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## Measure Evaluation Results

### FUN 8.3 – Urban Mobility Control and Monitoring Centre

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Measure title: **Urban Mobility Control and Monitoring Centre**

City: **Funchal**

Project: **MIMOSA**

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## **Executive Summary**

The measure 'Urban Mobility Control and Monitoring Centre' aimed to establish a Mobility Observatory as a tool for monitoring and managing mobility issues in Funchal. The idea of the Observatory corresponds to the European commitment formulated in the Green Paper "Towards a new urban culture", which stated that statistics on mobility in European cities are low and pointed out the necessity to collect strategic data: "...data collection initiatives have demonstrated that there are big gaps in urban mobility statistics at the EU level and that, despite some initiatives developed under the EU's regional policy, there is lack of common definitions. These gaps should be addressed in order to provide the necessary information to decision-makers and practitioners at all levels (pag. 18)". To fill the gap of missing relevant, reliable and updated information about transportation and mobility issues in the Madeira region, the Municipality of Funchal launched a Mobility Observatory with the objectives of providing citizens with better access to relevant information and of supporting a better decision-making process according to the current needs and available resources.

The implementation of the measure was structured in three main fields of activities:

**Field 1: Development activities** (October 2009 – September 2012) Stakeholders involved and concerned by the Mobility Observatory were identified and efforts were given to establish partnerships. At the same time, the structure of the concept was designed. Information on every mode of transport used in Funchal (individual and collective) collected for the establishment of the transport network in 2007 was updated. This information aims at feeding the modelling software (VISUM and VISSIM) that was acquired in this measure.

**Field 2: Mobility pacts** (June 2011 – September 2012) By signing the Mobility Pacts, the Municipality and the relevant partners in the field of mobility agreed to work in close collaboration and to follow the guiding principles formulated in the pacts which defined the operation of the Observatory in order to contribute to a more sustainable mobility strategy.

**Field 3: Software acquisition and training** (March 2009 - June 2012) Modelling software for traffic planning were purchased by the municipality and traffic planners were trained to use the software and manage the Observatory efficiently.

Overall, three indicators were used to evaluate the observatory: the ordinary citizen's perception on usefulness, the effectiveness and usefulness of the measure estimated by experts according to five interviews and the number of indicators produced for the observatory. For the first indicator, two surveys were conducted with citizens in general, while a guided interview was used in the second indicator.

**The key-results of the evaluation** are the following. While the majority of the respondents considers the observatory useful (84,1% in 2010 and 82,4% in 2011), the interviews showed that all respondents consider the observatory as an important contribution to the knowledge of the mobility dynamics in Funchal and a good instrument in supporting policy decisions. The respondents also considered it important that all data should be updated regularly. Finally, one respondent stressed the

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importance of organizing an event (annually) between partners as a mean of encouragement, exchange of experience, and discussion with a view to improve the system.

**Two main barriers** were encountered: firstly, the unwillingness of some entities to share their own data, and secondly, the difficulty to conduct the impact evaluation since the impacts of the measure are realized over a longer term than the MIMOSA project.

**The main driver** lies in the implementation of mobility partnerships and pacts, which support the development of future more sustainable planning system.

This measure **can be replicated** in small and medium cities in which entities do not collect data in a systematically way. The observatory can also be used to gather other type of information not related to mobility. The methodology used to assemble the observatory can be adapted by other cities because all cities have entities (public and private) that own relevant information, which is of interest to other entities, but it is not widespread. Through the application of this methodology, the information is available and it is easily accessible, with clear gains for all.

From the experience of Funchal, **some lessons-learnt** can be useful for cities which want to replicate this measure. In the island of Madeira and particular in the city of Funchal, there is a lack of coordination between agents that makes it difficult to collect data related to mobility. In a city like Funchal, the main challenge faced during the implementation of the measure was to make partners understand that sharing data is crucial. The success of the measure is very dependent on the ability of the Municipality to operationalize the signing of the partnership protocols with the entities that hold all the necessary information. Furthermore, the political commitment and willingness to explain the key advantages of a mobility observatory is also very important. To ensure that the information provided can support the decision making process the access of the entities to the database has to be guaranteed.

The success of the observatory relies on establishing protocols and collecting data. So far, 29 indicators were collected, which is more than what was originally expected. The future goals will be to further establish protocols with other entities and increase the number of indicators available on the database. In addition to the necessity of updating data continuously, the need to create new indicators implies the existence of a small support team.

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## **A Introduction**

### **A1 Objectives**

The measure objectives are:

*(A) High level / longer term:*

- Improve knowledge about both the transport network and mobility;
- Create an information centre that allows the promotion and consolidation of an innovative sustainable mobility culture while fostering the current mobility pattern towards a better life quality among the population;

*(B) Strategic level:*

- Provide easy and efficient access to all pertinent information that could allow a better management of all issues related with urban mobility;
- Contribution towards a better execution in decision making and mobility actions.

*(C) Measure level:*

- Establish mobility partnerships with all entities that deal (in)directly with traffic related issues;
- Manage an information database and its sources that aren't currently being shared by several entities;
- Monitoring the development and evolution of mobility and transport system;
- Supportive tool towards the creation of territorial planning studies;
- Promote the integration between both the mobility component and the territorial planning component;
- Implementation of a platform in which all entities can share and disseminate data;
- Serve as an information and communication tool for the general public;
- Promote a more sustainable mobility, and consequently, improve quality of life in the city.

### **A2 Description**

The economic growth and the infrastructural development that occurred in the last decade all around the Madeira Region, sharply changed the mobility patterns, creating new and complex mobility needs thus putting strong pressure on the territory, especially in Funchal, the Region's capital and most important city.

In the city of Funchal and in particular on the island of Madeira, coordination between agents that integrate mobility and transport system is based on weak relations, no joint consultation on establishing planning policies aimed at sustainability or greater efficiency and optimization of resources. The implementation of the observatory is to fill this gap in the planning process.

This way, this measure aimed at creating a control and monitoring platform regarding urban development, through access to various sources of information relevant to the management and monitoring system for mobility and transport, in which stands the

areas of population and territory, individual road transport, logistics and merchandise, urban public transport, parking, soft modes, road safety and environment issues.

The observatory has as main goal to support the Municipality with a tool that backup a better articulation and definition of policy, and decisions on urban investments to achieve more sustainable urban development, a better mobility culture and greater socioeconomic and territorial cohesion. This measure is oriented towards both decision-makers and citizens. While decision-makers can obtain important data to support political decisions, ordinary citizens can also access mobility data and use them for various purposes, such as academic or personal interest.

The implementation of the observatory implies the development of several tasks, as seen in diagram 1.

The development of the mobility observatory was originally proposed in the 2007 "Mobility Study of Funchal," since it could be a key tool in handling mobility. In fact, the establishment of the observatory has assumed a political importance, since the database can be helpful in supporting the development of strategic responses and integrated mobility decisions, encompassing all modes of transport and their relationship, with land use planning as well as their impact on the environment.

Therefore, the main challenge that arose was to involve several agents that somehow contributed to play a contribution in the transport and mobility system. Developing a strategy for more sustainable mobility is the main goal of the observatory, which was conceptualized through the formalization of partnerships and pacts with the various stakeholders.

The observatory's core function is the sharing and gathering of information from various sources (hence the need for partnerships), and the creation of indicators (with respective targets) to provide a systemic view of the state of the system and its evolution over time.

The observatory is a driving force for more sustainable mobility by enabling the participation of entities from different mobility sectors (hence the need for formalization of agreements), leading to commitments to change behaviors and take concrete measures to achieve sustainable mobility. Finally, it is an instrument of information and civic education, publicizing the actions and the respective results, allowing ordinary citizens to understand what is being done

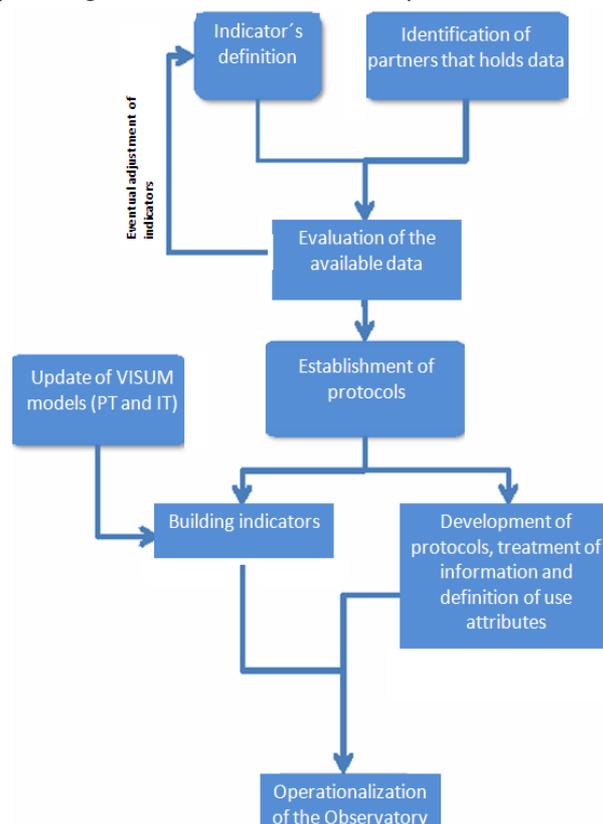


Diagram 1 – Observatory's operationalization

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to promote more sustainable mobility and the results obtained.

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## **B Measure implementation**

### **B1 Innovative aspects**

This measure has several innovative aspects, since prior to CIVITAS, there wasn't any kind of system dedicated to collecting traffic and mobility data. The measure is an innovative vision of land use and ambition for tailor-made mobility solutions.

- **New conceptual approach** – The observatory was the first integrated system in Madeira to control urban mobility in all operational and strategic aspects, giving the opportunity to local politicians and technicians to support the decision-making process based on reliable data and simulations on mobility, in the fields of land use planning, traffic, accessibility, parking, environment and energy efficiency.
- **New organisational arrangements or relationships** – The Observatory system includes the establishment of mobility protocols between public and private entities in order to gather as much information as possible related to mobility and transport system.
- **Targeting specific user groups** – The observatory includes a vast array of actors, ranging from ordinary citizens and specific entities that deal (in) directly with mobility. These include the local public transport operator, hospital, companies that own parking lots, shopping centres, local authorities and others.
- **Other (Information sharing web platform)** – This platform allows the user to access the desired indicators, which will be presented in specific format (map, chart or table).

### **B2 Research and Technology Development**

All types of mobility information are gathered by different public and private institutions, including local and regional authorities, public transport operator, Regional Government and other entities. Nevertheless, some entities have a policy of not sharing their information.

Due to the complexity of the measure, much research was conducted. What follows are short descriptions of the various research activities that were carried out.

#### **Mobility study (2007)**

This document, aiming to assess the Mobility scenario in Funchal, also includes some guidelines to reduce traffic problems. One of the guidelines proposed was the Mobility Observatory that aimed at creating a system that could compile pertinent mobility data. Besides the structure, this document also includes the most pertinent data that should be collected, ranging from public transport, taxi services, individual transport, parking information, environment, security and soft modes.

#### **Mobility observatory implementation plan (March of 2010)**

This document, elaborated after the Mobility Study, further developed the observatory's main components. In this document, the observatory's vision and mission were defined. The main vision of the observatory is to understand the components that support the development of the urban mobility system in and around Funchal, resulting

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in a functional core of information, which follows a logic of sharing and gathering information from several sources. This will lead to indicators for evaluating the implementation of mobility measures.

The observatory's goals were also more clearly defined in this document, namely:

- Improve the knowledge and control of issues related to urban mobility;
- Provide easy and timely access to information, generating content related to the mobility system (problems, causes, etc.);
- Provide support for decision making;
- Promote a new culture of sustainable mobility, promoting a change in current patterns of mobility.

### **Definition of indicators and selection of entities (September, 2011)**

For the conceptualization of the observatory, the first steps were to define the list of indicators needed to feed the observatory. These indicators serve the purpose to allow the availability of information that made the analysis and monitoring of the transport system and mobility possible.

Several evaluation indicators have been considered important to observatory's database. In total, 80 indicators have been organized by the following fields:

- Population and Territory (12 indicators);
- Road transport (offer and demand) (14 indicators);
- Supplies and logistics (2 indicators);
- Public Transportation (offer and demand) (23 indicators);
- Parking (8 indicators);
- Soft Modes (5 indicators);
- Mobility (5 indicators);
- Environment (4 indicators);
- Road Security (4 indicators);
- Success of observatory evaluation (3 indicators).

The choice of indicators took into consideration the availability of the information, and the frequency of its submission. More indicators can be added as the observatory is being developed.

Of the indicators definition, 32 entities were identified as potential partners covering a wide range, such as environment, labour, taxis, air and sea transport, tourism, education, shopping center, local public transport operators, the University, and others.

### **B3 Situation before CIVITAS**

The information about mobility and accessibility was gathered by different public and private institutions, including local and regional authorities, public transport operator, regional Government and other entities. However this information was not shared in a common platform, due to some resistance from entities to bring together all the data because each entity was mainly interested in analyzing their own information.

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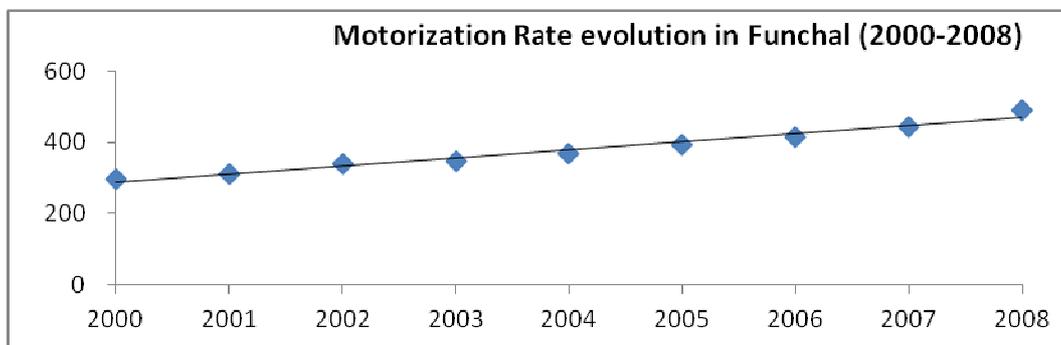
The lack of integrated and updated information about the diverse systems of accessibility was an important barrier to overcome in the development of integrated actions on mobility. City managers had difficulties to implement global approaches and integrated strategies because of this.

In 2007, the Mobility Study of Funchal was published. In this document, weaknesses and potentialities of the existent transport system were identified along with solutions that could promote sustainability in urban mobility.

A great part of the economic activity (tourism, public administration, social services, construction and public works), as well as a significant part of public services is concentrated in Funchal, as the capital of Madeira's archipelago. Therefore, Funchal is an important attractor, not only for the people living in the municipality, but also to citizens living elsewhere on the island.

Strongly limited by its topography, Funchal's road network has responded with growing difficulties to the increase in road traffic, especially in peak periods, thus generating traffic congestion and the corresponding increase of noise and air pollution.

The increase in traffic was strongly linked to the regression in the number of inhabitants in Funchal (especially during the 1990 decade) encompassed by an increase in the population in the outskirts. This phenomenon is a result of a typical polarized urban centre, boosted by tertiary dynamics and consequent population migration to more peripheral locations, in which the housing prices are more accessible.



**Graph 1 - Motorization rate in Funchal (2000-2008)**

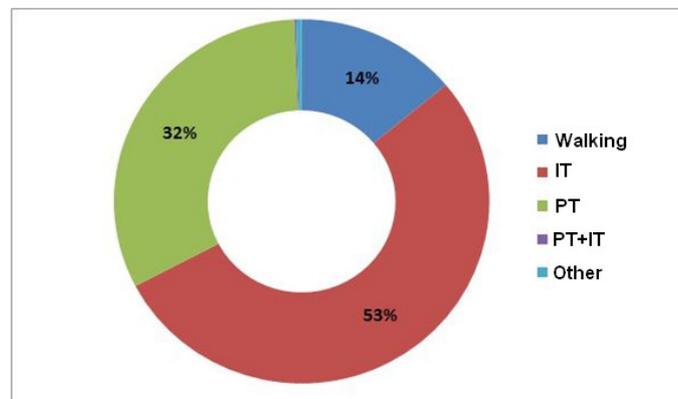
**Source:** Instituto de Seguros de Portugal

The above graphic shows an increase of the motorization rate (number of passenger cars per 1,000 inhabitant), throughout the years peaking in 2008. The Study of Mobility showed that 49,000 vehicles entered the city daily.

Road congestion is very common in many parts of the city, especially in the city centre and at various times of the day. In the morning, for instance, the main access roads are very close to capacity, or even exceed it, leading to congestion that also affects the performance of public transport.

Additionally, the mobility study also revealed that parking is a problem felt by everyone, namely drivers and pedestrians.

In almost every place in Funchal, there are more vehicles parked on the road than on legitimate parking spaces . As a consequence, illegal parking is a problem that occurs day and night.



**Graph 2:** Modal split in Funchal (trips ended in Funchal) (2007)

**Source:** 2006/2007 Mobility Survey

Neither at a regional level, nor at a municipal level in Funchal, was there a formal structure to gather data related to mobility and transport, which made defining a mobility planning strategy difficult.

At the regional level, the data is less extensive and detailed than in the mainland which adds an extra barrier to the understanding of the mobility phenomena in the island.

At the Municipal Level, there is a Mobility Study (2007) and a Parking Study (prior to 2007) that serves as a base to the municipal mobility policy and provides more recent data on the specific subject of mobility in Funchal.

B4 Actual implementation of the measure For the development of the measure, and as established in the Description of Work document, the Municipality hired an external consultancy team (TIS, Transports, Innovation and Systems) with expertise in this theme to support the conceptualization, development and implementation of the mobility observatory.

Due to the complexity of the measure, the implementation implied the development of several tasks.

### **1) Mobility observatory implementation plan (December 2009 - May of 2010) and launch of the tender process (January of 2011)**

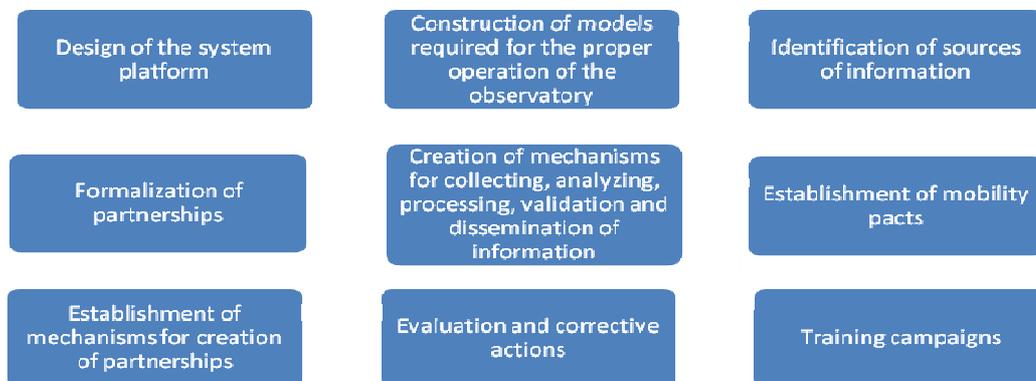
Already described in the RTD section, the Mobility Observatory implementation plan laid down all the necessary components that comprise the observatory. The guidelines established in this document played an important role in preparing the tender process, for hiring a team to support the implementation of the mobility observatory. Due to its complexity, it was necessary to hire an external team.

The specification describes in detail all stages of the implementation of the mobility observatory, namely the design of the system architecture of the Centre, i.e. the design of the solution to be implemented for the observatory, which defines the organizational

structure of the information system, through the definition of the modules that make up the observatory, its contents, and the relationships that operate between them.

Another task within this stage refers to the identification of information sources (companies or entities) that own relevant information for the observatory and its creation of indicators that will feed the observatory (also including testing, processing, validation and dissemination of information. Creating mobility partnerships, which constitutes one of the pillars supporting the implementation phase of the observatory is also included in the specifications.

Upon completion of the bidding process, the Municipality and the subcontractors<sup>1</sup> had frequent meetings in order to optimize the process. To this end, a structure containing all key components that define the observatory was established.



**Diagram 2 - Mobility Observatory main key components**

## **2) Identification of the information sources and creation of mechanisms for collection and validation (March 2010 – November 2011)**

### **Entities**

Initially 37 entities were identified as potential information suppliers, including Funchal Municipality. These entities include the airport, an environment agency, transport company, public transport operator, shopping centres, local authorities, hospital and others.

The first step that was taken in order to involve potential partners in the Mobility Observatory; this took place in September 2011 in which a presentation was given in order to inform the entities of the importance of the observatory.

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<sup>1</sup> The companies that are supporting the Municipality in the observatory implementation are TIS and PTV. TIS is a transport consultancy that is helping the Municipality in achieving its main components, while PTV's role is as a technological partner.

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**Picture 1 and 2 – Mobility observatory presentation**

During October and November 2011, each of the companies were contacted in order to assess the actual availability of the information. Some of the data was not handled in a proper way, while in other cases the data was not relevant for the database. In the end, a set of 18 entities were considered. Simultaneously, both the Municipality and the companies supporting it drafted partnership protocols to be signed by all. Until now, 9 protocol partnerships were signed (only 1 of the entities refused to sign on the grounds of data confidentiality).

In the short term the Municipality is expecting to have a few more partnerships signed.

### **Monitoring indicators**

The mobility management (and its understanding) implies a continued attention on how the systems evolve, in which there is a need to know the results and relevance of the implementation of actions aimed at a more sustainable mobility.

In this context, the assembly of the Mobility Centre, as a monitoring tool is a key step to support the implementation of an effective strategy, not only because it allows us to assess progress, but also allows the identification and correction of deviations.

Thus, the Centre for Mobility was materialized in its construction with a set of indicators that meet the following requirements:

- be comprehensive and reflect the various elements and mobility dimensions;
- be easily understood by all and simple in its construction, using a replicable methodology and unambiguous;
- take into account the availability of existing data, the cost of obtaining these data regularly and its operational capacity (both human and financial);
- allow as much as possible, a comparison among different mobility systems;
- show their evolution over time in order to prove the suitability of the mobility system and the actions taken.

In the process of defining indicators they were classified as follows:

- **Outcome Indicators:** which allow assessing the impacts of actions and their contribution to achieving the established objectives;
- **Indicators of Implementation:** which allow you to perform control of what was expected to do and what actually was done in accordance to the established schedule;

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- **Indicator Background/Knowledge:** which contribute to obtain information on the evolution of variables that influence the mobility system.

The indicators are divided by various groups that characterizes the type of information in which they belong. In total, a set of 80 indicators were defined, and organized by groups:

- Population and Territory (12 indicators)
- Road transport (offer and demand) (14 indicators)
- Supplies and logistics (2 indicators)
- Public Transportation (offer and demand) (23 indicators)
- Parking (8 indicators)
- Soft Modes (5 indicators)
- Mobility (5 indicators)
- Environment (4 indicators)
- Road Security (4 indicators)
- Success of observatory evaluation (3 indicators)

The choice of indicators took into consideration the availability of the information and the regularity of its submission. Some of the entities contacted provided statistical data (public transport operator, Port of Funchal and Madeira airport) allowing the inclusion of some of the earliest indicators available in the Centre.

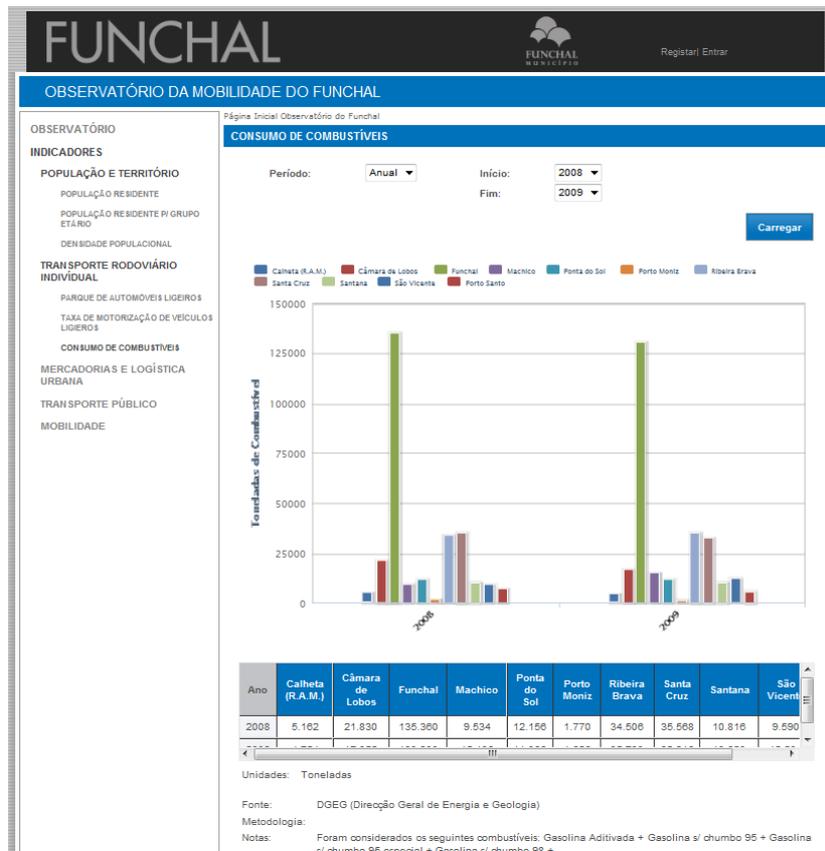
Currently, the Mobility Observatory provides information for 29 indicators, it is expected that this number of indicators available on the website will increase.

### **3) Design of the system architecture and Construction of models required for the proper operation of the observatory (June 2011 – September 2012)**

What follows is the description of the system architecture and presentation of the main evaluation indicators.

#### **Web interface with the user**

The Web interface will allow the user to query the desired indicators, which will be presented in a table format and/or graphic. Some indicators will be represented on a map, in this case using the new geographic services of the Centre for Mobility that will be installed in Geographic Information System (GIS) available in the Municipality.



**Picture 3: Mobility Observatory webpage**

The interface consists of a lateral menu where one can access various indicators, arranged in groups of indicators. The indicators available for consultation by users depend on the user accessing the interface and its permissions to view the indicators.

The general public can access a subset of indicators. At the top of the page there will be a button that will allow partners to access the Centre, through the introduction of a password to access a broader set of indicators.

The user can choose the query criteria, including the level of disaggregation of the information and the selected period of time, in which this information is based on these parameters. All the indicators presented on the suppliers referencing information (information that appears underneath the table and graph) and the date on which the data were obtained. When appropriate, there is still the possibility to obtain additional information by routing to specific link on which it will be possible to obtain other information related to the chosen indicator such as a description of the methodology that was used to obtain information.

### **Web Interface administrator**

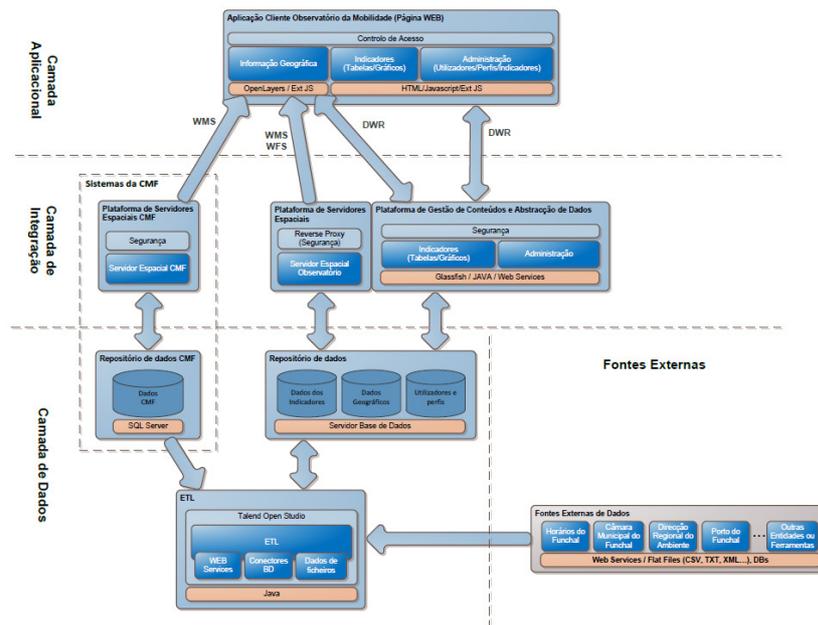
In this interface, it is allowed to the system administrator to create and manage users, including the access permission to indicators. It also allows the editing of indicators in which we can choose the level of access for each indicator.

The administrator interface is composed of three areas:

- Management of users;
- Creation or deletion of profiles that can be assigned to users;
- Management of the indicators.

### Description of logic system

This section describes the system architecture and the respective components and describes the relationship with the data sources and other systems such as reporting tools and server space.



**Diagram 4:** Architecture of the system

The proposed architecture considers three logical layers:

- **Application Layer** - provides all tools for end users and administration of those users and their respective profiles. Aims to ensure access easy, intuitive and secure the various indicators by end users (whether internal or external customers of the observatory);
- **Integration Layer** - provides access to the functionality of the system generated indicators. This layer aims to allow integration with all systems collect the data source for the creation of indicators and provide a platform for content management to the dissemination of information managed and/or created by the system;
- **Data Layer** - contains all the data stored in the system and the connection to data sources and their extraction. Its objective data storage provided by information sources, as well as the aggregate results to be presented in the client application and / or made available on the platform for content management.

### Creation and Configuration of Indicators

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The configuration of the indicators is established by completing a table that is accessed by the system to provide indicators to users. In this table is an entry for every indicator in the system, and in which several information about the indicators are presented (name; group to which it belongs; description of the methodology used to calculate the values of the indicator; etc.).

### **Access Control / Security**

There are two security modules that make security management system: one inserted in **Client Application Centre** that will aim to authenticate users on the system; another one in the **Platform for Content Management and Data Abstraction** will have to filter access indicators.

The available indicators in the system have an associated access level that is checked when users try to access them. The levels defined for the indicators are:

- Private - sets that the indicator can only be accessed by users that belong to the entity that provided the data for the building, or Municipality;
- Partner - sets that the indicator can be queried by users belonging to the organization that provided the data to build and yet all entities that provide data for other indicators including the Municipality;
- Public - sets the indicator that can be queried by any user to enter the system, but is not obliged to authenticate it. Authentication is made by the access control module located in the Application Client Centre, which will have to check the data that the user enters and ensure its access or not.

The indicators that users can query this module are provided by Platform for Content Management and Data Abstraction, which verifies the entity to which the user belongs to know which indicators that concerns you. The entity is associated with a profile that each user has, and this is analysed based on the level of security applied to indicators and based on the source data of the indicators.

### **Data Processing**

The process of loading data for the system is divided into three stages:

- Loading the staging tables (STG) serving repository initial data from external sources into the system;
- Organizational data stage (tables RAW) using the data loaded in the first stage;
- Charge of the scorecards (AGG) in which the creation and calculation of indicators using all data processed in the second stage. In the first stage (loading Staging) the data from external sources are fully copied to a database that stores all the data that will be loaded during system life. When data is loaded it is assigned to each row of data, date of importation, to register when the data was imported into the database of the Centre.

In the second stage (RAW table or raw data) the data model to support the Observatory is built, using data that was loaded in the first stage. Here, the splitting



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With CIVITAS MIMOSA project we proceed to update this traffic model, which led to the development of the following tasks:

- Upgrading the transport model;
- Use of new information of traffic counts in order to update and calibrate the model for the current road traffic situation and considering periods of morning rush hour and afternoon rush hour (since these are the ones that demand pressure is more critical).

Construction and calibration of the network of public transportation In order to proceed with the update stage calibration and the public transportation network of Funchal the following tasks were developed:

- Check and update of the routes, schedules and timetables of the local transport operator;
- Check and update of the bus lanes that defines the supply of buses serving the municipality of Funchal.

Estimations of fuel consumption, emissions of air pollutants and noise impacts in order to estimate pollutant emissions and noise impacts of the methodology was adopted from studies of social and environmental benefits, in which these impacts are valued economically and are indexed to passenger/kilometer performed on individual and collective transport. This methodology relies on the information contained in the manual analysis of costs and benefits of investment projects (2003, DG Regional Policy of the European Commission), and allows the comparison of results over the years, but also with other mobility systems considered in the CIVITAS network.

The estimated fuel consumption in Funchal has been developed based on the methodology used by the Department of Transportation in the UK - "Values of Time and Operating Costs, December 2008, Department for Transport, Transport Analysis Guidance (TAG).

#### **4) Parcerias e mobility pacts (Junho 2011 - September 2012)**

During the 2012 Mobility Week, a formal session was held in which the signings took place.



**Picture 4** - Mobility pacts signing session

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During the initial stage 6 entities were identified as potential signers for mobility pacts. The mobility pacts are understood as an instrument in which the Municipality and other actors in the field of mobility set, voluntarily and collectively, the guiding principles for its operations in order to contribute to a more sustainable mobility strategy, reflected in the development of actions and measures that each undertakes to perform.

These pacts aimed to:

- Create an understanding that is essential for the development of the city and to assert its identity.
- Establish a shared and consensual vision for the Mobility Strategy of the city so that all stakeholders can have a broader perspective of the measures that are being implemented.
- The definition of the major objectives and strategy of the mobility system, a “win-win” process in which the city can gain as the entity responsible for the planning and management of the city, and the other actors, ranging from citizens to public institutions, can benefit from the existence of an efficient, inclusive and sustainable city .
- Foster the articulation of a broader set of initiatives in a more limited period of time, since the efforts of planning, investment and implementation of measures and actions become the responsibility of a broader set of entities.

The signatories of mobility pacts were:

- Horários do Funchal – Local public transport operator
- Madeira Tecnopolo – Technological research
- University of Madeira
- SESARAM - Regional Health Service
- ACIF - Commerce and Industry of Madeira
- Madeira shopping centre

#### **e) Purchase of equipment, training modules (March 2009 – June 2012)**

The training modules represents an important stage in the process as they provide the technicians who will work in the observatory all the necessary technical knowledge to maintain and improve the observatory.

So far, the training had two stages, one initial and one advanced, and is still unfinished because two more training plans will take place in the future, namely in VISUM and in the observatory platform. Training was also provided on the use of traffic counters.

The first training module happened in January, 2012, while the second occurred in June. These mainly focused on VISUM and VISSIM, the traffic simulator that was purchased by the Municipality and Horarios do funchal. VISUM also included a module to evaluate the environment. VISSIM is a microscopic simulator that shows the interactions between all the traffic elements (pedestrians, cars) and their behavior, according to the traffic system. As for VISUM, it is based on transportation planning, traffic flow models, and real-time traffic data. It computes traffic conditions and travel times used for dynamic route guidance. Dynamic traffic analyses and forecasts provide advanced traffic management systems with completely new applications in

transportation control, strategic management and traveller information. The creation of scenarios implies the collection of traffic data. To facilitate this collection, two traffic counts were acquired by the Municipality in March of 2009. These devices, Viacount II, are dedicated to measuring velocity and traffic flow composition and have been used on several occasions, helping the Municipality to count the traffic flow in the streets.



**Picture 5 and 6 – Viacount II device and viagraph (software analysis)**



**Picture 7 and 8 – Visum and VISSIM screenshots**

**B5 Inter-relationships with other measures**

This measure is related with the following measures:

- **Measure 2.3 Public Urban Transport Planning Centre** - It's important to the operationalization of the Mobility Observatory, since the PT operator stores everyday a great amount of data of its network, namely speed, transported passengers, frequency, etc. The whole information system already managed with fleet operational data and passenger information will be integrated in a monitoring central control that will support the transport planning process in the urban area and the PT decision making process, feeding, more broadly, the city's mobility policy. Additionally, Horários do Funchal have also acquired VISUM.
- **Measure 8.1 Mobility Services SMS** - is based on the introduction of a SMS broadcast based service for alerts and information on traffic, public transport services and parking. At the local level, all the other measures included in the MIMOSA project will contribute to achieve Mobility Observatory goals related to a more sustainable mobility:

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- **Covenant of Mayors** - The Mobility Observatory also played an important role in launching the seeds of other projects, such as Funchal's participation in the Covenant of Mayors, a European initiative that focus on reducing CO2 levels by 20% by 2020. While the SEAP (Sustainable Energy Action Plan) includes dozens of various actions, spread throughout the various intervention fields, including also transport.

## C Impact Evaluation Findings

### C1 Measurement methodology

#### C1.1 Impacts and Indicators

**Table C1.1:** Indicators

<b>N o.</b>	<b>Impact</b>	<b>Indicator</b>	<b>Data used</b>	<b>Baseline data</b>
1	Acceptance	Common citizens perception on usefulness (Pointer indicator: 14)	PT Operator and the Municipality have collected this data through a survey	Collected in July, 2010 and in July 2011. In 2010 the sample size was 679 while in 2011, the sample size was 584. The surveys were carried on using a random process and mostly face-to-face. The target group covered a wide range of people, ranging from students to elderly people and company representatives
2	Acceptance Experts and stakeholders	Effectiveness and usefulness of the measure estimated by experts according to 5 interviewers (Pointer indicator: 14)	The Municipality have collected and recorded this data through guided interviews of an average duration of 10 minutes, 1 month after implementation	No baseline data
3	Number of indicators	Number of indicators produced for the Observatory (city specific indicator)	The choice of indicators took into consideration the availability of the information and the regularity of its submission. The choice was made by both the Municipality and the team that is supporting the Municipality in implementing the observatory.	No baseline data

In Funchal's Local Evaluation Plan, the indicator "Incorporation of the mobility dimension in the drafting and revision of sectorial plans of Strategic Policy" was removed, since the elaboration of strategic plans have a regional scope, in which the Municipality doesn't have competences in the decision/revision making process. This process is, therefore a competence of the Regional Government.

Therefore, the Municipality is not able to define dates, regarding the elaboration or revision of the sectorial plans.

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Following the recent evaluation meeting between the local partners (Funchal Municipality and Horários do Funchal) a decision was taken to revise the evaluation approach using a different methodology. The gist behind this new methodology is to assess the technical body, the decision makers and the community perspective in order to prove the effectiveness of the measure and improve its impact.

Therefore, interviews were conducted among the decision makers who represent a target group of the Observatory, namely a member of the local public transport operator (Horários do Funchal), the Deputy Mayor, the director of the company that manages the parking lots, the director of the Municipal Traffic Department, and the director of a rent-a-car.

The citizens' perception of the mobility observatory was also assessed through the conduction of two surveys. The following text describes in detail the indicator:

- **Indicator 1** (*Acceptance*) – This indicator was measured to assess the measure's usefulness. The target group to assess this indicator consisted of ordinary citizens and was carried on during Expo-Madeira 2010 and 2011. This indicator is related to specific level (C), objective 7. The expected impact of this indicator is to make the observatory an important tool for citizens. Citizens could also obtain important data from the observatory. Students for instance can use them for academic purposes. Its also important to state that the surveys conducted are prior to the observatory's implementation.
- **Indicator 2** (*Acceptance Experts and stakeholders*) – This indicator refers to the effectiveness of the measure, according to decision-makers as the main target group of the measure. To assess this, a guided interview was carried out with 5 people, during the first week of October of 2012. The expected impact of this indicator is too show the importance of the observatory to experts and stakeholders. This indicator is directly related to strategic measure level (B), objective 2.
- **Indicator 3** (*Number of indicators produced for the Observatory*) – This indicator refers to the number of indicators that are included in the platform. 80 indicators were chosen, from a vast array of fields. The expected impact of this indicator is to increase the number of indicators in the database. 29 indicators were already uploaded in the platform.

**Table C1.2:** List of potential effects that were not accessed

<b>Impacts category</b>	<b>Indicator</b>	<b>How does it impact</b>	<b>Why it was not accessed</b>
<b>1</b>	Number of news on Observatory issues and to site partners platforms	Hits in the observatory web platform	The number of hits would not be the most suitable way to evaluate the observatory properly
<b>2</b>	Number of entities that received newsletters from the observatory	Creation of a newsletter	During the process it was found that the creation of a newsletter will not be important for the observatory. Instead it would be more efficient, whenever there are significant updates of data, to draft an email to both partners and stakeholders and publicize this information on the websites. Without the existence of a newsletter, it is not possible to maintain this indicator.
<b>3</b>	Number and type of stakeholders involved	Number of stakeholders involved in the mobility protocols	The number of stakeholders would not be the most suitable way to evaluate properly the observatory
<b>4</b>	Number of protocols between entities with responsibilities in the mobility scope	Mobility protocols arranged with stakeholders	The number of mobility protocols would not be the most suitable way to evaluate properly the observatory
<b>5</b>	Number of traffic lights	Reduction of conflicts between private and public flows	These indicators do not fit the role of observatory
<b>6</b>	Bus lanes	Increasing traffic flow by increasing number of bus lanes in the city	These indicators do not fit the role of observatory
<b>7</b>	Safety	Number of transport related accidents in the city	At this stage it is too early to consider the number of accidents as an indicator

### **C1.2 Establishing a Baseline**

<b>No.</b>	<b>Indicator</b>	<b>Baseline data</b>
1	Acceptance	84,1% considered the Mobility Observatory useful in 2010. In 2011, 82,4%.
2	Acceptance Experts and stakeholders	There is no prior data
3	Number of indicators	There is no prior data

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### **C1.3 Building the Business-as-Usual scenario**

Since the measure is innovative, a BAU analysis was not possible to assess.

<b>Nº</b>	<b>Indicator</b>	<b>BAU assumptions</b>
1	Acceptance	Since the measure is innovative, it is not possible to assess a BAU scenario
2	Acceptance Experts and stakeholders	Since the measure is innovative, there is no possible way for a BAU scenario
3	Number of indicators	Since the measure is innovative, there is no possible way for a BAU scenario

## **C2 Measure results**

### **C2.1 Economy**

### **C2.2 Energy**

### **C2.3 Environment**

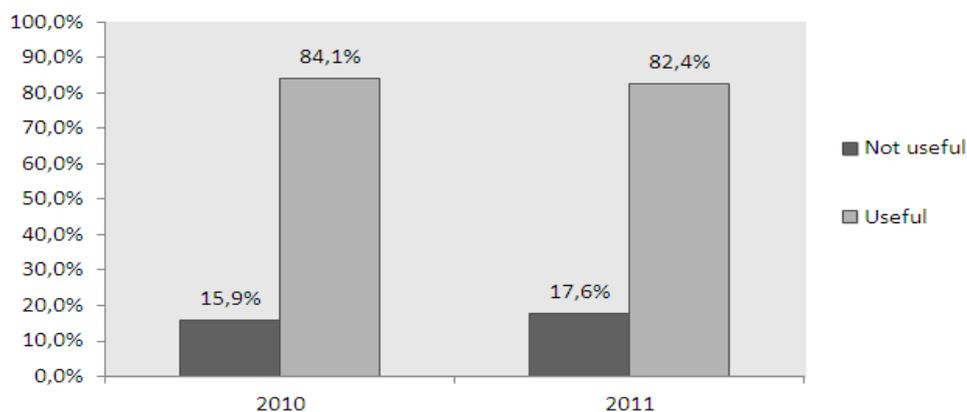
### **C2.4 Transport**

### **C2.5 Society**

#### **1. Acceptance**

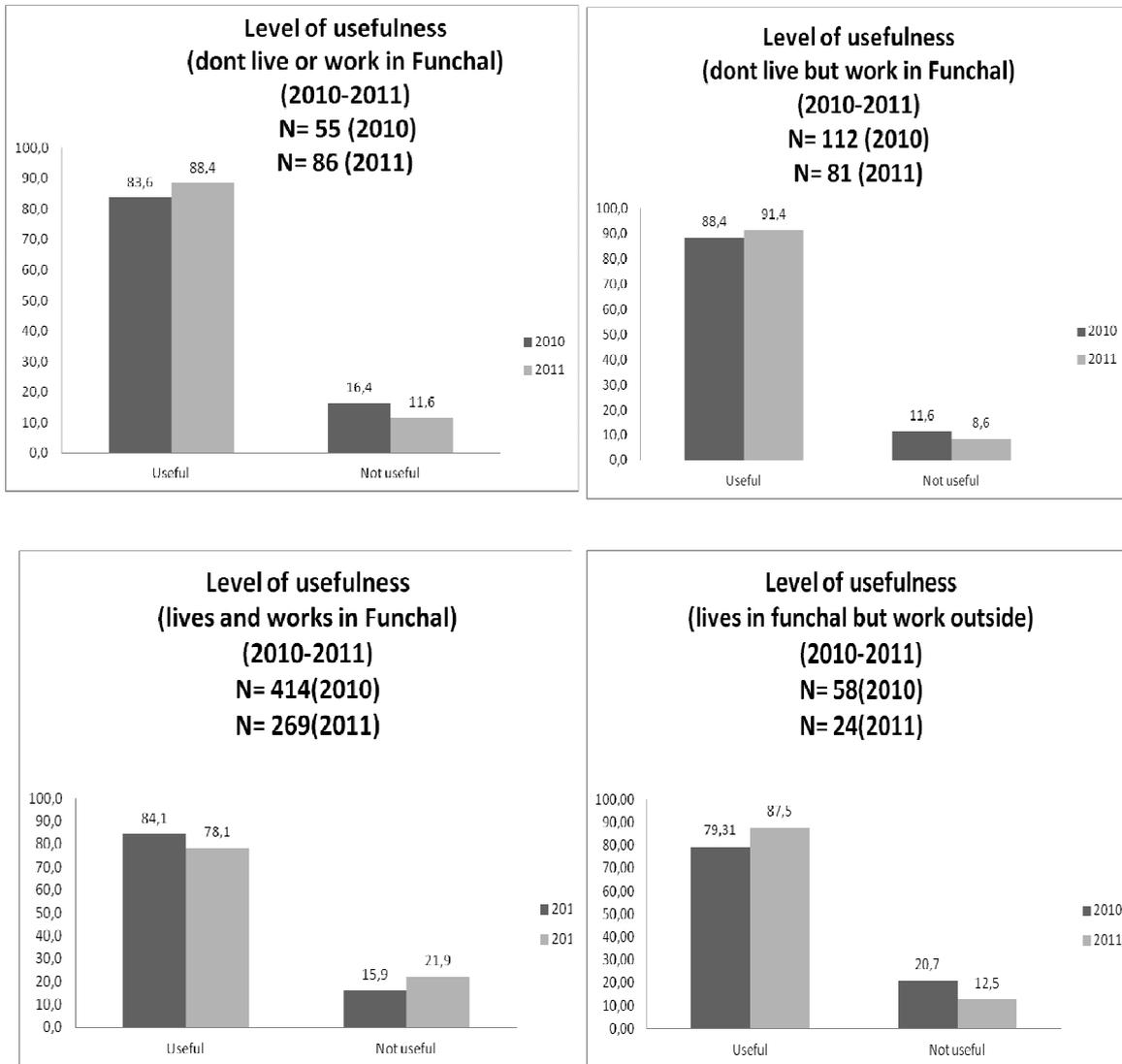
According to the graph below, the majority of participants considered the observatory useful in 2010. The same trend continued in the following year, although with a slight decrease in the percentage of people that considers the observatory useful. Since both surveys were conducted before the implementation, there are not evident changes. We have 2 categories, so the number of degrees of freedom is 1. For the table, for a significance level of 0.05, the critical value is: 3.84. Since  $1.019 < 3.84$ . Furthermore we cannot reject the hypothesis that there is no change of opinion about the usefulness of this measure between 2010 and 2011. Although the measure was perceived as useful, both surveys were conducted before the implementation. Nevertheless the results obtained are considered very positive.

#### **How useful is the Mobility Observatory? (2010-2011)**



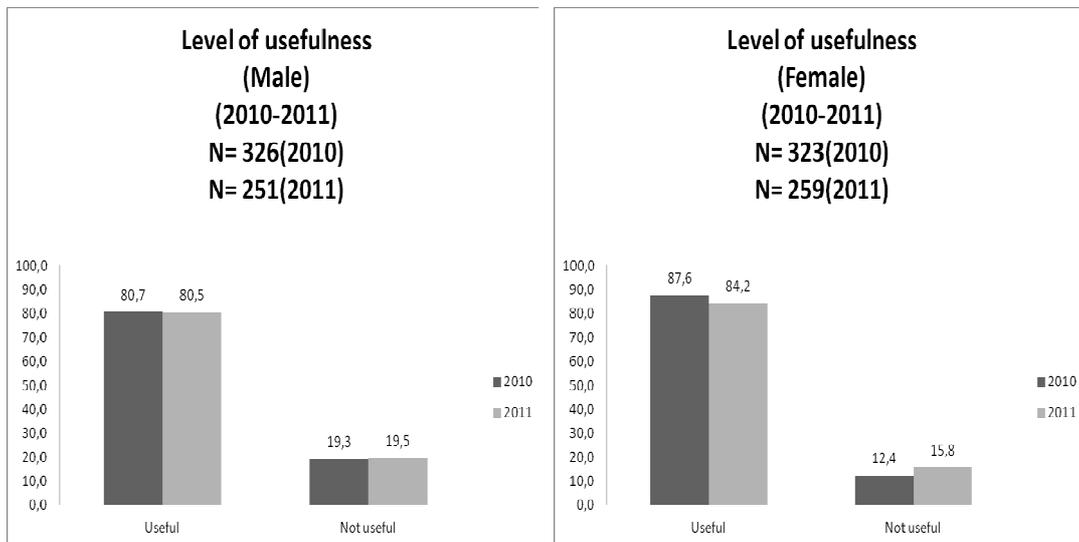
**Graph 3 - How useful is the Mobility Observatory? (general)**

Breaking the graph to 4 categories, as followed in the graphs below, all groups considered the observatory useful. Despite the fact that CIVITAS events were conducted in Funchal, non residents or workers found the observatory useful.



**Graph 4,5,6 & 7 - How useful is the Mobility Observatory?**

As for gender, the survey reveals that there is not a significant difference, although more mails considered the observatory not useful.



**Graph 8 & 9 - How useful is the Mobility Observatory? (gender)**

## 2. Acceptance Experts and stakeholders

In October, when the observatory was already implemented, 5 people were interviewed from different entities:

- **Bruno Pereira**, 39 years old, with a graduation on International Affairs. – The Deputy Mayor of Funchal is responsible for Mobility, Public Works and Civil Protection. He was the Regional Director of Tourism. He is also the President of the Political Advisory Committee of CIVITAS.
- **Mário Nunes**, 55 years old, Civil Engineer. He was a city councillor in the Municipality of Câmara de Lobos, with responsibilities in mobility and public works. Currently, he is the director of the Traffic Department of the Municipality of Funchal.
- **Claudio Mantero**, 34 years old, with a graduation on Economy. – He is the head of the Department of planning of Horários do Funchal (local public transport operator) and Project Manager of Civitas Mimosa;
- **Rui Neves**, 55 years old, graduated on Civil Engineering. He is the director of the company SEP, the concessionaire for the management of parking meters and parking lots in the City;
- **Mario Camacho**, 49 years old, with a graduation on Management. He is the managing Partner of a Rent-a-Car. This rent-a-car in particular is a dynamic company located in Funchal.

The interviews, whose questions were the same for all respondents, were held in order to determine the importance of the Centre, the most important indicators and the relationship between the observatory and the mobility system. Finally, the interviews also sought to determine the importance of the Observatory in deepening relations between the various actors in the system.

The experts had only 1 month to use and familiarize themselves with the Observatory. The time after implementation was enough to get a first impression of the system but

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too short to integrate the Observatory in the decision-making processes. Therefore the future impact can only be evaluated on the long run.

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Questions	Mário Nunes (Traffic Department)	Cláudio Mantero (Local public transport operator)	Rui Neves (SEP - company that manages parking lots)	Bruno Pereira (Deputy Mayor)	Mário Camacho (Rent-a-Car company)	Resume
<p><b>Have you already accessed the observatory platform?</b></p> <p><b>If not, why?</b></p> <p><b>If yes, what are the main advantages?</b></p>	<p>Yes, the main advantage is that it will allow both the municipality and the entities to share information that was previously unavailable.</p>	<p>Yes, the main advantage is that it allows access to the mobility data from other operators and stakeholders linked to mobility.</p>	<p>Yes, it is a profound work and now it is necessary to process the data to obtain good results and valid conclusions for the mobility of Funchal.</p>	<p>Yes, the main advantage is that it allows a single repository to gather a range of information on mobility generated by various entities. Therefore, this is the only way to concentrate in a single repository information dispersed by various entities.</p>	<p>Yes, lot of information available on the website.</p>	<p>Interviewees state that the main advantages are:</p> <ol style="list-style-type: none"> <li>1) Concentrating on the same platform, the main indicators of mobility, which allows easy reference;</li> <li>2) Allow quick insight into the mobility system of the city.</li> </ol>
<p><b>Do you plan to use the platform in the future?</b></p>	<p>Yes, depending on the needs. It is a database with information on mobility.</p>	<p>Yes. To deepen the understanding of urban mobility. To make more conscious decisions in relation to all the actors who handle mobility and evaluate the effects of measures taken by myself and other decision-makers.</p>	<p>Yes. I can get information to be updated and my company is also committed to providing information about car parks and parking meters.</p>	<p>Yes, as a decision tool. I plan to use it weekly or even on a daily basis.</p>	<p>Yes.</p>	<p>All replies are moving towards greater use in the future. With regularity to enable a better understanding of how the decisions of an actor influence other actors in the system. The interviewees plan to use it as support for decision making and they predict its use often.</p>
<p><b>Do you consider that the existing data in the observatory may be useful for your organisation?</b></p> <p><b>If no, please justify?</b></p> <p><b>If yes, to what extent?</b></p>	<p>Yes, especially for decision makers of the Municipality. They can be useful for decision making, such as the construction of new streets, changes in transit (transit directions and parking), and other information that can be obtained from other data</p>	<p>Yes, because for the first time we get access to data from various entities, including demand for public transport, number of users in health centres and shopping centres. This information helps in the planning of public transport service and decreases cost by</p>	<p>Yes, knowing the number of cars in circulation, it may give an indication of potential users of car parks and parking meters.</p>	<p>Clearly yes, for all technical and political levels. It is an essential tool.</p>	<p>Yes It has lots of information on tourism that is important.</p>	<p>All respondents felt that the observatory will be a useful tool in the decision-making process. They consider that the availability of data will support better decisions in technical terms or in political terms. One interviewee said that in addition to the decision process, the indicators listed in the observatory will be able to change its trade policy, as it allows a better understanding of the trends of</p>

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	sources.	collecting information and facilitates cross-checking with the information that the public transport operator has in order to validate them.				its customers.
<b>Of all the indicators included in the platform, which one do you consider to be the most useful to the entity you represent?</b>	Motorization rate. Data from the parking lots.	Distribution of demand (health system, university, shopping centre); Motorization rate; Potential demand (potential users);	Number of cars in circulation.	The public transport indicators that are not accessible elsewhere. Variables related with parking. Road safety data.	The tourist arrivals through the Port and Airport.	The answers are very comprehensive, making it realize that although there are some common indicators, the needs of respondents vary depending on his field of expertise. While some interviewees stress the importance of public transport indicators, others stressed the importance of other variables related to parking, motorization rate in air and sea transport and tourism.
<b>To what extent does the observatory help improve mobility in the city of Funchal?</b>	The city has not got much room left to manoeuvre, but can assess decision-making regarding the reduction of surface parking and increase the capacity of circulation pathways (improve the flow of traffic).	There are two sides: - More conscious decision making. - Awareness of citizens, as it can be a tool for information and environmental alert.	The existing elements can improve the accessibility and mobility in Funchal.	As a decision support tool, the better the information the better the decision. One of the major difficulties in decision making relates to the lack of data.	The availability of more information will provide better decisions.	Everyone agreed that, one way or another, the availability of information provided by the Observatory can help to improve the Mobility System in the City. It was noted, however, that for this to happen it is necessary that the information provided is reliable. It was also noted that in addition to being a tool for decision support, the indicators listed in the Observatory could serve as an awareness vehicle for cities to achieve a more sustainable mobility.
<b>Do you consider that the Observatory will continue to contribute to deepen relations between the partners? In what sense could it improve?</b>	Yes, all partners have an interest in receiving the data, as long as they are updated. However, there will be interest from the Municipality in having local authorities and public transport	Of course, because the observatory besides being a tool also generates commitments (through protocols) and determines goals. The observatory brings transparency and technical content. It also can encourage discussion.	It's too early to tell but it seems so. Through the exchange of information and knowledge. From what I see on the platform there is a lot of work on gathering information and deepening of relations that is very valid. As for the future, it is	For the Municipality, the observatory is certainly important, but that interest might not be the same for partners, since the interest for each partner can differ. The Observatory is a win/win solution. Periodically it is	Yes. If there is a bigger involvement, the observatory will become more efficient.	While all interviewees consider the deepening of relations between entities important, the answers to this question are not unanimous as there are some who believe it is premature to evaluate this aspect. Others consider that the transparency of information provided by the Observatory will promote the know-how in this area and encourage

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	companies as partners.	It's a collaborative relationship for the common goal.	necessary to continue this work.	important to establish a link between partners, in order to optimize the data, since it is not easy to maintain a relationship in the future.		discussion. There are still those who think that this relationship will create synergies between partners.
<b>What were the lessons learned?</b>	The implementation was done in a late stage.	Mobility is not an isolated phenomenon, nor controllable by isolated actors. The information should move more easily between entities and currently the communication is bad. There are many resources, but it does not work for the same goal and the observatory can contribute for it.	-	It is the same as the system of National Statistics. There are always difficulties by some entities to realize the importance. The trickiest part is to involve all partners.	-	Regarding the question of lessons learned, this was only answered by three of the five respondents, who were those who were more related to implementation of the measure (Bruno Pereira, Claudio Mantero and Mario Nunes).

**Table 1 :** Summary of the views of each expert on each topic resulting from the interview and summary /selection of main points

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Overall, the previous table and the answers collected allowed us to understand that in a city like Funchal, the Mobility Observatory's main barrier was to make partners understand that sharing data is crucial. The respondents also considered it important that all data should be updated on a regular basis.

Finally, one respondent stressed the importance of organizing an event (annually) between partners as a mean of encouragement, exchange of experience, and discussion with a view to improve the system.

The following table summarizes the potential contribution of each task developed related to the measure's goals.

**Table 2- Contribution or potential contribution of each task to the specific goals**

	Support the decision making process, promote sustainable mobility, improve the city's quality of life through the improvement of knowledge about both the transport network and the mobility system's operating method	Create an information centre that allows entities to share and disseminate data;	Establish mobility partnerships with all entities that deal with traffic related issues;	Create a supportive tool towards the creation of territorial planning component that can promote the integration between both the mobility component and the territorial planning component;
Creation of the Informatics Platform	😊😊	😊😊	😊	😊
Signing of the Mobility Protocols	😊	😊😊	😊😊	😞
Signing of the Pacts	NA	NA	😊😊	NA
Purchase of VISUM traffic software	NA	NA	NA	😊😊
Training campaigns aimed to technicians	😊	😊	😞	😊😊

😊😊	Big contribution
😊	Small contribution
😞	No contribution
NA	Not applicable

The observatory's components are firmly linked. The tasks developed within this measure have contributed positively to achieve the observatory goals. The platform for instance, is directly related to the creation of an information centre that allows entities to share and disseminate data. Besides, the platform launch could also play an important role in

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supporting the decision making process. The mobility protocols and the pacts also play a key role in involving partners and consequently sharing data which can be used in the traffic simulator.

### 3 – Number of indicators

As stated before, 80 indicators were defined and arranged according to a vast array of group themes, such as population and territory, logistics, public transport, parking, soft modes, mobility, environment and road safety. Currently, the platform holds 29 indicators.

Category	Indicator
Population and territory	Resident population
	Resident population by age group
	Population density
Individual road transport	Parked cars
	Motorization rate of light vehicles
	Fuel consumption
urban freight and logistics	Goods handled in Funchal's port
Public transport	Passengers traveling by airplane
	Movements between airplane
	Cruise ships that dock in Funchal
	Passengers from cruise ships
	Number of lanes offered by road operators
	Services offered by road operators
	Services offered by road operators per km
	Funchal bus fleet schedules by type
	Funchal bus fleet schedules by powertrain
	Average age of fleet
	Average speed of commercial road operators
	Number of passengers transported by road operators
	Level of satisfaction with the service of road operators
	Distribution of passengers by bus ticket
	Transport needs according to impaired people
	Costs and benefits of local public transport
Mobility	Modal split of trips (single) – Funchal residents
	Modal split of trips (single) – Funchal residents and nonresidents
	Reasons for travel (Funchal residents)
	Reasons for travel (funchal residents and non residents)
	Average number of trips per person (day)
	Percentage of people that travels (day)

**Table 3-** Description of indicators and categories

It is expected that in the future, the platform will include more indicators, with the establishment of mobility protocols.

### C3 Achievement of quantifiable targets and objectives

No.	Target	Rating
1	Objective - Acquisition of 1 traffic software; Result - A license for VISUM was acquired by the Municipality;	<b>**</b>
2	Objective - A tool to simulate energy consumption, pollutant emissions and noise of different micro mobility options Result – While not properly assessed, the traffic software that was acquired had several plugins, including one to measure pollutant emissions.	<b>**</b>
3	Objective - Cooperation protocols established with 80% of the entities with responsibilities in mobility management. Result – Of all 17 entites that were contacted, so far, 9 have signed the mobility protocol.	<b>*</b>
4	Objective – An urban mobility control and monitoring centre in operation Result – The mobility observatory was successfully launched.	<b>*</b>
5	Objective - Number of decisions on mobility management based on the data provided by the centre.	<b>NA</b>
6	Objective - Number of planning instruments that takes in to account the data provided by the centre: depends on the planning instruments elaborated on centre operation and project development.	<b>NA</b>
7	Objective - Number of indicators produced:10 Result – So far, 29 indicators are available on the plataform.	<b>***</b>
8	Objective : Number of entities that receive the centre newsletter with mobility indicators: 20	<b>O</b>
9	Objective: Number of centre web-site visits per month: 300	<b>NA</b>
<b>NA = Not Assessed O = Not Achieved * = Substantially achieved (at least 50%)</b> <b>** = Achieved in full *** = Exceeded</b>		

This measure suffered some changes, especially in the evaluation part. The majority of indicators that were considered before, were removed, since they would not contribute to assess the observatory in a proper way. Due to this, and also given the late implementation, a more qualitative aproach was adapted. Nevertheless, and given the short time of implementation, most results were achieved to some extent. Despite the fact that this kind of measure is an ongoing work, most of the seeds were successfully planted, such as the mobility pacts, the purchase of the simulator, the traffic counters, and the launch of the web platform. As for the goals that were not assessed, goals 5, 6 and 9 were not measured, since the measure was implemented in a later stage. As for indicator 8, as stated previously, the newsletter idea was dropped, since it wouldn't be efficient.

### C4 Up-scaling of results

Despite the fact that the Observatory is already available to the general public (as well as to the information suppliers), it was released at an late stage, which makes it difficult to properly evaluate its impact on the mobility system. Additionally, there is still important data missing (for example, pollutants emissions, parking data). It is difficult to assess immediate results,

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taking into account that the impact of the observatory is only felt in the medium and long term.

### **C5 Appraisal of evaluation approach**

The acquisition of reliable data to support decision-making at the level of road transports, has not been a priority for both public entities so far (Municipalities and Regional Government) or to other stakeholders (transport companies, major traffic generators, etc. ).

Thus, the Observatory sees itself as the place where the mobility information is collected, analysed, and made available.

For a greater success of the Observatory, it's necessary that the available information is reliable, available in time, and that the system could add more partners. It is also necessary that new improvement processes (including indicators) are included to create collection systems of information that has not been collected by any entity so far. As an example, the systematic traffic counts campaigns, allowing the optimization of the traffic light system.

Regarding the assessment of the observatory, its real impact upon mobility in Funchal can only be properly assessed in the future, given that the observatory's primary focus is supporting decision-making. Therefore, this is a process that will develop over time. As for the evaluation of the observatory, the barriers encountered (technological complexity, lack of information and difficulty in involving stakeholders) were successfully overcome, and it is expected that more partners are involved in the future.

Everything indicates that as the observatory is known, more stakeholders can get involved and contribute to growing it. Political involvement is essential alongside with public dissemination.

### **C6 Summary of evaluation results**

The key results are as follows:

- **Acquisition of 1 traffic software and tool to simulate energy consumption, pollutant emissions and noise of different micro mobility options** – The Municipality and the main public transport operator (also a MIMOSA local partner) recently acquired a transport modelling software, namely VISUM. So far, two training sessions were carried out, including a more advanced one with more comprehensive details. The software acquired includes a module to simulate the noise and pollutant emissions. Although it has not been tested yet, it will prove an important module to assess the traffic impact on the environment in the City.
- **Cooperation protocols established with 80% of the entities with responsibilities in mobility management** – Of all the 17 entities that were contacted, so far, the Municipality already established 9 protocols which correspond to approximately 50% of the total.
- **Number of indicators produced** – The DOW established 10 indicators as a goal. The goal was obviously exceeded, since the platform now has more than 29 indicators fully available.
- As for citizens usefulness, over both years, more than half of the respondents considered the mobility observatory useful.

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- The interviews conducted revealed that the observatory is important and could provide interesting data, according to the interviewees.

## **C7 Future activities relating to the measure**

The evolution of the measure is very dependent on the ability of the Municipality to operationalize the signing of the protocols partnership with the entities that hold all the necessary information.

The availability of indicators depends on access to information for suppliers, since it is not public.

The signing of mobility pacts is important to begin the implementation of an effective strategy for managing mobility.

The success of the observatory relies on establishing protocols and collecting data. The future activities will be to further establish protocols with other entities and increase the number of indicators available on the database. The Observatory is a dynamic entity. In addition to the necessity of updating data continuously, the need to create new indicators implies the existence of a small support team.

The number of partners tends to grow as the number of users (partner or not) is also growing.

It is expected that the Mobility Observatory can grow positively. To achieve this, the Municipality will need to allocate some financial and human resources. In the future, it is also expected that the Municipality will further promote the mobility observatory through conferences, meetings, exhibitions in order to involve more potential partners and establish mobility protocols and pacts.

## **D Process Evaluation Findings**

### **D.0 Focused measure**

#### **D.1 Deviations from the original plan**

In the DOW the launch of the tender process was predicted for month 6-10. Some administrative difficulties were found in launching the tender process to contract an external team to develop the Observatory.

Formally the project started in June 2011. The first presentation of the project to the potential suppliers of information occurred in early September to avoid its realization in the months of July and August which coincide with the summer holyday.

There were some delays in the development of the mathematical models because it was difficult to obtain some data (namely new routes built between 2007 and 2011 and traffic counts between 2006 and 2011) and the public transport operator has considerably changed its network (regarding the public transport network modelled in the scope of the 2007 Mobility Plan). At the moment, the models are already updated and working.

The negotiating process that culminated with the signing of mobility pacts was delayed because it was a pioneering activity and no previous experience existed. This being the first time meant that there was need to break some initial resistances.

## **D.2 Barriers and drivers**

### **D.2.1 Barriers**

#### **Preparation phase**

##### **10 – Planning barrier**

- **Complexity** – The launch of the tender process and the preparation of specifications lasted longer than expected, given the complexity of the measure and the cooperation among stakeholders involved. In Portugal, there isn't any mobility model that is similar to the observatory.

##### **5 – Involvement/Communication**

- **Cooperation among stakeholders** – In the initial stage, some stakeholders were not easily engaged, since some of them showed resistance and reluctance to join the project.

The absence of information about the availability of data for each entity requires further work to identify the sources of information.

#### **Implementation phase**

##### **4 – Problem related barrier**

- **Resistance** – Some of the information holders showed some resistance in sharing information or even refused to share it because of the company's policy of confidentiality.
- **Difficult operationalization** – The operationalization of the data flows between the information suppliers and the Observatory is more difficult than anticipated, especially due to supplier's inertia.

#### **Operation phase**

##### **6 – Institutional/Cultural barrier**

- **Organizational structures** – For the development of the measure, and as established in the Description of Work, the Municipality hired an external consultancy team (TIS, Transports, Innovation and Systems) that specializes in transport and mobility to support the conceptualization, development and implementation of the mobility observatory.

### **D.2.2 Drivers**

#### **Preparation phase**

##### **3 – Cultural driver**

- **Highly innovative** – Measure is highly innovative and since people are becoming more and more aware of sustainability issues the existence of the Mobility Observatory can work as a driver to induce a more sustainable mobility behaviour.

##### **1 – Political/Strategic driver**

- **Vision** -This measure is part of a vision and policy agenda of engagement with citizens in developing measures and actions aimed at better sustainable mobility and transport in the city.

## **6 – Positional driver**

- **Mobility policy** - As part of a strategic framework for policy planning in the area of mobility, framed by the vision of sustainability that is intended for the municipality. The MIMOSA served as a catalyst for its implementation.

## **5 – Involvement/Communication driver**

- **Political commitment** - The success of the observatory is built on the establishment of entities that are part of this platform. For this reason the strong commitment by the political executive was a key factor in the communication and stakeholder involvement. As suggested by one of interviewees, events will be promoted regularly to boost partnerships that could support the Centre.

## **Implementation phase**

### **1 – Political/Strategic driver**

- **Shared mobility policy** – The involvement of stakeholders in the creation of the observatory is an important step in defining convergence strategies articulated between them and the Municipality in order to optimize mobility and transport, with benefits for all involved parties.

### **5 – Involvement/Communication driver**

- **Communication between stakeholders** - The establishment of positive and constructive relations between the various stakeholders was critical for the project implementation and facilitated the conduction of tasks.

### **6 – Positional driver**

- **Mobility policy** – An initial view of the observatory is part of a strategy outlined by the Mobility Study (2007). Its findings were widely disseminated among stakeholders with a view to raise awareness of the strategies outlined by the Municipality for the transport and mobility system.

### **7 – Planning driver**

- **Planning of partnerships** - The commitment and motivation on the part of the project team to determine the requisites necessities, as well as assessing needs and expectations of stakeholders, contributed to facilitate the process of implementation.

### **8 – Organizational driver**

- **Mobility Partnerships** - A clear and effective leadership allowed the establishment of partnerships with stakeholders.

## **Operation phase**

### **8 – Organizational driver**

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- **Mobility Partnerships** - Meeting the commitments with the Municipality in mobility partnerships begin to foster new planning processes, through the development of specific measures aimed at a better mobility.

#### **1 – Political driver**

- **Strategy policy** – The implementation of the observatory follows a vision of sustainability that allows positive impacts for the convergence of common interests among the actors involved and the Municipality, in the process of planning and managing the city.

#### **7 – Planning driver**

- The mobility observatory demonstrates to be an important tool in the planning exercise in the technical area. It is also an important instrument for decision making.

### **D.2.3 Activities**

#### **Preparation phase**

##### **5 – Involvement/Communication activities**

- **Selection of sources of information** – During this stage, 80 indicators were chosen along with the potential stakeholders.
- **Presentation session** – The project has been presented to the partners, in a concerted effort to involve them in the discussion of sustainability issues and finding joint solutions through mobility partnerships.

##### **8– Organizational activities**

- **Protocol draft** – During this stage, the protocols were drafted to be signed by the entities.
- **Definition of the mode of operation of both the platform and observatory** - Internal meetings with staff from various departments of the Municipality, particularly with the Department of Systems and Information Technologies, where the platform is uploaded.
- **Definition of approach** – Definition of methodology to conduct the activities

#### **Implementation phase**

##### **7 – Positional activities**

- **Strategic vision** – this measure follows a sustainability agenda as part of a combined program of strategic actions, reasons for the involvement and participation of agents.

##### **3 – Organizational activities**

- **Data Sharing Platform** - building a platform for data sharing is an important tool not only for the Municipality, but also for all those involved, as it allows the articulation of various entities with common goals.

##### **5 – Involvement/Communication activities**

- **Involvement of all stakeholders in the establishment of the observatory** -

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In every stage of the project, especially in the implementation phase, the involvement of stakeholders was guaranteed so that these can contribute constructively for the implementation of the observatory.

### **Operation phase**

#### **7 – Positional activities**

- **Involvement of stakeholders** - To ensure the motivation of stakeholders, meetings are taking place regularly in order to foster the development of joint actions to improve mobility in the city.

#### **5 – Positional activities**

- **Planning activities** - In order to operationalize mobility partnerships, the drafting of concrete actions to improve mobility in the city is being developed with stakeholders.

### **D.3 Participation**

#### **D.3.1. Measure Partners**

**Measure partner 1:** Municipio do Funchal Municipality of Funchal - Leader in the development and main responsible for all activities within the measure.

**Measure partner 2:** Madeira Tecnopolo - as MIMOSA partner it supported the development of the observatory with expertise in all stages of the measure.

**Measure partner 3:** Horários do Funchal - Local bus operator and MIMOSA projet partner. Contributed for the establishment of the observatory platform through the share of ideas and support through expertise in mobility.

#### **D.3.2 Stakeholders**

What follows is a listage of the partners involved in the observatory, according to their level of participation.

<b>Consolidated pacts</b>	
<b>Entity</b>	<b>Description</b>
Universidade da madeira	Madeira university
Horários do Funchal	Local public transport operator
Madeira Tecnopolo	MIMOSA partner who is focused on technological innovation and research of new technologies of information and communication
SESARAM - Serviço de Saúde	Hospital
ACIF	Association that represents commerce, tourism, services and industry in the Region
<b>Partnerships to be consolidated</b>	
<b>Entity</b>	<b>Description</b>
Direção Regional de Educação	Governmental entity that manages schools
SAM - Sociedade de Automóveis da Madeira, Lda	Interurban public transport operator
ACIF	Association that represents commerce, tourism, services and industry in the Region

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<b>Consolidated partnerships</b>	
<b>Entity</b>	<b>Description</b>
ANAM	Madeira airport
Direção Regional de Estatística	Regional Department of Statistics
Horários do funchal	Local public transport operator
AITRAM	Taxi association
Direção Regional de Ambiente	Environmental Regional Department
Vialitoral	Company that manages a part of the road infrastructures
SEP	Company that explores parking lots located in Funchal
PSP	Police
SESARAM	Hospital

## **D.4 Recommendations**

### **D.4.1 Recommendations: measure replication**

Replication of the mobility observatory

Keywords: Involvement, creation of communicational channels, articulation between entities, definition of common goals

In the island of Madeira and particular in the city of Funchal, the coordination between agents that integrate mobility and transport system is based on weak relations.

The cities that doesn't have a policy of exchanging information between institutions, gathers all the conditions to adopt the same strategy as Funchal.

In Portugal the communication bonds are established in a very vertical and limited way. For the replication of this measure, it is necessary that entities see the observatory as an asset and an important database that doesn't jeopardize their activity, and is considered an important tool that allows the establishment of a win-win relationship with obvious gains for both parties.

It's also important that there is a deep political commitment and willingness to explain the key advantages of a mobility observatory. Similarly, it is important to ensure the confidentiality of both sides in order to not create discontentment. In order to ensure the adherence of a significant number of entities with relevant info, it is necessary that the information provided can prove to be important for the entities.

Cities interested in implementing this measure need to ensure the active involvement of stakeholders. The involvement of the political executive is also extremely important, because only with consistent effort throughout all stages of the implementation of this measure can one not only ensure to overcome barriers, but also to obtain a greater commitment of stakeholders in the development of the observatory.

### **D.4.2 Recommendations process:**

The implementation of the observatory is to fill this gap I the planning process. The involvement of stakeholders is vital in this process, and crucial to building solid institutional relationships to define policies that could articulate mobility. This involvement has been

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achieved through an established communication process individually with each entity in order to customize their participation in the project. This procedure proved to be successful and is a driver for the development of the observatory.

It is important to ensure that the observatory is implemented at low costs, whether in terms of equipment or human resources. Additionally, it is important to establish a communicational channel in which each entity has at least one or two people responsible for the process.

As for the politicians, it's important to involve them in a way to promote the positive impact that the sharing of information have.