

DELIVERABLE 7.3e: FOLLOWER CITY REPLICATION PLAN

CITY OF VALLETTA

WP 7 – REPLICATION

Graz



Porto



Suceava



Cork



Valetta



Follower Cities of GrowSmarter

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1 Objective

The Grow Smarter Follower Cities (FCs) are committed to preparing for the replication within their territories of the Smart Solutions demonstrated by the Lighthouse Cities (LCs). In order to ensure appropriate and effective transfer of knowledge, experiences and Smart Solutions, the FCs have developed a baseline assessment for replication and an implementation plan of selected measures in the medium and long term, reflected in this document.

The objectives of this Replication Assessment and Implementation Plan include:

- Identify and assess the full potential of replication and up-scaling of Smart Solutions on a city level and for specific districts
- Provide a matrix for FCs to develop their smart city projects through in-depth understanding of concept, approaches, applications, opportunities, challenges, needs, success factors of smart city applications in LCs
- Support related and necessary local smart-city stakeholder engagement
- Support the political and technical capacity development process through mapping the framework conditions for deploying Smart Solutions and identifying opportunities and needs for a knowledge transfer
- Identify and select key actions needed to implement and replicate the GS smart solutions on a city/district level.
- Define a replication plan for the selected GS smart solutions in accordance to city priorities and to address city sustainability challenges.

2 Engagement of parties for Assessment and Replication

The Assessment Report and Replication Plan has been prepared by all GS FC. The cities of Cork, Graz and Porto are supported through all activities by ICLEI while Suceava and Valetta are supported by ICLEI and REC.

The different stakeholders that are supporting the assessment and future implementation of smart solutions in the city of Valetta include:



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3 Timeline and replication roadmap

The Smart City Replication Assessment and Plan can be understood as a living document that which is continuously (and at least annually) updated and refined as needed to reflect the latest developments of the potential and framework conditions for the replication of Smart Solutions. Two public reports are foreseen; the first for month 6, the second for month 30. Subsequently, the Replication Assessment will lead to the development of a Replication Plan in month 48.

The Replication Assessment and Implementation Plan is part of the overall replication roadmap of the Follower Cities (FCs) of GrowSmarter and can be characterized by the following milestones:

Milestone 0

- FC made initial selection of LCs’ Smart Solutions for

Milestone 1

- Establish a multi-stakeholder Smart City Liaison Group



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- Milestone 2** • 1st Replication Assessment for deployment of Smart
- Milestone 3** • Establishment of capacity development programme and stakeholder process in FC
- Milestone 4** • 2nd Replication Assessment for deployment of Smart
- Milestone 5** • Development of Replication Plan in FCs
- Milestone 6** • Up-scaling and replicability Report



4 Structure of the Replication Assessment and Implementation Plan

The Smart City Replication Assessment and Implementation Plan consists of the following main sections:

- | | |
|--|---|
| Smart City Replication Profile | <ul style="list-style-type: none">• Mapping the overall framework conditions and potentials for replication within the city territory |
| Smart Solutions Selection | <ul style="list-style-type: none">• Description of replication potential of selected Smart Solutions of LCs within FC |
| Smart District Replication Profile | <ul style="list-style-type: none">• Per potential replication site/district: Mapping of district related framework conditions relevant for the replication of the selected solutions |
| Smart Measure Specifications | <ul style="list-style-type: none">• Assessment and adaptation of measures towards the most effective deployment and integration at site/district level |
| Replication Plan for Smart Measures | <ul style="list-style-type: none">• Definition of activities and actions required for the replication and future implementation of the specific smart solutions on a city and district level. |



5 Replication Assessment of the Follower City Valetta

5.1 Smart City Replication Profile

5.1.1 Mapping the overall framework conditions for replication within the city territory

5.1.1.1 Q1 What is the overall replication potential for Smart Solutions until 2020 and beyond?

Energy Mix

The Government of Malta is fully committed to continue with its policy of having a sustainable national energy mix brought about by four main policy drivers including the implementation of a number of solar power energy related projects; conversion from the use of heavy fuel oil to a gas-fired electricity generating plant which is now fully commissioned and the purchase of electricity from the European Continent through the installation of the Malta-Italy electricity inter-connector, use of diesel mixed with bio-fuel for transportation.

Following these policy initiatives, the Government has hence implemented and still is implementing a number of measures to diversity Malts's energy mix and the use of such energy sources. Malta has been connected to the European energy grid since the 24th March of 2015, as the electricity interconnector (connecting Malta to Sicily) was fully commissioned and the Maltese grid was synchronized with the Italian grid for the first time.

The Combined Cycle Gas Turbine (CCGT) 200MW plant and the Liquefied Natural Gas (LNG) facility powered by natural being sourced from the LNG plant has been commissioned earlier on this year. The LNG facilities will also supply gas to the existing 144 MW Diesel-operated power plant, known as the BWSC plant, which has been converted to run on natural gas. Enemalta (the sole energy provider for the Maltese islands) started receiving its first gas-fired electricity in April 2017. This new energy source is expected to reduce Malta's dependency on electricity generated through oil-fired sources.



Furthermore, the Maltese Government is also working on a gas pipeline connecting Malta to the trans-European Natural Gas Network via an approximately 155 kilometre pipeline to the port of Gela in Sicily to deliver natural gas for the generation of electrical power. This project is currently at design stage and is looking into the future demand for gas, security of supply, competitiveness, sustainability, and identifying those aspects that qualify it as a Project of Common Interest (PCI).

Furthermore, one also need to point out that during the last few years, the electricity provider had finished installing in all of the Maltese residences and businesses, a Smart Meter, whereby data of the respective electricity consumption can be gathered and billed remotely to the effect that all Smart Meters are now connected to the electricity billing system.

It is expected that in the future Malta will have an intelligent SMART electricity grid in the future to complement the expected increase in national Electric Vehicle fleet.

In terms of the Valletta Region, certain actions have been undertaken which target the geographical area as the two districts with the highest recorded emission levels. Three projects have specifically target the Valletta Region:

- The 'Vertical Connections Project' has improved the accessibility of the city through the installation of a vertical lift, facilitating connectivity between the lower part of Valletta to the highest upper main point, adopting a cleaner transport technology. The direct beneficiaries of the project include the local population of Valletta and the Grand Harbour area and the Cruise Liner incoming tourists.
- The 'PORT-PVEV Project' tackled the renewable energy theme by providing for the installation of solar power generation systems at port administration buildings and within port areas. The pilot actions aim to realize joint innovative interventions to guarantee reducing energy consumption into the ports and their public facilities. The project allowed an Italian-Maltese exchange of solutions to increase the eco-efficiency of the ports with the diffusion of sustainable and energy-saving practices for sea transport. In particular, the following actions were taken:



- ✓ Identification of physical interventions to be implemented in the port area and a high level strategic environmental assessment to evaluate ex-ante the actual and future environmental efficiency in the port and hinterlands.
- ✓ Feasibility study on the provision of renewable energy to power berthing vessels to include drafting of local port plans to identify the best location for a shore supply pilot targeting heavily polluting ships in harbour.
- ✓ Installation of PV panels on identified buildings (Transport Malta Head Office) in respective port areas.
- ✓ Installation of Photo-voltaic powered Vehicle Recharging Car Ports.
- ✓ Installation of normal and fast vehicle recharging infrastructure.
- ✓ Purchase of 13 electric vehicles which replaced and added on the current fleet of Transport Malta Port Activities

The project has achieved a total of 185 tonnes of CO2 emission savings within the region.

- The 'D-Air Project' which focused on the Airport (located barely 7km from Valletta Centre and within in the Southern Harbour District) Carbon Footprint, on which an Implementation Plan has been developed, listing measures focusing on surface transport accessing the airport and airport operations. If implemented the Plan will result in 39,000 tonnes of CO2 emissions saved.

Renewable Sources of Energy

DECISION No 406/2009/EC on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020

- 20% RES of Total Energy Used

As of 2010, Malta had planned to achieve its 2020 renewable energy targets through a number of identified major projects of solar, wind and waste to energy combined heat and power plants. However, studies highlighted significant environmental concerns surrounding the proposed wind farm projects. Furthermore, attempts to tap NER300 funds for the development of a floating wind farm were also



unsuccessful. As a result, renewable energy will be generated from a higher number, but smaller capacity sources of renewable energy distributed across the Maltese Islands. Priority is given to deployed technologies, mainly solar photovoltaic systems and solar water heating.

Investment in PVs is being incentivised through grants and attractive feed-in tariffs. Schemes financed through national and ERDF funds have been launched to assist domestic households. The scheme launched in May 2013 was taken up by March 2014 and resulted in the installation of circa 23MWp of PV systems, generating around 37GWh/ year. By the end of February 2015, 8331 households benefitted from this grant. The industrial and commercial sectors as well as non-profit organisations have been assisted through ERDF funds, whilst Local Councils could tap national funds. The Government is banking on tapping new ERDF funds to further incentivise the deployment of PVs within the domestic and commercial sector. In fact, the Operational Programme for ERDF and Cohesion Fund for 2014–2020 published in March 2015, re-extends the scheme until 2020.

Smart meters are installed for every electricity consumer, with the aim of changing consumer behaviour through information on energy consumption. By the end of February 2015, nearly 96 per cent of meters were installed.

Transport

Malta has a very ambitious medium to long term program as far as transportation in Malta is concerned. This programme was kick started with the public transport reform programme which was kicked off in 2011, with a number of additional sub reforms taking place in the interim period. The result of this was that by end 2016, Malta has totally reorganised its national Public Transport to a modernised bus public transport system using the latest Euro V and Euro VI buses. The results of the reform speaks for themselves as from the 31.7 million passengers using public transport by the end of 2016, the number of passengers using public transport rose to 43.3 million passengers per year.

A major corner stone in public bus transport services was the introduction of the **Tal-Linja Card** which is a debit card used by public transport users similar to the London Oyster card. In addition, the transport operator also introduced real time



data at key bus termini and bus stages to indicate the time of bus arrivals and departures. This service is also complemented by the introduction of the *Tal-Linja App*, which is a dedicated journey planner for public transport users. In the very near future, Transport Malta will also introduce a multi modal national journey planner.

Concurrently with the bus public reform programme, TM also introduced new public maritime ferry services, a ferry service that runs on a schedule in between Malta's maritime ports around Valletta.

By 2017, the number of passengers using this service accounted for one million passengers per year. In 2017, TM started to design three new additional routes and infrastructure to complement them to include additional maritime ports in the Valletta region as well as further up North in St. Paul's Bay to Sliema and Valletta as a pilot project in its own right.

In addition, a substantial investment is being earmarked to introduce passenger waiting facilities which are coupled by ITS deployment to provide real time information services.

In the meantime, in 2013, the Government and Transport Malta upped the efforts to promoting the use of more sustainable modes of transport and the use of electric vehicles by setting up the Malta National Electromobility Platform and the publishing of the Malta National Electromobility Action Plan.

In 2017, Transport Malta published for the first time a national strategy for Transport, entitled the National Transport Strategy 2050 and the National Transport Master Plan 2025. A major undertaking in the Master Plan is that by 2025, half of the national vehicle fleet will be made up of electric vehicles which will be powered through a mix of PV farms and the gas powered Power station recently in operation.

The Action Plan also include a roll out programme of a Electric Car Charging Network to service electric vehicle owners by 2020 made up of 500 charging points. This will complement the already deployed 114 networked charging points located in key public parking areas around Malta and Gozo.



In addition, TM is also currently working to introduce a national e-car sharing programme and a national bicycle and e-bike sharing programme.

Other initiatives include a full deployment of ITS services from the ground up, a process kick-started with the completion of the MODUS project and the carrying out of SUMMITS I, II and III phasing of ITS deployment to improve and introduce real time intelligent traffic management services and introduce a host of new ITS backed transport services and real time information services in line with the European ITS Framework Directive and C-ITS.

Furthermore, TM is currently working on a detailed study to implement an Mass Rapid Transport System to complement the current bus public transport and maritime public transport services.

The final aims and objectives of the Government of Malta is that by 2025 we will move to an ITS based transport ecosystem.

Current Transport Scenario Including Modal Split

Malta has an extensive road network stretching over 2,400 kilometres of road in 2014. Malta also has one of the densest networks in the world with 762 km of roads in every 100 km² of land area. Key sections of the Maltese road network form part of the Trans-European Network – Transport (TEN-T).

Despite continued land use decentralisation away from the Valletta hub area, the average length of car trips during the morning peak is quite short – 5.5km, this compares well with commuter journey distances within most other European towns and cities but is much lower when compared at a national level. The average number car trips made by drivers on a typical weekday in Malta is 3.20 which is notably higher than averages for other selected countries reported in the 2012 JRC study¹ for which daily car trip averages range from 2.4 in Spain to 2.9 trips in France.

¹ *Driving and parking patterns of European car drivers - a mobility survey, JRC 2012.*



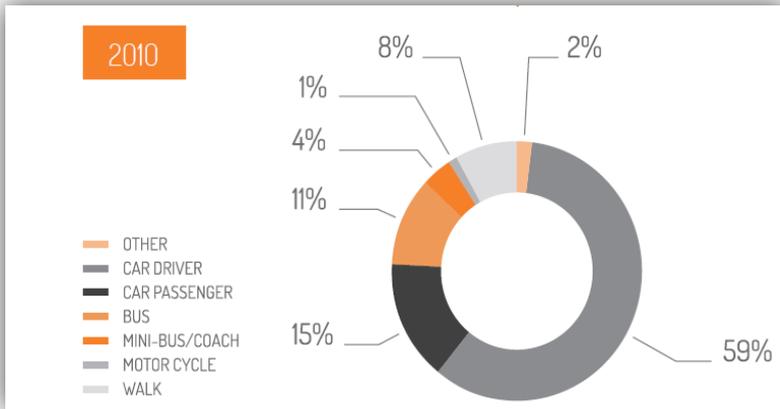
Around 74% of trips are made by car and bus travel only accounts for 11% of the national modal split. Most car trips are made as drivers, which equates to very low average car occupancy (1.25 people per car). About 50% of trips take less than 15 minutes; business car trips take an average time of 19 minutes which is notably less the average time for sample of countries reported which ranges from 25–30 minutes.

Trips by bus take 33.5 minutes on average (excluding time waiting for the bus and walking to and from bus stops). The predominance of road transport is confirmed by the high rate of motorisation, which is 759 licensed vehicles/1,000 inhabitants in 2013²⁹. Other features of the private vehicle fleet are the high average vehicle age of 13.6 years (two-thirds of which are petrol engine) and the low penetration of low-emission technologies (0.22% of the stock of licensed vehicles in 2013). The comparison between traffic flows and road capacity indicates that congestion problems during the most critical morning peak hour arise primarily in the central section of the TEN-T network, particularly around Marsa, Santa Venera, Qormi and Kappara, as well as the distributor linkage between the airport and the urban centre of Qormi. There are also congestion problems on certain sections of the roads in the coastal area of Sliema, on the radial axis towards the Valletta / Floriana Peninsula as well as on different urban sections in the Inner Harbour.

Privately owned vehicles represent the main mode of transport in Malta, with modal shares that range from 50% (movements inside the peninsula) to 90% (interzonal movements not involving the Harbour). Despite the lower use of private vehicles inside a region, the public transport modal share is not usually over 20%, as soft modes such as walking or cycling have a higher modal share within a region than at a national level due to the relatively short distances of travel. The higher share of public transport (25–30%) is obtained when connecting the Valletta and Floriana peninsula with other regions.

The latest Modal Split Study carried out for the Maltese Island is highlighted in the Figure below, which is extracted from the National Transport Strategy 2050:





The coastal area around the Valletta and Floriana Peninsula (hereinafter referred to as the ‘Valletta Hub’) is a remarkable focus of trips in Malta. When examining the peak hour for internal travel on weekdays between 7:30hrs and 8:30hrs (which accounts for over 11% of the daily travel demand), some 30,000 people movements are observed to involve the Valletta Hub either as an origin or destination of a trip.

Within the Valletta Hub, the Inner Harbour is the main destination and the main inter-regional connectivity is with the North West region, which accounts for some 68% of people movements to and from the Valletta Hub. There is also significant amount of mobility that takes place solely within the Valletta Hub area, with more than 9,400 short-distance trips occurring within this limited geographical area in the morning peak alone. These trip patterns mainly occur inside the North Inner Harbour and between the North Inner Harbour and the South Inner Harbour.

Road freight movements are mainly related to short-medium range deliveries across the Maltese territory. Traffic with industrial estates/ports/airport, and the transportation of goods between Malta and Gozo accounts for small shares of total freight movement (<10%). Freight movements are largely concentrated around the central sections of the Maltese TEN-T network, especially across the critical road system of Marsa, Hamrun and Santa Venera. These movements are higher during the AM peak hour.



For more detailed information, please refer to the following link:
<http://www.transport.gov.mt/transport-strategies/strategies-policies-actions/national-transport-strategy-and-master-plan>.

Energy for Transport

DECISION No 406/2009/EC on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020

- 10% of TRANSPORT FUELS GENERATED FROM RENEWABLE ENERGY SOURCES

In order to promote the use of biofuels, a biofuel substitution obligation has been imposed on importers/wholesalers of fuel for the transport sector. The obligatory share for 2014 is equal to 4.5 per cent. In 2013, the RES share in road transport was 4.04 per cent (pending audit) and the provisional figure for 2014 is 4.54 per cent.

Other measures aimed at reducing the impact of transport on climate change and air quality are in place.

An Annual Circulation tax has been introduced by Government whereby all vehicles registered with the Authority for Transport in Malta shall pay a fee according to the vehicle specifications, emissions and age. The tax is applicable to all petrol and diesel engine vehicles.

Schemes are also in place aimed at reducing the number of old motor vehicles from the road while promoting the use of clean and energy efficient vehicles as a way to contribute towards the reduction of traffic generated pollution and improvement of air quality levels. **A grant scheme to incentive the purchase of new, category M1 motor vehicles (passenger vehicles with a seating capacity of up to eight passenger besides the driver) is aimed at reducing the number of old motor vehicles from the road and thus reducing air emissions.** Subject to various conditions, the grant scheme provides the following incentives:

- a) €900 will be given to persons registering a new Category M1 vehicle with CO₂ emission levels up to 100g/km;



- b) €700 will be given to persons registering a new Category M1 vehicle with CO₂ emission levels between 101 and 130g/km;
- c) €3,000 will be given to persons registering a new Category M1 Plug in Hybrid vehicle with CO₂ emissions 0–50 g/km;
- d) €2,000 will be given to persons registering a new category M1 Hybrid Vehicle with CO₂ emissions between 51–65 g/km;

Such grants are given upon the purchase of a new M1 motor vehicle that qualifies for the grant scheme whilst at the same time de-registering a vehicle in the same category.

Grants for converting combustion engine vehicles to run using LPG/Autogas are available for Category M1 vehicles. Such converted vehicles benefit from a reduction of 10% on the amount of CO₂ which is either reflected in a reduction on the amount of the annual circulation fee or a reduction on the amount of registration tax upon registration, depending when the vehicle was registered.

Electric Vehicles

An Action Plan specifying the manner of deployment of both the charging infrastructure and the continuous entry into the market of battery electric vehicles has been published by Government in November 2013. Entitled the Malta National Electromobility Action Plan, the document identifies 22 projects earmarked to facilitate the deployment of 500 charging points and 5000 electric vehicles. Most of the projects are earmarked for EU funding, be it ERDF, CF, and centralized EU funding programmes.

Several of the projects earmarked have already commenced or been completed in the past few years. These include the DEMOEV project which was the first project introducing electromobility to the islands. The project installed the first basic Electric Car Charging network which has seen the installation of 90 charging points across the islands. The project also introduced 24 full electric vehicles to the national fleet and distributed the vehicles among volunteers in order to test at first hand the feasibility of the new technology.



This project was followed by the PORT-PVEV project which targeted businesses and promoted sustainable mobility as part of day-to-day operations. The project installed three solar charging stations incorporating 4 charging points each. The stations generate solar power on site and use it to directly charge electric vehicles. The service has been offered to the public free of charge. As part of the same project, 13 full electric vehicles have been introduced to the national fleet and are used by Transport Malta as part of daily operations.

In line with the Action Plan mentioned above, Government has introduced a number of schemes aimed at the improvement of clean vehicles and supporting infrastructure. The financial incentives were first introduced in 2014 and have been published annually since then. As the public accepts the concept of electromobility, the incentives keep improving with the scheme published in 2017 offering the following:

A Grant of €8,000 is provided to private individuals, private companies, Local Councils and Non-Government Organisations registering a new full electric vehicle while de-registering and scrapping another combustion engine propelled vehicle which is at least 10 years old from year of manufacture; €5,000 is given when registering a new or used (conditions apply) full electric vehicle and not de-registering and scrapping a combustion engine vehicle. The second hand registered full electric vehicle should not exceed 12,000 km on the odometer and should not be older than 24 months. In addition, €2,000 grant is given when registering a new or used electric quadricycle.

For the business community, the maximum amount of grant is provided according to the De Minimis Rule (i.e. a maximum of €200,000 in de minimis aid per single undertaking over a period of three consecutive fiscal years).

Spurred on by DIRECTIVE 2014/94/EU on the deployment of alternative fuels infrastructure which states that:

- Recharging points should be established taking into account the number of electric vehicles estimated to be registered by the end of 2020 in each Member State. As an indication, the appropriate average number of recharging points should be equivalent to at least one recharging point per



10 cars” For Malta, the target of BEVs registered by 2020 is 5000, therefore a total of 500 charging points are to be installed on the road network by then

The government of Malta issued further incentives to facilitate market entry of the latest charging technologies being introduced on the European and International markets.

With respect to the deployment of public electric vehicle charging network, Government has adopted a phased approach such as to make sure that the deployment is carried out in a manner to benefit from the continuous developments taking place in the field of electric car charging infrastructure as well as the developments of the vehicles themselves while also meeting actual demand.

In line with the National Electromobility Action Plan mentioned above, Government has introduced the following schemes:

a) Government Grant on the Purchase and Installation of Electric Vehicle Charging Pillars for the Business Community and NGOs

This is a scheme open to the business community and NGOs that the Government, in conjunction with Transport Malta, is launching to incentivise the installation of Electric Vehicle Charging Pillars.

The grant will amount to a maximum of €2,000 per electric vehicle charging pillar. Every eligible entity can install more than one electric vehicle charging pillar but shall be entitled to only one ‘total’ grant under this scheme which will be inclusive for up to a maximum of five (5) charging pillars. A company may install the pillars specifically for its use or for the use of its clients.

b) Government Grant for the Upgrading of New Plug-in Electric Vehicle Importers’ Service Centres and Staff Training

This scheme aims to incentivise the upgrading of Electric Vehicle Service Garages. It aims to assist the market entry of the new plug-in electric vehicles in the Maltese Islands which are not yet available on the national market while assisting car importers to start offering support services on their sold EVs.



The grant is set at a maximum of €25,000 per applicant car importer, and their current service garages to cater for the maintenance of plug-in EVs; both on EV models already sold in Malta as well as new models which have not yet been introduced on the local market. The grant can also be used for staff training and re-training.

The Action Plan, however, also covers the deployment of alternative technologies for transport such as hydrogen propulsion and related infrastructure.

References:

- Malta National Reform Programme, Ministry of Finance, April 2015
- Budget Document 2017, Ministry of Finance, November 2016
- Malta National Electromobility Action Plan, Ministry for Transport and Infrastructure, November 2013
- Programming of European Funds for Malta, Operational Programme I (ERDF-CF), Ministry for European Affairs, March 2015

5.1.1.2 Q2 How does the “Smart City” approach feed into/connect with your existing local planning processes?

Transport Malta has just completed the National Transport Strategy (NTS) and National Transport Master Plan (TMP) covering all relevant transport modes (land, public transport, maritime, and aviation) for the short, medium and long term. It is to be noted that during the drafting of the strategy and master plan, Transport Malta had carried out a continuous stakeholder consultation process with all major stakeholders including the Planning Authority so that the policies of both entities will be synchronised with each other.

By means of this strategy, Transport Malta has laid out its long term vision of how transport will shape itself by 2050. The Masterplan on the other hand offers a detailed Action Plan on how the first part of the strategy will be realised for the short and medium term spread out over a period of 10 years..

The Transport strategy was compiled in parallel with the new Strategic Plan for the Environment and Development (SPED) which was drawn up by the Malta Environment and Planning Agency (MEPA) which plan strictly deals with land planning issues.



It is to be noted that as from 2017, Transport Malta will start working on the drafting of a fully fledged Sustainable Urban Mobility Plan (SUMP) for Valletta and the whole of the Valletta region. This project is being financed by the CIVITAS Action Programme through the Destinations Project. The SUMP will include a number of measures which will be implemented or piloted and then audited to ascertain whether the results that they were intended to achieve in the first place have been achieved.

Moreover, further to the EU Commission's Communication entitled 'Together towards competitive and resource-efficient urban mobility' Transport Malta sought to introduce the concept of urban planning at a local and regional level. So far, such planning has always taken place at a national level, which shouldn't be surprising considering Malta's size. However, there are certain benefits to be had if each local council, or groups of local councils within the same region, were to take a higher level of responsibility and interest in the medium to long-term development of their locality.

To promote the concept of sustainable urban mobility planning, as part of the events held in Malta during the various European Mobility Week editions, Transport Malta subsidizes a Permanent Measures Award. The Awards consist of a competition open to all local councils for the best permanent measures proposals, which measures must promote sustainable mobility and planning within the locality. The winning Local Council is awarded a cash grant to implement the proposed measure. The Awards are intended to introduce Local Councils to the concept of thinking on what needs to be done in terms of sustainable mobility within their localities as well as serve as an incentive for Local Councils to start exploring different forms of funding to implement the measures which are right for their localities, including private public partnership arrangements and participation in EU funded project.

5.1.1.3 Q3 Is there a (strategic) plan and organizational structure in place to become a "Smart City"?

It is inevitable that by 2025, not only Valletta City but the whole of Malta will become a country which can be regarded or considered to be as one City, a Smart



City or better still, a Smart Island. This will not happen in the short term but on the longer term, as Malta will continue to put in place the respective infrastructure and ICT-based services.

The smart city concept will not only be applied in a holistic manner to transportation, energy and planning but also to data gathering exercises and the provision of all government service provided to the general public. This process has long been started and will continue to be applied until all Government services will be digitized and provided on line. The use of mobile telephony and computer peripherals among the population is one of the highest in Europe which reflects the extraordinary economic growth that Malta is currently experiencing.

From a transport perspective, Transport Malta is already moving in that direction, whereby an ITS and c-ITS based ecosystem will be implemented on the medium to long term. For this to happen, Transport Malta is planning in this direction already and by laying down the key foundations of the transport ecosystem in the short term as more ITS infrastructure, smart EV charging infrastructure with the use of solar energy together with the presence of more electric vehicles and autonomous driven machines are introduced in the national vehicle fleet, all based on Artificial Intelligence.

In the meantime however, the Government, besides developing the smart city concept it has also embarked to introduce in Malta by importing and implementing the SmartCity® product, a concept developed by TECOM investments of Dubai City in October 1999 and which starting officially to implement the project in 2000. The SmartCity® concept is a product of building a city based on digitisation and a knowledge based society thus serving as a test bed for new ICT-based technologies from the ground up. It will host a number of leading ICT based companies including Smart Health Services. Apart from Offices, retail outlets and so on, the small city will also include Smart accommodation units as described below.

This project is being developed along the east coast of Valletta in the limits of Kalkara, where recently the Government had opened a new Science park on the outskirts of SmartCity Malta (SCM) which is the first European outpost of this



SmartCity Global method of business townships, creating a network of opportunities for knowledge based companies.

It will have the most advanced and reliable ICT infrastructure available in Malta today. Through progressive implementation of technology and services, SmartCity Malta has developed its proprietary ICT infrastructure concept to meet the technical demands of mission critical digital operations.

Environment Sustainability comes with:

- Rainwater harvesting and storm water management
- Use of water efficient landscaping
- Use of solar photovoltaic panelled LED lights and energy efficient LED street lighting
- HVAC LED optimization and VRV system
- Heat recovery wheels
- Limited glazing in build environment
- Appropriate metering to meet energy end use.

5.1.1.4 Q4 Are there synergies and/or conflicts of the “Smart City” plan and organizational structure with existing initiatives and their structures within the city?

The Smart City Concept fits well as a means of getting the Valletta Region on track to address the environmental and sustainable transport targets. There are no current conflicts and synergies in between all stake holders involved including all national, public and other government agencies as well as the private sector will be build.

Public Financial resources however are still lacking to implement long term measures in this regard leaving dependence for the implementation of these measures on PPP arrangements with the aid of EU funded projects were possible. However some element of public finance and a mix of EU funds will be made available on specific projects and elements of the smart city concept as already indicated above, especially for transport and ITS interventions. Transport Malta also does not include direct private investment as in the case of the e-car sharing programme as well as e-bike sharing programme, whereby both services will form part of the overall smart transport and energy ecosystem.



5.1.1.5 Q5 Which and how are regional and local stakeholders involved in the Smart City strategy and planning process on a city level?

The main stakeholders include:

- Ministry for Transport and Infrastructure
- Ministry for Finance and Investment
- Ministry for Sustainable Development, the Environment and Climate change
- Ministry for Energy and Health

- Transport Malta
- Malta National Electromobility Platform
- Malta Resources Authority
- Malta Environment and Planning Agency

- Valletta Local Council
- Local Councils Association

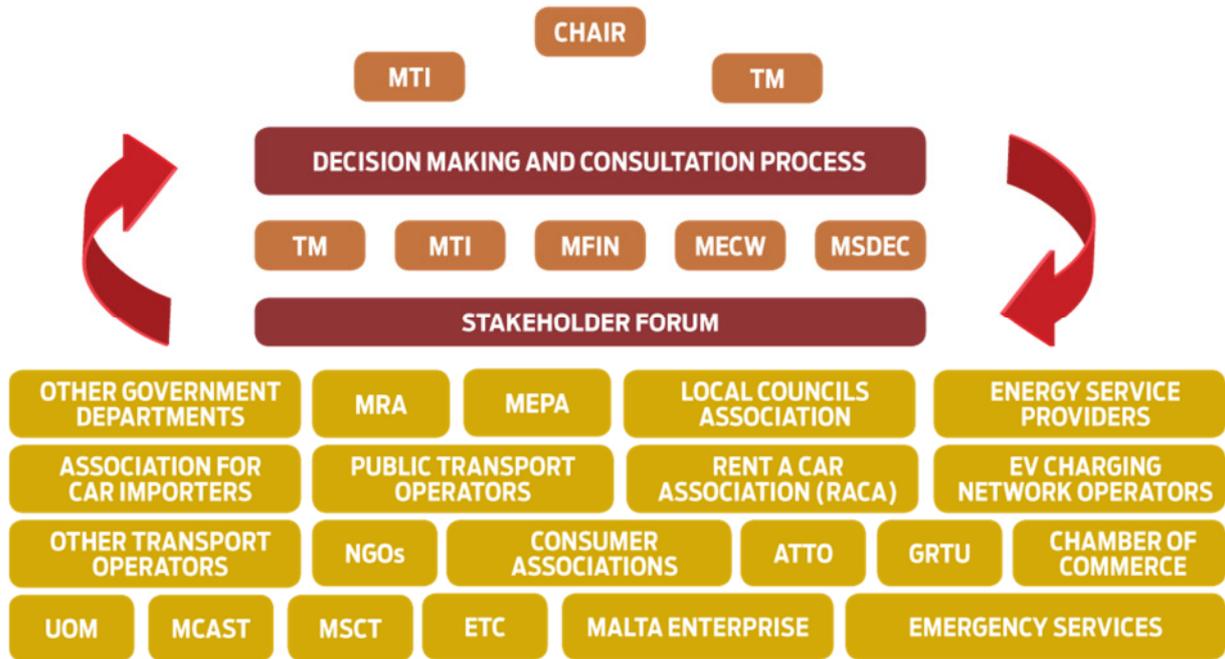
- Energy Service Providers

- Association for Car Importers
- Rent a Cab Association
- EV Charging Network Operators

- Consumer Associations
- General Retailers and Traders Union
- Chamber of Commerce

Organizational structure of the stakeholder forum:





5.1.1.6 Q6 What are past (<5 years) and current projects that are closely related to the "Smart City" concept?

PAST PROJECTS

The **Valletta Vertical Connections Project** – Better accessibility through innovative and cleaner transport (2009 – 2013): Funded through ERDF, the vertical connections project connects the lowest part of Valletta and the highest point of the City through the installation of a lift. The lift facilitates accessibility to the centre of the City and the waterfront where the Valletta Gateway Terminal and the Valletta Cruise Port are situated, guaranteeing modal shift adopting a cleaner transport technology.

MODUS (2010 –2015): Funded under ERDF, the MODUS project strives to mitigate negative trends in Maltese transport by making public transport more efficient and reliable. This is done through various measures that will minimize road congestion and make public transport more attractive, including the introduction of accessible Bus Interchanges connecting public transport routes together and facilitating commuters' shift between routes; launch of two Park and Ride facilities; Extension



and introduction of new bus priority lanes; Introduction of an Intelligent Transport Management System that will allow Transport Malta to monitor the traffic situation on all Maltese roads in real time, all day, every day. The system will enable TM to respond quickly to congested areas and divert traffic to alternative routes. The real-time traffic monitoring offered by the system will also allow TM to respond to accidents as they occur as well as any other incidents that happen on roads, such as flooding. TM will also be able to alert and deploy the personnel necessary to handle the situation at hand without any delay, while diverting traffic in real time using Variable Message signs at key locations.

DEMOEV (2010 – 2014): funded under Life+, the DemoEV demonstration project introduces EVs in Malta (24 in total) to be used and tested by volunteers ranging from households to SMEs. The vehicles' feasibility, efficiency, charge autonomy and design are demonstrated to the general public over 12 months with the aim of expanding the use of green transport.

Through this project the Government introduced the foundations of the Malta National EV Charging Network whereby 90 electric car charging points installed at different strategic locations on the road network to be used by EV owners within the general public.

In addition, a real time EV Charging App was also introduced whereby EV owners and users can pre book or book in real time a charging pillar for a maximum of four hours. The system is an intelligent one, accompanied by a smart electric meter and the app can advise users which charging pillars are occupied, not occupied or out of service.

PORT-PVEV (2012 – 2015): funded under the OP Italy–Malta 2007–2013, this project contributes towards energy efficiency improvements in port operations and the attainment of carbon neutral road transport within the Valleta port area (Grand Harbour and Marsamxetto Harbour) and the respective port areas and hinterlands.

This has been done through the deployment of 13 full electric vehicles to be used and demonstrated by Port Authority officials during port operations activities; the installation of fast charging points within Port Authority premises; the installation of a Photovoltaic farm on the on roof of the Transport Malta Head Office situated at



the Port spanning over 1,704 square meters, which offset the charging of electric vehicles and provide energy for part of the Transport Malta energy needs.

The most novel deliverable of this project was the building and installation of three solar electric car charging stations to test and demonstrate carbon neutral road transport. These solar car ports are intelligent in their own right. Solar energy captured through the PV array on top of the car port is stored in a battery room built adjacent to the car port and connected directly to both the electricity grid and the charging pillar. Once the battery storage is filled up, the excess solar energy produced will go into the electricity grid not to be wasted. Once EVs start to charge during the day, the batteries keep being replenished by solar energy. At night, while car charging takes place, and if the batteries are emptied, the electric cars will keep on charging from the electricity grid.

D-AIR (2012 – 2014): Funded under INTERREG IVC, the D-AIR project contributes to convert airports into environmentally sustainable transport hubs. The project deals with two main elements of airport operations that fall under the competence of public authorities and bodies, namely; surface accessibility to airport zones and carbon neutrality for airport operator activities. Based on the studies and exchange of best practices completed during the lifetime of the project, the end result is an Implementation Plan which has been endorsed by national decision making bodies and which will be followed as guidelines to future policy after the termination of this project in order to create a truly decarbonized airport region.

STREETS (2012 – 2015): Funded under Italy-Malta 2007-2014, the STREETS project contributes towards the strengthening of efficiency, sustainability and integration within a joint transport system aiming at an improved internal (Maltese road network) and external (Malta to Sicily transport) accessibility and competitiveness. The main result provides a contribution to overcoming the current bottlenecks identified within and between Malta and Sicily in strong connection to inadequate land and air infrastructures, logistics and commercial services. This project thus provides the basis for better accessibility through an eco-friendly transport system.

MEDNET (2012 – 2015): Funded under MED Programme, the MEDNET project establishes a network of Mediterranean port authorities and transport experts – on a long-term basis – focusing on the exchange of experiences concerning port and



custom procedures and the simplification of clearance of vessels and cargoes. This is expected to enhance the common understanding of such procedures and promote the introduction of smart information systems to ports and potentially other intermodal nodes. As part of the MEDNET project TM has commissioned a detailed study which serves as a Masterplan to be implemented by Transport Malta to effectively prepare the way for the implementation of the National Single Window – a directive which aims at the harmonization of port procedures, limiting unnecessary bureaucracy and facilitating administration at the port area.

PROMETEUS

The aim of the project, which has a total Budget allocation of €1.4 Million is to stimulate a learning process based on the identification, analysis and exchange of knowledge and practices in the field of e-mobility by the elaboration and implementation of e-mobility action plans, as well as promoting it.

Considering the European framework, the project will carry out a joint analysis of e-mobility approaches in the different partners' regions, highlighting the specific territorial contexts and the respective demands (tourism, urban areas, high vehicle ownership) for electric vehicles.

The second part of the project will identify valuable experiences and practices of local and regional measures that were intended to promote e-mobility in the respective municipalities and regions, which are then further investigated through activities such as study visits and thematic workshops.

Besides electric propulsion itself, implementing and promoting electromobility means also a combination of stakeholders, technologies and activities from different actors (such as public administrations, suppliers, parking operators, companies with transport fleets, private car owners, charging infrastructure installers, suppliers of mobility services, etc.). Such analysis will be used to characterize and evaluate the possible sources and forms of promotion (regulations, aid schemes, Planning Authority incentives in terms of use of the road space, economic incentives, market measures and public awareness).

Based on the findings of such analysis, the project will draw up specific e-mobility action plans to be strongly integrated in the policy instruments identified in each participating region or updating existing ones already in place. A shared monitoring



system will be designed and implemented to measure the Action Plans' effectiveness.

Transfer of knowledge and good practices will be guaranteed both within the partnership through joint project activities and through dissemination activities to the general public including the relevant stakeholders.

Malta will be addressing Axis 3: Supporting the shift towards a low-carbon economy in all sectors (corresponding to thematic objective 4) 4(e) – *Promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multi-modal urban mobility and mitigation relevant adaptation measures.*

The other partners in this project are:

- Austria – Regional Government of Carinthia
- Spain – General Directorate of Industry and Competitiveness of Castilla y Leon
- Italy – Lazio Region
- Slovakia – Presov Self Governing Region
- Italy – Politecnico di Milano, Poliedra

DESTINATIONS Project

By adopting an integrated view of tourist and residents' mobility, CIVITAS DESTINATIONS aims to address the problem of high seasonal mobility demand in smaller touristic destinations. In this regard, the project brings together Funchal (Portugal), Las Palmas (Spain), Elba (Italy), Rhetymno (Greece), Limassol (Cyprus) and Malta who together will work towards finding solutions to common problems.

In such destinations mobility is highly car dependent, and congestion and other harmful mobility impacts bloom when and where they are less desired.

To show how to address this challenge, CIVITAS DESTINATIONS will implement a set of mutually reinforcing innovative mobility solutions in each of the participating sites, who, through testing innovative solutions, sharing experience and learning from best practices .



The DESTINATIONS Partnership brings together six demonstration sites Funchal (Portugal), Las Palmas (Spain), Elba (Italy), Rhetymno (Greece), Limassol (Cyprus) and Valletta (Malta) as well as four follower cities from China who will be following closely the measures implemented in the demonstration sites and learning from experiences gained.

In Malta, the project is focused on the Southern Harbour and Northern Harbour districts termed as the Valletta Region. While housing approximately 50% of the local resident population, the region also houses both the Valletta Cruise Port and the Malta International Airport. As such, the region experiences a high number of annual visitors. As of 2016, 1.8 million tourists visited Malta, 90% of whom also visited Valletta at some point during their stay.

To this effect, the region endures a high number of mobility demand, which – particularly in recent years – is putting a high strain on the local transport infrastructure resulting in high traffic congestion and journey delays. In order to mitigate these negative externalities, a number of initiatives, which have yet been untested in Malta shall be implemented in order to assess their success in the local context and thus form the basis for future transport policy development.

5.1.1.7 Q7 Which sites/districts are projected to be developed in the next five/ten years?

Being the centre for administration, business and transport – including the international airport, both the Grand Harbour and the Marsamxetto Harbour which cater for cargo shipment, cruise landings and the Malta–Sicily ferry, as well as the main land transport hubs – the Valletta Region is the main focal point for development over the medium and long term.

Projects planned for implementation include:

- Pilot projects and relevant studies on the use of hydrogen energy for transport
- E-bike sharing projects and schemes focusing on better accessibility within urban centres for tourists and residents
- E-car sharing projects targeting tourists and commuters
- Developing a Regional SUMP for Valletta



- The improvement of harbour ferry and water taxi landing sites within the Grand Harbour and Marsamxetto harbours to encourage modal shift from congested roads to the sea while better connecting ferry landing sites at Valletta, Sliema and Cottonera together as well as with other modes of public transport through ITS infrastructure
- The introduction of last mile delivery of goods using clean and energy efficient vehicles within the Valletta City
- Extending the Modus project to increase the role of ITS on the national network, particularly within the urban centres, to focus on road safety and intermodality
- Real time app for a national safe cycling route network.
- Safe cycling streets based on the “share the road” concept. Two main corridors will be implemented. The upgraded streets and promenades will include specific signs, speed management, ITS infrastructure, reduction in current speeds.
- The introduction of Smart Local Transport Hubs, 45 in total across Malta and Gozo in key strategic areas where multi modal transport services will be provided for transport users.
- SUMMITS I, II and III. These three projects reflects a three phased approach of ITS deployment on Malta’s road network, much of it to based on Artificial Intelligence.

5.1.1.8 Q8 What are the main areas of interest of the FC in the Smart City concept?

Smart Solution 11 (Alternative fuel driven vehicles):

To build on the electric vehicle charging point network implemented through the DEMOEV project with which forty-five charging pillars have been installed nationwide in Malta, Government will continue the deployment of additional 400 charging points. Current pillars are dual-point, meaning that as of 2014, ninety charging points have been available for public use.

Furthermore, as part of the PORT-PVEV project, additional charging points and solar charging stations have been installed in and around the Valletta port area. Each solar charging station can house up to 4 vehicles at any given time, adding the national charging point network by an extra 11 points for public use. Solar



Charging points are being installed together with batteries in order to store energy generated on site by the solar station and use it to charge vehicles directly; thus making available and demonstrating carbon neutral transportation.

In order to manage the various public charging points, a monitoring platform for the existing charging points is already in place which specifically covers the forty-five pillars that have been installed as part of the DEMOEV project.

However, the setup of a national e-platform is planned. This will connect current and future charging points and enable their remote management and monitoring while ensuring interoperability and the competitiveness of the charging infrastructure on the national transport network. The e-platform must cover the entire island since focusing the remote monitoring on specific isolated regions within the road network would not generate economies of scale.

As stated above, as part of the EU Directive on Alternative Fuels Infrastructure, and in accordance with the targets indicated in the Malta National Electromobility Action Plan, Malta is bound to install a total of 500 charging points nationwide by 2020. This, coupled by the drive to encourage the take up of electric vehicles particularly by the commercial sector – namely, economic operators with sizeable vehicle fleets – the interoperability, monitoring and management of the different charging systems is a high priority for the Government.

As stated above, within the Valletta Region, several electromobility projects will merge over the coming five years. To this effect, Transport Malta is very interested to learn from the experience of other cities on how charging infrastructure for electric vehicles can be effectively managed to provide the best service to its users, maintain an open, competitive market, including different propulsion technologies, while leaving the least possible negative impact on the electricity grid.

Through its participation in the development of Solution 11 and the development of its Replication Plan, Transport Malta aims to achieve the following:

- Identification of the locations where future charging points should be installed in the Valletta region (which encompass the Inner and Outer Harbour Regions);
- Roll out plan (including timeframes) of the charging infrastructure installation;
- Funding and financing options to support this investment;



- Stakeholders to be involved;
- Type of infrastructure to be installed (keeping in mind evolving technologies and demand);
- Identification of a suitable e-management system for the existing and future infrastructure to be deployed.

Smart Solution 12 (Smart mobility solutions):

Malta will look at the actions implemented with respect to car sharing, be it conventional car sharing, electric car sharing as well as e-bike sharing (PEDELEC) in specific urban cores.

The studies and knowledge-gathering exercise to be conducted by Transport Malta during the GrowSmarter project on these vehicle sharing platforms is essential before Transport Malta can attempt to carry out an actual pilot project in Malta, especially since there has so far been no experience with car sharing of any form in Malta.

E-Car/Car Sharing and e-bike sharing are both included in Malta's National Electromobility Action Plan and hence are of top priority both for the Transport Authority and the Government. These will further contribute towards the promoting of additional modes of transport, in the case of PEDELEC and addressing traffic congestion problems in specific urban cores by developing the concept of vehicle sharing.

Through its participation in the development of Solution 12, Transport Malta aims to achieve the following:

- Identification of the locations from where future e-Car/Car sharing and e-bike sharing services may be offered;
- Type of infrastructure to be installed (keeping in mind evolving technologies and demand);
- Roll out plan (including timeframes) of the infrastructure installation;
- Funding and financing options to support this investment;
- Stakeholders to be involved;
- Identification of a suitable e-management system for e-Car/Car/e-bike sharing system.



The Smart Solutions which Transport Malta will be following and studying as part of GrowSmarter merge three technologies; BEVs (e-bikes, electric quadricycles and electric vehicles), vehicle charging systems and vehicle sharing software and management systems. The integration of BEVs with vehicle sharing technologies can potentially increase the utility of vehicle sharing by reducing some barriers to the use of BEVs and increasing the amount of prospective users, while merging vehicle sharing software with vehicle charging stations allows for a comprehensive, space saving solution which may create hubs where electric vehicle owners may charge own cars as well as share public vehicles with interested users. Such a solution would be ideal for Malta where parking space is such a limited commodity.

The GrowSmarter project will allow Transport Malta to better understand the various options of monitoring and managing charging infrastructure which is intended for public use. Considering the authority's current development of the MODUS project and, more specifically, the implementation of the Intelligent Management Transport System (ITMS) forming part of the same project, the opportunities that GrowSmarter offers could not have come at a better time.

A remote management system that manages various electric car charging points is currently in place. It is operated by a private operator and caters for the 90 points which have been installed as part of the DEMOEV project. However, the operational costs for the management of these 90 points are astronomical and it is in the National interest for Transport Malta to find a more economical way of monitoring these points, especially when considering that since the end of the DEMOEV project, a further three solar charging stations have been constructed as part of the PORT-PVEV project. Moreover, since the new Solar Charging Stations do not form part of the DEMOEV project, they neither form part of the management and monitoring system catering for the initial 90 points.

As stated above, the current 101 points are only the beginning, and at least another 399 points must be available on Maltese roads by 2020. All new points must be monitored and managed if the public is to be provided with an efficient and effective service. On the other hand, segmenting the system between various private operators will not provide the best comprehensive solution, while at the same time, private operators should not be deterred from bidding to operate segments of the system in order to maintain a healthy level of competitiveness, ensure the best technology on the market at the right prices.



In order to solve this problem, a Government operated, umbrella management platform must be created to which all the separate segments of the network are connected. This will allow standardisation, deter abuse, and ensure a seamless service no matter the type of infrastructure and respective operator.

Moreover, in order to ensure the best level of monitoring, the umbrella platform must be connected to the ITMS and monitored from the Central Hub which is to be housed at Transport Malta and manned on a 24/7 bases. Herein lies one of the main opportunities which GrowSmarter offers as the project will not only study the best technological solution which is most adapted to offer the needed monitoring service, but it will also offer the right solution of how such a monitoring system can best be connected to the ITMS. ITS in Malta is currently at its infancy stage, therefore now is the best time to develop the service with the right solutions that meet the country's needs. With ITS being such a new experience for the island's transport managers, learning from the wider experiences offered by countries such as Cologne and Stockholm will offer Malta a well of know-how and ensure that Transport Malta has the right guide on which to plot its own system.

Through the sharing of best practice and knowledge gathering exercise made possible by GrowSmarter, Transport Malta will also look at funding options which will be used as guidelines for Transport Malta when it comes to contracting the monitoring service and connecting such solutions to the ITMS. The funding options will also be studied in terms of financing the deployment of the remaining 399 charging points to be installed on the national network, as well as financing the vehicle-sharing systems.



5.2 Smart Solutions Selection

The table below shows which solutions the Follower Cities plan to replicate.

Area	Smart Solutions	Follower Cities				
		<i>Porto</i>	<i>Graz</i>	<i>Cork</i>	<i>Valletta</i>	<i>Suceava</i>
Housing measures	<i>1. Efficient and smart climate shell refurbishment</i>		X	X		X
	<i>2. Smart building logistics and alternative fuelled vehicles</i>					
	<i>3. Smart, energy saving tenants through information</i>	X	X			X
	<i>4. Smart local electricity production and integration with buildings and grid</i>			X		X
Integrated measures	<i>5. Smart lightning, lampposts as hubs for communication</i>	X	X	X		X
	<i>6. Waste heat and local heat integration by new business models</i>		X			
	<i>7. Smart waste collecting, turning waste to electricity, heat and biogas for vehicles.</i>	X				X
	<i>8. Big data protocol for saving energy and improving the quality of life</i>	X				
Mobility measures	<i>9. Sustainable delivery</i>					
	<i>10. Smart traffic management</i>					X
	<i>11. Alternative fuel driven vehicles for decarbonizing and better air quality</i>	X		X	X	X
	<i>12. Smart mobility solutions</i>		X	X	X	X



5.2.1 Smart Measures Selection

The table below specifies which smart (bundle of) measures within the 12 solutions each FC plans to replicate.

SC Measure	Measure title	Follower City Valletta
Low Energy Districts		
Solution 1 – Efficient and smart climate shell refurbishment		
1.1 – Energy efficient refurbishment of the building	Energy efficient refurbishment of residential buildings – Stockholm	
	Climate shell refurbishment – Cologne	
	Energy quality assurance – Stockholm	
	New adaptative control and regulation techniques for heating systems – Barcelona	
	Re-build an industrial site: Ca l’Alier – Barcelona	
	Efficient and smart climate shell and equipment refurbishment – Barcelona	
	Efficient and smart climate shell refurbishment of residential buildings – Barcelona	
	Efficient and smart climate shell and equipment refurbishment of tertiary buildings – Barcelona	
	Energy efficient swimming pools – Barcelona	
Solution 2 – Smart building logistics and alternative fuelled vehicles		
2.1 Integrated multimodal transport for construction materials	Construction consolidation centre – Stockholm	
Solution 3 – Smart, energy saving tenants		



3.1 Active House/Home energy management system/Smart home system	Home Energy Management - Cologne	
	The Active House - Stockholm	
	An Open Home Net - Stockholm	
	Hubgrade - Energy Saving Centre - Stockholm	
	Adaptive Temperature Control System - Stockholm	
	Home Energy Management System (HEMS) - Barcelona	
	Virtual Energy Advisor - Barcelona	
	Dynamic Pricing Models - Barcelona (Stochastic Model of Appliances Energy Consumption)	
Solution 4 - Local renewable energy production and integration		
4.1 Virtual power plant	Residential Estate Management - Cologne	
4.2 Smart energy and self-sufficient block	Smart Energy & Self-Sufficient Block - Barcelona	
	Building Energy Management System (BEMS) to minimise consumption of fossil fuels and electricity - Barcelona	
Integrated infrastructures		
Solution 5 - Smart lighting, lamposts and traffic posts as hubs for comm.		
5.1 Smart streetlighting	Smart LED streetlighting - Stockholm	
5.2 Combined electrical charging and street lighting poles + wifi	Combined electrical charging and street lighting poles + Wifi-to-grid connection - Barcelona	
	Combined electrical charging and street lighting poles + Wifi-to-grid connection - Stockholm	
5.3 Smart meter information analysis and actuators	Smart Meter information analysis and actuators - Barcelona	
Solution 6 - New business models for district heating and cooling		
6.1 Open district heating with feed-in of waste heat	Open district heating - Stockholm	
6.2 District heating and cooling rings	District heating rings - Barcelona	
6.3 Smart local thermal districts	Smart local thermal districts - Barcelona	



Solution 7 – Smart waste collection , turning waste to energy		
7.1 Optical sorting of waste	Smart waste management – Stockholm	
7.2 Introduction of AWCS		
7.3 Waste collection statistics for individual households/businesses		
Solution 8 Big open data platforms		
8.1 Big consolidated open data platform	Big consolidated open data platform – Stockholm	
	Big open data platform – Barcelona	
	Urban Cockpit – Cologne	
	Urban Traffic – Cologne	
	Urban Environment Cologne	
8.2 Urban models		
8.3 Semi-automatic instance mapping		
8.4 Integration of sensor and heterogeneous data in standard data format	Integration of sensor data in a uniform in standard-driven data format – Barcelona	
8.5 Sustainable connected lighting to enhance safety and mobility		
Sustainable Urban Mobility		
Solution 9 – Sustainable delivery		
9.1 Integrated multi-mode transport for light goods	Communal service boxes for sustainable deliveries – Stockholm	
9.2 Micro-distribution of freight	Micro distribution of freight – Barcelona	
Solution 10 – Smart traffic management		
10.1 Traffic management through MFD	Smart traffic signals – Stockholm and Barcelona	
10.3 Travel demand management		
10.4 Traffic control systems for passenger vehicles		
10.5 Traffic signals synchronised to prioritize movement of goods		
Solution 11 – Alternative fuel driven vehicles		
11.1	Developing charging infrastructure for	Normal charging infrastructure for X



infrastructure	electric vehicles – Stockholm	
	Fast charging infrastructure for electric vehicles – Stockholm and Barcelona	X
	eTanKE – Cologne	
	Vehicle to X (V2X) Charging for EVs – Barcelona	
11.2 E-mobility management system		X
11.3 Charging infrastructure for electric tricycles for micro-distribution		
11.4 Refueling facilities for alternative heavy duty fuels	Alternative fuels for heavy duty vehicles – Stockholm	
11.5 Smart guiding to alternative fuel stations and fast charging		
11.6 Small distributed CNG grid	Small distributed CNG grid – Barcelona	
Solution 12 Smart mobility solutions		
12.1 Green parking index	Green parking index – Stockholm	
12.2 Electrical and cargo bike pool		
12.3 Mobility hub	Mobility Hub – Cologne	
12.4 Electrical and conventional car sharing		X
12.5 Conventional/PHEV/CNG vehicle sharing fleets		
12.6 Smart taxi stand system	Smart taxi stand system – Barcelona	



Smart City and District Replication



The Districts with the highest potential for Replication of Smart Solutions are the Northern Harbour and Southern Harbour Regions – shown in purple and green in the map below. These two districts form the Valletta Region and together are acting as Follower City to this project.

5.2.2 Smart District Harbour Replication Profile

5.2.2.1 Q1 What are the main characteristics of the district and what is the replication potential?

Southern Harbour District:

Area:	26.17 Km ²
Population:	79,438
Population per Km ² :	3,035
Demography:	Males: 39,575 Females: 39,863
Employment:	29,561 persons aged 15 and over who are employed
Major Transport Hubs:	Malta International Airport (TEN-T Core Network); Grand Harbour (TEN-T Core Network) including the Valletta Cruise Port; Valletta Gateway



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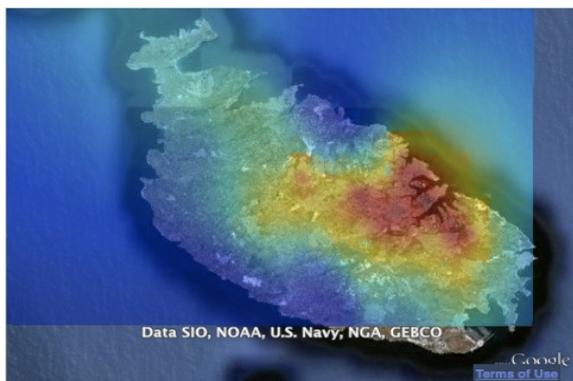
Terminal, Malta–Sicily ferry landing site and Valletta and Cottonera ferry landing sites; Valletta, Marsa, Fgura Bus Interchange Termini.

Northern Harbour district:

Area: 24.02 Km²
 Population: 120,449
 Population per Km²: 5,014
 Demography: Males: 59,335 Females: 61,114
 Employment: 50,110 persons aged 15 and over who are employed
 Major Transport Hubs: Marsamxetto Harbour including the Sliema Ferry landing site; Sliema, St Julian's Bus interchange termini

These two districts have the highest potential for replication since they house the most prominent transport, administrative and commercial hubs, as well as being the most densely populated districts on the island. Development done in these districts is felt by the highest per capita population, while due to their density, they are the districts most in need of improvement.

Traffic congestion is rampant in these districts. From Air Quality data gathered periodically by the Malta Environment and Planning Agency (MEPA), depicted in the map below, it is evident that these two districts are in the line of fire when it comes to poor air quality – due to the high level of road traffic congestion, emissions within the port areas and the airport.



Poor air quality not only affects the quality of life of the population – these two districts alone house 47.88% of the entire Maltese population – but also historical infrastructure located in the area which deteriorate from acid rain and the dirty air.



Valletta, the three cities of Cottonera and Fgura are four cities surrounded by 4-century old bastions which form a major role in the Maltese national heritage.

As the Maltese population feels the effects of poor air quality and rampant traffic congestion, so do tourists who throng to these two districts annually. 90% of tourists who visit Malta, also visit Valletta, while 64% visit Sliema – located across the harbour from Valletta. Of the 1,520,828 tourists who visited Malta in 2014, 492,207 were cruise passengers who landed in the Valletta Cruise Port – these numbers are staggering when keeping in mind that Malta’s residential population amounts to 417,432 residents.

Moreover, Sliema, Gzira, St Julian’s and Valletta house the main tourist resorts on the island.

As stated above, the districts also house the main transport hubs, therefore in solutions that generate potential for intermodality, vehicle-to-infrastructure communication, green modes of public transport and ITS, these Districts hold the greatest potential for replication and improvement.

The National Transport Strategy and Transport Master Plan

Following a request by Government to develop the National Transport Strategy and Master Plan, the Integrated Transport Strategy Directorate has analysed all modes of transport (land, public transport, maritime, and aviation), for internal and international transport. This analysis looked closely at the needs of the country (both Malta and Gozo), identified problems and sought to understand what we expect to face in future – short, medium and long term. Through the National Transport Strategy, Government will develop a vision of where Malta wants to be in the long term, the strategic direction required to get there.

Besides being a requirement for Malta to be able to access EU structural and innovation funds (2014–2020), this exercise will be the first fully comprehensive look holistically at all transport modes, and also the inter-modality that clearly will become the future for both freight and passenger transport. Transport Malta is working closely and intensely both with JASPERS (Joint Assistance to Support Projects in European Regions) as well as specially contracted experts from Spain and Italy (INECO–Systematica Consortium) to support the local team.



The National Transport Model

For these purposes, a National Transport Model (NTM) will be constructed to inform policy and provide an integrated transport analysis. The model will be an update of the TRIPS transport model last developed by Malta in late 1980's and early 1990's when formulating the Structure Plan (1992) and which is now obsolete. The new model will be used for the testing and appraisal of transport scenarios and provision of transport forecasts which will be used to refine the NTS and develop the TMP for Malta. The model will assist Transport Malta's work by producing outputs for more detailed local or project models as input into the engineering design process, economic and financial analysis, environmental assessment, and for monitoring of current and future projects.

Budget Document 2017

The encouraging rise in the number of passengers making use of public transport is a clear sign that gradually the Maltese public is regaining confidence in this service. During the last year public transport carried over 40 million passengers, an increase of 7% on the previous year and a rise of 18% when compared with 2012. This has an effect on the use of private vehicles on the roads and we shall continue to insist with the public transport provider for further improvement of the service. Whilst striving to improve public transport and providing better infrastructure, we shall be taking further measures to offer incentives to particular groups in a way that rewards the use of organised transport. Both with regards to frequency and punctuality as well as the level of service offered to passengers.

In an effort to encourage more people to use public transport instead of their own private vehicle, every young person reaching the age of 18 in the course of 2017, will be given a one year free travel pass for public transport amounting to a maximum of €312 for every young person.

Solar Farms are also encouraged on a smaller scale; the Government, through the Malta Resources Authority, has launched and is implementing additional schemes for the installation of photovoltaic panels and solar water heaters for households, as well as initiatives to encourage efficient use of energy.

In the last budget we introduced an incentive for enterprises that invest in bicycle racks for the parking of their employees' bicycles when these opted to use this means of transport to commute to work. This scheme will be extended for another year. Moreover, we continued with the incentive schemes for the purchase of electric vehicles, whilst also scrapping IC vehicles. We also introduced schemes to fund the installation of



charging points and the upgrading of service garages to start catering for electric vehicles.

National Electromobility Action Plan

Published in 2013, the strategy notes the importance of electric mobility and its relevance to land transport in Malta and Gozo. The Government of Malta has set an indicative target of 5,000 electric vehicles uptake by 2020. To meet this target, the Action Plan lists 22 projects to be implemented by 2020. The projects are planned at a national level, however since tourism and transport infrastructure are geographically focused in the two districts under review, the majority of the project will be focused in these areas.

Projects include:

- Building of a Hydrogen Fuel station
- E-car Sharing for Hotels
- Studies into light rail and monorail
- Public Transport Routes for electric buses
- Carbon Neutral Transport infrastructures

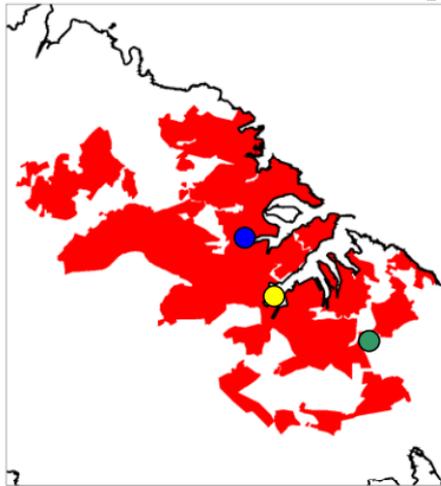
Air Quality Plans and Measures

Published in 2010 by MEPA, this document is aimed to act as policy guidance to reduce daily average PM₁₀ concentrations in ambient air in the Maltese agglomeration. The measures contained in this document are proposed for the major sources of PM₁₀ in the Maltese Islands, more specifically the construction industry, power generation and traffic.

In its measures, the document focuses on the Valletta (Southern Harbour) and Sliema (Northern Harbour) agglomeration as it is the zone in exceedances.



Proposed Valletta & Sliema agglomeration



Malta agglomeration and location of PM₁₀ measuring stations

With respect to power generation, the measures contained in this document are conditions already set out and legally binding.

With respect to the road transport sector, national data shows that this sector is the major contributor to the exceedances of PM₁₀ concentrations in ambient air.

Measures proposed for the road sector include, but are not limited to, the facilitation of carpooling and car sharing, restrict circulation of public buses falling in the Euro 3 category and lower (implemented by 2011), improvement of Valletta Park and Ride (extended to Marsa and Pembroke), improvement of cycling infrastructure, reform of the Valletta Controlled Vehicle Access system, measures to encourage local car dealers to promote the sale of cleaner technology vehicles (under implementation since 2013).

This document is currently being updated by MEPA in consultation with Transport Malta.

Funding varies between national, cohesion policy and ERDF, other Centralized EU funding projects and PPPs.

5.2.2.2 Q2 Are there synergies and/or conflicts related to the Smart Solutions with the existing infrastructure, socio-economic profile and social acceptance?



Synergies exist particularly with the projects planned over the coming five years as described in Q1 above.

5.2.2.3 Q3 How will local stakeholders be involved in the replication of Smart Solutions?

When it comes to the implementation of all sorts of infrastructure on public land, the Malta Environment and Planning Authority must be consulted since all permits are issued from said authority. The Authority will check that relevant impact studies are in place and that no major negative impacts will result; both on the environment, air quality and the road network; as a result of the development in question.

When the infrastructure is particularly relevant to the generation of energy from renewable resources the Malta Resources Authority will also be consulted extensively.

The Malta Tourism Authority will be consulted when it comes to implementing infrastructure and equipment in areas of high tourism value and when it comes to implement measures that may impact the flow of tourism.

All Local Councils within the selected districts will be kept on board throughout the consultations.

Consumer organizations, the General Retailers and Traders Union and the Chamber of Commerce will be consulted when measures may impact the market.

The Ministry for Finance and the Ministry for European Affairs will be consulted on matters related funding and resources, in terms of the latter Ministry, consultations will occur when the project is targeting EU funding.

5.3 Smart Measures Specifications

5.3.1 Replication of measure 11 / bundle of measures 11.1 a, 11.1 b and 11.2

5.3.1.1 Q1 What is the replication potential of the Smart Measure(s)?

Malta has already a National in place which is currently being updated as a number of measures have been implemented; others are in the process of being implemented while newer ones are being included. Through this project we have



just completed a study on full deployment of the national EV charging point network. We are also in the process of rolling out a national E-Car Sharing service, later on this year with a private operator.

- Reason for interest / value for money (if not redundant)

The interest for Malta is that it already has an electromobility action in place since December 2013, hence our interest is natural.

- key policy and legislation frameworks affecting the solution's development / implementation

The policy framework is embedded in the Malta National Electromobility Action Plan which is in place and currently being updated

- Status quo of deployment of solution (e.g. feasibility study available etc.)

Through the Grow Smarter project we have carried out a Cost Benefit Analysis, Technology Study and Gap Analysis as well as an implementation plan till 2020, to continue with the deployment of the infrastructure in line with the respective EU Directive, which mandates Malta to put in place a minimum of 500 charging points nationwide. Transport Malta is in the meantime asking the Ministry of Finance for the respective finance to continue with the deployment

- Specify area and scope of potential implementation (e.g. deep refurbishment of m²)

The area for the implementation is the wider Valletta Region . The potential is indicated in the respective studies being carried out and referred to above.

- What needs to happen for the Smart Solution to get implemented?

Acquiring the necessary finance from central government to continue with the roll out of the equipment.

5.3.1.2 Q2 What is the business case and do financing opportunities already exist?

- Assess the current business case for the solution

The business case comes out from the Cost Benefit Analysis



- Name potential financing opportunities (European, national, private etc.)

National Funds, Private investment, ERDF Funds, other EU funds

- Assess market up-take / expected consumption

This is being carried out as part of the Cost Benefit Analysis Process.

- Describe future financing model and ownership of Smart Solution

Financing will come from various pots, including private investment, national funds and EU Funds where applicable such as when testing new technologies.

5.3.1.3 Q3 What are the main challenges and barriers related to the measure(s)?

- Describe technological barriers if any

None

- Describe procurement barriers if any

None

- Describe other barriers (regulatory, financial, etc.)

Financial : This depends on the allocation of funds as far as direct national investments are concerned.

5.3.1.4 Q4 How does the Smart Solution integrate with the existing and future infrastructure?

- Links to/integration with other measures / Smart Solutions,

The smart solution will be implemented and the current infrastructure will be integrated within the new smart solution, ie, a national overarching platform which will integrate the charging infrastructure due to the fact that it is interoperable

5.3.1.5 Q5 What user / stakeholder involvement is foreseen?

- What are their main interests/objectives/expectations?

Yes stakeholders were being consulted by our consultants who carried out the respective studies, Also stake holders are already included in the structure of the MNEP, that is, the Malta National Electromobility Platform. The structure of the latter already has a stakeholder relationship in built within it.

- What group(s) can be supportive, skeptical or blocking towards the solution?

There aren't any groups blocking the solution.



5.3.1.6 Q6 What is the potential implementation timeframe?

The planned implementation time frame is 2017 – 2020.

5.3.1.7 Q7 What do you need to know for the successful deployment of the Smart Measure(s) beyond the GrowSmarter factsheets?

Since we know what we require and where the infrastructure has to be installed (from the CBA Process), apart from funding, we would require the latest up-to-date technical information on the technology available. Therefore we would recommend technical visits specifically on charging infrastructure in any or all of the Lighthouse Cities, wherever the infrastructure in these locations is the most modern. Business dialogues with companies involved in implementation would also be useful.



6 GrowSmarter Replication Plan

During the replication assessment process, the city of Valetta identified two group of solutions to be replicated in their territory. These where, Solution 11.1 City charging infrastructure (normal and fast charging); and solution 11.2 E-mobility management system.

Due to new opportunities for projects' funding which developed during the same time as the GrowSmarter Project was developing, important changes in the sustainable urban mobility planning processes of the city became possible and so , Valetta decided to slightly change the focus and replicate other more relevant and affordable (in terms of funding opportunities) smart city solutions in the field of mobility. Our aim was to foster modal shift and multimodality, and so we reshaped the priority of the different measures implementation. Another driver for this decision has been the alignment of the city activities with the national mobility planning processes, for example the national Electromobility Action Plan and the Air Quality Plans and Measures. In addition, the measures selected have selected aligned with the development and synergies with other EU projects for sustainable mobility such MODUS, DEMO EV, PROMETEUS, etc.

In this context, the measures aimed to be replicated in Valetta are:

- a) Smart Solutions: 12.2 E-bike sharing and 12.4 Car sharing
- b) Replication plan of Solution 9: Sustainable Delivery: Last Mile delivery of goods
- c) Smart parking management system for Valletta. Linked to Smart Solution 12,3 Mobility Hub.

6.1 Replication plan of Smart Solutions: 12.2 E-bike sharing and 12.4 Car sharing

6.1.1 Summary of implementation activity

What does the measure consist of/key components?

Today, Malta has one of the highest per capita car ownership levels in the EU with the number of households possessing 3 or more cars currently standing at 19.4%. The goal of Malta measure is to reduce CO₂ emissions, improve the general air quality levels and contribute towards the reduction of congestion.

According to the National Household Travel Survey which was carried out in 2010, 74% of all trips by members of a household were undertaken using private



passenger cars, either as a driver or a passenger. This represents a modal share increase of private cars of more than 5% when compared with the findings of the 1998 National Household Travel Survey. This change in the modal share was mainly due to a transfer of trips away from public transport and walking. At the same time, cycling only represents 0.1% of the modal split.

In recent years, several measures have been introduced with the aim of reducing dependence on private cars, including a fiscal regime that imposes comparatively high taxation levels for car registration, above-EU-average fuel costs, and an annual circulation tax that is aimed to discourage the purchase of high polluting cars.

The annual increase in the motor vehicle national fleet in recent years has exerted great pressure on national transport infrastructure both in terms of high demand for parking space and motorists' demand for increased road capacity. Capacity problems and bottlenecks now exist at a number of critical locations on the 2,350 km of road network, particularly at major traffic intersections.

Malta is in the process of implementation an E-bike and a car sharing service across the islands. These services are targeted to tourists, who are generally used to shared services available in major European Cities, and to local residents. The services offer an alternative mode of transport to tourists who, as yet, have only two viable options to travel around the island, either by bus or rented cars. The latter is selected by 22% of all tourists who visit Malta, which considering the high influx of tourists drastically contributes to the island's congestion. By providing alternative options of travel it is hoped that the impact of tourism on the transport infrastructure is lessened.

Specify area and scope of implementation

Car sharing stations will be launched as close to public transport infrastructure as possible in order to facilitate intermodality. Government has recently launched a concession tender to introduce car sharing services on the island which will support this move. Moreover parking slots specifically reserved for car sharing vehicles will be identified and marked accordingly. This will encourage the use of the service since users will always be able to find a parking space wherever they use the service, therefore saving time and resources in driving around in search of a parking space.

The project will seek to strengthen the competitiveness of local mobility operators and stakeholders in the provision of high quality and innovative mobility services.



New services and infrastructure will be designed with high safety standards which will offer mobility users the most secure journey experience. The impact will be a reduction in the perceived and actual safety issues of walking, cycling and using public transport. This should result in a sustainable modal shift and therefore less emissions (namely NO_x, CO₂, PM_{2.5} and PM₁₀) which will bring about an improved air quality and a decrease in respiratory illnesses in our cities. Through increased walking and cycling, there will be reduced cardiac illnesses caused by sedentary behaviour. Mental health will also improve from a population with greater mobility autonomy and access to mobility needs.

6.1.2 Phase 1: Preparation of the implementation framework

Objective: Set the basis for a successful implementation of the measure.

Indicative timeframe	Description of key activities	City departments/ offices involved
Sept 2017 – Dec 2020	<ul style="list-style-type: none"> - Policy and regulatory screening: name the potentially required adaptations of local/regional policy and regulatory frameworks; which may influence project development. - Stakeholder´s roles definition: name key roles and responsibilities of internal and external stakeholders involved in the implementation of the measures. <p>Transport Malta, as the measure leader, has identified stakeholders for consultation from both the private and public sectors. These are categorised below according to their role and envisaged influence in the e-bike and car sharing promotional campaign.</p> <p>The stakeholders below are classified as having high interest in the measure and high power for its implementation:</p> <ul style="list-style-type: none"> ➤ Malta Hotels and Restaurants Association ➤ Malta Tourism Authority ➤ Ministry for Transport and Infrastructure ➤ Transport Malta: Licensing and Testing Directorate ➤ Transport Malta: PR Unit <p>The following stakeholders are classified as having high</p>	<p>Malta Hotels and Restaurants Association,</p> <p>Malta Tourism Authority</p> <p>Ministry for Transport and Infrastructure</p> <p>Transport Malta: Licensing and Testing Directorate</p> <p>Transport Malta: PR Unit</p> <p>Transport Malta: Sustainable Mobility Unit</p>



	<p>interest in the measure but low power have been also identified for consultation:</p> <ul style="list-style-type: none"> ➤ Ministry for Finance and Investment ➤ E-bike sharing operators ➤ Car sharing operators ➤ Valletta 2018 Foundation <p>Meetings were held with the experts conducting the study that will assess the cost of owning a car, to discuss the specifications of the study. Following the outcome, consultations with the marketing experts were initiated to formulate the campaign message and timeline.</p> <p>The Ministry for Transport and Infrastructure will assist the PR Team, assisting with the marketing of the measure, particularly in the organisation and hosting of press conferences which the Transport Minister will be invited to address.</p> <p>Stakeholder consultation at the design stage was in the form of one-to-one meetings with the involved ministries, the PR Unit within Transport Malta and the marketing experts. Throughout the campaign, users will be engaged via surveys and public meetings to get their feedback on their experience and views of the new services.</p> <p>The stakeholders listed above are expected to provide supportive feedback throughout the design and implementation of the information and awareness campaign. Despite the fact that the e-bike and car sharing operators are private, profit-making companies, they stand to benefit from the success of this campaign and are expected to assist in the sharing of data and knowledge.</p>	
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6.1.3 Phase 2: Project inception planning, performance and finance

Objective: Outline key structural aspects for the measure's implementation.

Indicative timeframe	Description of key activities	City departments/ offices involved
	- Governance designation: Transport Malta: Sustainable Mobility Unit	Transport Malta: Licensing and Testing



	<ul style="list-style-type: none"> - Targets and goals setting (short- to long-term): as per Malta National Electromobility Action Plan and the National Transport Strategy - Technology and infrastructure planning: this is already crystallized in the Tender issued and the eventual Contract signed. - Definition of key performance indicators (KPIs): As per Contractual Obligations between Service Provider and Transport Malta - Cost-benefit analysis: as eventually jointly decided by the Ministry for Transport and Infrastructure, the Ministry of Finance and Transport Malta. - Business and financial model definition: Ministry for Transport and Infrastructure and the Ministry of Finance. <p>Surveys targeting the general public will be carried out before, during and after the information and awareness campaign. These will measure the awareness and acceptance level of the campaign by the public. The baseline survey will get an insight of the citizen's perception of the new e-bike and car sharing services prior to the launch of the information and awareness campaign. The results of the second survey will allow changes and shifts to the campaign to make it more effective. The final survey at month 26 will again focus on public acceptance and awareness and will indicate the overall success of the information and awareness campaign.</p>	<p>Directorate</p> <p>Transport Malta: Sustainable Mobility Unit.</p> <p>Ministry for Transport and Infrastructure.</p> <p>Ministry of Finance.</p>
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6.1.4 Phase 3: Political approval and stakeholder engagement

Objective: Obtain and maintain political and stakeholder commitment for the implementation.

Indicative timeframe	Description of key activities	City departments/ offices involved
	- Political commitment: Already undertaken.	Ministry for



	<ul style="list-style-type: none"> - Strategic intermediaries: Local Councils, Entity providing Energy Services and Planning Authority. - Public participation and citizen engagement: PR Campaign by Service Provider - Capacity building of city staff: 	<p>Transport and Infrastructure</p> <p>Transport Malta: Sustainable Mobility Unit</p>
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6.1.5 Phase 4: Project implementation

Objective: Plan the effective implementation of the defined measure.

Indicative timeframe	Description of key activities	City departments/ offices involved
	<ul style="list-style-type: none"> - Implementation plan: Already undertaken. Service up and running. - Procurement model: Already undertaken, tender issued and Adjudicated. - Contract negotiation and management: Already undertaken, Contract Signed. <p><u>Risks and constraints</u> In Malta, cycling is considered as a purely leisure activity and very few people cycle as a mode of transport. In fact, cycling represents a mere 0.27% of the modal split. In recent months, a private initiative has seen the deployment of e-bike sharing stations in most localities around the islands of Malta and Gozo, and yet, the public still perceive cycling too unsafe as a commuting option. In this regard, Cycling Safety education is highly necessary.</p>	<p>Ministry for Transport and Infrastructure</p> <p>Transport Malta: Sustainable Mobility Unit</p>

6.1.6 Phase 5: Monitoring and progress evaluation

Objective: Plan the monitoring, evaluation and reporting of the implementation of the measure.

Indicative timeframe	Description of key activities	City departments/ offices involved
	<ul style="list-style-type: none"> - Project monitoring: Service provision level monitoring will be undertaken by Transport Malta 	<p>Ministry for Transport and</p>



	<ul style="list-style-type: none"> - Project evaluation: As per Contractual Obligations - Internal and external reporting: As per obligations vis-à-vis Transport Malta Communication Policy 	<p>Infrastructure</p> <p>Transport Malta: Sustainable Mobility Unit</p>
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6.2 Replication plan of Solution 9: Sustainable Delivery: Last Mile delivery of goods

6.2.1 Summary of implementation activity

What does the measure consist of/key components?

Two of the most popular tourist resorts are located within the Valletta Region; Sliema and St Julians. In recent years, the city of Valletta has also seen a rise in the number of boutique hotels. These establishments create a high demand for goods delivery and transport resulting in high congestion and a negative impact on air quality. At the moment, the region of Valletta generates 18,076 trips/km² /hour inbound and 12,709 trips/km²/hour outbound during the morning peak only. Congestion within the region is worsened by the fact that deliveries to hotels, shops and restaurants coincides with the peak hours of morning traffic. Negative effects are felt by commuters who are hampered by heavy goods vehicles on the road, as well as by the distribution chain which is delayed by congestion and lack of parking spaces for unloading.

Main distributors have shown interest in the concept of last mile delivery in recent years, however there has yet to be the right opportunity to give impetus to the concept locally, and that is why this measure is of such value. Last mile delivery using energy-efficient vehicles has never as yet been tested in Malta; nor has the transport of goods been given much attention. In fact, little data exists in the sector of freight transport.

The Valletta Local Council, together with Transport Malta and the University of Malta, will collaborate with LuxMobility to study and implement a Last Mile delivery of goods pilot system for Valletta. The current situation will be detailed and further research will be carried out to understand the processes, analyse drivers, barriers and opportunities that may impact the development of the Sulp. A feasibility study will be compiled to analyse the possibility and propose a methodology on how to implement the concept of last mile delivery of goods in Valletta. The study will identify a warehouse close to the city, which can be used, modified or repurposed to



serve as a depot point for the storage of goods until the time of delivery. The optimal system of goods delivery will be studied. This will include whether a time restricted delivery system is to be adopted where goods and returns are delivered and collected during restricted time periods or whether a system of multiple runs is to be adopted. A system of handling payments will need to be developed where payments are kept confidential.

The study will also identify the man power needed to operate the service as well as the number and type of transport vehicles to be used for deliveries, depending on the goods to be handled. The potential suppliers and businesses who will benefit and participate in the service will be included at this early stage. The feasibility study, will elicit the specifications that will be used to design the IT systems needed to manage and monitor the service. The results from the same study will also design the pilot for testing and implementation during the project lifetime.

- *Status quo of deployment / implementation step (if) already achieved (see below)*

The study is currently ongoing and is being carried out by an expert who has been procured following an open tender procedure. The procurement process for a light goods electric van, which will be used throughout the pilot phase of at least 12 months, is also currently ongoing. The van will be required to have a data logger for the collection of data which will be analysed as part of the DESTINATIONS Project. Further data will be collected throughout the piloting period and analysed for the possibility of extending the service beyond the project lifetime. Stakeholders' consultation will be ongoing and feedback from participants will be sought on a regular basis in order to improve the service delivery.

6.2.2 Phase 1: Preparation of the implementation framework

Objective: Set the basis for a successfully implementation of the measure.

Indicative timeframe	Description of key activities	City departments/ offices involved
Sept 2017 – Dec 2020	<ul style="list-style-type: none"> - Policy and regulatory screening: Traffic flows and circulation within the Capital City. - Stakeholder's roles definition: <p><u>Freight & logistics regulation</u></p> <p>Currently, businesses within Valletta coordinate their</p>	<p>Valletta Local Council.</p> <p>Transport Malta and external expert.</p> <p>Local business Community</p>





own deliveries, therefore several distributors, importers and delivery companies operate within the city. The City Council however established specific times when deliveries can take place. Goods vehicles are allowed to provide services between midnight and 9:30 and between 19:30 and 20:30 from Monday to Friday; Mondays, Thursdays and Saturdays deliveries are also allowed between 14:30 and 16:30. These service times ensure that Valletta is free from trucks and vans during the peak hours for pedestrians and tourists. Since many streets in Valletta are rather narrow, and to avoid congestion, it is common practice for delivery vans to park on the curb while loading and unloading. This poses a great risk to the health and safety of the other users especially pedestrians and causes damage to street infrastructure and adjacent building quoin.

Parking and access to Valletta has been a constant point of discussion amongst stakeholders since it affects all residents and visitors to Valletta. Parking within the city is currently at saturation levels, therefore, while some loading and unloading bays do exist, their number – compared with other urban centres around the island – is limited. Goods distribution vehicles that deliver regularly to retailers in the charging zone within Valletta are allowed limited free access in all of the charging zones at the times defined below. The vehicle must be registered to deliver and must not be left unattended.

The waste collection system further exacerbates the problem of congestion caused by logistics within Valletta. Mixed waste from homes (black bags) is collected door-to-door between Monday and Friday at 15:00 and on Saturdays at 13:00. On Mondays and Wednesdays there is an extra collection at 07:00. The collection of co-mingled dry recyclable (green/grey bag containing paper, plastic and metal) is done once a week on Tuesdays at 07:00. More recently the door-to-door collection of glass was introduced and this is collected on the first and third Friday of the month. This system brings to Valletta large, high polluting vehicles which moves around the City at a very low speed. It is also a major contributor to traffic within the City since vehicles have to trail behind the truck in streets which are too narrow for overtaking. Garbage collection services also have access to pedestrian zones



at certain times, this encumbers the street and creates a very unpleasant experience to diners sitting along the pedestrian zones.

Stakeholders

The following table summarises the main stakeholders (public and private) who have direct or indirect influence on logistics within the study area.

Stakeholder	Role
Valletta Local Council	Main Stakeholder for this Measure
Transport Malta	National regulator of road transport
General Retailers and Traders Union	Representative of small retail outlets Nationally (including in Valletta)
Malta Hotels and Restaurants Association	Representative of Hotels and Restaurants Nationally (including in Valletta)
Chamber of Commerce; Logistics Sub-group	Representative of large businesses in Malta including major delivery companies
Ministry for Finance	
Ministry for Transport, Infrastructure and Capital Projects	Remit includes both transport and planning
Ministry for Energy and Water Management	Remit includes sustainable energy

Besides these specific stakeholders, several general freight stakeholder groups are actively influencing traffic and goods transport activities in the Valletta Region, and participate in the public consultations and events.

Authorities

- Facilitation and buildings
- Operation and maintenance
- Public Roads Administration
- Parking managers
- Food Safety
- Customs
- Labour Inspection

Carriers

- MaltaPost
- Private freight forwarders (e.g. TNT, DHL, UPS, etc)
- Transport companies
- Construction industry
- Independent retailers and goods vehicle owners

End-receivers

- Stores, shopping malls, groceries
- Hotels, restaurants, catering
- Public institutions, offices
- Industrial and construction sites
- Residents

6.2.3 Phase 2: Project inception planning, performance and finance

Objective: Outline key structural aspects for the measure's implementation.



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Indicative timeframe	Description of key activities	City departments/ offices involved
	<ul style="list-style-type: none"> - Governance designation: As per adjacent column. - Targets and goals setting (short- to long-term): as per Project Brief which is still being compiled. - Technology and infrastructure planning: as per Project Brief which is still being compiled. - Definition of key performance indicators (KPIs): as per Project Brief which is still being compiled. - Cost-benefit analysis: as per Project Brief which is still being compiled. - Business and financial model definition: as per Project Brief which is still being compiled. - 	Valletta Local Council, Transport and external expert Malta external expert

6.2.4 Phase 3: Political approval and stakeholder engagement

Objective: Obtain and maintain political and stakeholder commitment for the implementation.

Indicative timeframe	Description of key activities	City departments/ offices involved
	<ul style="list-style-type: none"> - Political commitment: as per Project Brief which is still being compiled. - Strategic intermediaries: as per Project Brief which is still being compiled. - Public participation and citizen engagement: as per Project Brief which is still being compiled. - Capacity building of city staff: as per Project Brief which is still being compiled. 	As above

6.2.5 Phase 4: Project implementation

Objective: Plan the effective implementation of the defined measure.



Indicative timeframe	Description of key activities	City departments/ offices involved
	<ul style="list-style-type: none"> - Implementation plan: Measure still at Planning Stage. - Procurement model: Measure still at Planning Stage. - Contract negotiation and management: Measure still at Planning Stage. <p>Transport Malta has compiled a list of Stakeholders that will be impacted by the measure as well as those entities who can assist with baseline data collection; baseline analysis and user needs analysis. Meetings with experts were initiated at an early stage in the project, in order to identify the boundary of the area where the last mile delivery of goods service will be piloted. Consultations with stakeholders and meetings with businesses in the city started around a year into the project. The initial major stakeholder engagement exercise as part of the development of the SUMP, was held in October 2018. This is logistically a very valid combination, since most stakeholders are common for both the SUMP development and the last mile delivery pilot measure. An expert has been engaged to carry out the feasibility study on the setting up, management and operation of the last mile delivery of goods in Valletta. The feedback from stakeholder consultations together with the outcome from the feasibility study, has provided the guidelines for the design (still to be completed) of the pilot to be implemented during the DESTINATIONS Project lifetime.</p> <p>The final stage prior to the launch of the pilot consists of the procurement of an electric light goods van and the managing platform.</p>	As above

6.2.6 Phase 5: Monitoring and progress evaluation

Objective: Plan the monitoring, evaluation and reporting of the implementation of the measure.

Indicative timeframe	Description of key activities	City departments/ offices involved
	<ul style="list-style-type: none"> - Project monitoring: Measure still at Planning Stage. - Project evaluation: Measure still at Planning Stage. 	As above



- **Internal and external reporting:** Measure still at Planning Stage.

Surveys will be carried out at two time points; before and after the piloting phase. The target group will be the business operators and the surveys will measure the level of awareness of the last mile delivery of goods in Valletta. A 20% awareness level is expected.



6.3 Replication plan of Smart parking management system for Valletta

6.3.1 Summary of implementation activity

What does the measure consist of/key components?

A parking management plan for the city will be compiled including the software and infrastructure necessary to implement the smart parking management system. The preparation of the pilot will involve:

- Procurement of sensors and software to be used;
- Installation of equipment;
- System testing and verification.

The measure aims to deliver a smart parking management system, which informs drivers and authorities about parking availability. This has the potential to reduce journey times in the city and improve the air quality.

This measure has been selected as a key smart city solution due to its similarities with the concept of Solution 12.3 Mobility Hubs.

Specify area and scope of implementation

The parking system will be installed in Valletta.

Valletta is a walled city with limited parking infrastructure. Access to the city by car is therefore limited physically, and limited further through road pricing, extensive pedestrianisation and relatively few parking spaces. Car drivers today access the city and cruise for a long time to try and find an available space. This causes congestion, pollution and excessive waste of resources and time. This innovative parking management solution has the potential to inform the driving public as well as to reduce the impacts of transport through parking management.

- *Name key steps and activities required for the project implementation*

The measure includes the installation of sensors in specific off-street and on-street parking areas in the city of Valletta to manage the demand and supply of parking in the city. Data will be collected remotely. A parking management plan for the city will be compiled including the software and infrastructure necessary to implement the smart parking management system.

This seeks to solve the lack of parking availability within Valletta which is at saturation point. With an approximate total of 5,000 residents, Valletta sees ten



times the number of visitors daily: these include tourists, workers and shoppers. Rat running by visitors in search of parking within the city is highly common.

The smart parking management system, through the installed sensors, will inform drivers about parking availability. This has the potential to reduce journey times in the city and hence improving air quality. The objectives of this measure include the potential for reduced congestion in the city of Valletta, improvements in the energy efficiency in transport (through reduction of cruising) and an improvement in travel awareness amongst road users.

- *Status quo of deployment / implementation step (if) already achieved (see below)*

From an early stage in the project, consultations between the local partners to this measure were initiated in order to discuss and design the system. Following the compilation of the specifications required to procure the sensors and the related software, the Local Council published a tender for the smart parking system. The bids are currently being evaluated.

6.3.2 Phase 1: Preparation of the implementation framework

Objective: Set the basis for a successfully implementation of the measure.

Indicative timeframe	Description of key activities	City departments/ offices involved
Sept 2017 – Dec 2020	<ul style="list-style-type: none"> - Policy and regulatory screening: Measure still at Planning Stage. - Stakeholder’s roles definition: Measure still at Planning Stage. <p>Valletta Local Council, the lead partner for Smart Parking Management System for Valletta, will be supported by both the University of Malta and Transport Malta. The University of Malta will be assisting in the evaluation of data while Transport Malta will be assisting in the Information and Dissemination.</p>	<p>Valletta Local Council</p> <p>Transport Malta</p> <p>University of Malta</p>

6.3.3 Phase 2: Project inception planning, performance and finance

Objective: Outline key structural aspects for the measure’s implementation.

Indicative	Description of key activities	City
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timeframe		departments/ offices involved
	<ul style="list-style-type: none"> - Governance designation: Measure still at Planning Stage. - Targets and goals setting (short- to long-term): Measure still at Planning Stage. - Technology and infrastructure planning: Measure still at Planning Stage. <p>This measure aims to inform travellers through smart cities applications by testing and piloting sensor and mobile technologies and telematics to provide further information to drivers as they cruise around the city, trying to find a parking space.</p> <ul style="list-style-type: none"> - Definition of key performance indicators (KPIs): Measure still at Planning Stage. - Cost-benefit analysis: Measure still at Planning Stage. - - Business and financial model definition: Measure still at Planning Stage. 	<p>Valletta Local Council</p> <p>Transport Malta</p> <p>University of Malta</p>

6.3.4 Phase 3: Political approval and stakeholder engagement

Objective: Obtain and maintain political and stakeholder commitment for the implementation.

Indicative timeframe	Description of key activities	City departments/ offices involved
	<ul style="list-style-type: none"> - Political commitment: Measure still at Planning Stage - Strategic intermediaries: Measure still at Planning Stage - Public participation and citizen engagement: Measure still at Planning Stage - Capacity building of city staff: Measure still at Planning Stage 	<p>Valletta Local Council</p> <p>Transport Malta</p> <p>University of Malta</p>



6.3.5 Phase 4: Project implementation

Objective: Plan the effective implementation of the defined measure.

Indicative timeframe	Description of key activities	City departments/ offices involved
	<ul style="list-style-type: none"> - Implementation plan: Measure still at Planning Stage. - Procurement model: Measure still at Planning Stage. - Contract negotiation and management: Measure still at Planning Stage 	Valletta Local Council Transport Malta University of Malta

6.3.6 Phase 5: Monitoring and progress evaluation

Objective: Plan the monitoring, evaluation and reporting of the implementation of the measure.

Indicative timeframe	Description of key activities	City departments/ offices involved
	<ul style="list-style-type: none"> - Project monitoring: Measure still at Planning Stage - Project evaluation: Measure still at Planning Stage - Internal and external reporting: Measure still at Planning Stage <p>Towards the end of the project a survey will be carried out with the local citizens to measure the level of satisfaction of the smart parking system. The target is to have 20% of respondents who are completely satisfied.</p>	Valletta Local Council Transport Malta University of Malta



7 Conclusions

As can be surmised from the above information, there is no single Smart Solution being replicated by all five FCs – conversely, there are four measures which are only planned for implementation in a single city each. Of course, all this is a reflection of quite different local contexts and needs driving each of the FCs towards certain smart city priorities over others, which logically results in interesting variations amongst the FCs’ assessments of their preferred LCs’ Smart Solutions.

Valletta’s contribution to the national SmartCity Malta initiative, at least within the GrowSmarter project, has (so far) exclusively focused on developing three smarter *Sustainable Urban Mobility* solutions, since they did not indicate single other type of measure to be replicated.

However, these three measures are indeed an exciting development based on observations and experiences from the Lighthouse as well as other Follower Cities. Coupled with their original plans to go on a similar route towards the implementation of such measures, Valletta regards themselves as lucky to have been able to observe what they had originally envisioned. This makes them more confident that their goals would prove successful, particularly since they could rest on the comfort of the results displayed by the same measures in the Lighthouse Cities.

