are manual counting, automated counting, and travel surveys.

At the beginning of the project, it was evident that there is a gap in **conceptual understanding of evaluation**. It was not fully clear for cities how to internalize evaluation as an integral component of pilot activities rather than viewing it as a separate, burdensome administrative task. The implementation process revealed a fundamental disconnect between the technical comprehensiveness of the Monitoring Guidance and cities' practical understanding of why systematic evaluation matters beyond project compliance requirements. This conceptual gap manifested in cities treating the indicator catalogue as a one-time reference tool rather than understanding evaluation as an adaptive, continuous process embedded throughout pilot preparation, implementation, and operation phases. Moreover, the implementation process revealed that the original Monitoring Guidance lacked foundational explanatory content about evaluation principles, including the distinction between impact and process evaluation, the rationale for baseline and post-intervention data collection, and the benefits of systematic monitoring for

implementation control and results demonstration. At the beginning of the project cities might not have been fully confident regarding how selected indicators would serve their communication and accountability needs after project completion. While the Monitoring Guidance emphasized methodological rigor and alignment with YRAM framework objectives, it inadequately addressed the practical question of how cities could leverage evaluation results when presenting outcomes to municipal authorities, funding bodies, and citizens. This disconnect between project-focused evaluation and post-project utility created hesitation during indicator selection, as cities struggled to balance project requirements with long-term transferability and local relevance.

These conceptual barriers have been amplified with guide's **navigability complexity**. The documentation structure — with detailed specifications of calculation methods, data sources, and weather/lighting dependencies – jumped directly into comprehensive indicator tables without providing graduated entry points or simplified introductory frameworks that could build user confidence before engaging with full complexity. The initial catalogue of indicators, while scientifically robust and comprehensive, presented overwhelming navigability complexity for municipal practitioners seeking a practical starting point. Cities faced difficulty identifying which indicators among the extensive catalogue genuinely aligned with their specific pilot objectives and existing data collection capabilities.

Successes

The following where the various barriers identified for the development of the MG.

A distinctive feature of the indicator development was the **explicit integration of environmental factors**. The table includes dedicated columns addressing how weather and lighting conditions influence each KPI, which is crucial for year-round active mobility assessment. This approach directs users toward KPIs that are either robust to environmental variables or allows analysis of how weather and lighting specifically affect active mobility usage.

The **structured questioning approach** introduced during individual consultations — exploring how weather affects outcomes, what detection methods work best, and what barriers exist — proved necessary precisely because the original tool lacked sufficient scaffolding to guide cities through systematic indicator selection. The need for intensive facilitation through individual meetings demonstrates that the tool's accessibility fell short of enabling independent, confident use by city teams.

The Monitoring Guidance is supplemented with foundational introductory material that explains basic evaluation concepts before presenting the comprehensive indicator catalogue. This introductory section defines key terminology, distinguish between different evaluation types, present 3-5 example indicators from diverse categories with simplified descriptions, and illustrate how baseline and post-intervention data enable impact measurement. This **graduated entry point** addresses the structural accessibility issue where the original guidance jumped directly into detailed indicator tables without building user confidence through approachable preliminary content.

The Monitoring Guidance should implement a tiered complexity structure that has **step-by-step guidance for users**, progressively from simple concepts to comprehensive specifications. A step-by-step procedure should help cities systematically identify indicators aligned with their pilot objectives, assess available data sources and collection capabilities, select 1-2 main indicators supplemented by additional contextual measures, anticipate resource needs and implementation challenges, and connect evaluation results to post-project communication and accountability requirements. This structured navigation approach addresses the overwhelming complexity that initially prevented cities from independently identifying appropriate indicators from the extensive catalogue.

The development process has also enabled that developed framework is **practically applicable**. The guidance should explicitly connect evaluation activities to practical outcomes beyond project compliance, demonstrating how systematically collected data supports municipal decision-making, funding justification, citizen engagement, and intervention replication in other contexts. Including case examples from partner cities showing how selected indicators informed adaptive management decisions or facilitated stakeholder communication would concretely illustrate the tool's practical utility. This application-oriented framing addresses the future application uncertainty where cities questioned how evaluation results would serve their needs after project completion.

The overall success was recognition that monitoring process has to be **adaptive**. Through the iterative consultation process, cities gradually shifted from viewing the indicator catalogue as a static reference document to recognizing evaluation as a dynamic process requiring ongoing refinement based on pilot scope clarifications and evolving data availability. However, this conceptual evolution required substantial external facilitation rather than emerging organically from the tool's design, indicating that the Monitoring Guidance did not sufficiently communicate or operationalize evaluation as an adaptive management instrument. Finally, after in-depth internal consultation process it was evident that involved cities were capable to identify an optimal set of indicators fully facilitating their needs and capabilities as well as reflecting strategic orientation towards YRAM related interventions.

3.3 Insights from Citizen Activation Guide Development

The preliminary concept started with focus on the topics of behavioural change, understanding user groups and strategies that evolved into the core structure of the guidelines (WHY, TO WHOM, HOW). Based on the partner input, various core elements were refined, including the simplification of the WHY section and the development of a persona-based approach and template for the TO WHOM section. Practical examples of nudging, templates for citizen surveys, stakeholder workshops, and focus groups, as well as preliminary examples from the BATS experiments in the cities, were also added for the second version of guidelines. The difference between the initial and final CAG version are depicted in the following Figure 8.

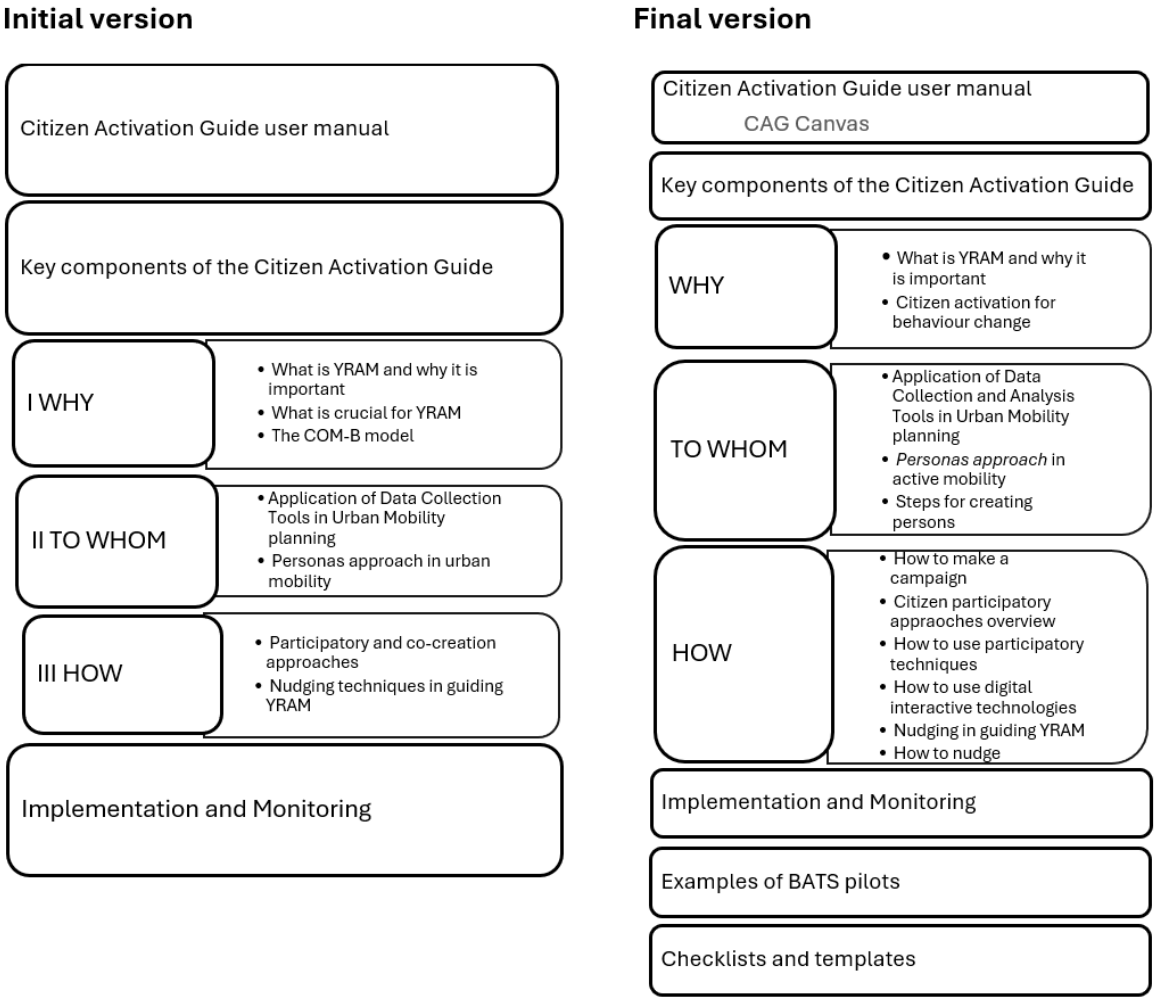


Figure 8: Citizen Activation Guide initial version vs. final version

Challenges

The interviews with cities identified several capacity and skills gaps, including need for good **communication, organization, moderation and facilitation competences**, related to engagement events and surveys. External factors (e.g. weather conditions) influenced data collection, and various practical challenges (e.g. managing bike returns in bike lending campaign) created additional administrative burdens affecting the engagement activities.

Citizen engagement processes were found to be both meaningful, but also **resource intensive**, particularly in terms of time resources and coordination needs for multilayered approach, including meetings, interviews and follow-ups, outreach and access to various stakeholder groups and logistical arrangements.

One of issues related to the KPIs was that it is **difficult to measure the long-term behavioural change** within such a short project cycle. For example, the survey for citizens had to be repeated too soon to provide an insight into if there has been a meaningful change in active mobility uptake.

Another issue was the need for clearer **upfront KPI planning** before the start of the interventions, including having a good data and defining the hypothesis for testing and KPIs at the onset of the project. Cities also expressed the need for demonstration and clearer support in defining measurable goals and KPIs and evaluating the effectiveness of their engagement activities.

The feedback from the pilot period provided specific recommendations on how to improve usability as well as how to expand the content of the guidelines and good practice examples. The feedback from the BATS cities demonstrated that while the overall structure of the CAG was useful and logically structured, its usability could still be further improved. A particular issue was that the **guidelines are lengthy** and CAG contains a substantial amount of information, while users often are interested in only a specific topic and consult the guidelines very selectively and are looking for quick guidance.

BATS partner cities' feedback from the pilot testing indicated the need for ideas and more demonstrations for concrete, **easy to implement engagement approaches** that can be quickly and flexibly applied in real life pilot environments with limited time and resources, e.g. on-spot events and tools suitable for engaging pedestrians and cyclists, who are on the move; interactive, but low-threshold techniques (e.g. sticker voting).

Another struggle identified by the BATS cities involved **diversity of engagement strategies** and innovative approaches for reaching very specific target groups, such as teenagers or politicians. Some good examples were provided by the other BATS partners (e.g. involvement of social media influencer) and incorporated into the updated guidelines

Successes

BATS partners' feedback demonstrated overall **constructive and successful approach to engagement activities** related to their experiment. Some specific examples included meaningful feedback from new user groups (e.g. people with disabilities) and a wide range of stakeholders (e.g. firefighters, bus drivers, street maintenance providers, etc.), whose contributions brought important new design insights and provided opportunities for multi-way experience sharing and better insights to both the pedestrians and cyclists' experience as well as maintenance providers' needs.

Several suggestions were made to improve **guide's usability**, including the development of a shorter quick-start tool, more clickable and easier to navigate templates. Those were considered in the adjustment and finalization of CAG, including an updated canvas tool.

The experience of several BATS partner cities demonstrated various approaches and good practices related to **KPI planning** that were also integrated into the guidelines to strengthen their practical relevance.

The BATS partners **utilized and combined various engagement formats** such as citizen panels (e.g. winter agents), online and in-person engagement with surveys, telephone and face-to-face interviews, workshops, on-the-spot events and nudging campaigns. The use of digital and visual tools, including a 3D model development, QR codes supported making

the interventions more tangible and understandable to stakeholders. Moreover, strong **cooperation between different actors**, such as municipalities, schools, and communication departments strengthened implementation and long-term sustainability.

The BATS partner cities' feedback emphasized that CAG's main strengths are in its clear structure, and it is **visually appealing** approach, which provides a lot of information and brings together various scattered tools and topics into one document. It offers strong practical components, including personas, nudging strategies, various templates, survey examples, and workshop and structured discussion formats, complemented by inspiring real-life examples from other cities. The guidelines effectively provide **clear ready-made recipes** for planning engagement activities from defining goals, identifying personas, selecting appropriate methods, and establishing KPIs and monitoring guidance. In addition, the examples from other cities were considered particularly inspiring and confidence building.

4. Conclusions

4.1 Transnational value

The transnational value of BATS project has 2 dimensions: first the common testing of tools who's approaches should be applicable in the diverse conditions of the BATS and BSR cities; and second, the common thematics and joint learning about them through the local experiments. Thus, the project has benefited from the cooperation with a range of partners, producing value that could never be achieved in isolated national or local action.

On the first dimension, BATS project has strongly contributed to **jointly and iteratively developing solutions**. Despite BATS partners being from the same region, there are still sufficiency important differences among them. These range from weather and lighting conditions (e.g., among of snowfall, daylight duration), mobility system (e.g., modes available and their quality, urban form, travel patterns), to planning cultures (e.g., legal mandates, maturity of processes and procedures). Here, the development process has had a substantial added value from the involvement of these different municipalities, especially in scoping the tools' requirements and in defining their usability aspects. Moreover, since the development process has also involved experts from other organizations, the transnational value has been even greater, especially for benchmarking and validation purposes.

On the second dimensions, BATS project has strongly contributed to **jointly implemented solutions and institutional capacity building**. This has been achieved by the very development process design, where close ties have been established between the development of tools and local piloting cases. Such as setup has further enhanced comparative learning and knowledge exchange. Moreover, this project setup has also ensured that both the tools and lessons from pilots are relevant for a plethora of other BSR actors.

Besides these aspects, it is rather important to underline that experiences from this project recommend to the practice and academic communities to embrace a more **action research approach**, bridging the practice-academia gap to equip practitioners with practical tools urgently needed in order to improve transport planning practices.

4.2 Overall lessons learned

Different institutional capacities and needs of the target groups

The development process was built on co-creation approach with project partners and continuously updated throughout the project. However, the BATS partners had very different levels of prior knowledge and experience with YRAM-related activities. Despite commonalities in their overarching challenges, such as those related to funding YRAM-related activities or unclear responsibilities of different actors, project partners had also important differences in their institutional capacity and development needs. For example, while some municipalities had high level of needs in collecting different YRAM-related data such as trip or attitude information, others had more need in developing their

communicative planning practices, ranging from stakeholder discussions to citizen engagement activities. Nonetheless, all the partners had a common need to implement actions with limited resources and constrained time plans, thus requiring tools that are easily adapted and replicated in different local contexts.

The overall importance of agile development approach

The project experiences highlighted the importance of an agile development approach. Cities initially faced diverse usefulness and usability challenges related to drafts of tools, but through iterative, collaborative refinement, the tools were progressively adjusted to meet their needs. Using agile development approach — short feedback loops through surveys, individual meetings and workshops, and systematic integration of partner input — the BATS project continuously adapted and rethought the tools to the practical realities and diverse capabilities of participating cities. This agile process of co-development turned early obstacles into opportunities for improvement, demonstrating how responsive, incremental adjustments can bridge the gap between theoretical frameworks and operational implementation and lead to user-responsive tools that preserve methodological rigor while remaining practically feasible. Future project should therefore also be designed as an agile, adaptive process that can respond to changes in pilot scope, evolving data availability, and emerging city needs across preparation, implementation, and operation phases.

Early integration of tool testing in piloting activities

Another important lesson that comes out of this project is that activities for tool development should be embedded during the initial planning stages of pilot activities rather than added retrospectively. This proactive integration ensures that cities naturally incorporate tool capabilities into their intervention and piloting design, reducing the perception of tool use and development being a burden separate from implementation. In this project, the timing of activities has been of even greater importance because piloting activities related to only specific months of the year, during autumn and winter, placing additional constraints on project management. Moreover, partners also had differences in their speed of pilot implementation, with some partners progressing much quicker than others. This means that interactions between piloting and tool development activities came at different points in the process, which had its advantages (e.g., increased diversity of experiences) and challenges (e.g., integrating diverse input). This all leads to a fundamental trade-off that has to be achieved in the project – how early in the project to have the tools available for testing in the project activities themselves, while how well defined and designed the tools should be by collecting the experiences from project activities.

Usefulness and usability of tools

Feedback from partners and external peer target groups consistently underlined that the tools must be useful and easy to use for municipal authorities and planners. Rather than academic depth in itself, users needed clarity, simplicity, and direct practical relevance for their daily implementation and development activities. In addition, the tools had to be progressively redesigned in visual terms, to prioritise usability. Explanations of YRAM-related concepts and behavioural change were simplified, and the tools were structured around

clearly identifiable sections with practical checklists, templates, and concise, real-life examples from BATS pilots and partner cities. Thus, the emphasis was on making guidance as short, concrete, and directly applicable as possible – for the tools to be both methodologically robust and user-friendly, avoiding documentation not directly necessary for practical activities. Overall, the development process demonstrated that the usefulness and usability of tools depend on clear structure, concise content, and a strong focus on the day-to-day realities of municipal practitioners.

Organizational learning related to important planning principles

Lastly, the project lessons indicate that future projects have to explicitly account for incorporating activities directed at organizational learning around important planning principles. For example, the basic principles of communicative planning, strategic monitoring or user-centric design should be presented to cities at project initiation, to enable the early on intervention into core knowledge. These learning interventions can be achieved through dedicated orientation session that explain both the strategic importance of these concepts and their use in practice. These sessions should emphasize practical benefits for long-term organizational learning, beyond the direct benefits in specific project activities. Ultimately, these individual learning lessons should expand into organizational learning activities, where the participating organization should unpack their long-standing assumptions and beliefs about YRAM-related activities.

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