WP.T2 - D.T2.4.13

Evaluation Report and Guidelines on Actions

Final version

06 2022

Dissemination level	***Public***
Activity	***A.T2.4 - Pilot action monitoring and evaluation***
Deliverable	***D.T2.4.13 - Evaluation Report and Guidelines on Actions***
Coordinating partner	***BOKU***
Contributors	***Valerie Batiajew, Roman Klementschitz, Oliver Roider, Katja Hanžič, Tomislav Letnik, Nina Pavletič, Maršenka Marksel***
Due date of deliverable	***30.04.2022***
Actual date of deliverable	***30.06.2022***
Status (F: final, D: draft)	***Final***
File name	***078_SMACKER_D-T-2-4-13_2022-06-30_Final***

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1. Introduction

Remote regions in central Europe share the same risks and issues related to being at the periphery of main transport networks. Inadequate and under-used services, excessive costs, lack of last-mile services and proper intermodality, poor communication and information to users and car commuting are the challenges that many central European regions face.

The SMACKER project addresses those disparities to promote public transport and mobility services that are demand-responsive and that connect local and regional systems to main corridors and transport nodes.

Within SMACKER, mobility issues related to peripheral and rural areas, and main barriers are assessed and addressed by providing solutions that draw on the best international know-how. SMACKER promotes demand-responsive transport services to connect local and regional systems to main transport corridors and nodes: soft measures (e.g. behaviour change campaigns) and hard measures (e.g. mobility service pilots) are used to identify and promote eco-friendly solutions for public transport in rural and peripheral areas to achieve more liveable and sustainable environments, better integration of the population to main corridors and better feeding services. SMACKER helps local communities to re-design their transport services according to user needs, through a coordinated co-design process between local/regional partners and stakeholders; SMACKERS also encourages the use of new transport services through motivating and incentivizing campaigns. The direct beneficiaries of the actions are residents, commuters and tourists.

Participation reflects the overall integration of citizens and groups in planning processes and policy decision-making and consequently the share of power. In particular, transport planning and transport relevant measures are often the subject of controversial discussions within the urban community. The concept of Sustainable Urban Mobility Planning has established the principle that the public should be included from the very beginning of the transport planning process and not only when the plans are largely completed and only minor amendments can be carried out. For that reason, public authorities need to open-up debate on this highly specialised and complex subject area and make participation a part of the planning process. In order to ensure participation throughout the process, development of an engagement strategy would be necessary.

This deliverable contains the findings of the cross-evaluation of the six SMACKER campaigns, a KPIs analysis comparing baseline and after scenarios/versus the BAU[1] scenario, the assessment of objectives accomplishment based on results obtained by the pilot actions, as well as the Guidelines on Actions.

It is organized in three main parts. The first part, i.e. chapter 2, presents the basic information on the six SMACKER pilot regions, which is needed for the correct understanding of the analyses presented in the rest of the document.

The second part is the Evaluation report and is presented in chapters 3 and 4. The evaluation reports (D.T2.4.7 to12) of the six SMACKER pilot actions in Bologna (IT), Gdynia (PL), Prague-Suchdol (CZ), Murska Sobota (SI), Budapest (HU) and East Tyrol (AT) are the basis for this part, which provides a cross-case analysis of those reports to reveal a full overview and indicate commonalities and differences to deduce conclusions. Chapter 3 summarises the process evaluation of the pilot actions regarding stakeholder involvement and strategies to overcome barriers. In chapter 4, KPIs are treated comparing the baseline and after scenarios/versus the BAU scenario: such a comparison includes the MUST-HAVE KPI, which all pilot regions needed to monitor, as the NICE-TO-HAVE KPs, which the pilot regions were free to choose, and the contribution of the nudging activities to the KPIs themselves.

The third part, in chapters 5 and 6, contains lessons learned in pilot region and provides general descriptions and instructions of DRT development process based on expertise and experiences of SMACKER project.

Chapter 7 summarised the conclusions, which can be conducted from SMACKER activities.

[1] Business As Usual

2. Basic information on the six SMACKER pilot regions

For the scope of this deliverable, the SMACKER pilot regions are fully described in the SMACKER deliverable D.T1.2.24. For the sake of the readers and to help them in understanding the difference/similarities of the pilot regions and have a clear background for the analyses conducted in chapters 3 and 4, the chapter 2 "Pilot area characteristic" from D.T1.2.24 is replicated here below. A map (*Figure 1*) showing the locations of the pilot actions provides a better understanding of where in Central Europe the pilot activities took place.

The pilot regions in the SMACKER project can be categorized into two groups (see Table 1and Figure 2).

The pilot regions of Bologna, East Tyrol and Murska Sobota share similar spatial characteristics, as they are characterized by a predominantly rural character with rather dispersed settlements and a low population density. They also have similar characteristics in terms of transport options in the area, i.e. scarce accessibility of touristic sites by Public Transport (PT), and their focus on tourists as a target group of passengers. Murska Sobota focuses on commuters as well and Bologna focuses onto residents as well.

In contrast, the pilot regions Gdynia, Prague and Budapest have a rather dense, suburban character, with a higher density than the pilot regions mentioned above, but not as dense as in the city centres they are linked to. Pilot actions of Gdynia, Prague and Budapest are therefore more focused on commuters and residents with their pilot action.

Figure 1: Pilot regions

Table 1: Characteristics of pilot regions

Pilot area	Bologna	Gdynia	Prague	Murska Sobota	Budapest[2]	East Tyrol
Pilot area [km2]	816	25,53	70	209	36	2.020
Inhabitants [number; year]	55.488 (2018)	12.563 (2019)	36. 000 (2020)	25.540 (2020)	56.200 (2020)	48.753 (2018)
Population density [inhabitants/ km^2]	68	492	1.403	119,83	153	24,13
Population dynamics	Stagnant	Growth	Strong growth	Decreasing	Stagnant	Decreasing
Topography	Mountainous of the metropolitan city of Bologna	Varied topography and landscape, a lot of agricultural land and green areas	Rolling plains with valleys in the eastern part towards and along the river	Flat	One side flat, the other slightly hilly	Mountainous
Spatial characteristic	■ Predominantly rural, wide scarcely populated ■ Disperse settlements ■ 12 small municipalities ■ touristic profile (thermal sources, health spa, ski area etc)	■ Suburban ■ Largest district ■ Chwarzno: single-family houses and blocks of flats ■ Wiczlino: an old village with a large area, extensive building and relatively small population	■ Suburban ■ Disperse settlements of various sizes ■ Metropolitan area	■ Predominantly rural ■ Disperse settlements	■ Suburban ■ Low-density of population	■ Disperse settlement ■ Low % of permanent settlement area

[2] Stated numbers for Budapest refer to the zones covered by DRT line in July 2020

Pilot area	Bologna	Gdynia	Prague	Murska Sobota	Budapest[2]	East Tyrol
SMACKER-specific characteristics	■ Tourism > scarce accessibility of touristic sites by PT ■ No PT service during off-peak hours	■ Traffic safety ■ Road congestion	■ Regular commuters to/from city centre ■ Environmental pollution	■ Agriculture ■ Tourism ■ Commuters to/from neighbouring municipalities	■ DRT bus line implemented ■ Fixed bus line of low utilization	■ No PT service during off-peak hours ■ Tourism > scarce accessibility of touristic sites by PT ■ Tourists interested in sustainable mobility ■ Elderly resident asking for PT
Goals	■ Encourage last mile mobility between villages & touristic sites and among villages themselves	■ Improve connectivity to city centre	■ Offer improved sustainable mobility services/ level of service	■ Offer sustainable and multimodal mobility for events/ touristic sites ■ Improve user experience (Web-application)	■ Transport passenger from lower density peripheral areas by DRT to core PT network of Budapest ■ Improve user experience (Web-application)	■ Offer sustainable mobility for tourists and residents ■ Provide information about regional mobility offers ■ Establishment of e-car-sharing
Level of public transport	■ Poor ■ Mobility requests mostly uncovered	■ Not sufficient	■ Not adequate to rapid development	■ Not sufficient ■ Mobility needs covered unsatisfactory	■ Not effective/comfortable DRT for users	■ Not sufficient ■ Mobility requests mostly uncovered
Dominant mean of transport	Private cars	Private cars	Private cars	Private cars	Private car & PT	Private cars

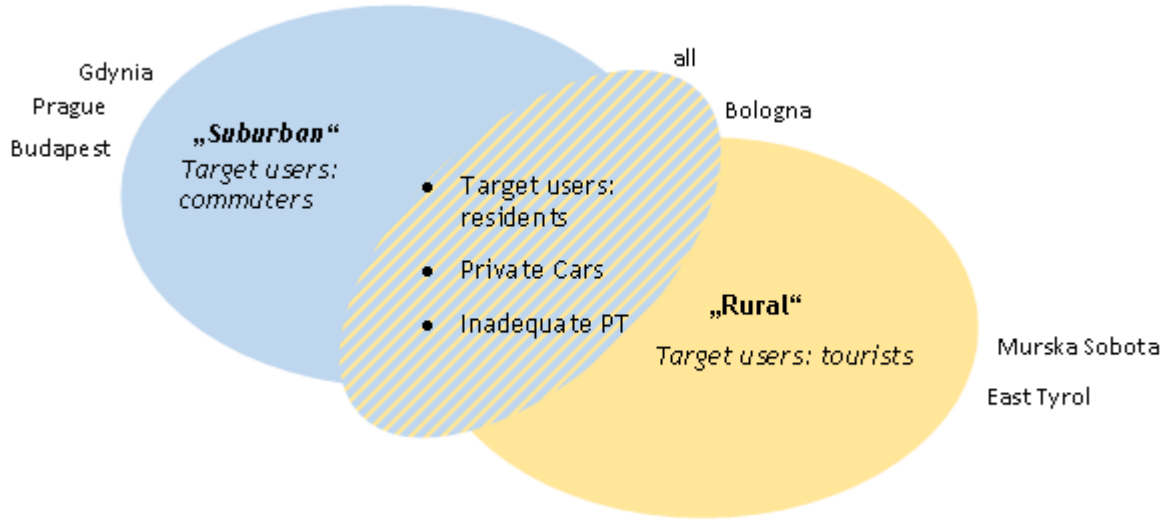


Figure 2: Types of pilot regions

All pilot regions have in common that the level of public transportation that does not meet the mobility needs and is therefore insufficient and/or ineffective. Moreover, in all pilot regions the dominant mean of transport are private cars.

3. Process evaluation

This chapter provides an analysis of the pilot evaluation process of the implementations, which were provided by all pilot regions regarding stakeholder involvement and strategies to overcome barriers.

3.1. Stakeholder involvement

A comprehensive overview about the stakeholder involvement in the Local Mobility Forum (LMF), beyond the LMF and differentiated between the pilot phases PLANNING, IMPLEMENTATION and EVALUATION across all pilot regions is given in Figure 3. It is noted that the stakeholders are identified with the SMACKER Target Groups as reported in the Application Form version 3, page 89.

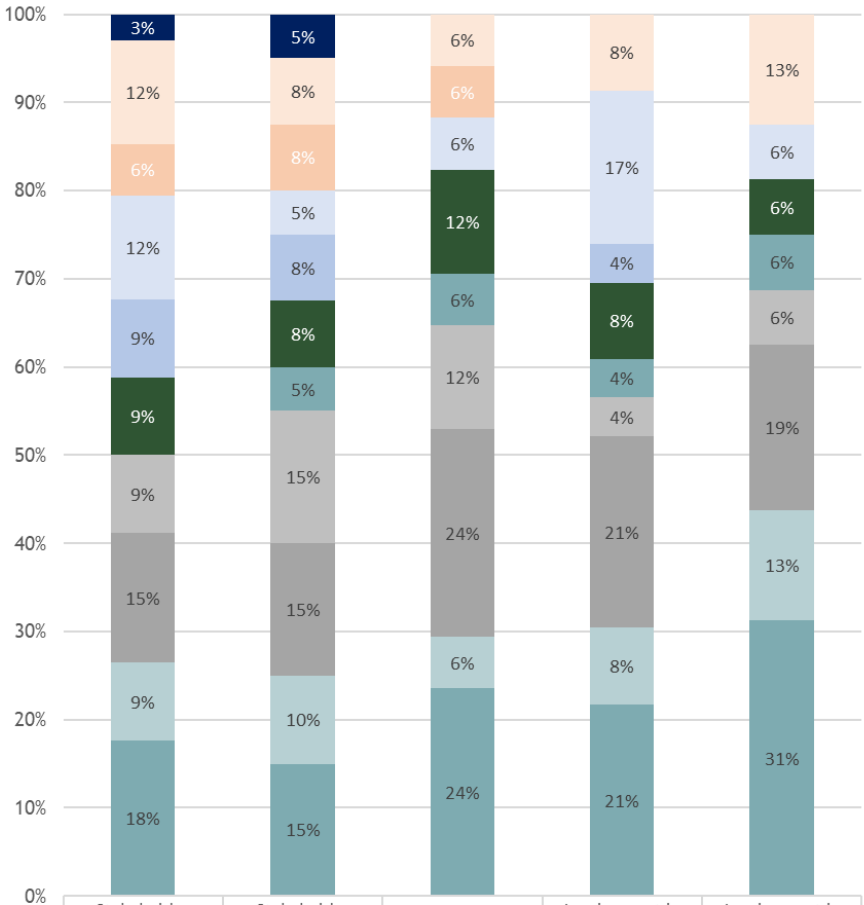
It shows that in the LMFs, Local Public Authority accounted for the largest percentage share (18%) followed by Infrastructure and/or (public) service providers (15%), and Higher Education and Research and Interest groups including NGOs (both 12%). Apart from this, represented with 9% each, Regional Public Authorities, General Public, Other, SMEs were part of the LMFs. National Public Authorities (3%) played a minor role across the pilot regions.

From this it can be concluded that Local Public Authorities and Infrastructure and/or (public) service providers are the most relevant partner to involve in a LMF for Demand Responsive Transport service in peripheral Europe which is reasonable due to the local context of implementation. Also, Higher Education and Research and Interest group including NGOs are presented in many LMF. Involvement of further stakeholders in a LMF is assumed to be depending on the local context.

Also, when looked at the involvement of stakeholders apart from the LMF, Local Public Authorities still are stated the across the pilot regions among the highest ranked shares (15%) but share this percentage with other stakeholders: Infrastructure and/or (public) service providers and General Public are also involved (both with 15%) and Regional Public Authorities with 10%.

From this, it can be concluded that Infrastructure and/or (public) service providers are important to be involved (not only via a LMF but also apart from this). General Public is also a relevant stakeholder to be involved as well as Regional Public Authorities. This seems reasonable due to the need to address General Public, e.g. for the identification of mobility needs. Apart from this, local pilot activities in mobility are rarely “local only” projects, as mobility is linking different spatial regions and therefore Regional Public Authorities are relevant stakeholders in the context of mobility.

When looking at the different phases in which stakeholders were included, Local Public Authorities and Infrastructure and/or (public) service providers are also among the stakeholders most often involved across the pilot regions. In the phase of PLANNING, apart from the mentioned stakeholders before, General Public and Other are both involved (each with 12%). In the phase IMPLEMENTATION Higher Education and Research can also be considered an important stakeholder to involve (17%), apart from Local Public Authority (21%) and Infrastructure and/or (public) service providers (21%). It is also noticeable that the number of different stakeholders is more or less the same across the various pilot phases (9 in PLANNING and IMPLEMENTATION and 8 in EVALUATION). From this it can be concluded that an early involvement of the stakeholders can be considered a good choice due to their ongoing involvement across the phases of pilot activities.



	Stakeholder involvement in LMF	Stakeholder involvement beyond LMF	Involvement in PLANNING phase	Involvement in IMPLEMENTATION phase	Involvement in EVALUATION phase
International organisation, EEIG under national law	0%	0%	0%	0%	0%
Large enterprise	0%	0%	0%	0%	0%
National public authority	3%	5%	0%	0%	0%
Interest group including NGOs	12%	8%	6%	8%	13%
Sectoral agency	6%	8%	6%	0%	0%
Higher education and research	12%	5%	6%	17%	6%
SME	9%	8%	0%	4%	0%
Other	9%	8%	12%	8%	6%
Education/training centres or school	0%	5%	6%	4%	6%
General public	9%	15%	12%	4%	6%
Infrastructure and/or (public) service provider	15%	15%	24%	21%	19%
Regional public authority	9%	10%	6%	8%	13%
Local public authority	18%	15%	24%	21%	31%

Figure 3: Stakeholder involvement in the SMACKER pilots

3.2. Most influential stakeholders and their roles

Five out of six pilot regions stated that Local Public Authority was one of the most influential stakeholders. Apart from this, East Tyrol and Prague-Suchdol named Infrastructure and/or (public) service provider important. Gdynia stated the General Public as the most influential. Prague-Suchdol also stated that Regional Public Authority was an influential stakeholder and East Tyrol stated that the target group Other, in particular the "Tourism Association", was among previously mentioned stakeholders the most influential. Budapest stated Higher Education as the most influential stakeholder.

The roles, which these stakeholders took on, can be described as follows.

The Local Public Authority supported all the pilot action phases and disseminated knowledge in Bologna, responsibility for implementation of the Local Public Authority was its dedicated role in Gdynia. In Prague-Suchdol, Local and Regional Authorities had strong influences and interest in pilot activities and provided feedback as well as they showed commitment by signing a memorandum to continue the activities after the SMACKER project. In Murska Sobota, Local Public Authorities had the role of a coordinator of pilot activities and also showed commitment by ensuring the pilot activities to continue after SMACKER project. In East Tyrol not only the Local Public Authority but all three stakeholders (Local Public Authority, Infrastructure and/or (public) service provider and Other: Tourism Association) provided expertise, experience and responsibility to the planning and implementation process. In Gdynia, the General Public enabled to tailor specific pilot elements to the user needs and expectations. In Budapest, Higher Education provided national and international best practices.

It can be concluded that Local Public Authorities are of high importance for the implementation of Demand Responsive Transport (DRT) in rural and peripheral areas, but they are not the only stakeholders that are considered as "most influential": General Public, as well as Other like Tourism Association, and Higher Education can be of importance for the implementation of DRT.

3.3. Contribution of LMF to the various pilot phases

The contribution of the LMF for pilot roll-out is divided into 3 phases: PLANNING, IMPLEMENTATION and EVALUATION, which form a classic structure of a mobility project.

For the phase PLANNING, the contribution of the LMF for pilot roll-out is presented in Figure 4: It shows that in the PLANNING phase ""*support for designing the pilot action*" is conducted in more than half of the pilot regions (4 of 6). "*Support for collection of mobility needs*", "*support and advise for nudging activities*", are the activities that more than half the LMF of (3 of 6) pilot actions conducted. 2 of 6 LMF supported the pilot activities by "*providing feedback on existing challenges*", "*support and advise for communication activities*", "*support re-planning due to COVID-19*".

It can be concluded that in the phase of PLANNING the design of the pilot action itself, the elicitation of mobility needs, and the design of nudging activities does benefit from the consultation of a wider variety of stakeholders, like the LMF. Apart from this, LMF can also provide support rather general topics like communication activities, cooperation and existing challenges.

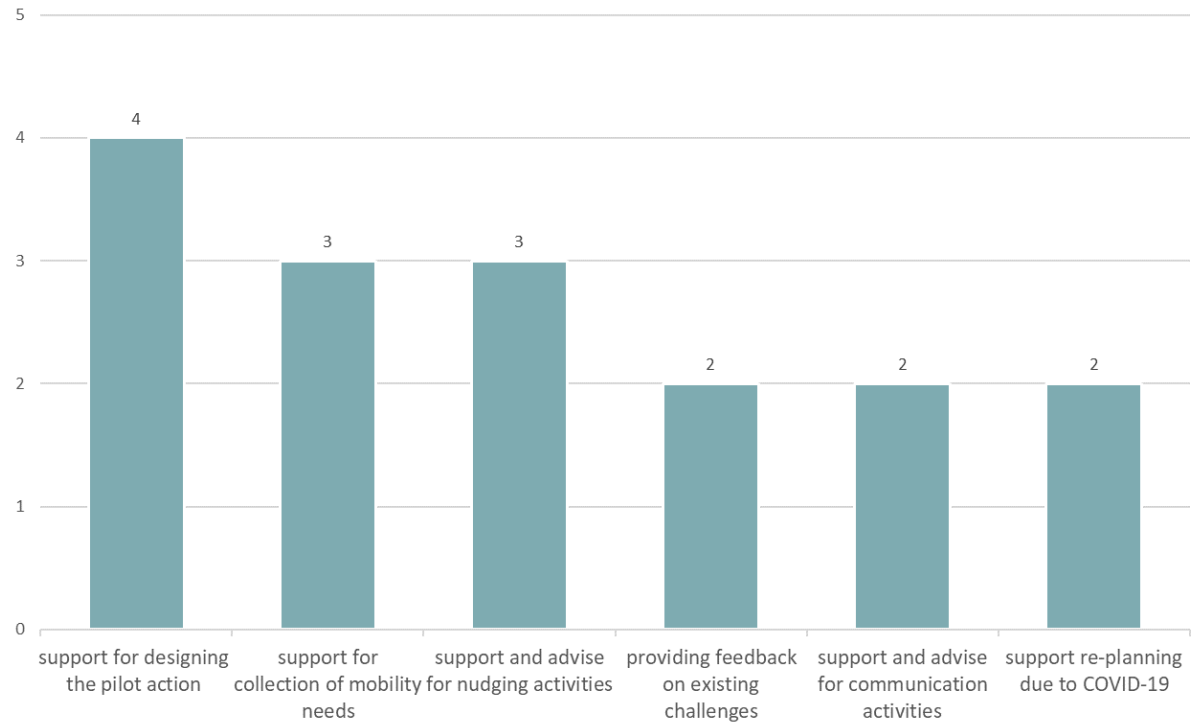


Figure 4: Contribution of the LMF for pilot roll-out in the phase PLANNING

For the phase IMPLEMENTATION, the contribution of the LMF for pilot roll-out is presented in Figure 5. It shows that in the IMPLEMENTATION phase the LMF provided "*support for implementation of nudging activities*" in more than half of the pilot regions (4 of 6). "*Support for implementation of communication activities*" and "*support for implementation of pilot action*", are the activities that more than half the LMF of (3 of 6) pilot actions conducted. 2 of 6 LMF supported the pilot activities by "*collection of feedback on pilot action*", "*suggestions for pilot action improvements*", 1 of 6 pilot regions stated "*feedback for pilot action*". As the last 3 categories are very similar (although not exactly equivalent) it can be summarised that in 5 of 6 pilot regions the LMF supported with the feedback on the pilot action.

It can be concluded that in the phase of IMPLEMENTATION the LMF supports the implementation of nudging activities (which is reasonable as nudging activities are very diverse and are supposed to address different stakeholders, which need to be reached) and therefore a strong collaboration among different stakeholders seems reasonable. Also, the LMF provided support for the implementation of pilot action and communication activities and feedback for pilot action.

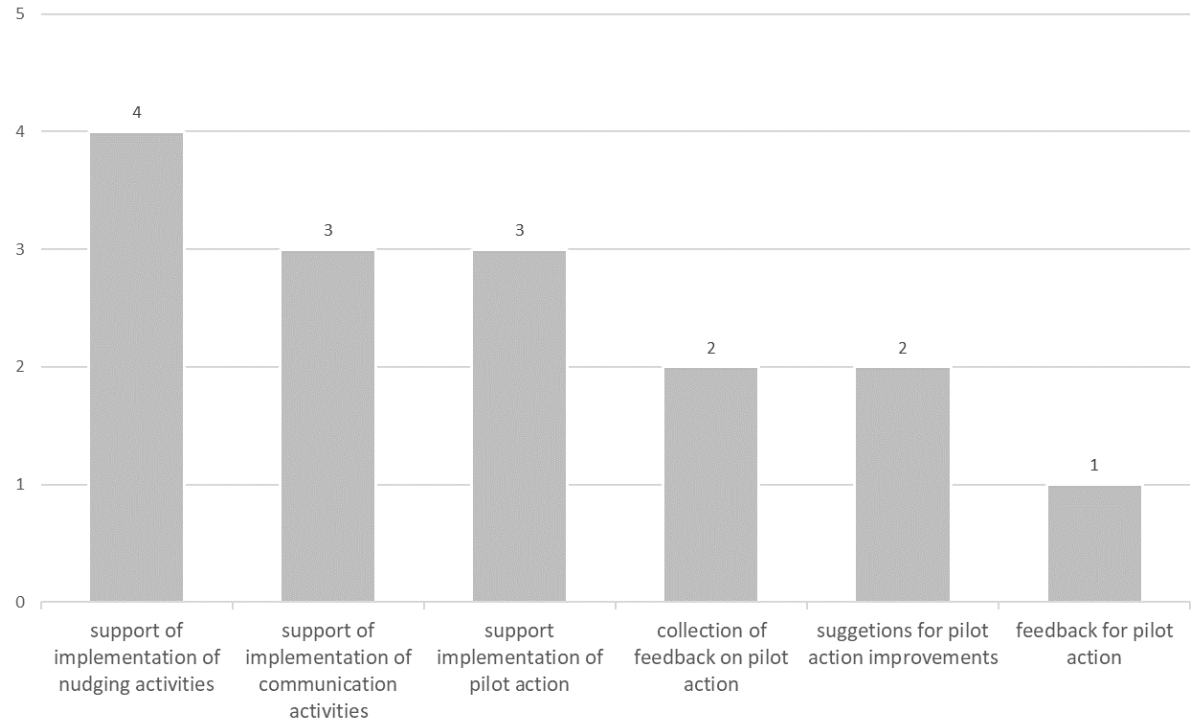


Figure 5: Contribution of the LMF for pilot roll-out in the phase IMPLEMENTATION

For the phase EVALUATION, the contribution of the LMF for pilot roll-out is presented in Figure 6. It shows that in the EVALUATION phase the LMF provided in half of the pilot regions (3 of 6) support by "*review of pilot results*".

In 2 of 6 pilot regions "*support for lessons learned*", "*collection of data for monitoring and evaluation*" and "*feedback on nudging activities*" were the aspects in which the LMF supported in this phase. And 1 of 6 pilot regions stated the following: "*commitment to pilot activities after SMACKER*".

It can be concluded that in the phase of EVALUATION the LMF is of importance to review the pilot results across most pilot regions. Apart from this, the LMF supported in different ways, which can be related to the individual context and composition of the LMF in the respecting pilot region.

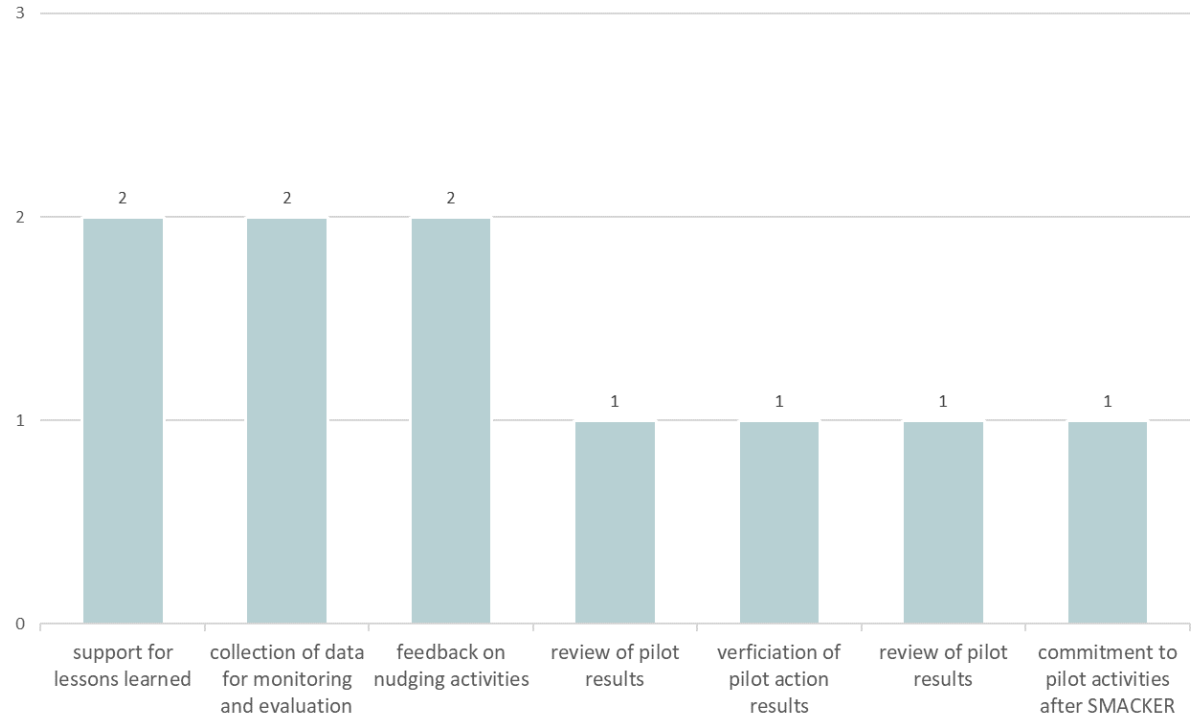


Figure 6: Contribution of the LMF for pilot roll-out in the phase EVALUATION

3.4. Relevant topics from process evaluation of pilot implementations

The following topics were frequently stated by the pilot regions in their conclusions about the process evaluation: "Early involvement of stakeholders from the beginning of the project" and "Clear communication" were considered important across most pilot regions.

Early involvement of stakeholders from the beginning of the project

All pilot regions concluded regarding the stakeholder involvement, that it was useful for the pilot activities and 5 of 6 pilot regions highlighted the importance of an early inclusion of the stakeholders at the beginning of the project, stating different reasons:

- Gdynia stated that the stakeholder involvement was crucial for gaining political support from the beginning for pilot activities and to create ownership.
- Prague-Suchdol stated that early stakeholder involvement ensured a smooth PT implementation (for this, Local Public Authority and Infrastructure and public transport service provider played key role) and for conducting nudging activities (for this, the General Public, NGO, University and Schools were crucial) as they provided feedback. It also resulted in a learning process about which stakeholders were key stakeholders and about their roles in the pilot activities. The LMF gave recommendations and was actively involved.
- Murska Sobota stated that stakeholder involvement and especially the LMF was useful for the development of the pilot action and especially useful during implementation phase due to knowledge and support but also during the planning phase, where PT operator provided valuable insights.
- In Budapest the LMF provided valuable input related to best/bad practise.

- In East Tyrol, the involvement of ALL relevant stakeholders since the beginning of the project a was stated to be crucial as inclusion at a later point in time is considered difficult. It was also pointed out that it is important to address the right person and therefore knowledge of the stakeholders is key, ideally in person, and good network is basis for establishing platform like LMF. Also, the involvement from the beginning was highlighted as it was essential for proceeding with pilot activities beyond SMACKER. The Touristic Association, who coordinated the pilot activities was also named as success factor as it resulted in a strong interest in a successful implementation and great commitment among the stakeholders. The LMF provided useful feedback in planning phase and implementation phase.
- Regarding the way the LMF was contacted, 2 pilot regions highlighted in their conclusions different approaches: Bologna stated that an "official" consultation body like LMF provides clear role in project context and a clear working plan is necessary, which includes expected inputs from stakeholders, to engage them with clear expectations, considering that the working plan must be clear but not stiff and must be adaptable. Murska Sobota instead, organised the cooperation on informal level and therefore no particular need for formal meetings was stated. From this it can be concluded that the establishment of an LMF is a very useful tool, the way the implementation of the LMF is conducted seems to be related to the cultural context.

Clear communication

Apart from an early involvement of relevant stakeholders, a commonly addressed topic among the pilot regions was the topic of communication. The pilot regions stated different aspects about this.

Bologna stated that a clear working plan is necessary, which includes expected inputs from stakeholders, to engage them with clear expectations. In Prague-Suchdol and Murska Sobota a regular and open communication was stated crucial and in East Tyrol the preparation of clear, concise and well-prepared key facts was important for communication with stakeholders to not be intrusive. Also being in time at meetings was essential. For Prague-Suchdol and East Tyrol it was stated that COVID-19 negatively impacted the communication.

Overall, the LMF fulfilled its role in all pilot regions, its impact can be summarised by the following statement of one of the pilot region's representative Manfred Mair from East Tyrol: "*The LMF has fulfilled its role and has also been a drive and a factor for success for the pilot action. The exchange and the contribution of such a platform is important for linking the pilot actions to the region.*" - Manfred Mair in D.T2.4.12.

3.5. Strategies to overcome barriers

Five out of six pilot regions stated that **collaboration and communication** was essential to tackle barriers: 2 of 6 pilot regions (Bologna and Gdynia) stated that at fruitful collaboration needs to be established from the beginning (pre-planning phase); in Bologna early involvement of LMF was important as it can guarantee the involvement of the stakeholders that are more relevant to ensure their commitment for reaching the local population and economic operators. Also, a continuous exchange and communication with various service providers was stated as it allows to adapt the pilot activities to evolving framework conditions and to ensure their active understanding of participation. In Gdynia, the early involvement was important to gain political support and to create ownership. In Prague-Suchdol an intense communication with the LMF was considered important as it led to signing of memorandum to ensure long-term cooperation beyond SMACKER. Also, in Murska Sobota the cooperation with the LMF was considered important. For East Tyrol a strong stakeholder network and their knowledge about the region in combination with face-face-meetings were considered a well-working strategy to overcome most barriers. 4 of 6 pilot regions (Bologna, Prague-Suchdol, Murska Sobota and Budapest) stated that **adaptability and flexibility** is important to be able to adapt to evolving framework conditions, e.g. external events like COVID-19.

Apart from these common aspects, some pilot regions stated specific aspects.

Gdynia pointed out that addressing mobility, although no legal framework for its implementation exists, and to start with "baby steps" is important as well as the whole functional spatial area needs to be considered, when addressing mobility in peripheral area and that the involvement of local community is important to tailor solutions to their expectations and needs. The need to check about previous attempts for DRT to learn about their mistakes to not repeat them was stated by Murska Sobota. Budapest stated that costs like IT development increased rapidly in previous years and therefore a review of planned costs was necessary.

Furthermore, the pilot regions stated different aspects in their conclusions about the lessons learned regarding the barriers: Gdynia states that the involvement of local community is important to tailor solutions to their expectations and needs. Murska Sobota emphasized importance of the identification of the target group of a DRT service.

It can be concluded that communication and collaboration with the stakeholders is of high importance due to various reasons and an early involvement can be considered important as well as flexibility and adaptability across the pilot regions.

3.6. Overall conclusions from pilot regions to process evaluation

All pilot regions stated in their conclusions of the evaluation process that involvement of stakeholders is important from the beginning. Two of the pilot regions (Bologna and Gdynia) also highlighted an early involvement to be of importance. East Tyrol stated that a comprehensive network is important to provide the involvement. Bologna also highlighted that an “"*official consulting body*" of an LMF is beneficial and Murska Sobota stated that an LMF is important for success. Communication and cooperation were pointed out by 4 of 6 pilot regions (Bologna, Gdynia, Prague-Suchdol and East Tyrol) to be of importance. Half of the pilot regions (Prague-Suchdol, Budapest and East Tyrol) stated that COVID-19 was challenging.

4. Impact evaluation

This chapter provides an analysis of the evaluation of MUST-HAVE KPIs, which needed to be provided by all pilot regions and NICE-TO-HAVE KPIs, which were evaluated by the pilot regions based upon their local settings.

4.1. Evaluation of MUST-HAVE KPIs

Figure 7 lists the "MUST-HAVE KPIs" that were monitored and evaluated by all pilot regions.

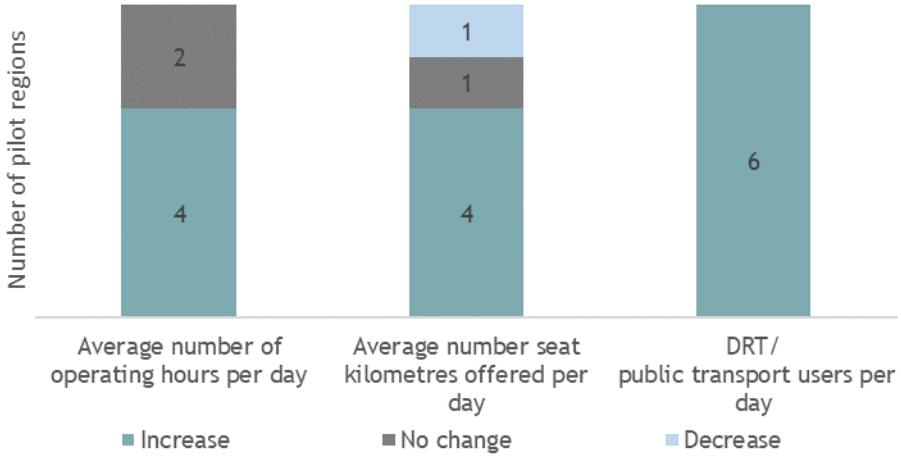


Figure 7: Evaluation of MUST-HAVE KPIs

The cross-case-analysis of the MUST-HAVE KPIs elicits that the "Average number of operating hours per day" did increase in 4 of 6 pilot regions (67%) and no change was reported by 2 pilot regions (33%). None of the pilot regions stated decrease for this KPI. The "Average number of seat kilometres offered per day" did increase in 4 of 6 pilot regions (67%) and no change was reported by 1 pilot region (17%) and one of the pilot regions stated decrease for this KPI (17%)[3]. The increase of DRT/ public transport users per day was reported in all pilot regions (100%).

From the comparison of the MUST-HAVE KPIs it can be concluded that the MUST-HAVE KPIs increased in more than the half of the pilot regions (at least 67%), which can be considered a positive development, especially when the unexpected event of COVID-19 is taken into consideration, which highly influenced peoples' mobility across Central Europe and across the world.

[3] It is noted that the Gdynia pilot region did not establish a preliminary goal for this KPI.

4.2. Evaluation of NICE-TO-HAVE KPIs

Figure 8 and Figure 9 list the "NICE-TO-HAVE KPIs" that were monitored and evaluated by at least two pilot regions and were comparable: if too much variation within one KPI of one pilot region was stated in the respective evaluation report, this could not be considered for the comparison in this chapter as generalisation of the provided information would have been necessary and this would not present the pilot action activities in a reasonable way. Apart from this, further NICE-TO-HAVE KPIs were monitored by some pilot regions, but because of being an KPI only evaluated by one pilot region and therefore does not allow a comparison: it is possible to refer to the evaluation reports (D.T2.4.7to12) for in-depth insights.

The cross-over analysis shows that the "*Number of available booking options for DRT*" and "*Number or % of DRT bookings via online booking tool*" did increase in all pilot regions (100%), which evaluated this KPI. The "*Number of distributed leaflets*" increased in 5 of the 6 pilot regions (83%) and showed no change in one pilot region. The "*Range of network*" and the "*Number of operating PT-lines*" increased in 3 of 4 pilot regions (75%) and did not change in one pilot region (25%). The "*Share of residents accessed within 500 metres of PT stop*" increased in one of the pilot regions (50%) that evaluated this KPI, and showed no change in the other pilot region (50%).

"*Average intervals per line [min]*" did increase in one pilot region (50%) and decreased in the other pilot region (50%) whereas the "*Number of interchanges of each line*" increased in 2 pilot regions (50%), showed no change in one pilot region (25%) and decreased in one pilot region (25%). The "*Number of new on-demand lines*" increased in 2 of 3 pilot regions (67%) and showed no change in 1 pilot region (33%) and the "*Number of operating PT-line kilometres per year*" and "N*umber or % of complaints at services hotline of PT operator regarding DRT service*" showed equally (33%) increase, no change and decrease. An increase in the "*Number of CO2 friendly vehicles in the fleet of public transport/DRT*" is noticed in 1 of 4 pilot regions (25%), whereas 3 of 4 (75%) did not report a change.

No change was stated for the KPI "*Number of vehicles per line equipped with bike/ ski carriers*", "*Change of existing regular lines into DRT lines*" and "*Waiting time at interchanges [minutes]*" by all the pilot regions, who evaluated this KPI.

It can be concluded that the NICE-TO-HAVE KPIs "*Number of available booking options for DRT*" and "*Number or % of DRT bookings via online booking tool*", which increased in all pilot regions, that evaluated this KPI (100%) can be explained with the KPIs relevance and linkage to the pilot implementation itself. The NICE-TO-HAVE KPIs, which showed no change "*Number of vehicles per line equipped with bike/ ski carriers*", "*Change of existing regular lines into DRT lines*" and "*Waiting time at interchanges [minutes]*" are all KPIs, which are linked to whole mobility system/ PT network and therefore influenced by many other decisions, which are not part of the SMACKER pilot actions. Apart from this, the variety in results shows heterogeneity among the pilot regions and that the same KPI is dependent on the local context/ the pilot action itself and therefore of high relevance for the pilot region itself but regarding a comparison has limited informative value.

Decrease can be detected for the KPI "Number of operating PT-lines", "Share of residents accessed within 500 metres of PT stop", "Average intervals per line [min]", "Interchanges of each line", "New on-demand lines" and "Operating PT-line kilometres per year" in one pilot region, which is the same pilot region of Gdynia, that showed a decrease in MUST-HAVE KPI "Average number of seat kilometres offered per day". It can therefore be assumed that the changes in the Public Transport system in this pilot region affected those KPIs, although no further information about the causes are available.

Another decrease was detected in another pilot region for the KPI "Complaints at services hotline of PT operator regarding DRT service", which is in fact a possible development.

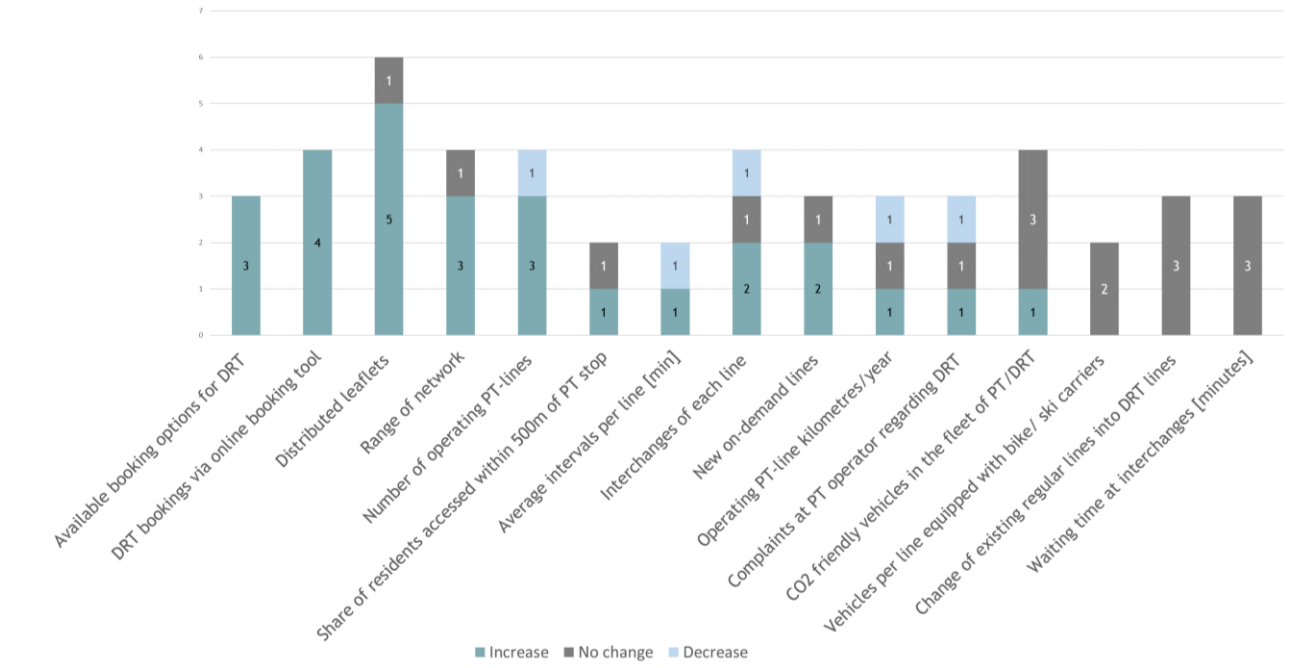


Figure 8: Evaluation of NICE-TO-HAVE KPIs (in absolute numbers)

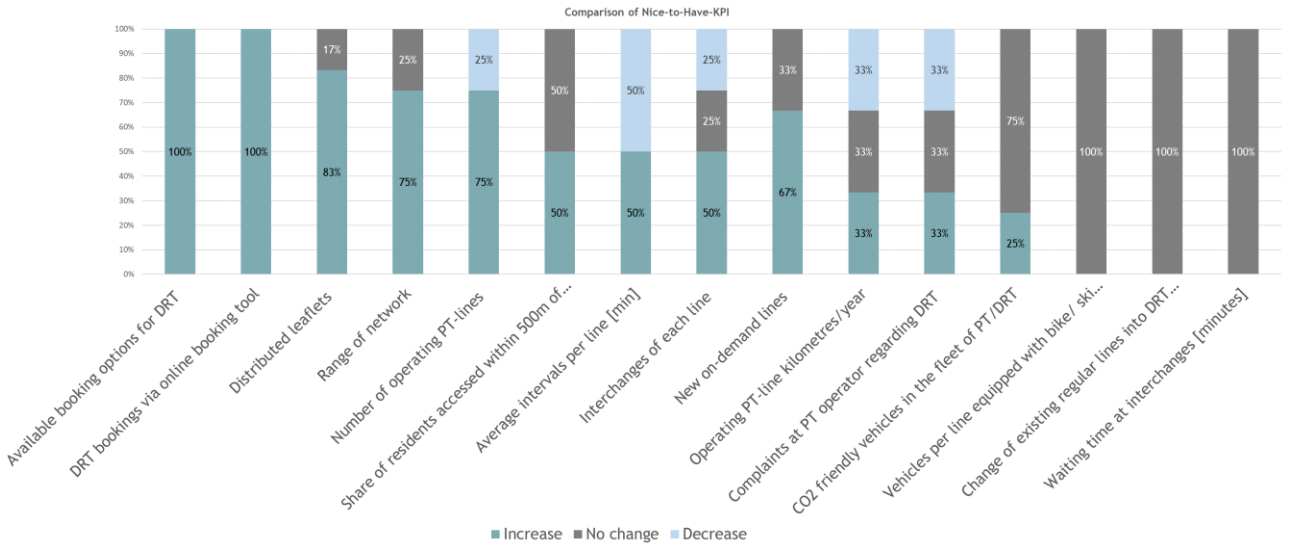


Figure 9: Evaluation of NICE-TO-HAVE KPIs (in %)

4.3. Contribution of nudging activities to the KPI achievement

The provision of nudging activities combined with the pilot implementation during the implementation phase is a unique feature of SMACKER, which sets it apart from other implementations, the evaluation of these nudging activities is also an important aspect of the project. The pilot regions could undertake a user survey after the implementation, on how the nudging activities supported the users to notice and use the pilot action in their region or, in case this was not possible, an estimation of the contribution of the nudging activities to the overall achievement of the goals, was an option.

All pilot regions chose to estimate the contribution of the nudging activities to the overall achievement of the goals. The following results are related to the MUST-HAVE KPIs as all pilot regions[4] needed to state their estimation of the nudging activities for those KPIs. It is noted that two pilot regions did not contribute the relevant data in their evaluation report, therefore, this analysis is based on 4 of 6 pilot regions. In particular: for Prague-Suchdol it is stated in the report "Car usage and visibility of public transport are the only relevant indicators to assess the impact of nudging activities on the achievement of the pilot goals", while Budapest did not state contribution of nudging activities to MUST-HAVE KPI but stated contribution to NICE-TO-HAVE-KPI (which are not considered in this chapter).

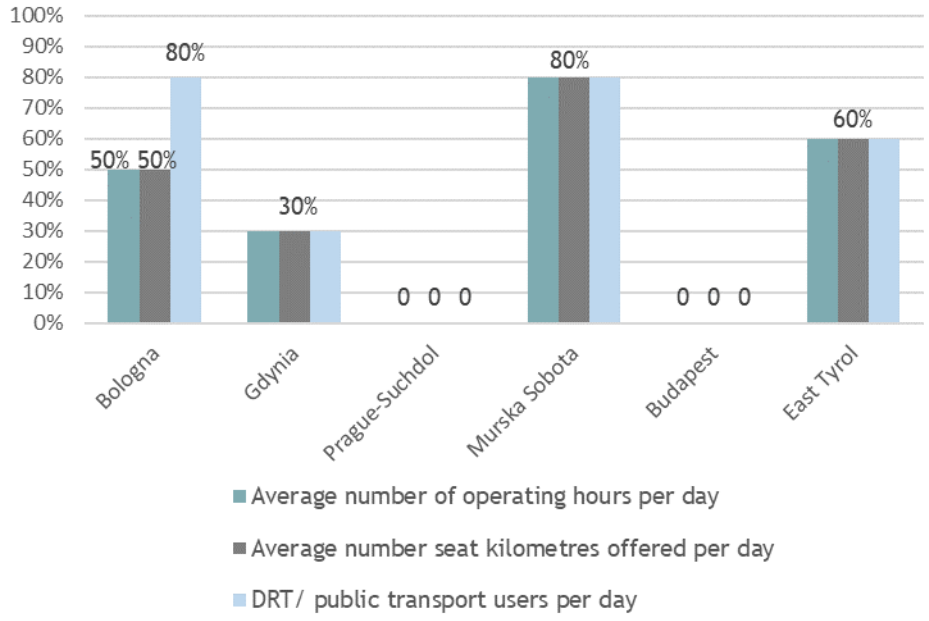


Figure 10: Contribution of nudging activities to MUST-TO-HAVE KPIs

The results show that the contribution of the nudging activities, which was estimated by the pilot regions, does vary between the pilot regions. Therefore, a survey among the target groups about the contribution of the nudging activities may have provided clearer results. Nevertheless, the results show that the nudging activities contributed to the KPI achievement and can be considered a valuable measure for the implementation of DRT in peripheral areas.

[4] Two pilot regions did not contribute the relevant data in their evaluation report. Therefore, this analysis is based on 4 of 6 pilot regions. For Prague-Suchdol it is stated in the report "Car usage and visibility of public transport are the only relevant indicators to assess the impact of nudging activities on the achievement of the pilot goals."

5. Lessons learnt in SMACKER pilot regions

Table 2 summarises the main aspects, which the pilot regions stated about the lessons they learned during the SMACKER project, which were stated in the pilot evaluation reports D.T2.4.7 to 12.

Table 2: Lessons learnt from SMACKER pilot regions

DID THE RESULTS MEET THE GOALS?	All the pilot regions but one stated that they meet the goals (Prague-Suchdol specifically clarified that one goal was reached and the other was not[5]).
WHAT WAS SURPRISING WITH REGARD TO THE IMPACT?	Despite COVID-19 pandemic the pilot activities were successfully implemented, although it caused difficulties (see next row). One pilot region stated that despite doubts about pilot action (due to bad experiences in the past) the success of the pilot action was appreciated by stakeholders (Murska Sobota). In another pilot region (East Tyrol) despite the pandemic, a growth in e-carsharing was reported.
WHAT SUPPORTED OR PREVENTED THE SUCCESS OF THE PILOT ACTION?	COVID-19 pandemic was stated as a preventing factor due to restrictions, which caused mobility behaviour changes and reduction of passenger numbers and therefore great success of pilot action was prevented (East Tyrol). It also caused difficulties regarding the measurement and therefore achievement of KPI, moreover the meetings needed to be conducted online. One pilot region (Budapest) stated that the pandemic supported usage of online tool, which was part of the pilot action. Regarding supporting aspects, the answers show variety, but the common result is that communication, cooperation and stakeholder involvement played a key role. One pilot region (Murska Sobota) stated lessons learned from previous pilot action, pilot region (Bologna) explicitly named a consulting body for stakeholder involvement since the beginning as success factor.
FURTHER EXPECTATIONS FOR THE FUTURE (FURTHER IMPROVEMENTS, DEVELOPMENTS)	Pilot regions expect continuation of activities, in different ways: in Bologna and Gdynia, discussion with stakeholders is expected. Prague-Suchdol expects further development of PT service based on pilot action and continuation of nudging activities. Murska Sobota hopes that other municipalities see benefits so that the pilot action can be expanded. Also, Budapest hopes for an expansion of the DRT network and new DRT methods. In East Tyrol a growth of the e-carsharing fleet plus further development of the mobility website to a MaaS platform and integration of new DRT services is expected.
LESSONS LEARNT, WHAT TO DO DIFFERENTLY IF THE ACTION IS	An early involvement of stakeholders is stated by half of the pilot regions to be important. It is also stated by Gdynia, that community

[5] *YES in terms of car traffic decrease, NO in terms of PT usage*" from WP.T2 - D.T2.4.9

REPEATED, WHAT WOULD YOU RECOMMEND TO OTHERS, IF ACTION IS PLANNED	involvement for problem identification to tailor service to needs and more meetings with residents for the entire duration of the process is recommended. Prague-Suchdol stated that being creative to redesign activities to adapt to new/ unexpected situations is recommended and adjusting nudging activities to specific local context plus communication with key stakeholders beyond official (LMF) meetings and thinking beyond the project lifetime is recommended. Murska Sobota highlighted technology to be of importance: an analysis of current trends and possibilities related to technology and therefore to work with external experts and preparation of guidelines how to implement the technology based on specific needs is recommended. Moreover, the usage of Good Practise examples from similar cities to elicit which option is optimal for a particular area. East Tyrol recommends focussing on one aspect of the pilot action instead of three at the same time.

Further aspects to be considered by interested regions are the following:

- The identification of user needs, as the pilot action highly depends on their usage of the service (Bologna) and to include the local community (Gdynia). The LMF was considered important by Murska Sobota and diversity among the involved stakeholders is considered important by East Tyrol as well as decision makers and enablers in the LMF are considered important in a large LMF. East Tyrol stated that the involvement of municipalities is double-edge as they are needed for financing and funding but have lengthy decision-making processes.
- Nudging activities nudging and communication activities must be designed to promote the new mobility service (also including online activities).
- Gdynia highlighted that addressing the functional area instead of the “own” peripheral area is important and Budapest highlights the need for preparation of technical description of the development and involving experts.

6. Guidelines on Actions

Demand Responsive Transport (DRT) is a flexible service that provides shared transport to users who specify the desired location and time for pick-up and drop-off. DRT can complement fixed route public transport services and improve mobility in areas with low population density and at times of day when demand is low. DRT services operate without a fixed timetable and usually use smaller vehicles than fixed route bus services. Dial-a-ride services, which are booked in advance, are a traditional example. DRT services are most effective when integrated into a regular network and are not the right solution in all circumstances (11).

Many decisions need to be made when setting up and procuring a DRT service. Experience from pilot actions has shown that while each DRT service is different because it is adapted to local circumstances and needs, a universal process can be followed for its establishment. The following guidelines describe the key actions and considerations arising from the experience and expertise of the SMACKER project. These are general guidelines for the development of DRTs. SMACKER has also considered four specific stakeholder groups, namely public authorities, public transport operators, businesses and users. For each of these groups, a specific guide has been developed that contains information on DRT according to the needs of the stakeholders. The Guidelines targeted per stakeholder group are available at www.smacker-toolbox.eu.

6.1. Setting up a Demand Responsive Transport

Before introducing a new DRT service, it is recommended that the following important steps are taken.

1. **Understanding key drivers of demand**

   The first step in developing a successful and cost-effective DRT service is to understand and thoroughly analyse the key drivers of mobility (origin/destination relationships) and the specific needs related to mobility in the area. This should include an understanding of the legal and policy framework. For a smooth implementation of the DRT service, a thorough knowledge of the environment (physical, legal and political) in which the DRT is to be established is essential. Explained in more details in Chapter 6.2 *Understanding key drivers of* demand for details.

2. **Involving stakeholders**

   A critical success factor is the involvement of appropriate stakeholders who can provide valuable input at the DRT service planning stage. This includes stakeholders from the transport and mobility sector, public authorities and end-user representatives (see chapter *6.3 Stakeholder involvement*) to concretely address mobility demand in the region. The co-creation/co-design process and the active involvement of stakeholders can contribute significantly to the success of the DRT service. In this context, special attention should be paid to potential users and the activities to reach them. Explained in more details in Chapter *6.3 Stakeholder involvement*.

3. **Choosing the operating model**

   An important decision that needs to be made concerns the selection of the DRT operating model to be used. In order to develop the most appropriate operating model, not only should the specific mobility needs and problems be taken into account, but also the embedding of the DRT in the public transport network should be carefully considered. In general, the specific role played by a DRT can be associated with different operating models, such as:

   - Network: extending or partly replacing fixed routes in periods/hours or (spatially) low-demand areas.

- Interchange: feeder lines (from a limited geographical area/basin with low demand) to connect to public transport hubs or as connection to fixed/scheduled network.
- Destination-specific: connecting a specific point-of-interest (generator of demand, such as a hospital) to area with low population density or low demand that is not served with fixed route.
- Substitute: fully replacing traditional, fixed route public transport services in a certain geographical area.

4. **Ensuring adequate financial resources**

Unrealistic expectations in terms of costs can hinder the successful implementation of DRT, especially if funding is limited upfront (limited funds for the action). In this context, it is important to bear in mind that DRTs, despite their cost-effectiveness, are often implemented in difficult contexts with low demand (sometimes with a relevant social value that needs to be recognised when it comes to accessibility to remote areas) and low return on investment. Some important aspects that should be considered in both initial piloting and long-term implementation are:

- Thoroughly estimate and monitor the costs of the service, taking into account their possible increase.
- Exploration of funding options, taking into account the social value of the service and specific needs, where appropriate.
- Assessing willingness to pay and tariff policy, including in relation to the particular characteristics of the service.

5. **Deciding on the amount of flexibility**

Flexibility is a characteristic feature of the DRT service that allows it to implement cost-effective services tailored to actual demand. However, there are different degrees of flexibility that can be applied. The most commonly used types of DRT are:

- **fixed routing** (itineraries) **and flexible scheduling** (fixed time slots or on demand);
- **fixed routing** (itineraries) **with routing deviation on demand**;
- with **flexible routing** (itineraries) **with predefined stops**;
- with **flexible routing** (itineraries) **and flexible stops** (door-to-door service, very similar to a taxi).

On-demand public transport is not the same as commercial ride-sharing services such as Uber, taxis and others (although there may be scenarios where ride-sharing providers could participate in on-demand public transport). Commercial on-demand services typically focus on optimising the journey for the individual passenger to reduce waiting and/or travel times. On-demand public transport focuses on optimising the journey for groups of passengers travelling to or from a hub at a subsidised price. This can result in relatively longer waiting and travel times compared to commercial on-demand services and is more likely to involve shared journeys.

The decision on which approach to take must give due consideration to the resources available and is linked to important aspects of operational planning, including the fleet deployed, the areas/routes to be covered and the maximum waiting or travel times, etc. Last but not least, this decision has to be balanced with the provisions of the respective national legislation for public transport services.

6. **Providing smooth and easily accessible service through booking system and ICT tool**

   DRT booking options are a crucial factor for the successful implementation of DRT. Different booking options and their combinations are possible - from booking by phone (important for older people) to booking via the internet and smartphone app to Hail-a-Ride (the customer stops the vehicle at the bus stop). ICT tools for booking and DRT management are almost a must. Dispatching services (the process of assigning vehicles to individual trips and drivers to vehicles) is almost impossible to do manually by assigning vehicles to passengers. Investing in a technology platform, either an off-the-shelf or a customised system, can improve the efficiency and user experience of DRT services by (11):

   - optimising journeys and efficiency,
   - maximising the number of passengers,
   - faster booking by users, often online or via app,
   - tracking key performance indicators (KPIs),
   - tracking vehicle locations.

   Online bookings are more attractive to younger people than telephone bookings, and optimised routes are more timesaving for users. However, inclusion is important, so a telephone booking service should be considered to enable booking for disadvantaged user groups (older people, people on low incomes). All this has implications for the technology needed for operational planning. There is no rule on how to manage bookings, but as a rule simpler is better.

7. **Informing potential users**

   Insufficient marketing and lack of awareness among potential users is an important potential factor hindering successful implementation. Information should be made as accessible as possible so that the mobility needs of all categories (i.e., people with reduced mobility, elderly, young people) can be considered. Both ICT tools/apps and more traditional communication campaigns should be carried out synergistically. Explained in more details in Chapter 6.4 *Informing potential* users.

6.2. Understanding key drivers of demand

As outlined previously, understanding transport demand (mobility needs) and transport supply in the area, is the starting point in setting-up a DRT service. Transport demand is generated by the economy, which is made up of people, institutions and industries that generate the mobility of people (and goods).

For understanding of transport demand and supply in concerned area, considerations need to be given to:

- the main characteristics of the area to be served (residential areas, industrial areas, tourist areas),
- key destinations (attractors/Points Of Interest POIs) in and outside the area, such as employment zones, major employers, town centres, hospitals and health facilities, leisure attractions, transport hubs in the area,
- existing passenger transport services and multimodal accessibility,
- mobility habits in the area.

To understand existing mobility demand, existing sources should be used such as:

- share of household expenditures on personal mobility,
- motorisation rate,
- modal share,

- car dependency,
- origin/destination matrixes,
- survey on mobility habits,
- public transport data (network, quality, occupancy, etc.),
- data on sharing mobility services,
- existing surveys and analyses of user needs and behaviour in addressed area.

The following table shows factors affecting transport demand, that should be taken into consideration when designing a DRT.

Table 3: Factors that affect transport demand (12)

Demographic	Economics	Mobility options	Public Transport Service	Land use
Population density	Number of jobs	Walking	Relative speed and delay	Mix[6]
Number of people per age and activity group[7]	Tourist activity	Cycling	Reliability	Walkability
Incomes	Business activity	Public transport	Fares	Connectivity
Age/lifecycle	Spatial distribution of activities	Ridesharing	Comfort	Roadway design
Lifestyles		Automobile	Safety and security	
Preferences		Taxi services	User information	
		Telework	Waiting conditions	
		Travel times per transport mode	Transport service proximity	
		Parking fees	Social status	
		Delivery service		

In sparsely populated areas, demand for public transport services tends to come from the traditionally transport-dependent populations of older people, people with disabilities and people on low incomes. Considering that Demand Responsive Transport services are somewhat less convenient than fixed services (advance booking required, often longer trips), it is advisable to consider DRT for less time-dependent travel demand. Matching population demographics with travel purposes can help determine the potential for DRT. If the population is transit-dependent and makes trips that are not time sensitive, DRT service is feasible. When the population is less transport-dependent or the trip purposes are more time sensitive, the viability of DRT decreases. The following table shows the potential for DRT by trip purpose and demographic group. A combination of demographic group and trip purpose classified as "high" is the best fit for DRT service options. In rural areas, the trip purposes that best fit DRT service come primarily from the elderly and low-income individuals, although there are youth activities that are eligible for flexible public transport service (11).

[6] Agricultural, residential, recreational, commercial, industrial, and transportation

[7] Residents, employees, tourists, youth, etc.

Table 4: Matrix of the DRT potentials bases on user's typology and travel reasons (11)

<table>
<tr><th>Demographic/Trip Purpose</th><th>Youth
< 18</th><th>Adult
18 - 64</th><th>Elderly
65 and over</th><th>Persons with Disabilities</th><th>Low-Income Persons</th></tr>
<tr><td>Work
School</td><td colspan="5">Low Potential for Demand Responsive Transport</td></tr>
<tr><td>Non-Emergency Medical</td><td>High Potential</td><td>Medium Potential</td><td colspan="3" rowspan="4">High Potential for
Demand Responsive Transport</td></tr>
<tr><td>Shopping/Groceries</td><td colspan="2">Low Potential</td></tr>
<tr><td>Shopping/Other</td><td rowspan="2">High Potential</td><td rowspan="2">Low Potential</td></tr>
<tr><td>Social interaction</td></tr>
</table>

When planning DRT services, trip origin and destination of the journey according to the purpose of the journey can provide helpful insights. A trip origin is suitable for a DRT service if it is close to transport dependent populations or is a convenient public meeting place and the purpose of the trip is not time sensitive. A trip origin becomes less suitable for DRT service the further it is from transport-dependent populations or convenient public meeting places and the more time-critical the purpose of the trip.

If the destination serves the purpose needed by the transport-dependent population, e.g. non-emergency medical care, and if the purpose of the trip is not time-sensitive, then this location is suitable as a destination for DRT service (e.g. destinations such as hospitals or clinics that are not medical emergencies have high potential for DRT service). If the trip destination is more time-sensitive, its potential as a destination for DRT service decreases. The key to designing DRT services is to target the service to transport dependent populations and to use origins, routes, and destinations whose trip purposes are not time sensitive.

6.3. Stakeholder involvement

Obtaining community input on design transportation service already in early stages of planning, is vital to ensure the service is adapted to actual needs of potential users and to ensure its acceptance. The importance of community involvement early in the process of DRT service development has been shown in SMACKER pilot actions and SMACKER Enlarged Transfer Programme.

Community involvement essentially means the inclusion of stakeholders in the process of designing DRT services.

In the broadest sense, stakeholders are those who are affected by the outcome or can influence the project in a positive or negative way. Identifying and selecting the right stakeholders is essential. Each stakeholder has different information and perceptions about an issue, and not all of them may be useful in a particular context. To identify the right stakeholders, the reasons for stakeholder engagement need to be clearly identified. This enables the identification of specific stakeholders who may impact or be impacted by the issue in question. Regarding mobility issues, the following groups of stakeholders should be considered (1):

- Local public authorities
- Regional public authorities
- National public authorities
- Sectoral agencies
- Infrastructure and (public) service providers
- Interest groups including NGOs
- Higher education and research
- Education/training centres and schools

- International organisation, EEIG under national law
- SMEs and/or Large enterprises
- General public
- Other.

Mobility managers, public transport operators, mobility operators and/or touristic operators are among those whose participation is of utmost importance when designing new mobility services. Particular attention should be paid to identifying disadvantaged and vulnerable groups. This includes disabled people organisations and social services. Stakeholder identification should be as comprehensive as possible so that relevant groups are not inadvertently excluded. It is important not to rely only on known institutions and to reach out to groups that are normally excluded from decision-making processes, especially women and marginalised groups that may be affected by the project.

Stakeholder engagement is a two-way communication process that provides a mechanism for exchanging information and promoting stakeholder interaction with the formal decision-makers. It brings in knowledge about problems and needs, enables the development of alternative solutions, ensures better quality decisions, helps overcome conflicts and increases public support and social empowerment. It increases the legitimacy of planning and decision-making and allows stakeholders to provide feedback on the acceptability and usefulness of proposed actions.

Local Mobility Forum

Within SMACKER, stakeholder engagement was realized through Local Mobility Forums – a concept that formalizes the process of cooperation, sets objectives, defines structures and operating procedures. In general Mobility Forums for the most part:

- bring together transport and mobility community to debate, draw long-term perspectives and develop visions for tomorrow's mobility;
- provide advice and technical expertise to the policy makers on the development and implementation of legislation, policies, projects and programmes related to mobility issues;
- facilitate exchange of information, stimulate cooperation and creation of partnerships;
- deliver opinions or develop and propose innovative solutions.

Local Mobility Forums implement activities that are more focused on (locally) specific issues by:

- improving information and communication with citizens and all mobility stakeholders in relation to mobility planning activities;
- involving the public in the decision-making process of mobility policy strategies at an early stage;
- seeking partnerships with different stakeholders in the transport system, such as shopkeepers and residential and commercial land developers, etc.;
- creating a platform for the effective exchange of mobility-related information;
- debating on specific measures and their impact on community to reach common understanding and to identify acceptable solutions.

A common methodological approach was used for SMACKER Local Mobility Forums. It consists of the following[8]:

- Step 1: Strategy design
- Step 2: Stakeholder identification, mapping and prioritisation
- Step 3: Design of stakeholder engagement action plan

[8] For details on SMACKER LMF methodology see SMACKER "D.T1.2.4 Methodology for stakeholders involvement and creation of Local Mobility Forum (LMF)"

- Step 4: Engaging stakeholders
- Step 5: Feedback and follow-up.

Experiences with the work of LMFs were somewhat varied (see chapter *3 Process evaluation*). While some LMFs worked very formally, others applied a more informal approach that was better adapted to local conditions. Nevertheless, LMFs have proven to be a valuable tool for engaging stakeholders and communities. SMACKER Experience shows that the establishment of a Local Mobility Forum has enabled the early involvement of stakeholders from the beginning of the project and clear communication with them. With this co-creation process of DRT services (implemented in SMACKER actions) as well as nudging activities, a successful implementation of the activities could be achieved. Furthermore, the SMACKER Local Mobility Forums will continue their operations to support mobility management in the participating regions.

6.4. Informing potential users

Attracting sufficient ridership is critical to the viability and success of a DRT service. Communication and continuous engagement are needed to increase understanding of any DRT service, encourage improvements and build confidence in the reliability and sustainability of the service. The more people know and understand about the service, the more familiar they are with it, the more likely they are to use it. Any materials (printed and electronic) should clearly explain how the service works, particularly the booking process, zones and fares and any constraints. This will help to give users confidence, provide reassurance and set realistic expectations about using the service.

Various nudging and promotional campaigns can be designed to reach different target groups of potential users. For instance, it is possible to think about:

- Guided (demand-responsive) public transport tour per target group.
- Demand-responsive public transport try-out activities (free public transport test ticket etc.).
- Competition with lottery to promote (demand-responsive) public transport commuting from home to work/school.
- Personal mobility assistants for elderly people or persons with disabilities at major transport interchanges.
- Bonus mile programme for (demand-responsive) public transport.
- Gamification for (demand-responsive) public transport.
- Mobility management in workplaces and organisations.

Promotion of Demand Responsive Transport can be combined with promotion of public transport and sustainable mobility in general.

Within SMACKER pilot actions, three specific groups were targeted:

- Residents

  Residents have set mobility patterns that are not easily changed. The best opportunity to do so is when residents are transitioning from one life stage to another (relocation, children, new job, medical reasons) and need to adapt their mobility patterns.

- Commuters

  Mobility patterns of commuters are highly repetitive and thus have a high potential to provoke sustainable behaviour. In particular, employees that change their workplace are open to new mobility options due to changed framework conditions.

- Tourists

Tourists do not have habitual trips at their holiday destination. They often have to orient themselves in a new area, thus, they are open for mobility options offered. Addressing tourists offers a high potential to nudge towards sustainable mobility.

The pilot regions have used different combinations of promotional and nudging actions to reach their target groups. From campaigns on digital media and social platforms, competitions for school children (walking to school), try-out activities to posters and leaflets. Unfortunately, the COVID -19 epidemic significantly curtailed promotional and nudging activities during the implementation of the SMACKER project. Planned face-to-face events were moved to the internet, access to and operation of public transport was severely restricted, and the use of public transport was discouraged across the EU. Nevertheless, SMACKER promotional and nudging campaigns had positive effects, as shown in chapter *4.3 Contribution of nudging activities*.

7. Conclusions

Based upon the detailed results above, it can be concluded that for the implementation of mobility related pilot action in peripheral and rural areas in Central Europe, the Local Public Authority are of high importance for the implementation of Demand Responsive Transport (DRT), but are not the only stakeholders that are considered as "most influential": General Public, as well as Other stakeholders like Tourism Association, and Higher Education can be of importance for the implementation of DRT. Apart from this, communication and collaboration with stakeholders is of high importance due to various reasons and an early involvement can be considered important as well as flexibility and adaptability. How the stakeholder involvement is set up (formal or informal) seems to depend upon the local/ regional context.

Apart from this, nudging activities, which supported the pilot actions in SMACKER are considered to have contributed to the KPI and can be considered a valuable measure for the implementation of DRT in peripheral areas due to their ongoing involvement across the phases of pilot activities.

Regarding the impact evaluation, it can be concluded that the MUST-HAVE KPIs increased in more than the half of the pilot regions (at least 67%), which can be considered a positive development, especially if the unexpected event of COVID-19 is taken into consideration, which highly influenced peoples' mobility across Central Europe and across the world.

The variety in results in NICE-TO-HAVE KPIs shows heterogeneity among the pilot regions and that the same KPI is dependent on the local context/ the pilot action itself and therefore of high relevance for the pilot region itself but regarding a comparison has limited informative value.

The idea of Demand Responsive Transport is not new, but the task is difficult to perfect. Every city/region is different and therefore has specific and unique problems that need to be addressed with DRT. Just as each community has its own needs, DRT can address a seemingly endless list of mobility problems and adapt accordingly. There is no clear blueprint for developing a DRT service, and each can and should be quite different to be successful. Although there is no universal blueprint for DRT development, the steps that need to be taken in developing such a service are universal. It all starts with understanding the problems and needs that DRT is meant to address. Within SMACKER, global knowledge has been combined with project experience to provide basic guidelines for those interested in developing DRT. The information presented in this document should be a basic guide for SMACKER followers and newcomers to DRT. The general guidelines for DRT development contained in this document have been further elaborated in stand-alone documents for authorities, public transport operators, companies and users. These specific guides contain information on DRT tailored to the needs of the respective target groups.

In the future, we will certainly see more examples of the use of Demand Responsive Transport in rural and sparsely populated areas. For those to follow, SMACKER Guidelines provide valuable suggestions for the development of DRT in co-creation process with the local community.

8. References

1. SMACKER Application Form, Version 27 February 2019
2. SMACKER “D.M.2.1 Internal Quality Handbook”, September 2019
3. SMACKER “D.T1.2.4 Methodology for stakeholders involvement and creation of Local Mobility Forum (LMF)”, September 2019
4. SMACKER “D.T1.2.24 Transnational review for matching needs and services for a comprehensive planning”, July 2020
5. SMACKER “D.T2.4.7 Pilot action evaluation – Bologna (IT)”, June 2022
6. SMACKER “D.T2.4.8 Pilot action evaluation – Gdynia (PL)”, June 2022
7. SMACKER “D.T2.4.9 Pilot action evaluation – Prague-Suchdol (CZ)”, June 2022
8. SMACKER “D.T2.4.10 Pilot action evaluation – Murska Sobota (SI)”, May 2022
9. SMACKER “D.T2.4.11 Pilot action evaluation – Budapest (HU)”, June 2022
10. SMACKER “D.T2.4.12 Pilot action evaluation – East Tyrol (AT)”, May 2022
11. Transportation Research Board. A Guide for Planning and Operating Flexible Public Transportation Services, 2010
12. Transportation Demand. Evaluating The Amount And Type Of Travel People Would Choose Under Specific Conditions. Victoria Transport Policy Institute, 2015