EX-ANTE IMPLEMENTATION OF THE IMPACT ANALYSIS FRAMEWORK FOR THE REPLICATOR CITIES

Project deliverable D8.5

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MOVE21 – Multimodal and interconnected hubs for freight and passenger transport contributing to a zero emission 21st century

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Project Executive Summary

The main objective of MOVE21 is to transform European cities and functional urban areas into climate neutral, connected multimodal urban nodes for smart and clean mobility and logistics. MOVE21 will do this through an integrated approach in which all urban systems are connected, and which addresses both goods and passenger transport together. As a result, MOVE21 will improve efficiency, capacity utilisation, accessibility and innovation capacity in urban nodes and functional urban areas.

The integrated approach in MOVE21 ensures that potential negative effects from applying zero emission solutions in one domain are not transferred to other domains but are instead mitigated. It also ensures that European transport systems will become more resilient. Central to the integrated approach of MOVE21 are three Living Labs in Oslo, Gothenburg, and Hamburg and three replicator cities Munich, Bologna and Rome. In these, different types of mobility hubs and associated innovations are tested and means to overcome barriers for clean and smart mobility are deployed. The Living Labs are based on an open innovation model with quadruple helix partners. The co-creation processes are supported by coherent policy measures and by increasing innovation capacity in city governments and local ecosystems. The proposed solutions deliver new, close to market ready solutions that have been proven to work in different regulatory and governance settings. The Living Labs are designed to outlast MOVE21 by applying a self-sustaining partnership model.

MOVE21 partners

The MOVE21 consortium consists of 24 partners from seven different European countries, representing local city authorities, regional authorities, technology and service providers, public transport companies, SMEs, research institutions, universities and network organisations.

- **Norway**: City of Oslo, Viken County, Ruter, Urban Sharing, Mixmove, Institute of Transport Economics, IKT-Norge
- **Sweden**: City of Gothenburg, Rise Research Institutes of Sweden, Business Region Gothenburg, Volvo Technology, Renova, Parkering Göteborg
- **Germany**: City of Hamburg, City of Munich, Hafencity University Hamburg, Deutsche Bahn Station & Service
- **Italy**: Metropolitan City of Bologna, Roma Servizi per la Mobilità, Roma Tre University
- **Belgium**: Eurocities, Polis
- **The Netherlands**: TNO
- **Greece**: Hellas Centre for Technology and Research

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Deliverable executive summary

Key words

#1 Impact Analysis, #2 Key Performance Indicators, #3 Ex-ante assessment framework #4 Innovative mobility solutions #5 Zero-emissions

Executive Summary

The current deliverable demonstrates the ex-ante results of the implementation of the impact analysis framework for the replication activities in all six participating urban areas, i.e. Replicator Cities (RCs; Bologna, Munich and Rome) and the Living Labs (LLs; Oslo, Gothenburg and Hamburg) as described in the Deliverable D8.4 Impact Analysis Framework for Replicator Cities. The project deploys an ambitious two-way replication approach in which all six urban areas engage in Replication Activities (RAs) and are thus inter alia described as Replicator Cities. According to the impact assessment concept, three fundamental conceptual models are integrated in the cities' replication activities, including the description of the relevant metrics and indicators that will be measured, calculated or estimated per level. Level one refers to the three innovation-enabling topics which are society, governance, and technology. Level two refers to Replicator co-creation procedures. Level three refers to the impact-oriented MOVE21 result indicators. For the calculation of the specific KPIs included in each level, a data collection process takes place based on different monitoring tools used, which are presented along with the process for supporting their launch and usage. More specifically: The first tool refers to the organization and conduction of a Questionnaire Survey to representatives of the RCs, including questions that reflect i) the city's collaboration level between public private entities in the field of transport domain, ii) the city's level of understanding governance drivers and barriers for the measure's implementation and iii) the city's level of modal integration. The second tool refers to a Measures/Innovations/Solutions Logbook designed for the RCs to fill in in order to substantiate specific MOVE21 impact areas and calculate the relevant result indicators. The ex-ante for Replicator Activities evaluation results are mainly based on the statistical analysis of the relevant input collected from the abovementioned monitoring tools. The result indicators of the ex-ante period are demonstrated per level, Impact Area and city/urban area, leading to conclusions drawn. The current report provides an overall picture of the innovations that will be implemented during the project lifecycle and their impact to society, traffic, and environment. According to the results, minimal discrepancies have been revealed between the targeted values and the measured values of the indicators. After implementation, the ultimate measured values will be compared to those from the before-implementation phase (outlined in the current deliverable). This comprehensive evaluation aims to determine the overall effectiveness of the measures and draw final conclusions regarding the attainment of positive impacts.

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1 List of abbreviations and acronyms

Acronym	Meaning
KPI	Key Performance Indicator
LLs	Living Labs
PT	Public Transport
QS	Questionnaire Survey
RCs	Replicator Cities
RAs	Replication Activities
WP	Work Package

2 Introduction

2.1 Purpose of Deliverable and attainment of objectives

The current deliverable describes the work that has been done in the framework of Task 8.3 ***"Implementation and Validation of the Impact Analysis Framework".*** It explains in terms of i) data collection and analysis and ii) result indicators' calculation, the implementation of the ex-ante impact assessment framework for the Replicator Cities (RCs) of Bologna, Munich, Rome, and the Living Lab cities (LLs) of Oslo, Gothenburg, and Hamburg which are also engaged in Replication Activities (RAs). Thus, and from now on, when referring to RCs all six cities are included.

D8.5 follows and implements the Replication Impact analysis framework developed under D8.4 (Impact analysis framework for Replicator Cities) in order to estimate the impacts of the measures, solutions, and innovations that RCs will replicate or implement within MOVE21 as part of RAs. Specifically, D8.5 presents:

- A quantification of the different innovations replicated/implemented within the project by the six cities;
- An assessment of the base case capacity of RCs representatives;
- Final results from the indicators' calculation (defined in the impact analysis framework evaluation framework).

The Deliverable's objective has been achieved to full, and was submitted on time within the project's time schedule. It contains information on result indicators calculated within the deadline of the deliverable.

2.2 Intended audience

The main internal audience of this deliverable is the Project Coordinator, the WP Leaders, MOVE21 Executive Board and the city representatives, as well as the European Commission Services. Moreover, D8.5 is a public document aiming to become a guide for any interested body, as it provides the results from the framework and methodology implementation, and which are transferable to any relevant EU initiative or relevant research activity. Therefore, it is open to a wider audience.

2.3 Structure of the deliverable and links with other work packages/deliverables

The deliverable consists of five sections overall. Initially all the relative administrative information (authors, Deliverable number, document history, etc) and project information (project summary, project partners), is provided. Abbreviations and acronyms are also included. Following, the purpose and the objectives of the project are described ending up to its construction and its links with other work packages. In the ***third section,*** the methodological framework of the ex-ante replication impact analysis is presented, enriched with a detailed presentation of the MOVE21 monitoring tools used for data collection procedures and necessary for the monitoring and calculation of the result indicators. It also includes the definition of several concepts enclosed by the results indicators of the replication impact analysis framework and describes how MOVE21 understands them. Moving forward, within the ***fourth section*** the result indicators are demonstrated per Level and city while the ***fifth and final section*** includes the conclusions. The deliverable is completed with the section References and ***Annexes*** (A and B) presenting the structure and images of the monitoring tools.

The Deliverable is linked with i) D8.4 *Impact Analysis Framework for replicator cities*, ii) D8.1 *Impact Analysis Framework for the Living Labs*, and D8.3 *Ex-ante implementation of the Impact Analysis*

Framework for the Living Labs, as the assessment methodology presented in D8.4 was initially inspired and based on the LLs methodology and its implementation. It is also linked with D7.*2 Replication action plans for Oslo, Gothenburg, Hamburg, Munich, Bologna and Rome* which details each city's specific plans for the replication of selected measures. D8.5 will feed deliverable D8.6 *Ex-post Implementation of the Impact Analysis Framework*, in order the result indicators from the ex-ante evaluation phase and the respective ones from the ex-post evaluation phase to be comparable, leading to final conclusions regarding the project's impact.

3 Methodological Framework for the Ex-ante MOVE21 Replication Impact Assessment

3.1 Ex-ante impact assessment methodology overview

To evaluate the anticipated achievement of MOVE21 objectives as regards the RAs, an impact assessment concept was devised, inspired by the similar one developed for assessing the Living Lab activities. Detail descriptions of both the assessment concepts, have been presented in deliverable D8.1 *Impact Analysis Framework for the Living Labs* and deliverable D8.4 *Impact Analysis Framework for the replicator cities*. As described in D8.4, three fundamental conceptual models are integrated in the RAs including the description of the relevant metrics and indicators that will be measured, calculated or estimated per level. ***Level one*** refers to the three innovation-enabling topics which are society, governance, and technology. ***Level two*** refers to replication co-creation procedures. ***Level three*** refers to the impact-oriented MOVE21 result indicators.

3.1.1 Level 1: Innovation-enabling topics

As described in D8.3 and D8.4, within this level, a performance assessment is taking place for assessing the number of innovations intended to be replicated/implemented in the Replicator Cities in the view of the ***three thematic areas***: urban social layer, governance, and technical integration. The ***urban social layer*** considers the implemented innovations that provide a close link between social and spatial components of the cities, enhance social acceptance, and maximize the impacts on social cohesion. The ***governance level*** is related to the needed innovative actions that should be done by the RCs to solve specific problems and barriers as regards governance structures/mechanisms, and specific parameters such as regulatory knowledge, stakeholders, resource mobilization, direction of search, market and customers, legitimacy, and entrepreneurial experimentation. The ***technical integration*** is related to the technological innovations of the final implemented solutions as regards the achievement of the connectivity and interoperability among them. This integration is examined individually in each of the six cases; Bologna, Rome, Munich, Oslo, Gothenburg, and Hamburg.

The KPIs included in this Level per thematic area for the RAs are listed below:

Thematic Area 1: Urban Social Level

- Number of MOVE21 social innovations implemented/replicated in the Replicator Cities

Thematic Area 2: Governance Level

- Number of MOVE21 innovative business models implemented/replicated in the Replicator Cities
- Number of MOVE21 governance innovations implemented/replicated in the Replicator Cities

Thematic Area 3: Technical Integration

- Number of MOVE21 technological innovations implemented/replicated in the Replicator Cities
- Number of MOVE21 service innovations implemented/replicated in the Replicator Cities
- Number of interoperable systems of innovative solutions adopted/replicated in the Replicator Cities
- Number of implemented MOVE21 innovations in the Replicator Cities

3.1.2 Level 2: Replicator procedures

The procedures encompass the collaborative development and implementation of innovative mobility solutions/services, the efforts aimed to enhance innovation capabilities within the cities and the local ecosystems, and the adoption of self-sustaining partnership models by the cities participating in RAs. Under this concept, there are two out of the three project target areas that are used for the evaluation framework of RAs:

- ✓ The evaluation and uptake of new knowledge and skills within the six cities/urban areas during the replication and/or implementation procedures of the measures.
- ✓ The quantification of the collaborations created, and the business models developed within the six cities/urban areas for achieving a successful replication and/or implementation and operation of innovative measures.

A total of four KPIs are included in this Level, addressing the two target areas:

Target Area 1: Uptake of new knowledge and skills

- Perceived improved understanding of governance drivers and barriers to implementation of measures

Target Area 3: Quantify the collaborations created and the business models developed

- Number of MOVE21 business models developed
- Increased collaboration between public and private entities and transport domains
- Modal integration of transport

Target Area 2 is related to modifications within the cities' administrative and legal frameworks as well as technological upgrades (for example number of policy, commercial, administrative and governance decisions solutions, number of technological equipment, etc). These were additional KPIs (not included in the Grant Agreement) added by WP4 and WP5 in agreement with WP8 for the case of the LLs evaluation framework. When proceeding with the RCs evaluation framework the final list of KPIs did not include Target Area 2 KPIs.

3.1.3 Level 3: Impact-oriented result indicators

Under this level, two out of the three project Impact Areas have been used for the RAs evaluation: i) ***Impact Area 2***: Sustainable, inclusive, safe, and secure mobility system and ***Impact Area 3:*** Improvements of the efficiency and accessibility of the transport networks/systems covering the TEN-T urban nodes.

It is worthwhile to highlight at this point that two of the indicators included in the evaluation framework for the RAs (***Increase in public transport use*** (Impact Area 2) ***and Increase in active modes due to RAs*** (Impact Area 3)), have been excluded and simultaneously have not been calculated in the ex-ante phase. In order to have more accurate results, these two indicators will be calculated in the ex-post evaluation phase where specific surveys will be organized addressing users of the new services who will assess the before and after situation.

Concluding, the ex-ante evaluation framework for RAs addresses only the Impact Area 3. Due to the fact that the six cities/urban areas are directly linked to the TEN-T core network, the MOVE21 innovations are expected to contribute to improved connectivity between TEN-T corridors (in particular the Scan-Med Corridor) and the urban areas and increased sustainable transport options, while also increasing efficiency and capacity utilization within the urban nodes. The indicators of this area to be calculated for the evaluation framework of RAs are i) ***the number of new (micro) hubs as a result of the Project*** and ii) ***the number of improvements in existing hubs as a result of the Project.***

The above-mentioned Ex-ante MOVE21 Impact Assessment process as well as the relevant KPIs are presented in the figure below.

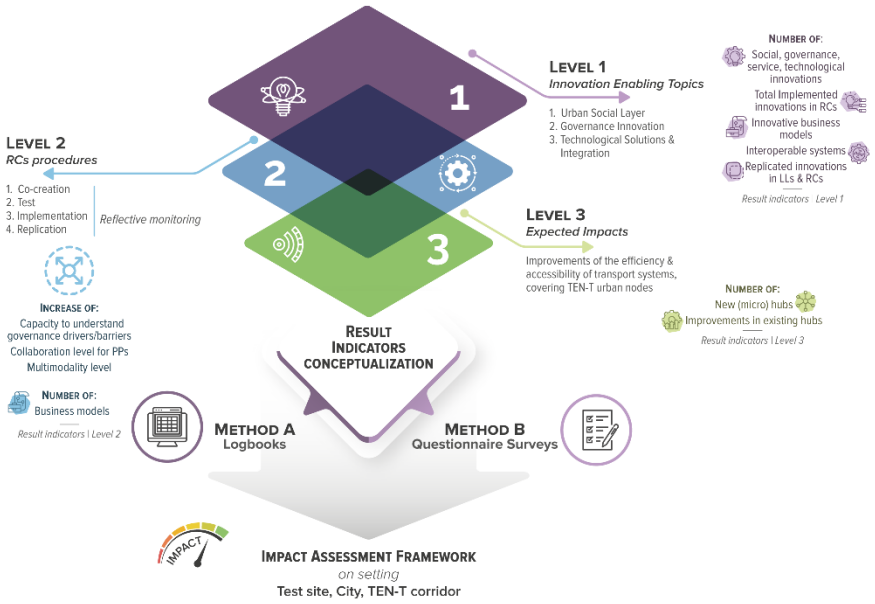

Figure 1: Results indicators of the ex-ante MOVE21 Replication Impact Assessment

3.2 Ex-ante replication impact assessment methodology implementation

The ex-ante Replicator Impact Assessment implementation is based on two monitoring tools; a ***Questionnaire Survey (QS)*** and the ***Measures/Solutions/Innovations Logbook***. These tools were also used in the ex-ante evaluation of the LLs providing the relevant numbers for calculating the respective KPIs.

Similarly, to the ex-ante evaluation of the LLs, a communication process was implemented involving WP8, RCs, and project partners. This process aimed to present and describe the relevant tools, determine specific timelines for input provision by the RCs and clarify other pertinent issues. This was particularly crucial for the cities of Rome, Bologna, and Munich. Oslo, Hamburg and Gothenburg LLs (acting also as RCs) were already aware of the tools and the procedures, however in case further clarifications were necessary, brief meetings were organized with WP8.

The detailed description of the data collection methodology is presented in the next sections.

3.2.1 Ex-ante date collection using Questionnaire Survey

For the implementation of the MOVE21 Replication Impact Assessment, a ***Questionnaire Survey (QS)*** was organized for selecting the relative figures corresponding to the specific result indicators covering the respective RCs result indicators.

The QS of this period aimed to collect information on two specific timelines of assessment (***a) the baseline and (b) the ex-ante assessment.*** The baseline period refers to the reference point, the current status. The ex-ante assessment refers to the pre-identification of the result indicators: what impact the implemented solutions would achieve after their implementation. Based on the guidance of

the ex-ante assessment, the alternative solutions will be modified and the decisions will be more factual. This approach is more comprehensive and can lead to the achievement of the target values and the specific objectives as well as to the improvement of the quality of design of each solution. The QS form is presented in Annex A in this deliverable.

Based on the previous experience gained from the LLs, the QS followed the same logic as the ones of the LLs. Specific guidelines were provided to the RCs for clarifying and resolve any issues or concerns, (e.g., technicalities end time-related issues).

The questions included in the survey reflected three specific KPIs, namely; the city's collaboration level between public and private entities in the transport domain, the city's level of understanding of governance drivers and barriers for the measure's implementation, and the city's level of modal integration. There was also free space to share thoughts and comments.

The level of participation was an important factor in order to ensure the accuracy and reliability of the QS results. The outcome of the process was the structure of a database fulfilling the needs of the three result indicators.

3.2.2 Ex-ante data collection using Measures, Innovations and Solutions Logbooks

For the implementation of the MOVE21 impact assessment, a ***Measures/Innovations/Solutions Logbook*** was designed for the RCs to fill in in order to explain cover specific MOVE21 impact areas and calculate the result indicators. The Logbook followed the same logic as the ones used for the LLs, however a simplified version was prepared, since the number of KPIs to be calculated was lower. The aim of the Logbook was to collect all the relevant information related to the measures, solutions, and innovations intended to be replicated and/or implemented in the six cities/urban areas. The Logbook form is presented in Annex B in this deliverable.

In the Logbook, the RC representatives were invited to fill in the measures and the built-in solutions proposed and describe the innovative aspects (technical/non-technical) intended to be adopted. Furthermore, the RCs' representatives had to examine the business models in need for enhancement.

The communication process for supporting filling out the Logbook followed the launch of the QS and was part of the same communication activities, as described in section ***(3.2.1. Questionnaire Survey).***

3.3 Data analysis

The ex-ante for RAs evaluation results were mainly based on the statistical analysis of the relevant input collected from the Questionnaire Surveys and the Logbooks.

In total six Logbooks were completed by the six RCs, summing up to ***12 measures***, ***28 solutions***, and ***57 innovations*** intended to be replicated and/or implemented as well as ***18 new business models*** to be developed. Also, within the logbooks ***291 new (micro) hubs*** and ***29 improvements in existing hubs*** as result of the project are reported.

Regarding the data collected by the Questionnaire Surveys, the overall number of responses/records is 47 (Bologna 18; Rome 6; Munich 6; Oslo 7; Gothenburg 5; Hamburg 5). The professional background of the stakeholders/respondents is from the mobility, environment, and development sectors (e.g. climate, procurement, urban development, traffic management, transport planning).

3.4 Definitions in the Impact Analysis

Before presenting the Replicator Impact Analysis results, it is important to provide the definition of several concepts enclosed by the results indicators of the Replicator Impact Analysis framework and explain the way MOVE21 understands them. For the result indicator: ***Number of MOVE21 innovations intended to be replicated/implemented,*** it is important to clarify the concept of innovation as well as define the categories of innovations. As regards the innovation concept, the definition of D1.2: Innovation Management Vision and Strategy is adopted [1], which follows the ISO56000:2020 approach. Accordingly, innovation is defined as a new or changed entity, realizing, or redistributing value. MOVE21 has chosen LLs as its innovation model which is quintessentially an open innovation model.

MOVE21 uses the following categories of types of innovations. It is important to note that overlaps between categories often occur and that "bundled innovations" are prevalent, meaning that innovations can have characteristics from more than one category. For monitoring purposes, different innovations are only counted in one category, although they might exhibit many characteristics with other categories.

1. ***Social***

   According to the OECD, social innovation refers to the design and implementation of solutions that imply conceptual, process, product, or organizational change, which ultimately aim to improve the welfare and wellbeing of individuals and communities [2].

2. ***Governance***

   Governance innovation is defined according to D4.1 *Initial Governance Innovation and Capacity Context Analysis for the Living Labs*. Consequently, governance innovations concern developing better ways to organize and govern, with the goal of significantly improving the provision of public goods and services [3]. This includes various co-governance and partnership models, innovation capacity in government and policy innovation.

3. ***Business***

   According to the OECD and Eurostat, business innovation refers to a new or improved business process for one or more business functions that differs significantly from the firm's previous business processes and that has been brought into use in the firm. This concerns the different functions of a firm, including production of goods or services, distribution and logistics, marketing and sales, information and communication systems, administration and management, and product and business process development [4].

   In MOVE21, the category of business innovation also includes innovation related to pricing and revenue models. Pricing model refers to a way an organization maximizes profits and can pertain to pricing strategies such as flat rates, freemiums, premiums, or flexible pricing. Revenue model refers to the way an organization generates income and can pertain to for example pay-per-use, licensing, leasing, advertising, or subscriptions.

4. ***Technological***

   According to the OECD, technological innovation refers the comprise of new products and processes and significant technological changes of products and processes [5].

5. Service

Service innovation can pertain either to innovation of new service products, processes, or new service companies or organizations. Service innovation can pertain to both immaterial innovation but also be linked to manufacturing. Service innovation is about significantly improving user experiences [6].

For the result indicator ***Number of MOVE21 innovations implemented/replicated in the cities replicating activities,*** it is, also, important to clarify ***the meaning of the measures and solutions*** (related to passenger and freight mobility). The ***measures*** refer to the urban and mobility planning decisions while the ***solutions*** are closely linked to the measures and describe in detail the different components of the measures. Consequently, a measure is defined in a more strategic level (e.g., a hub network) and several solutions are enclosed by it (e.g., business models among involved stakeholders, freight and passenger mobility planning, land-use in the context of infrastructure allocation).

Regarding the result indicator ***Number of implemented MOVE21 innovations,*** the term "implemented innovations" indicates the real operation of the innovations within the project duration.

For the result indicator ***Number of MOVE21 business models developed,*** it is important to define the business model meaning. In the context of MOVE21, a business model is a plan for how the measure/solution in question will generate value for its users.

Regarding the result indicator ***Modal integration***, this defines the availability of intermodal connections (between different transport modes) and the quality of the interchange facilities, number and frequency.

For the result indicator ***Number of interoperable systems of innovative solutions adopted/replicated in the Replicator Cities*** it is important to define the interoperability meaning. In general, interoperability is the ability of different systems, devices, applications, or services to communicate and exchange data effectively and efficiently. It is a key requirement for many complex and dynamic systems, such as healthcare, transportation, e-commerce. In the transport policy concept, *"interoperability"* is the ability of two, or more, transport systems to operate effectively and efficiently together to fulfil consumers' requirements of a transport system. In the context of MOVE21 concept, an interoperable system is consisted of two or more transport modes or mobility services used for the completion of a seamless trip between the origin and the destination. [7]

4 Replication Impact Analysis Results (Ex-ante and Baseline)

The current section presents the result indicators for each Level and each RC. For several KPIs a monitoring card is presented following a structure that continues the corresponding card in the D8.4 evaluation framework and refers to the baseline and ex-ante time periods, both before the replication and or implementation of the measures, innovations, and solutions in the six cities involved in RAs.

4.1 Level 1: Innovation Enabling Topics

4.1.1 Bologna

Result Indicator 1.4: No of MOVE21 innovations replicated in Bologna

Result indicator 1.4	**Number of MOVE21 innovations replicated in Bologna**
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 12 (innovations)
Method/ Monitoring tools used	RAs procedures Measures/Innovations/Solutions Logbook
Ex-ante evaluation result	**10** innovations **4** innovation categories

Table 1: Result indicator 1.4 (BOL)

Taking into consideration its needs and inspired by the three LLs, Bologna intends to replicate i) the "Provider-neutral parcel boxes in public spaces" of Munich, testing an innovative delivery solution in three new automated micro hubs for the consolidation and transshipment of parcels from conventional vans to cargo bikes, ii) the "Cargo-waste co-freight" measure of Gothenburg, for testing the waste material disposal by cargo bikes and iii) the "Mobility hub" of Kaltenkircher Platz of Hamburg, for exploring the legislative and regulatory framework regarding the prerequisites needed for implementing the mobility hub and for establishing the appropriate logistics operator network. Detailed descriptions are provided for Bologna as well as for all the other cities in D7.2 *Replication action plans for Oslo, Gothenburg, Hamburg, Munich, Bologna and Rome*.

As described in the Measures/Innovations/Solutions Logbook and depicted in Figure 2, the three measures Bologna intends to replicate ***sum up to six solutions and ten innovations of four different types.***

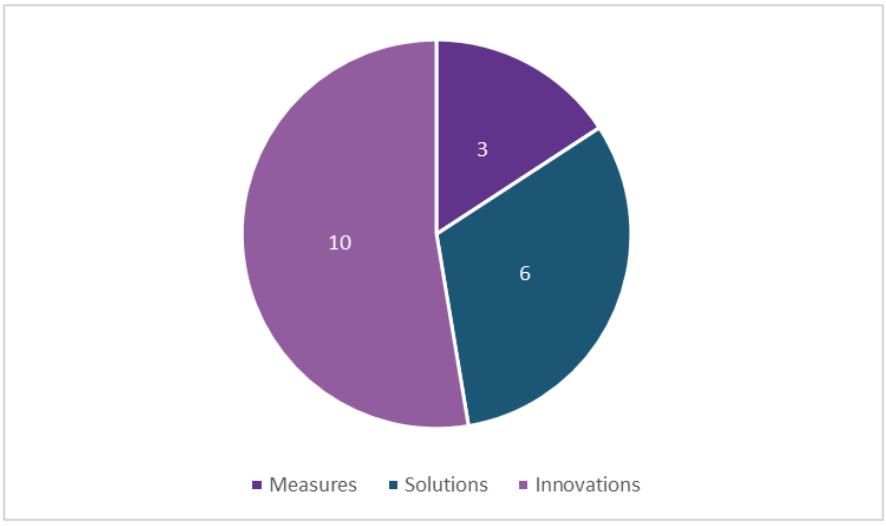

Figure 2: Measures/Solutions//Innovations distribution in Bologna

The categories of the above-mentioned indicators intend to be integrated are social innovations, business innovations, service and governance innovations. Their distribution is presented in Figure 3.

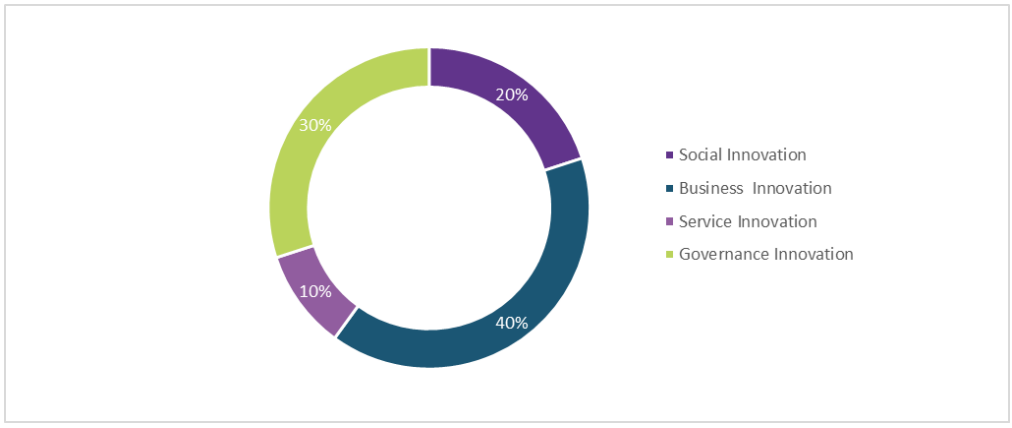

Figure 3: Innovation types in Bologna

As regards the social innovations, the Bologna case incudes a total of two. The first one, associated with the "cargo-waste co-freight" measure, focuses on the area's liveability improvements due to the number of trips transports reduce. The other one is related to the "mobility hub" measure and refers to the provision of sustainable transport modes during the organization of major events in the city in parallel with a reduction in car parking space

The number of ***business innovations*** are related to i) innovation funds creation for financing innovative concepts in commercial transport, ii) the promotion of fleet renewal in commercial transport, iii) the testing of a model to finance the "cargo-waste co-freight" service and iv) the testing of a model to allow the mobility hub operate without external funds. In total, four innovative business models are included in Bologna case.

Technological innovations as well as ***interoperable systems*** of innovative solutions were not reported. As regards the ***service innovations,*** there is only one included in the "co-waste co-freight" measure, referring to the incorporation of a new service (cargo-bike service).

Finally, there are ***three governance innovations*** related to i) enabling the provision of public street space for logistics purposes, ii) benefitting from formalized collaboration between actors not typically working together and iii) the creation and operation of neighbourhood hubs in different kind of spaces.

Result Indicator 3.1: No of implemented MOVE21 innovations in Bologna

Result indicator 3.1	No of implemented MOVE21 innovations in Bologna
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 9 (innovations)
Method/ Monitoring tools used	RAs procedures Measures/Innovations/Solutions Logbook
Ex-ante evaluation result	4

Table 2: Result indicator 3.1 (BOL)

Bologna intends to implement and operate four solutions in total as reported in the Measures/Innovations/Solutions Logbook. More specifically regarding the "Provider-neutral parcel boxes in public spaces" measure the micro consolidation hubs network and the use of a dedicated platform to centrally manage the operations are intended to be operational within the project duration. Regarding the "cargo-waste co-freight" measure the innovative service will be operated by a cargo bike and as for the "mobility hub" measure, public (and private) areas will be temporary used as bike and cargo bike parking, in occasion of public events in the city.

4.1.2 Rome

Result Indicator 1.4: No of MOVE21 innovations replicated in Rome

Result indicator 1.4	Number of MOVE21 innovations replicated in Rome
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 12 (innovations)

Method/ Monitoring tools used	RAs procedures Measures/Solutions/Innovations Logbook
Ex-ante evaluation result	**18** innovations **6** innovation categories

Table 3: Result indicator 1.4 (ROM)

Rome intends to replicate i) the "Park and Bike node" measure of Klippan Gothenburg, focusing the replication on the improvement for bicycles and micro-mobility in a specific metro station of the city, by providing bicycle parking services (Bike Box and Bike Park app), cargo bike rental services (rental station) and parcel lockers, ii) the "Emission free goods transport" measure from Oslo, for attaining zero emissions logistics within the city center and initiating a fruitful dialogue with logistics service companies to drive decarbonization efforts and enhance the charging network infrastructure (number of charging stations increase) and iii) the "Technical guidelines for designing metropolitan mobility hubs" of Bologna.

As described in the Measures/Innovations/Solutions Logbook and depicted in Figure 4, the three measures Rome intends to replicate ***sum up to one solution and 18 innovations of six different types.***

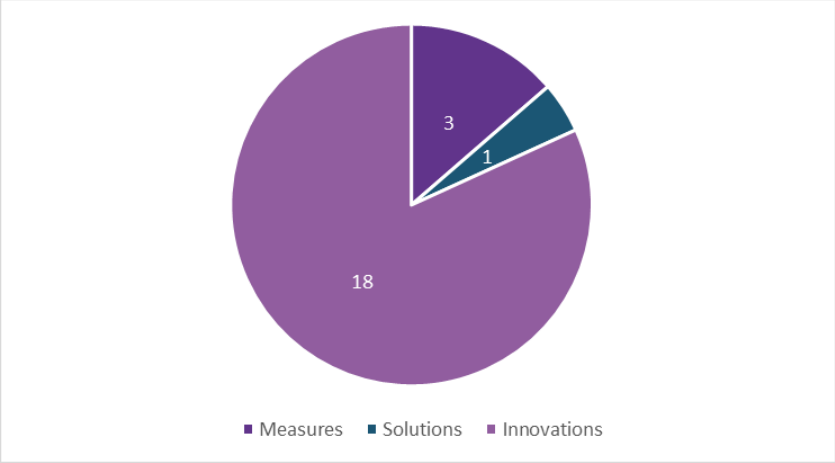

Figure 4: Measures/Solutions//Innovations distribution in Rome

The categories include social innovations, business innovations, technological, service and governance innovations as well as interoperable systems of innovative solutions. Their distribution is presented in Figure 5.

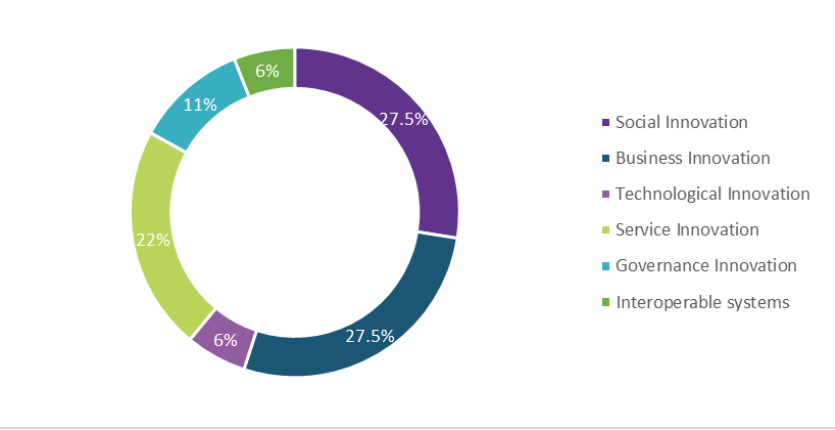

Figure 5: Innovation types in Rome

Regarding the ***social innovations***, these mainly refer to the increase of sustainable trips in favour of PT system (metro), travel behavioural change to safeguard the citizens' health, increases in liveability levels, and improvements for accessibility and intermodality.

The number of ***business innovations*** are related to i) the establishment of the new cargo bike service and the definition of a fare system for bike box users and discounts for PT users as regards the "Park and Bike node" measure and ii) the managerial scheme to operate the hub and the pricing model to be applied as regards the "Emissions free goods transport" measure.

The introduction of the "Bike Park" app for PT subscription holders is the only ***Technological innovation*** described in Rome's Logbook and is included in the "Park and Bike Node" measure to be replicated.

As regards the ***service innovations***, these are related to secure bike boxes for storing bicycles, the electric charging points for the bike boxes and the cargo bike services.

The ***governance innovations*** mainly refer to a governance tool ensuring a four-year framework agreement for bike boxes in order to avoid tender procedures each time and the launch of a participation process between local authorities and the private sector (transport operators, logistics companies, etc).

Finally, one ***interoperable system*** of innovative solutions is adopted in the first measure Rome intends to replicate, as the concept motivates people to combine the use of bicycle with Public Transport (half of trip will be completed by bicycle and the other half by metro).

Result Indicator 3.1: No of implemented MOVE21 innovations in Rome

Result indicator 3.1	**No of implemented MOVE21 innovations in Rome**
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 9 (innovations)
Method/ Monitoring tools used	RCs procedures Measures/Solutions/Innovations Logbook
Ex-ante evaluation result	3

Table 4: Result indicator 3.1 (ROM)

Rome intends to implement and operate in total three solutions as reported in the Measures/Innovations/Solutions Logbook. More specifically regarding the "Park and Bike node" measure, bike boxes and cargo bike sharing will be operational within the project duration. Regarding

the “emission free goods transport” measure, a hub for loading/unloading freight is intended to be implemented. Finally, an analysis of the technical guidelines will take place by technicians in order to support the deployment of future hub projects.

4.1.3 Munich

Result Indicator 1.4: No of MOVE21 innovations replicated in Munich

Result indicator 1.4	Number of MOVE21 innovations replicated in Munich
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 12 (innovations)
Method/ Monitoring tools used	RAs procedures Measures/Solutions/Innovations Logbook
Ex-ante evaluation result	**20** innovations **6** innovation categories

Table 5: Result indicator 1.4 (MUN)

Munich intends to replicate i) the “Neighborhood hub” measure of Holstenstrasse Hamburg by transforming a vacant space into a multifunctional hub for the transport of parcels and goods by electric cargo bikes, ii) the “Park and Bike Node” of Klippan Gothenburg by enhancing current mobility hubs and create new ones, the so called “mobility points”, with an emphasis on augmenting the multimodal offerings and on making notable improvements for bicycles and shared micro mobility options within the hubs and iii) the “Integration of micro-mobility with PT” of Oslo by offering users a seamless multimodal experience and to operators an easy-to-use solution for switching from bus to bike, all provided in one app.

As described in the Measures/Innovations/Solutions Logbook and depicted in Figure 6, the three measures Munich intends to replicate ***sum up to 13 solution and 20 innovations of six different types.***

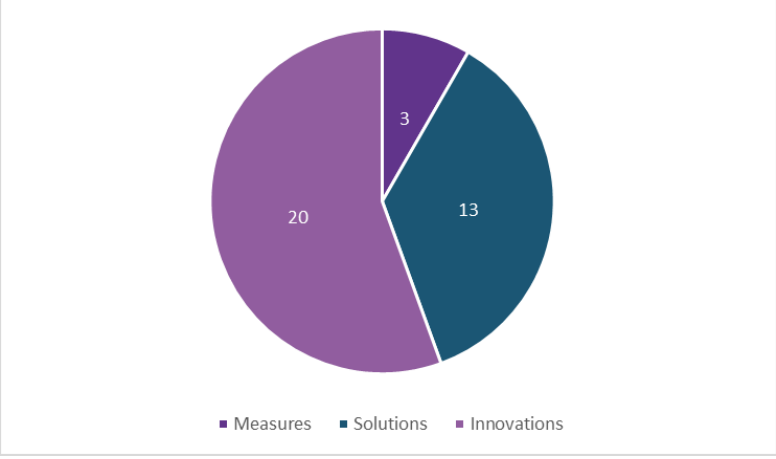

Figure 6: Measures/Solutions//Innovations distribution in Munich

The categories of the above-mentioned indicators are social innovations, innovative business models, technological, service and governance innovations as well as interoperable systems of innovative solutions. Their distribution is presented in Figure 7.

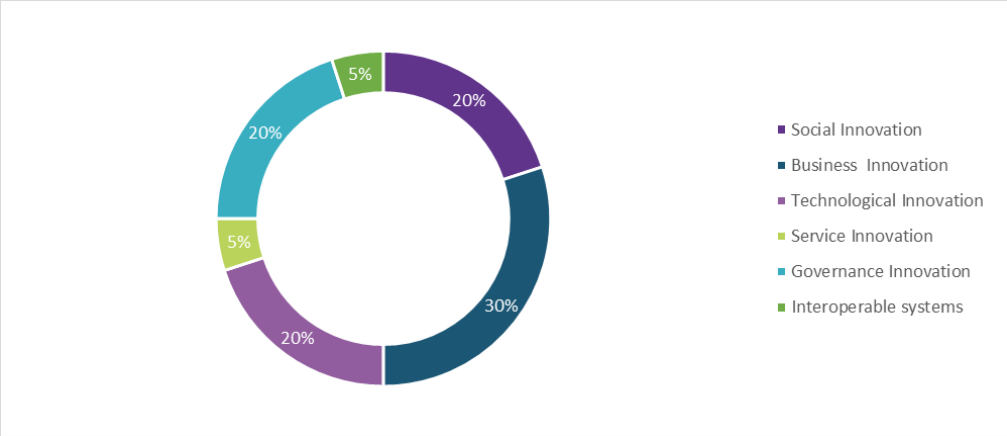

Figure 7: Innovation types in Munich

Regarding the ***social innovations***, these are related to the coexistence of different logistics users in the same space and to the reduction of traffic in the area, transforming it into a more liveable and safer area (as regards the "neighbourhood hub" measure replication) and the promotion of active and environmentally friendly mobility outside the city centre where the "mobility points" are created.

The ***business innovations*** are related to the multifunctional and multi-user hub creation (contracts, operators, ownership, etc), and the appropriate models to finance the provided services.

The **technological innovations,** mainly refer to the combination of existing mobility services with each other in the "mobility points" measure and a common API that shared mobility companies can connect to.

The user experience improvement is reported as the only ***service innovation***, included in the "integration micro-mobility with PT" measure of Munich case.

The ***governance innovations*** mainly refer to i) the development of a procedure that will allow the creation and operation of neighbourhood hubs and the introduction of new mobility services, ii) public procurement processes enabling innovative logistic solutions and iii) definition of location availability for implementing innovative solutions.

Finally, an ***interoperable system*** of innovative solutions is adopted due to the second measure Munich intends to replicate, as the concept of "mobility points" motivates people to combine the use of different transport modes for a trip completion.

Result Indicator 3.1: No of implemented MOVE21 innovations in Munich

Result indicator 3.1	No of implemented MOVE21 innovations in Munich
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 9 (innovations)
Method/ Monitoring tools used	RAs procedures Measures/Solutions/Innovations Logbook
Ex-ante evaluation result	13

Table 6: Result indicator 3.1 (MUN)

Munich intends to implement and operate 13 innovations.

4.1.4 Oslo

Result Indicator 1.4: No of MOVE21 innovations replicated in Oslo

Result indicator 1.4	Number of MOVE21 innovations replicated in Oslo
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 12 (innovations)
Method/ Monitoring tools used	RAs procedures Measures/Solutions/Innovations Logbook
Ex-ante evaluation result	**2** innovations **1** innovation category

Table 7: Result indicator 1.4 (OSL)

Oslo aims to replicate Bologna's "Technical guidelines for Metropolitan Mobility Hubs". As described in the Measures/Innovations/Solutions Logbook this measure sums up to ***three solutions***, i) a strategic framework for the establishment of new hubs, connected to overall city policy and other related key strategies, ii) a step by step guide for public and private actors wishing to establish hubs, including principles for involvement, and iii) design guidelines for mobility hubs, regardless if they are on private or public land, ensuring that users immediately recognize the mobility hubs as such. In total two **governance innovations** are reported in Oslo's Logbook, referring to i) a clear understanding of the

work division between the involved municipal actors or municipally owned actors and other stakeholders, and ii) the efficient establishment of further mobility hubs, either on private or public land.

Result Indicator 3.1: No of implemented MOVE21 innovations in Oslo

Result indicator 3.1	**No of implemented MOVE21 innovations in Oslo**
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 9 (innovations)
Method/ Monitoring tools used	RAs procedures Measures/Solutions/Innovations Logbook
Ex-ante evaluation result	-

Table 8: Result indicator 3.1 (OSL)

4.1.5 Gothenburg

Result Indicator 1.4: No of MOVE21 innovations replicated in Gothenburg

Result indicator 1.4	**Number of MOVE21 innovations replicated in Gothenburg**
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 12 (innovations)
Method/ Monitoring tools used	RAs procedures Measures/Solutions/Innovations Logbook
Ex-ante evaluation result	**2** innovations **1** innovation category

Table 9: Result indicator 1.4 (GOT)

Gothenburg has decided to replicate the “Technical guidelines for Metropolitan Mobility Hubs”.

As described in the Measures/Innovations/Solutions Logbook this measure sums up to ***three solutions***, i) a new parking policy for the City of Gothenburg with clear priority on sustainable mobility and mobility hubs. The policy aims to establish a direction towards a comprehensive network of mobility hubs and ii) a strategic framework with connections to city policy, existing knowledge and experiences and

recommendations for mobility hubs in Gothenburg and iii) technical guidelines including design concept equipment for implementing mobility hubs. In total two governance innovations are reported in Gothenburg's Logbook, referring to i) the new support needed for further collaborations and ii) a more effective implementation of mobility hubs.

Result Indicator 3.1: No of implemented MOVE21 innovations in Gothenburg

Result indicator 3.1	No of implemented MOVE21 innovations in Gothenburg
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 9 (innovations)
Method/ Monitoring tools used	RAs procedures Measures/Solutions/Innovations Logbook
Ex-ante evaluation result	2

Table 10: Result indicator 3.1 (GOT)

Gothenburg intends to have in place the new parking policy and the strategic framework connected to city policy, existing knowledge, experiences and recommendations for mobility hubs in Gothenburg.

4.1.6 Hamburg

Result Indicator 1.4: No of MOVE21 innovations replicated in Hamburg

Result indicator 1.4	Number of MOVE21 innovations replicated in Hamburg
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 12 (innovations)
Method/ Monitoring tools used	RAs procedures Measures/Solutions/Innovations Logbook
Ex-ante evaluation result	**5** innovations **3** innovation categories

Table 11: Result indicator 1.4 (HAM)

Hamburg replicates the "Mobility on demand" measure from Oslo by testing the combined transport of people and goods on a bus line of the PT provided by Hamburg. For this pilot, existing resources and

capacities will be used more efficiently as people and goods will travel in one shared vehicle achieving traffic emissions reduce.

As described in the Measures/Innovations/Solutions Logbook, the measure Hamburg intends to replicate ***sums up to two solutions and five innovations of three different types*** (one social, one technological and three service innovations)***.***

The ***social innovation*** refers to the increase of people with reduced mobility visiting the hub.

The ***technological innovation*****,** refers to the software needed to be developed for serving the different stakeholders involved (customers, suppliers, transport providers, etc).

The ***service innovations****,* are related to i) the identification of the test site that needs to concentrate a high percentage of elderly people, ii) the implementation of new transport services for local shops and iii) the new delivery service for elderly people (people can buy from local shops without using their private cars for carrying their shopping back home).

Result Indicator 3.1: No of implemented MOVE21 innovations in Hamburg

Result indicator 3.1	**No of implemented MOVE21 innovations in Hamburg**
Level of evaluation	1
Contribution to additional impacts	Mission board climate neutral and smart cities objectives Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Number
Target value according to GA. It refers to all 6 RCs	2025: 9 (innovations)
Method/ Monitoring tools used	RAs procedures Measures/Solutions/Innovations Logbook
Ex-ante evaluation result	2

Table 12: Result indicator 3.1 (HAM)

Hamburg implemented and pilot tested for a short time period (October 2023 – December 2023) the service for elderly people and people with reduced mobility offering them the opportunity all of their shopping to be delivered by local buses in the district of Rissen. Additionally, local shops (without delivery services at the moment) will be recruited to offer to their customers a delivery service.

4.2 Level 2: Replicator Cities procedures

4.2.1 Bologna

Result indicator 4.1: Perceived improved understanding of governance drivers and barriers to implementation of measures

Result indicator 4.1	Current improved understanding of governance drivers and barriers to implementation of measures in Bologna
Level of evaluation	2
Contribution to additional impacts	Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Qualitative scale: (1: very low 5: very high)
Target value according to GA	2025: 5
Method/ Monitoring tools used	Questionnaire Survey to city's administrations
Current status evaluation result	3

Table 13: Result indicator 4.1 (BOL)

The perceived understanding of governance drivers and barriers are related to governance structures and specific parameters such as regulatory knowledge, stakeholders' collaboration, resource mobilization, legitimacy and entrepreneurial experimentation. Based on these parameters, the perceived understanding was assessed on a qualitative scale from 1 (decreased) to 5 (increased), resulting ***in a mean score of 3.0 for Bologna.*** The understanding of governance drivers and barriers is expected to increase after the implementation phase when several actions will take place for solving specific problems that might arise from the existing governance structures.

Result indicator 4.3: Number of MOVE21 business models developed

For the innovations (part of the measures) to be successfully replicated and/or implemented, new business models should be developed. ***Bologna*** RC representatives, based on their experience and perception, organized a meeting supported by WP-leader of WP9 to fill out the Logbook. Regarding the three measures of Bologna in total ***three business models*** will be developed in Bologna for ensuring the successful replication and/or implementation of MOVE21 /solutions.

Result indicator 3.12: Increased collaboration level between private public entities and transport domains

The current collaboration level between private and public entities and different transport domains of ***Bologna*** was appraised by the RCs representatives coming from the mobility, environment and development sectors. They assessed the level on a qualitative scale from 1 (very low) to 5 (very high), resulting in a ***mean score of 2.9.*** The diagram in Figure 8 presents the distribution of the assessments around the mean value.

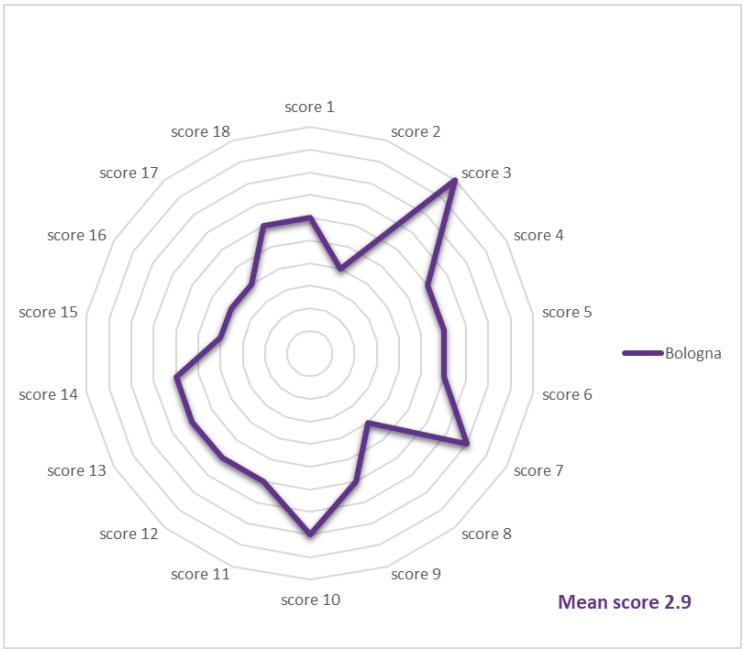

Figure 8: Current collaboration level between private public entities and transport domains (BOL)

Result indicator: Modal integration (SUITS)

The current level of modal integration in the city of ***Bologna*** was assessed by the RCs representatives using a qualitative scale from 1 (very low) to 5 (very high), resulting in a ***mean score of 2.8***. The diagram in Figure 9 presents the distribution of the assessments around the mean value.

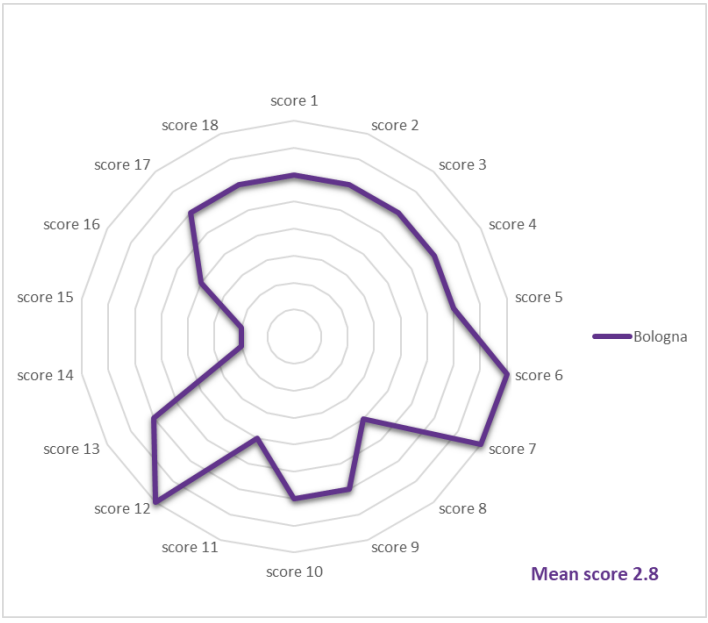

Figure 9: Current level of modal integration (BOL)

4.2.2 Rome

Result indicator 4.1: Perceived improved understanding of governance drivers and barriers to implementation of measures

Result indicator 4.1	Current improved understanding of governance drivers and barriers to implementation of measures in Rome
Level of evaluation	2
Contribution to additional impacts	Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Qualitative scale: (1: decreased, 5: increased)
Target value according to GA	2025: 5
Method/ Monitoring tools used	Questionnaire Survey to city's administrations
Current status evaluation result	2.8

Table 14: Result indicator 4.1 (ROM)

In the case of ***Rome***, the current perceived understanding as assessed by the city's representatives resulted ***in a mean score of 2.8*** and will most probably increase after the measures/solutions implementations when several actions will take place for solving specific problems that might arise from the existing governance structures.

Result indicator 4.3: Number of MOVE21 business models developed

In the case of Rome, two new business models are expected to be developed for replicating the "Park and Bike Node" measure and the "Emission Free Goods Transport" measure. Both business models refer to the definition of market segments targeted and the type of services offered (including fares), to private and public transport users.

Result indicator 3.12: Increased collaboration level between private public entities and transport domains

The current collaboration level between private and public entities and transport domains of ***Rome*** as appraised by the city's representatives, resulted in a ***mean score of 2.5.*** The diagram in Figure 10 presents the distribution of the assessments around the mean value.

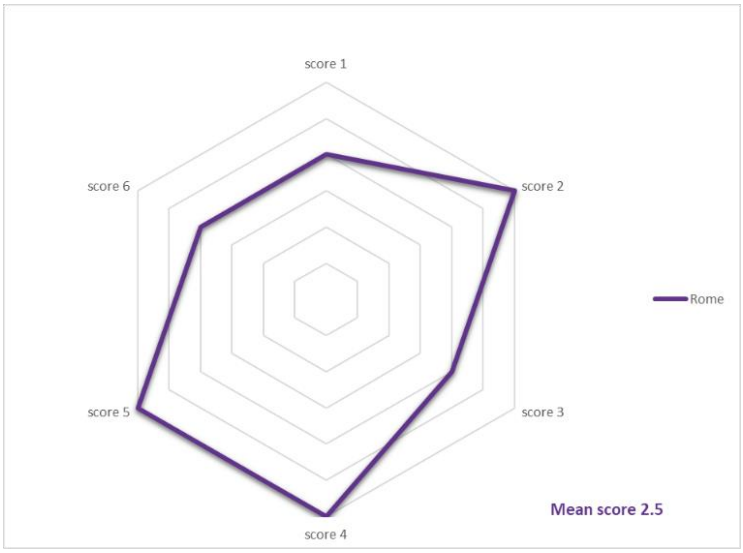

Figure 10: Current collaboration level between private public entities and transport domains (ROM)

Result indicator: Modal integration (SUITS)

The current level of modal integration in the city of ***Rome*** has been assessed rather low, as a ***mean score of 2.0*** was reported. The diagram in Figure 11 presents the distribution of the assessments around the mean value.

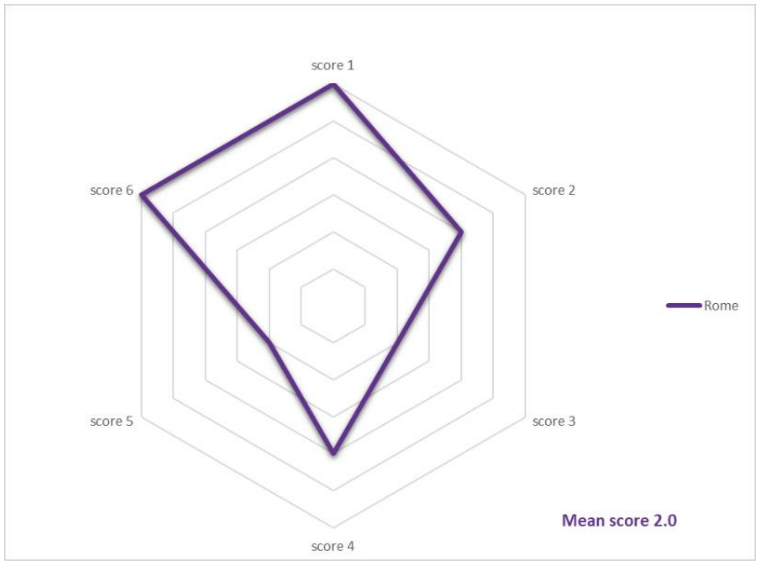

Figure 11: Current level of modal integration (ROM)

4.2.3 Munich

Result indicator 4.1: Perceived improved understanding of governance drivers and barriers to implementation of measures

Result indicator 4.1	Current improved understanding of governance drivers and barriers to implementation of measures in Munich
Level of evaluation	2
Contribution to additional impacts	Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Qualitative scale: (1: decreased, 5: increased)
Target value according to GA	2025: 5
Method/ Monitoring tools used	Questionnaire Survey to city's administrations
Current status evaluation result	3.3

Table 15: Result indicator 4.1 (MUN)

Munich's perceived understanding of governance drivers resulted ***in a mean score of 3.3*** and is expected to increase after the measures/solutions implementation when several actions will take place for solving specific problems that might arise from the existing governance structures.

Result indicator 4.3: Number of MOVE21 business models developed

Regarding the three measures ***Munich*** intends to implement**,** in total ***11 business models*** need to be developed.

Result indicator 3.12: Increased collaboration level between private public entities and transport domains

The current collaboration level between private and public entities and transport domains of ***Munich*** as appraised by the city's representatives coming from mobility, environment and development sectors, resulted in a ***mean score of 3.3*** The diagram in Figure 12 presents the distribution of the assessments around the mean value.

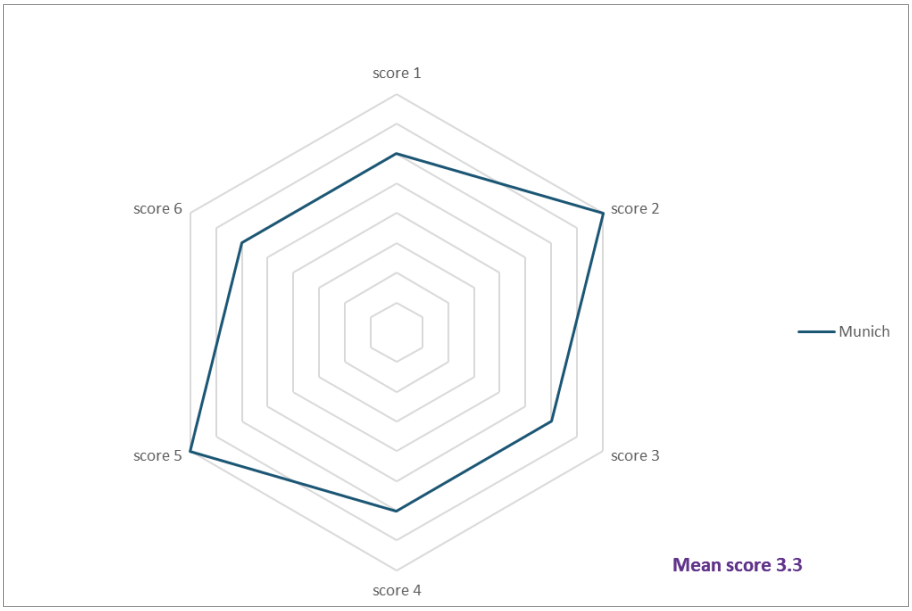

Figure 12: Current collaboration level between private public entities and transport domains (MUN)

Result indicator: Modal integration (SUITS)

Regarding the current level of modal integration in the city of ***Munich,*** the mean score is ***3.0***. The diagram in Figure 13 presents the distribution of the assessments around the mean value.

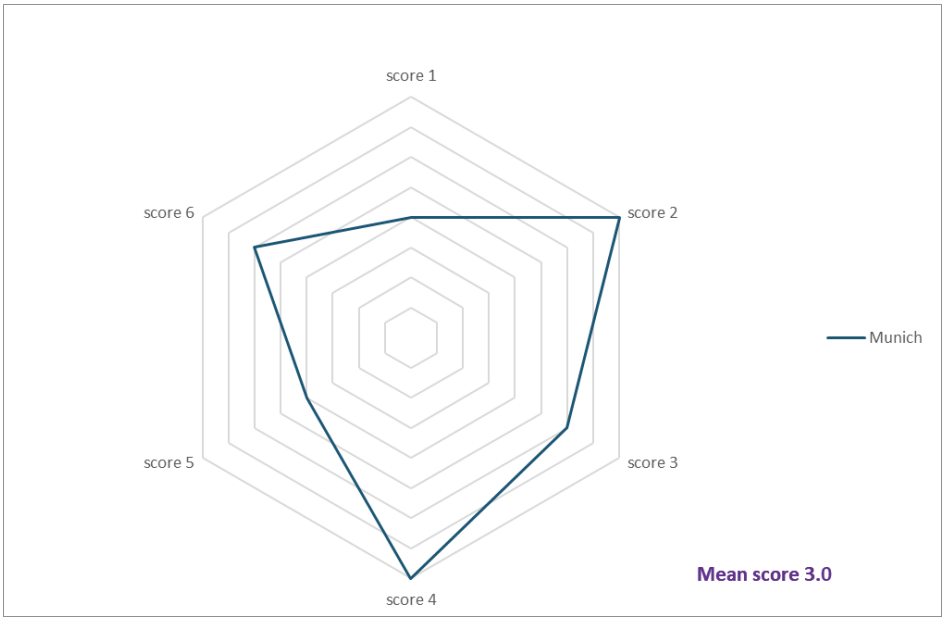

Figure 13: Current level of modal integration (MUN)

4.2.4 Oslo

Result indicator 4.1: Perceived improved understanding of governance drivers and barriers to implementation of measures

Result indicator 4.1	Current improved understanding of governance drivers and barriers to implementation of measures in Oslo
Level of evaluation	2
Contribution to additional impacts	Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Qualitative scale: (1: decreased, 5: increased)
Target value according to GA	2025: 5
Method/ Monitoring tools used	Questionnaire Survey to city's administrations
Current status evaluation result	3.3

Table 16: Result indicator 4.1 (OSL)

For Oslo, the perceived understanding of governance drivers and barriers resulted to a ***mean score of 3.3.*** This number expected to increase after the Technical guidelines for designing Metropolitan Mobility Hubs will be completed and customized for Oslo and tailored to fit the local context.

Result indicator 4.3: Number of MOVE21 business models developed

The development of "Technical guidelines for designing metropolitan Mobility Hubs" does not require any new business models in order to be successfully prepared and established.

Result indicator 3.12: Increased collaboration level between private public entities and transport domains

The current collaboration level between private public entities and transport domains of ***Oslo*** as assessed by the city's representatives, resulted in a ***mean score of 3.1.*** The diagram in Figure 14 presents the distribution of the assessments around the mean value.

Figure 14: Current collaboration level between private public entities and transport domains (OSL)

Result indicator: Modal integration (SUITS)

The current level of modal integration in the city of ***Oslo,*** resulted in a ***mean score of 3.2***. The diagram in Figure 15 presents the distribution of the assessments around the mean value.

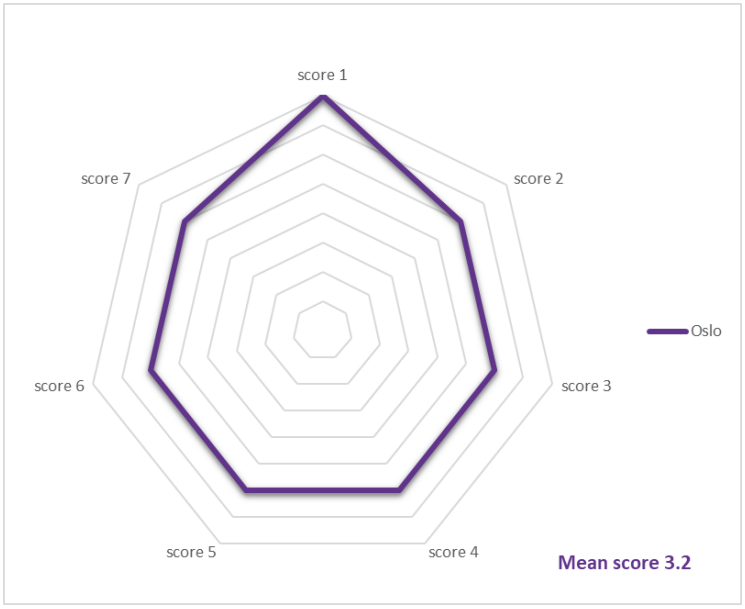

Figure 15: Current level of modal integration (OSL)

4.2.5 Gothenburg

Result indicator 4.1: Perceived improved understanding of governance drivers and barriers to implementation of measures

Result indicator 4.1	Current improved understanding of governance drivers and barriers to implementation of measures in Gothenburg
Level of evaluation	2
Contribution to additional impacts	Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Qualitative scale: (1: decreased, 5: increased)
Target value according to GA	2025: 5
Method/ Monitoring tools used	Questionnaire Survey to city's administrations
Current status evaluation result	3.2

Table 17: Result indicator 4.1 (GOT)

The perceived understanding of governance drivers and barriers for Gothenburg resulted ***in a mean score of 3.2.*** This number is expected to increase after the "Technical guidelines for designing metropolitan Mobility Hubs" will be completed allowing existing governing processes to be aligned and the conditions for enabling the implementation of guidelines for mobility hubs in Gothenburg will be further clarified.

Result indicator 4.3: Number of MOVE21 business models developed

For the "Technical guidelines for designing metropolitan Mobility Hubs" measure replication, no business models are reported in the Logbook.

Result indicator 3.12: Increased collaboration level between private public entities and transport domains

As regards the current collaboration level between private and public entities and transport domains of ***Gothenburg*** case, this resulted to a ***mean score of 3.8.*** The diagram in Figure 16 presents the distribution of the assessments around the mean value.

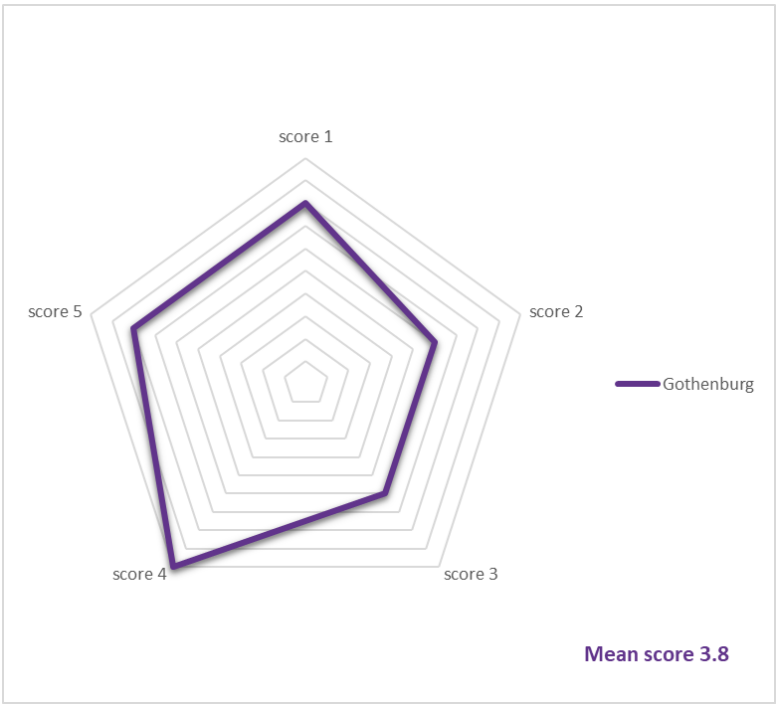

Figure 16: Current collaboration level between private public entities and transport domains (GOT)

Result indicator: Modal integration (SUITS)

The current level of modal integration in the City of ***Gothenburg*** as assessed by the city's representatives, resulted in a ***mean score of 3.0***. The diagram in Figure 17 presents the distribution of the assessments around the mean value.

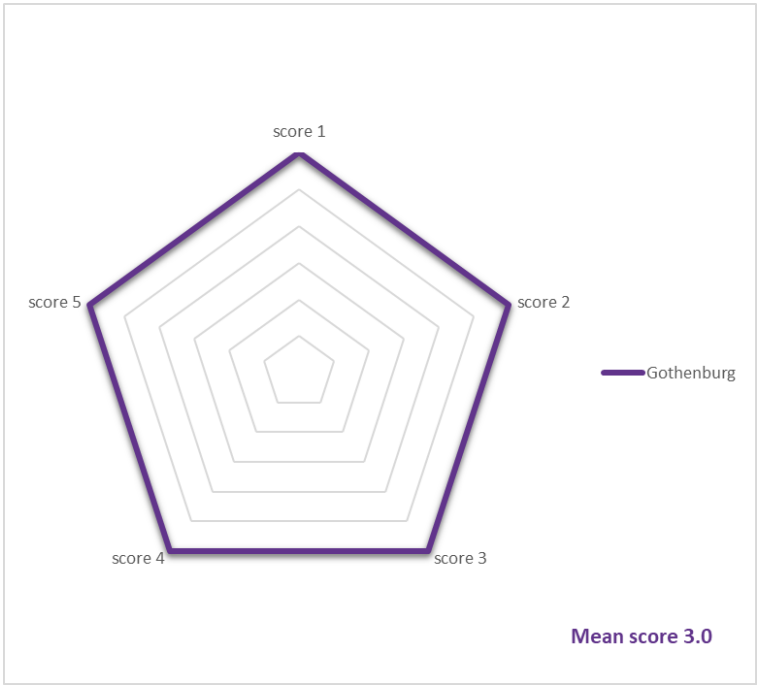

Figure 17: Current level of modal integration (GOT)

4.2.6 Hamburg

Result indicator 4.1: Perceived improved understanding of governance drivers and barriers to implementation of measures

Result indicator 4.1	Current improved understanding of governance drivers and barriers to implementation of measures in Hamburg
Level of evaluation	2
Contribution to additional impacts	Sustainable Development Goals / Goals 9 / Target 9.1
Measurement unit	Qualitative scale: (1: decreased, 5: increased)
Target value according to GA	2025: 5
Method/ Monitoring tools used	Questionnaire Survey to city's administrations
Current status evaluation result	4.2

Table 18: Result indicator 4.1 (HAM)

The perceived understanding of governance drivers and barriers for Hamburg case, resulted ***in a mean score of 4.2*** expected to increase after the measure/solution implementation.

Result indicator 4.3: Number of MOVE21 business models developed

For Hamburg two ***business models*** have already been developed. The first one is related to the Public Transport operator who will run the service for the elderly. The second one concerns an agreement with local shops agreed to offer their customers delivery services. The agreement has been signed by in total 12 local shops.

Result indicator 3.12: Increased collaboration level between private public entities and transport domains

The current collaboration level between the private and public entities and the transport domains of ***Hamburg*** as assessed by the city's representatives, resulted in a ***mean score of 3.8.*** The diagram in Figure 18 presents the distribution of the assessments around the mean value.

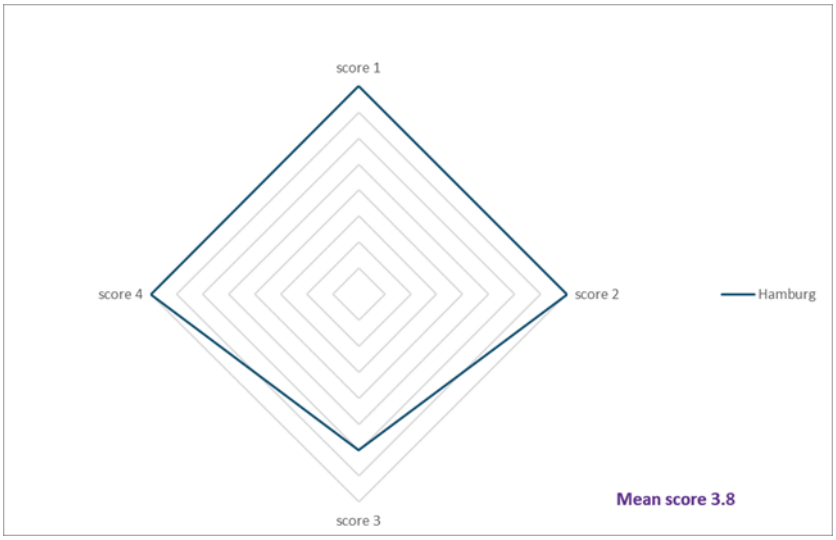

Figure 18: Current collaboration level between private public entities and transport domains (HAM)

Result indicator: Modal integration (SUITS)

The current level of modal integration in the city of ***Hamburg*** was rated in a ***mean score of 3.6.*** The diagram in Figure 19 presents the distribution of the assessments around the mean value.

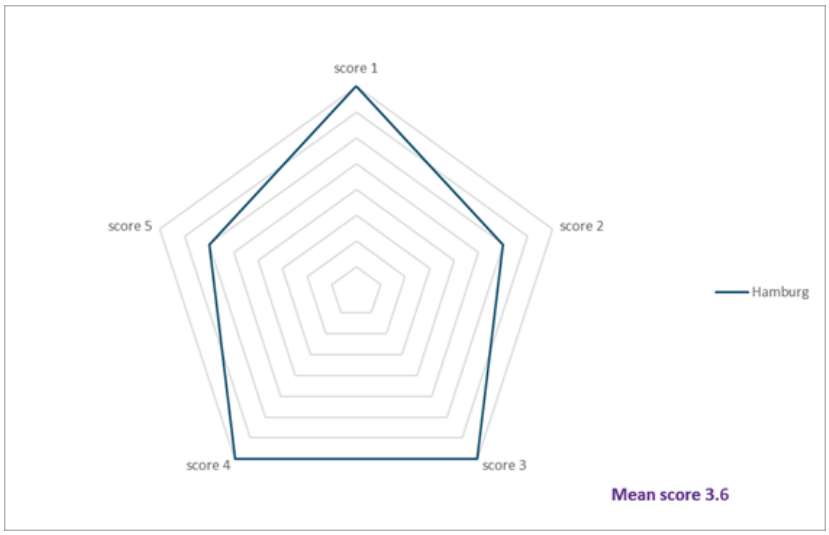

Figure 19: Current level of modal integration (HAM)

4.3 Level 3: Impact-oriented result indicators

4.3.1 Impact Area III: Improvements of the efficiency and accessibility of the transport networks/systems covering the TEN-T urban nodes

Regarding the Impact area III and result indicators ***3.3***: ***Number of new (micro) hubs*** and ***3.4***. ***Number of improvements in existing hubs intended to be implemented accordingly***, until now it has been approximated that i) Bologna aims to establish three new (micro) mobility hubs and proceed with improvements in one existing hub, ii) Rome intends to improve the already existing hubs of Trastevere and San Paolo, iii) Munich aims to establish 288 and improve 26 existing hubs.

#	Result indicator	Assessment mechanism	BOL	ROM	MUN	OSL	GOT	HAM
Result indicator 3.3	No of new (micro) hubs as a result of the project	WP8 Logbooks	3	0	288	-	-	-
Result indicator 3.4	No of improvements in existing hubs as a result of the project	WP8 Logbooks	1	2	26	-	-	-

Table 19: Result indicators Impact area III (BOL-ROM-MUN-OSLO-GOT-HAM)

5 Conclusions and next steps

Deliverable D8.5 quantifies the number of measures, innovations and solutions that the project will leave from the RAs as a lasting impact. This evaluation proves that the project has managed to transfer to replicator cities all previous experience and knowledge gained from the similar Living Labs ex-ante analysis in order to ensure a proper replication and/or implementation of the innovations.

During the project's implementation, cities appear to have effectively leveraged co-creative and cooperative approaches, as well as the knowledge acquired from various activities, to plan the subsequent phases of replicating and or implementing the measures. Several challenges were addressed during this process, and the degree of accomplishment is evident in the result indicators presented in the preceding sections.

More specifically the following were accomplished:

- One of the project's significant accomplishments is documented in the Measures/Innovation/ Solutions Logbooks used for the ex-ante impact assessment. The Logbooks provide a comprehensive account of the measures, encompassing distinct solutions within each, detailing innovative aspects, and new business models' development, deemed as particularly essential for a successful replication and/or implementation. Through this approach, the project guarantees the adoption and expansion of dependable solutions, contributing to a more sustainable, inclusive, safe, and secure mobility system.

- In total, ***12 measures, 28 solutions*** including ***57 innovations*** are discussed to be replicated and/or implemented in the Replicator Cities and 18 ***new business models to be developed***. The measures also include approximately ***29 new hubs.*** The current figures affirm that MOVE21 is poised to establish a European lighthouse ecosystem, incorporating novel technologies and measures into urban transport operations on a practical scale. The objective is to attain enduring decarbonization effects while concurrently realizing substantial enhancements in the efficiency and accessibility of the transportation system.

- More specifically, as it is presented in the Table 20, Bologna intends to replicate 10 innovations, Rome 18, Munich 20, Gothenburg 2, Hamburg 5 and Oslo 2. MOVE21 replication activities concern the implementation of new or the upgrading of existing hubs; under this framework, Bologna intends to implement three hubs, Rome two, Munich 13 and Hamburg 2. Oslo and Gothenburg are not implementing new hubs as RCs due to the fact that the measure agreed to be replicated is the "Technical guidelines for implementing mobility hubs" developed by Bologna. However, and as it has already been reported in deliverable D8.3, new hubs will be implemented in these two cities when acting as LLs. New business models will also be created for almost all cities ensuring their proper operation.

Replicator Cities	Number of innovations intended to be replicated	Number of hubs intended to be implemented	Number of business models intended to be developed
BOL	10	3	3
ROM	18	2	2

MUN	20	13	11
OSL	-	-	-
GOT	2	-	-
HAM	5	2	2

Table 20: Number of innovations and hubs intended to be implemented, number of business models intended to be developed (BOL-ROM-MUN-OSLO-GOT-HAM)

- For all six cities, it seems that the perceived understanding of governance barriers range at the same level (2.8 – 3.2), except from Hamburg which appears to be more confident regarding the barriers need to overcome for replicating the specific measures. As for the collaboration level between private and public entities and transport domains, Gothenburg and Hamburg present the highest level, scoring 3.8, Munich follows and Rome presents the lowest (2.5). As for the modal integration Rome presents a rather low score (2.0), while for all the others this ranges from 2.8 to 3.2.

Replicator Cities	Understanding of governance barriers for the measures/solutions replication/implementation	Collaboration level between private public entities and transport domains	Modal integration
BOL	3.0	2.9	2.8
ROM	2.8	2.5	2.0
MUN	3.3	3.3	3.0
OSL	3.3	3.1	3.2
GOT	3.2	3.8	3.0
HAM	4.2	3.8	3.6

Table 21: Total innovations implemented by the six RCs (BOL-ROM-MUN-OSLO-GOT-HAM)

- The result indicators are in accordance with the anticipated target values, offering a promising outlook for a favourable impact on the MOVE21 impact areas. This fosters a positive impression regarding their advancement toward achieving the set target values.

The implementation of the impact assessment framework for the RCs has revealed minimal discrepancies between the targeted values and the measured values of the indicators. After replication activities have taken place, the ultimate measured values will be compared to those from the before-implementation phase (outlined in the current deliverable). This comprehensive evaluation aims to determine the overall effectiveness of the measures and draw final conclusions regarding the attainment of positive impacts.

6 References

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Annex A: Questionnaire Survey for the Replicator Cities for the Ex-Ante Impact Assessment

QUESTIONNAIRE SURVEY FOR THE REPLICATOR CITIES

Introductory text

Dear representatives of the Replicator Cities (RCs),

Thank you for making use of the Questionnaire survey form. The information provided here will be used for the implementation of the MOVE21 impact assessment. The Questionnaire survey covers specific MOVE21 indicators.

This Questionnaire survey is the first one out of two similar surveys planned within MOVE21 for the RCs.

The aim of this period's Questionnaire survey is to collect all the relevant information in relation to the baseline and the ex-ante assessment phase.

Should you have any questions or difficulties in filling in this form, please use contact CERTH in the following emails nilia@certh.gr and marmor@certh.gr.

Data protection declaration:

The data shared by you through this form will be used for monitoring the progress of impact assessment of
MOVE21

and it may be quoted anonymously in publicly available online reports. Personal data may be shared with MOVE21 partners,
all of whom are contractually bound to abide to EU data protection law. Under no circumstances will any
data submitted to this form
be given to third partners.

Please tick to confirm that you understand and agree with the above.

Confirmation

- ◯ I agree

City you are representing

- ☐ Bologna
- ☐ Rome
- ☐ Munich
- ☐ Oslo
- ☐ Hamburg
- ☐ Gothenburg

Type of Organization you are representing (Municipality, Public Transport Operator, etc)

City's perceived capacities

1.1 What is the current collaboration level in your city between public private entities in the field of transport domains?

	1 (Very Low)	2 (Low)	3 (Neutral)	4 (High)	5 (Very High)
Level	◯	◯	◯	◯	◯

1.2 What is your city's current level of understanding the governance drivers and barriers for the measures' implementation?

	1 (Very Low)	2 (Low)	3 (Neutral)	4 (High)	5 (High)
Level	◯	◯	◯	◯	◯

1.3 How do you assess the current level of modal integration in your city (modal integration is the availability of intermodal connections (between different transport modes) and the quality of physical, information and fare integration facilities).

	1 (Very Low)	2 (Low)	3 (Neutral)	4 (High)	5 (Very High)
Level	○	○	○	○	○

1.4 Feel free to share any comments you may have here.

Annex B: Measures and Innovations Logbook

Table 22: Measures and Innovations Logbook

The Measures/Solutions/Innovations Logbook has been filled in per test site.

Replication measure Bologna	Measure Code	Describe the MAIN INNOVATIVE ASPECTS of each measure using the following categorization: - Social - Business model - Technological - Service - Governance	Number of innovative aspects / category	Number of MOVE21 solutions replicated in Bologna	Please describe the different solutions, services, systems that will be replicated as components of the measure.	Solution code	Start date of each solution (Month/Year)	End date of each solution (Month/Year)	Please indicate which of the solutions will be implemented (real implementation and operation)	No. of interoperable systems of innovative solutions adopted/replicated in Bologna	No. of implemented MOVE21 innovations in Bologna	No. of new (micro) hubs included in the specific measure	No. of improvements in existing hubs, included in the specific measure	number of Business Models	Description of New Business models needed for the implementation of the solution
Short description	R_BO11	Social innovation: 1. 2.				R_Bol 1.1									
		Business model innovation: 1. 2.				R_Bol 1.2									
		Technological innovation: 1. 2.				R_Bol 1.3									
		Service innovation: 1. New obligations are put in charge to pilots when an agreement is signed with the public administration – related to its new logistic settlement location, and sustainable mobility of its employees			Activation of a public-private partnership board	R_Bol 1.4									
		Governance innovation: 1. 2. 3.													
SUMS			0	0								0	0	0	

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