



SOLUTIONS

Sharing Opportunities for Low carbon Urban Transport

D4.1 Assessment of city needs and gap analysis (working paper)

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1. Introduction

The European Commission identifies Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestine, Syria, Tunisia and Turkey as Mediterranean Partner Countries (MPCs). The Mediterranean region is mainly characterized of rapid rates of urbanization, the consequent proliferation of informal settlements leading to urban sprawl, failure of the public transport sector to meet the growing demand, high fatality rates accounting for sustainable transport modes as well as increasing incomes and rates of car ownership in some parts of the region. However, the status of urban transport in the whole region cannot be summarized into a single broad trend for all countries. Urban mobility proves to be strongly influenced by a spectrum of economic, social and political factors indicating the need for analysing the conditions, trends and implications of sustainable urban mobility solutions in each of the different Mediterranean countries.

The above considerations form the background of this deliverable, which aims to present and analyze the framework conditions of different Mediterranean cities and identify their existing needs, gaps and priorities with regard to urban transport mobility solutions. The main objective is to build a common understanding of the current conditions in the Mediterranean region and conduct a preliminary assessment of selected solutions, based on the identified needs, within the context of four thematic clusters: Public transport, Transport infrastructure, City logistics and Integrated planning/Sustainable Urban Mobility Plans (SUMPs). The assessment will be conducted taking into consideration the framework conditions of each city while their potential for success and possible challenges to be met during their implementation will be also addressed.

The deliverable is structured as follows: the methodology developed for identifying and assessing the existing needs, gaps and priorities of selected Mediterranean cities regarding the aforementioned four thematic clusters is presented first. Based on this methodology, a series of personal interviews with local officials were conducted in the various Mediterranean countries targeted by the project: Israel, Turkey, Morocco, Algeria and Tunisia. The framework conditions of each participating city are described in the next section, and the main conclusions drawn from the interviews for each thematic cluster are reported next. The analysis included in the above sections provided the basis for defining the common urban mobility needs, gaps and priorities for the Mediterranean region which are reported in the last section of the deliverable.

According to the aforementioned methodology, the main issues raised during the interviews will be further discussed and elaborated within the context of three local workshops that will take place in Turkey (Kocaeli), Morocco (Casablanca) and Israel (Tel Aviv). During these workshops, the urban mobility solutions identified for the aforementioned four thematic clusters will be presented, the framework conditions of the participating Mediterranean cities will be described and the transferability of selected solutions to them will be assessed. Once the local workshops are concluded and the main conclusions are drawn, a final Mediterranean event will take place aiming to validate and finalize the common urban mobility city needs, gaps and priorities for the Mediterranean region. This final event will be organized in Turkey,

as part of the CODATU XVI conference, and all city officials from the countries targeted by the project will be invited to participate and provide their feedback. The main outcomes of the local workshops as well as the final Mediterranean event for each of the four thematic clusters will be reported in Deliverable 4.2.

2. Methodology: identify and assess needs, gaps and priorities

As indicated above, several innovative and green urban mobility solutions, successfully implemented in different parts of the world, were identified in Work Package 1. The selected solutions were categorized into six thematic clusters, namely Public Transport, Transport Infrastructure, City Logistics, Integrated Planning and Sustainable Urban Mobility Plans, Network and Mobility Management and Clean Vehicles. For each solution, a relevant description was provided indicating its main objectives as well as practical experience from Europe and other countries. Focusing on the Mediterranean region, Work Package 4 considers the first four thematic clusters, and aims to:

- Present experience from the implementation of the identified solutions, including conditions for success and lessons learnt from failures to MPCs.
- Discuss the framework conditions of different Mediterranean cities and identify their urban mobility needs, gaps and priorities with the objective of building a common understanding of conditions in the Mediterranean region.
- Conduct a preliminary assessment of the transferability of the selected solutions to the various Mediterranean cities, evaluating also the potential for success and indicating potential challenges to be met during their implementation.

In order to ensure that the aforementioned objectives are fully met, a relevant methodology was developed consisting of the following steps (Figure 1):

- (1) Development of a dedicated questionnaire facilitating the identification of existing urban mobility needs, gaps and priorities of different Mediterranean cities with regard to the four thematic clusters considered for the region.
- (2) Conducting personal interviews with local officials in different Mediterranean partner countries.
- (3) Organization of three local workshops in Israel, Turkey and Morocco where the main issues raised during the interviews will be further discussed and elaborated upon. During the workshops, the urban mobility solutions identified for the four thematic clusters considered for the region will be also presented, the framework conditions of the participating Mediterranean cities will be described and the transferability of selected solutions will be assessed vis-à-vis the local policy framework.
- (4) Organization of a final Mediterranean event in Turkey where the main outcomes of the local workshops will be presented, facilitating the validation and finalization of the common urban mobility city needs, gaps and priorities for the Mediterranean region. All officials from the Mediterranean countries targeted by the project will be invited to participate and provide their feedback.



Figure 1 – Steps of the methodology developed for identifying and assessing existing urban mobility needs, gaps and priorities of Mediterranean cities

Within the following sub-sections, each step of the methodology is described in more detail. At this point it should be highlighted that for the different Mediterranean countries targeted by the project, a local project partner was responsible for undertaking the aforementioned activities. Specifically, IIT was in charge for Israel, EMBARQ-TR for Turkey and Mobili-T for Morocco, Algeria and Tunisia.

2.1. “City-needs identification” questionnaire and interviews with officials

As indicated above, a “city-needs identification questionnaire” was prepared and circulated among the project partners for their review and comments. Once finalized (see Annex I), the three responsible local partners distributed the questionnaire to the candidates they identified and contacted (national and municipal public stakeholders, etc.). In all cases, the questionnaire was translated in the local language in order to ease the process for the officials. All questionnaires were completed by July 2014 through interviews with the city officials, ensuring the quality of the information received. The main conclusions derived from the interviews were structured around the following topics and are being reported in detail within the following sections of this deliverable:

- Existing framework conditions for each of the four thematic clusters,
- City needs and priorities regarding sustainable urban mobility solutions,

- Gaps to be addressed,
- Future plans.

In addition to the local officials contacted by the three responsible project partners, the “city-needs identification questionnaire” was also forwarded to the SOLUTIONS associated partners (i.e. those who had provided a Letter of Support to the project) and their input integrated into the analysis conducted for the different Mediterranean cities. The analysis assisted in pre-selecting those urban mobility solutions, identified in WP1, which best meet the needs reported by the cities, gaps and priorities thus enabled the identification of some initial common urban mobility city needs, gaps and priorities for the Mediterranean region.

2.2. Local Workshops in Turkey, Morocco and Israel

According to the aforementioned methodology, three local workshops will take place in Turkey, Morocco and Israel aiming to:

- Present the urban mobility solutions that were identified in WP1 for each of the four thematic clusters considered for the Mediterranean region
- Further discuss with the city officials the framework conditions in each city as well as existing urban mobility needs, gaps and priorities with regard to the four thematic clusters
- Assess the local and national policy framework
- Select and prioritize those urban mobility solutions that best meet the identified needs, gaps and priorities
- Conduct a preliminary assessment of the transferability of those solutions to each city thus identifying their potential for success and possible challenges to be met during their implementation.

The detailed description of the local workshops, the activities that were undertaken there as well as their main outcomes will be reported within the next deliverable of this Work Package (D4.2).

2.3. Final Mediterranean event

Once the local workshops are concluded (expected on January 2015), a final event will take place in Turkey. The event is being scheduled as part of the CODATU XVI conference which will be held in Istanbul in February 2015. All city officials from the countries targeted by the project will be invited to participate in this event and express their opinion in order to validate and finalize the common urban mobility city needs, gaps and priorities for the Mediterranean region as formulated based on the outcomes of the interviews and the local workshops.

3. Main outcomes of interviews with city officials

Within this section, the input received from the “city needs identification” questionnaire and through interviews with city officials is reported and analyzed. It should be also mentioned at this point that the questionnaires were sent to the city officials in advance so that they had adequate time for preparing their responses and the issues they would like to raise during the interviews.

3.1. Israel

Israel’s overall population is slightly over 8 million, inhabiting a total area of 22,000 km². The country’s high population density, over 370 people per km², is an important factor influencing its transport system, for which the Ministry of Transport & Road Safety is in charge, although certain responsibilities are delegated to local authorities.

Israel has four metropolitan ‘hubs’: Jerusalem, the capital, Tel Aviv-Yafo (usually simply referred to as Tel Aviv), Israel’s main economic center, Haifa, the country’s northern metropolis, and Beer Sheva, the southern metropolis.

3.1.1. Major metropolitan areas

Jerusalem

Jerusalem is the capital of Israel. The population of its metropolitan area is about 1.5 million, of whom 800,000 live in the city itself. As a capital, Jerusalem presents a unique character with many governmental institutions located there, while the city also attracts a large number of foreign tourists. Various cultural and governmental events are part of the city’s routine, often creating the need for special traffic arrangements. The population of Jerusalem consists of three different religious groups with each group having different needs and characteristics, and each has their own Central Business District (CBD).

The city’s topography is mainly hilly, for which reason for many years the city could not be reached by train. However, the city now has two train stations, and is the only city in Israel operating an intra-city Light Rail Transit (LRT) system (Figure 2). Furthermore, a central bus station is located near the city’s entrance, serving as departure point for destinations throughout the country and as a transfer point for buses within the city.

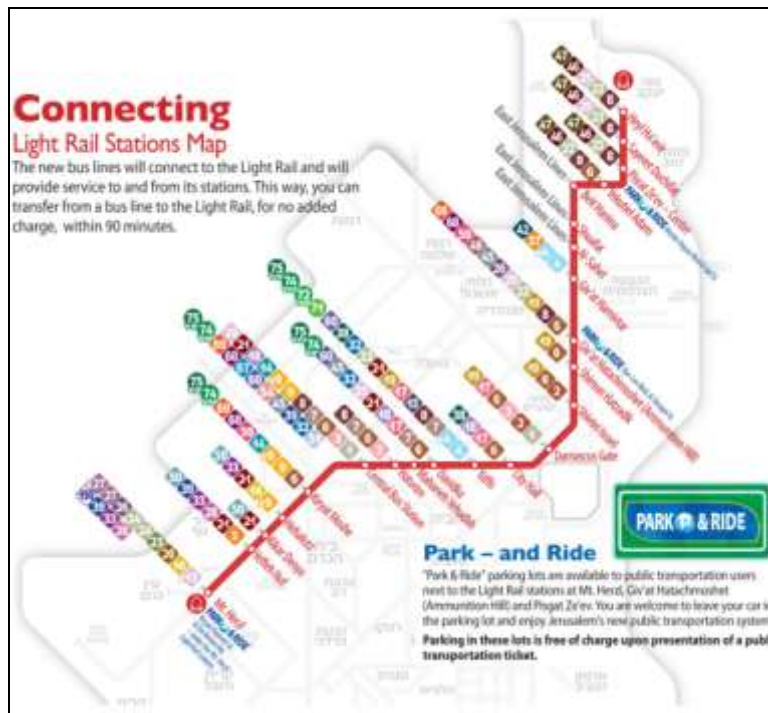


Figure 2 – Map of Jerusalem's LRT system (red line)

Tel Aviv

The population of the Tel Aviv metropolitan area is about 3.5 million, accounting for approximately 45% of the Israeli population, and is the most crowded area in the country. The city is Israel's financial capital, with many financial institutions (e.g. Israel's central bank, the stock exchange market, business services, etc.) and high-tech firms, both national and international, are located there. The Tel Aviv metropolitan area comprises three rings of suburbs and satellite cities, some of which are medium-sized, with around 200,000 residents; the rest being smaller.

About one million people and 500,000 vehicles travel into the city daily. Approximately 52% of all trips into and within the city take place by private cars. Another 23% is by public transport, 16% by walking and 9% by cycling.

The city has more than one transport hub as well as some Park & Ride facilities. More specifically, four train stations serve other cities within the metropolitan area and beyond, while one central bus station acts as the departure point for bus lines to the rest of the metropolitan area and elsewhere in the country. The main Israeli airport is located within the metropolitan area of Tel Aviv while there is an additional smaller airport serving mainly domestic flights.

The city experiences heavy congestion in its major arteries. To this end, as part of the EU-funded project 2move2 (within the CIVITAS initiative), the city began to promote a strategy for sustainable urban transport solutions. The city and the metropolitan area is mainly flat, with a compact city center. Additionally, a high percentage of trips within the city are shorter than 5 km, fact that encourages the use of alternatives, to motorized, transport modes, such as bicycles.

Haifa

Haifa is the northern metropolis of Israel, with about 1 million inhabitants. It is a coastal city with a hilly topography, including many steep paths and steps for pedestrians. It has two major industrial areas attracting many employees, mainly from the metropolitan area. The city center has developed around Haifa's port, which remains busy and generates many traffic-related challenges. Haifa Bay has been the traditional center of Israel's heavy and petrochemical industries, including oil refineries, which are major sources of air pollution affecting the residents' quality of life.

Haifa has also one small airport which handles mainly domestic flights. Within the city, there are four train stations and two central bus stations, located at its southern and northern edge. It should be highlighted that the city of Haifa has implemented some of the most challenging transport projects in Israel, including the first BRT system (Figure 3) and the Carmel tunnels, which cross the city from north to south and vice versa.



Figure 3 – Map of the “Matronit”, the Haifa BRT system (the three lines are marked in red, green and blue)

3.1.2. Proposals on sustainable transport solutions for medium-sized Israeli cities

As part of their policy targets to encourage the implementation of sustainable urban transport solutions and reduce the associated air emissions, the Ministry of Transport & Road Safety and the Ministry of Finance published, in 2011, a call for proposals focusing on medium-sized cities (70,000 – 250,000 inhabitants). The municipality submitting the winning proposal would be selected to serve as a “Model City” for the development of a modern, attractive and sustainable transport system. More specifically, the program's objectives were to encourage modal shift from private vehicles to public and non-motorized transport, reducing the associated air pollution, improving the quality of life in the city and providing accessibility to all residents and visitors. The proposals submitted were evaluated according to eight measures (80%) (Table 1), the overall impression produced by the plan (10%) and

the socio-economic status of the city (10%). The measures and their respective weights represent, to some extent, the priorities of policy makers in the Ministry of Transport & Road Safety.

Table 1. The eight measures and their respective weights (80% in total)

Network of lanes giving priority to public transport	30%
Deployment of advanced technologies for the use and management of public transport	10%
Suggestions for updating the public transport network	5%
Improving the infrastructure for users of public transport (e.g., providing information at bus stops)	10%
Infrastructure of cycling routes	10%
Improving pedestrian infrastructure	5%
Sustainable parking policy	5%
Other means of promoting sustainable transport (such as car sharing)	5%

The proposals submitted by the municipalities, in response to the aforementioned call, provide an indication of the relative preference of the cities to those eight measures. The following figure (Figure 4) presents the relative score assigned by the Ministry and the relative budget dedicated by the municipalities to each of the measures. Those measures for which the budget is lower than the score provided by the Ministry could be considered as less important than those for which the relative budget is higher than the respective score. More specifically, transport infrastructure for pedestrians and cyclists proves to be a major priority for all cities receiving 32% of the overall budget, compared to 19% of the Ministry's scoring.

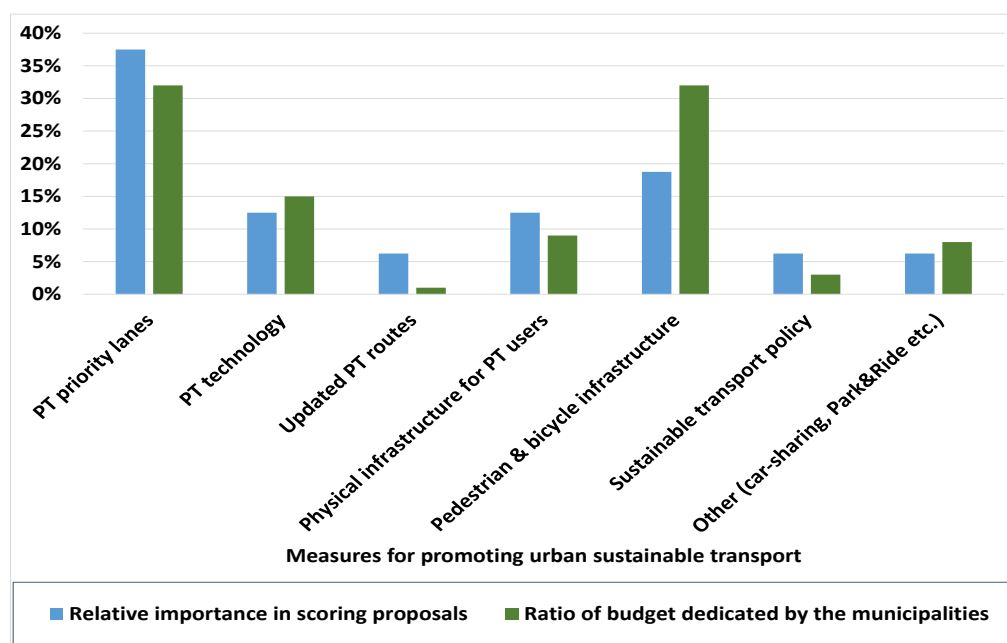


Figure 4 – The relative budget allocated by cities to various measures compared to their respective scoring provided by the Ministry of Transport & Road Safety

Although measures focusing on parking strategies and management were not explicitly included in the call, many cities chose to include such measures, especially parking-restriction measures, in their overall plans. Clearly, policy-makers believe that measures to improve transport infrastructure and associated services must be

accompanied with measures restricting the use of private vehicles (at least in certain areas) in order to achieve the desired impact.

3.1.3. Description of the data collection process

Seven interviews were conducted with different transport stakeholders (Table 2) representing local authorities, the Ministry of Transport & Road Safety and the Israel National Road Safety Authority (NRSA). Each city official was familiar with at least two of the four thematic clusters considered in the project. During the interviews, the SOLUTIONS project and its objectives were initially described. Based on the “city needs identification” questionnaire, the needs, gaps and priorities of different cities, as expressed by the interviewees, regarding urban mobility solutions for the four thematic clusters were recorded next. It should be mentioned that in order to facilitate the process, all interviews were held in Hebrew. The information obtained from Israeli city officials along with the characteristics of the transport system in Israel provided a good basis for drawing some initial conclusions for the four thematic clusters as well as their relative importance.

Table 2. City officials interviewed in Israel

No.	Name	Organization	Position
1	Zili Bar Yosef	Tel Aviv-Yafo Municipality	Head of the Municipal Strategic Unit.
	Michal Tausing		Senior Planner at the Municipal Strategic Unit.
2	Harel Damti	Ministry of Transport and Road Safety	Superintendent of the Haifa and Northern Region
3	Yoav Danziger	Haifa Municipality	Director of Department of Planning for Traffic, Roads and Gardens
	Anat Gilad		Head of Traffic Management and Control Unit
4	Prof. David Mahalel	Israel National Road Safety Authority	Special Consultant
5	Dr. Benjamin Maor	Tel Aviv-Yafo Municipality	Director of Infrastructure and Construction Administration
6	Inbar Netzani	Holon Municipality (formerly Jerusalem Municipality)	Head of Traffic Department
7	Dalit Regev	Ministry of Transport and Road Safety - National Public Transport Authority.	Head of Planning, Organization and Administration.

The identified needs, gaps and priorities regarding urban mobility solutions for the four thematic clusters are being summarized in the following section. Detailed descriptions have been included in the respective table (Table X) of Annex II.

3.1.4. Needs, gaps and priorities of Israeli cities for each of the four thematic clusters

Public transport

Israel's National Public Transport Authority is responsible for all aspects of public transport in the country, though it has delegated some responsibilities to local transport authorities. Despite the limited control they have, Israeli municipalities act as essential stakeholders in the implementation and operation of relevant services within their jurisdictions.

Over the past few years, substantial efforts have been dedicated to the improvement of the urban public transport system in Israel. Several mass transit systems, such as the new BRT system in Haifa (the "Matronit") and the LRT systems in Tel Aviv and Jerusalem are currently in various stages of planning and implementation. The Israeli officials expressed the need for mass transit systems in Israel's large metropolitan areas and identified, for the different Israeli cities, appropriate public transport solutions (Table 3).

Table 3. Public transport solutions identified by Israeli city officials (highlighted cells indicate solution not yet implemented)

Solution	City Name
BRT system	Haifa
LRT system	Jerusalem
LRT system	Tel Aviv-Yafo
Revised planning of Public Transport	Holon
Special event solutions	Jerusalem
Bike-sharing (Tel-O-Fun)	Tel Aviv-Yafo
Bike-sharing	Rehovot
DRT	Various cities in Israel
Sectorial solutions	Various cities in Israel
Shuttles	Rehovot

When deciding between LRT and BRT, the cost and ease of construction are weighted against the potential number of travellers. However, all interviewees made clear that while both types of mass transit system provide a good level of service along the backbone of the network, the door-to-door journey must be taken into account in order to increase the use of public transport. Long-term urban development is already being considered when planning public transport networks, including services in areas that are designated, in urban master plans, as residential.

According to the city officials, the main reasons for choosing to implement a BRT system in the city of Haifa were the following:

- The transport demand in the Haifa metropolis matches better the capacity of a BRT system
- Simpler legal procedures enabled the implementation of a BRT system in a shorter timeframe
- As Haifa is located in northern Israel, it was perceived that obtaining an approval from the Ministry of Transport for the large budget required for the implementation of a LRT system would not be possible
- In contrast with LRT, a BRT system enables gradual implementation, mainly with respect to the construction of dedicated lanes, and thus makes it possible to start operations (at least partially) earlier
- A high level of flexibility makes it possible to modify routes and change location of stations
- The negative impact imposed to local businesses and shops during the construction period is less critical for a BRT than a LRT. This aspect should be taken into careful consideration as the success of the project may be jeopardized even after the completion of the construction works.

The main challenges to be met and relevant recommendations for implementing a BRT system, as they were identified by the interviewees, can be summarized to the following:

1. Feasibility of a BRT system in terms of budget constraints and demand
2. High density of signalized junctions increases the BRT priority along the route, and hence some delays at junctions are sometimes inevitable
3. Minimization of bunching and delays; buses with higher capacity should be implemented at the expense of frequency, at least to some extent
4. The use of conventional bus lines as feeders from neighbourhoods with low population density is inefficient. Demand Responsive Transport (DRT) should be considered. Such services will provide private car users with a reasonable level of comfort and might attract them to use public transport
5. Planning an integrated card system is challenging and not yet fully implemented in the city of Haifa due to administrative considerations and multiple operators
6. The implementation of the BRT system should be combined with relevant policy measures such as control of parking availability in Central Business Districts (CBD)
7. It might be difficult to attract new passengers to public transport due to employment agreements that encourage the use of private cars (through benefits such as employer participation in insurance costs)

All interviewees pointed out the importance of synchronization in time, space and payment schemes. Synchronization in time is easier when the service on the main public transport line is frequent, as it is the case of mass transit systems, but more difficult when all lines that must be synchronized are less frequent. Synchronization in space, especially in large hubs, has to be considered at the planning stage, taking also into account, as an integral factor, disabled travellers. Finally, payment schemes

enabling the use of a single payment device for all transport modes are already being implemented in Israel and efforts to expand such schemes are currently being undertaken.

Besides trains and buses, great focus has been placed in Israel on sustainable transport modes. Tel Aviv's bike-sharing project (Tel-O-Fun), with about 1,500 bicycles, is a good example of a successful municipal initiative aiming to promote sustainable mobility leading to a high share of residents who now employ bikes as a mode of transport. Several conditions have contributed to the program's success, including a widespread network of cycle paths; the provision of a dense network of rental stations early in the program; the mild weather in Israel; Tel Aviv's flat topography; short journey distances and the general trend in the population toward health and fitness. Other cities in the vicinity of Tel Aviv are already considering similar projects.

Transport Infrastructure

The transport infrastructure solutions identified by the city officials for the different cities in Israel are presented in the following table (Table 4). Dedicated bus lanes are being considered as an important factor for prioritizing public transport, and are being gradually implemented in many Israeli cities. Dedicated cycle lanes are also a developing trend in many cities, following the experience in Tel Aviv, the pioneer in this area. Indeed, while Tel Aviv's flat topography might have been regarded as a mandatory precondition for the construction of cycle lanes, such a network is even being planned in Haifa, a city built on a mountain.

Table 4. Transport infrastructure solutions identified by Israeli city officials

Solution	City
Bicycle paths	Tel Aviv-Yafo
Bicycle paths	Haifa
Bicycle paths	Ashdod
Green routes	Tel Aviv-Yafo
Park&Ride	Tel Aviv-Yafo
Shared space	Tel Aviv-Yafo
New transport hub	Holon
Shared space & improving pedestrian infrastructure	Ramat Gan
Restrictive & sustainable parking policy	Kfar Saba

An ongoing trend towards prioritizing pedestrians and cyclists is also reflected in the planning and implementation of shared space, often at the expense of private vehicle

lanes. Tel Aviv, once again a leader in this area, has implemented extensive green routes, in which substantial space has been dedicated to pedestrians and cyclists while priority has also be given to them at junctions. Integration of bicycle paths with existing transport services as well as the provision of frequent bicycle racks along public transit routes has been identified as an important precondition for implementing bicycle services.

Other cities, such as Herzelia and Ramat Gan, have also adopted plans to transform parts of their city centres into shared space. It should be noted that there is still no clear consensus among public officials regarding the best way of implementing this type of infrastructure, especially concerning safety aspects. The segregation between various transport modes and the most efficient way of marking different sections of any shared space is still under discussion. It is expected that in the near future, these points will need to be further addressed, considering, in parallel, the growing use of motorized bicycles, segways, etc.

Many cities understand that consumers cannot rely on public transport for all parts of a single journey. Park & Ride facilities located in the outskirts of the city are regarded as a key service that can promote the more extended use of public transport within the urban network. Such facilities exist or are in various planning and implementation stages in several cities.

City Logistics

The City Logistics cluster proved to be the least advanced in Israel. However, the negative impact resulting from the movement of heavy vehicles in the urban network is being taken into careful consideration by city officials and new solutions aiming to mitigate this impact are emerging in various Israeli cities. The city logistics measures currently being considered (Table 5) include parking lots for heavy vehicles on the outskirts of cities as well as some restrictions regarding the access of heavy vehicles into certain parts of the urban road network.

Table 5. City logistics solutions identified by Israeli city officials

Solution	City
New roads from the port to bypass city center and access intercity roads directly	Haifa
Heavy vehicle restrictions	Holon
Nighttime truck parking lot	Holon
Nighttime truck parking lot	Haifa
Nighttime truck parking lot	Nazareth

Integrated Planning/Sustainable Urban Mobility Plans (SUMPs)

Both municipal and national officials recognize the importance of following a holistic approach to transport system planning. The supervisor from the Ministry of Transport for the northern region of Israel and the city of Haifa, in particular, identified this cluster as the most important one among the four thematic clusters considered for the Mediterranean region. The SUMP solutions identified by the local officials for two Israeli cities are presented in the following table (Table 6).

Although a SUMP is being promoted only in the city of Tel Aviv, some of its elements could be also identified in actions taken by other public authorities. Long term strategic planning and cooperation with urban planning authorities was identified as a prerequisite for implementing a long term master plan.

Table 6. SUMP Solutions identified by Israeli city officials

Solution	City
Long term master plan and strategic thinking	Haifa
Vision of sustainable mobility as part of the municipal strategic plan	Tel Aviv-Yafo
Evaluation criteria to monitor progress in implementation of the sustainable mobility vision	Tel Aviv-Yafo

One area that calls for improvement in Israel is the engagement of different stakeholders, and particularly the public, in the process of developing urban transport plans. While there is evidence for such engagement in some cases, this does not yet appear to be a common practice in Israel, and there are no methodological guidelines on how to pursue stakeholders' involvement.

Main conclusions for all four thematic clusters

The main conclusions derived from the interviews in Israel, for all thematic clusters, can be summarized to the following:

1. Several actions have been undertaken by several cities aiming to increase and promote the use of public transport. Particular focus has been placed on mass transit systems and the importance of synchronization in time, space and payment was highlighted.
2. The prioritization of public transport through dedicated bus lanes is a major priority for Israeli cities. Furthermore, great focus has been also placed on the prioritization of pedestrians and cyclists, a fact that is also reflected in the planning and implementation of shared space, often at the expense of private vehicle lanes.
3. Although the negative impact of urban freight transport movements is a significant concern, limited actions have been undertaken for city logistics. These mainly refer to specific parking places for the (un)loading of goods and access restrictions for heavy vehicles in certain parts of a city.

4. SUMP's and integrated urban transport planning are an emerging priority for Israeli cities. Some initial actions are being undertaken and great emphasis is being placed on the engagement of all relevant stakeholders to the developing process of urban transport plans.

As a general comment, it should be mentioned that due to the fact that most respondents provided information in an intuitive and associative manner, thus it is quite difficult distinguish between difficulties and recommendations. Furthermore, city officials tend to talk about solutions they have been engaged in their implementation or are in their scope of interest. Therefore, for certain aspects and specific solutions it was quite difficult to draw more general conclusions.

3.2. Turkey

Turkey is a transcontinental country connecting Western Asia and Southeastern Europe through Anatolia. Located at the crossroads of Europe and Asia, Turkey is considered as a country of significant geostrategic importance. Its overall population is about 76.6 million, covering a total area of 783,562 km².

Within the following sub-sections, the cities of Istanbul, Konya, Kocaeli, Izmir and Ankara, the capital of Turkey, are described and their needs, gaps and priorities regarding urban mobility solutions for the four thematic clusters are identified and analyzed.

3.2.1. Major metropolitan areas

Istanbul

Istanbul is the biggest city in Turkey with a population of approximately 14 million covering a total area of 5,343 km². The city, which is divided into 39 districts, is the most populous city in Turkey, leading to a variety of urban transport problems. Congestion being the most important concern, highlighting the need for a well integrated transport system including non-motorized, rail and maritime transport. To this end, the cooperation of local authorities with other relevant stakeholders, in order to promote innovative policies, is of utmost importance.

Public transport in the city is provided by the Istanbul Public Transport Authority (İETT) through a fleet of 2,562 buses, BRT systems and Tunnel Operations. İETT is also responsible for the management and inspection of Private Bus Transit Services.

As a subsidiary of the Istanbul Metropolitan Municipality, established in 2005, İspark provides incentives for short-term parking in low-density areas, aiming to transfer long-term parking from the main traffic arteries. The aim of İspark is to take over the Municipality's open and multi-stored car parkings and manage them systematically and in a centralized way.

Kocaeli

Kocaeli is a major industrial and transit city in Turkey with a population of about 1.6 million. The city, located close to Istanbul, is expected to play an important role to some of Istanbul's future transport developments such as the High Speed Train and the third bridge which is planned to be constructed near Kocaeli.

The city is not confronted with any public transport problems as it closely cooperates with more than fifty privately owned bus operators. It is believed that in order to have an integrated public transport management system, the operators should be gathered under the control of the municipality. A second major concern of the city is related to transport infrastructure. As a transit city to Istanbul, and with a large number of industries located there, infrastructure policies are set by the central government.

Konya

Konya covers the largest area in Turkey, and has a population of approximately 2.1 million. Although public transport in Konya is also provided through buses and trams, "Dolmuş" (Minibuses) present the highest rate of passengers on a daily basis. This fact is mainly attributed to the poor integration of public transit systems. Although Konya is equipped with ITS systems aiming to obtain traffic data in order to control traffic and improve road safety, well integrated plans are still to be developed. Also worth mentioning is that the city of Konya has the longest cycle lanes in Turkey (over 250 km).

Ankara

Ankara is the capital of Turkey with a population of approximately 2.1 million in its metropolitan area. In 1989, the city conducted its urban transport master plan which is currently being revised through a relevant study, started in 2012. The central and local authorities in Ankara highlighted the need for an integrated public transport system as well as better transport infrastructure. The city's vision for public transport focuses on the extension of its metro lines. Two metro lines have already been delivered by privately owned companies in cooperation with the Ministry of Transport, while one line is still under construction and the line connecting the airport to the city center is still in the tendering process.

İzmir

İzmir is the biggest port city in the Mediterranean part of Turkey, with a population of approximately 4.1 million in its metropolitan area. The city's population is growing at a rate of 5.3% pa.; higher than the rest of Turkey. As there is a high migration rate from rural areas to the city of İzmir, the metropolitan area is currently being revised. Its overall vision will be to improve quality of life and support the economic activities of the metropolitan area through sustainable development and transport.

Political problems in Izmir resulted in national budget allocation reductions. However, the municipality was able to raise enough money in order to conduct new transport and urban development projects. Furthermore, the lack of technical assistance and capacity within the municipality also must be addressed.

3.2.2. Description of the data collection process

Six “City needs identification” questionnaires were completed and nine personal interviews were conducted with different transport stakeholders (Table 7), including local and transport authorities, Ministries, development agencies, etc. Based on the questionnaires and the personal interviews, the needs, gaps and priorities of different cities, as expressed by the interviewees, regarding urban mobility solutions for the four thematic clusters were recorded. In order to facilitate the process, all interviews were held in Turkish. The information obtained from Turkish city officials along with the characteristics of the transport system in Turkey provided a good basis for drawing some initial conclusions for the four thematic clusters as well as their relative importance.

Table 7. City officials interviewed in Turkey

Name	Organization	Position	Notes
Abdülmuttalip Demirel	Kocaeli Metropolitan Municipality	Head of Transport Department	These surveys were online and filled in directly by participants.
Övünç Yılmaz	Kocaeli Metropolitan Municipality	Expert in Transport Department	
Cüneyt Çetintaş	Kocaeli Metropolitan Municipality	Urban Planner in Transport Department	
Esin Sayar	Kocaeli Metropolitan Municipality	Expert in Transport Department	
Ahmet Çelebi	Kocaeli Metropolitan Municipality	Head of Transport Planning Office	
İlker Bektaş	İETT	Business Intelligence & Project Management Specialist	
Erkan Atmaca	Kocaeli Metropolitan Municipality	Expert in Transport Department	Surveys conducted through personal interviews
Serkan Korkmaz	İstanbul Development Agency	Expert in Planning and Transport Department	
Ahmet Savaş	İSPARK (İstanbul Metropolitan Municipality Affiliation for Parking Heliport and Bike Sharing Systems)	Head of Heliport and Bike Sharing Department	

Faruk Cirit	Ministry of Development	Expert in Planning and Transport Department
Salih Demirci	Ministry of Transport, Maritime and Communication	EU Expert
Remzi Öztoklu	Konya Metropolitan Municipality	Expert in Traffic Signalization Department
Dr. Derya Çağlar	Ankara Development Agency	Coordinator
Assist. Prof. Dr. Hediye Tüydeş Yaman	ODTU (Middle East Technical University)	Department of Civil Engineering
Assoc. Prof. Dr. Ela Babalık-Sutcliffe	ODTU (Middle East Technical University)	Department of City and Regional Planning

3.2.3. Needs, gaps and priorities of Turkish cities for each of the four thematic clusters

Public Transport

The main means of public transport in Turkey are buses, minibuses and ‘dolmuş’ while in some major cities, such as Istanbul, BRT systems have been implemented. Although buses still remain the most preferred option for moving with the city, the share of minibuses is also quite significant. The BRT system in Istanbul is also gaining a significant share of public transport.

The need to reorganize the public transport system and achieve better integration between the different transport modes was pointed out by all interviewees. This target has been set in several local and regional plans of the different cities along with the overall target of increasing the use of public transport compared to the use of private cars. To this end, transport infrastructure as well as technical support for relevant projects are considered to be major priorities.

Table 8 summarizes the current situation regarding public transport in the five Turkish cities considered in the analysis and highlights their needs, gaps and priorities as expressed by Turkish city officials.

Table 8. Public transport solutions identified by Turkish city officials

City	Current Situation	Needs, future plans and priorities
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Istanbul	<p>The main means of public transport in the city are buses, minibuses, 'dolmus' and a BRT system.</p> <p>Although buses are still the most preferred option for moving within the city, the BRT system's share is increasing. The system has a capacity of about 600,000 passengers per day.</p> <p>The rail systems carry more than 1 million passengers per day and their share of public transport is growing. The city aims to build a mass transport network around the city by 2019.</p>	<ul style="list-style-type: none"> ▪ Extend the railway system and better integrate it with other transport modes. ▪ Improve the accessibility of public transport for everyone ▪ Better utilize ferry services ▪ Optimize the operation of buses, minibuses and dolmus and further expand their capacity.
Kocaeli	<p>The means of public transport in the city is buses, minibuses and 'dolmus'.</p> <p>The public transport system in Kocaeli consists of 298 bus lines. But most of them are operated by private companies. Therefore Kocaeli Municipality is not able to conduct an urban transport plan including private owned buses together. This fact causes many problems and dissatisfaction.</p> <p>Furthermore, the imbalance between supply and demand as well as the low education level of drivers are some other problems that must be addressed. Additionally, as the rates of population growth and rural-urban migration increase, the use of public transport usage should also increase, supported by well integrated urban transport plans.</p>	<ul style="list-style-type: none"> ▪ Development of public transport infrastructure. ▪ Technical support for future public transport projects
Konya	<p>In Konya, rubber-tired public transport has the highest priority. The means of public transport are buses and minibuses. Because of their increased mobility within the city, the routes followed and their price, minibuses are preferred. The city has also implemented a tram line (following the example of İstanbul) between the city center and the university. However, it is now considered insufficient.</p>	<ul style="list-style-type: none"> ▪ Applicable and sustainable plans for public transport ▪ Public transport priority
Ankara	<p>In the draft Ankara Regional Plan for 2014 – 2023, it is stated that integrated and mass public transport will be one of the main project areas. According to the Plan:</p> <ul style="list-style-type: none"> ▪ 40% use private cars in Ankara and 60% use public transport; ▪ Minibus and dolmuş systems are really ineffective and cause high levels of traffic 	

	<p>congestion;</p> <ul style="list-style-type: none"> ▪ Clean fuel systems will be implemented to the bus fleets. 	
İzmir	<p>The share of public transport is 74% by road, 23% by railway and 3% by water. The city is currently working on the integration of the bus systems to the metro and sub-urban railway. However, because ESHOT (Izmir Public Transit Authority) and municipality have revised some major lanes without participation of stakeholders, the community seems to be against this project.</p>	<ul style="list-style-type: none"> ▪ Implement approx. 100 km of cycling lanes (current cycling lanes are 25 km long). ▪ Optimize the public transport system and integrated it with other transport modes.

Transport Infrastructure

The high dependency on road (wheeled vehicles) proves to be a major issue for all Turkish cities causing significant problems such as high levels of congestion, etc. This is mainly attributed to the lack of integrated urban mobility plans leading to non-integrated public transport systems and infrastructure. Several transport infrastructure projects are still ongoing and it is expected that once completed traffic conditions will be improved. Emphasis is also being placed on extending pedestrian zones and bike paths while the need of technical assistance and funds for undertaking transport infrastructure projects (e.g. focusing on ITS) is being highlighted.

Table 8 summarizes the current situation regarding transport infrastructure in the five Turkish considered in the analysis and highlights their needs, gaps and priorities as expressed by Turkish city officials.

Table 9. Transport infrastructure solutions identified by Turkish city officials

City	Current situation	Needs, Future Projects and Priorities
Istanbul	<p>Istanbul's transport infrastructure serves different transport modes. The high speed railway system is expected to receive a significant share of passengers. The length of the railway system in Istanbul has increased from 45 to 141 km, which is equal to 214%.</p> <p>Highway infrastructure grows as the city grows. The Euroasian Tunnel and Marmaray projects are outstanding in this case. Marmaray is integrated with the railway system from both sides of İstanbul. Marmaray, the millennial project, connects Asia and Europe under the Marmara Sea. The railway tunnel crossing the Bosphorus is 76 km in total. Starting its operation on October 2013, with 14 km track,</p>	<ul style="list-style-type: none"> ▪ Transport infrastructure improving the accessibility and use of public transport, bicycles and pedestrians. ▪ Investments on sustainable transport modes. ▪ Promoting 'Transport Demand Management'

	Marmaray estimates to have approximately 1.5 million passengers per day in 2015 and 1.7 million passengers in 2025.	
Kocaeli	<p>The city of Kocaeli is in the middle of national and international roads. Transport infrastructure proves to be inadequate due to geographic barriers. To this end, current infrastructure with transit traffic is being shared. There are 5.270 km undivided, 1.000 km of divided roads and also 81 km of railway infrastructure which has not been completed yet. Besides there is a network of 32 km bike paths and 5 km of pedestrianized zone. The Rapid Railway system will be in service in 2014.</p>	<ul style="list-style-type: none"> ▪ Pedestrian zones /bike paths should be considered. ▪ Integration of high speed train station points with public transport system. ▪ Integrated hubs for different modes. ▪ Future projects; Gulf of Izmit 33 km HST, Izmit 7 km tram line, Izmit-Değirmendere (BRT-HST), Izmit-Gebze railway, Darica-Gebze Organized Industrial Zone HST lines are planned. ▪ City needs budget and funding for implementing the infrastructure projects they have planned
Konya	<p>Konya, in topographic terms, has a quit flat topography but highway transport has not been developed. Private car is the predominant mode of transport in the city.</p> <p>In 2002, 4 - 4.5% of travellers were using bikes for transport but in 2013 this percent decreased to 2.5 - 3%.</p>	<ul style="list-style-type: none"> ▪ Technical assistance and capacity building of intelligent transport systems for transport infrastructure. ▪ Increase pedestrian zones and the cycling network in the city center
Ankara	<p>The implementation of the subway system could not be completed due to financial problems at the municipality so the central government took over the project. There is a huge need for sustainable urban mobility solutions but first the technical/ethical quality of the team at the municipality has to be examined.</p> <p>Another infrastructure issue in Ankara is underpasses. Design of underpasses has not followed the engineering standards and guidelines. This issue has caused several floods during heavy rains as well as many traffic accidents.</p>	

Izmir	According to Izmir Provincial Baseline Study of 2013, the Izmir municipality has allocated 39.9% of the city's budget to the transport/communication sector.	<ul style="list-style-type: none"> ▪ Technical assistance and capacity building for infrastructural improvements in the city
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City Logistics

Strategies and targeted policies on city logistics are not well developed in Turkey leading to disorganized and not carefully planned urban freight operations. The presence of several industrial and logistics facilities in many cities urges the development and organization of urban freight operations. Efficient connections between the cities and their surrounding airports and ports are identified as a major priority.

Table 8 summarizes the current situation regarding city logistics in the five Turkish considered in the analysis and highlights their needs, gaps and priorities as expressed by Turkish city officials.

Table 10. City logistics solutions identified by Turkish city officials

City	Current situation	Needs, Future Projects and Priorities
Istanbul	In Istanbul, logistic center areas are disorganized and not carefully planned leading to a variety of transport-related problems. The restriction imposed to heavy vehicles regarding the use of the bridges causes significant problems to the urban transport system. The analysis and strategies being undertaken for city logistics prove to be inadequate.	<ul style="list-style-type: none"> ▪ A Third Bosphorus Bridge and a third airport will assist to the dispersion of the logistic centers. ▪ An Istanbul Master Plan must be prepared. ▪ All disorganized and unplanned logistic activities must be brought together.
Kocaeli	Kocaeli is a very busy city in terms of industrial and manufacturing facilities, since it contains seaway connections and natural harbors. It has 12 harbors and 13 active industrial areas which are served by over 100,000 trucks on a daily basis There are many large factory facilities such as automotive and automotive supply industry, chemicals, fuel etc. These facilities are connected with highway, seaway and railway.	<ul style="list-style-type: none"> ▪ Planning of logistic villages with the aim to reduce logistics pressure in the city ▪ Studies for using railway and maritime transport in the field of city logistics. ▪ Railway line connection between the port and logistic villages. ▪ Railway systems to enlarge industrial companies.

Konya	Especially in the field automotive sector, industry is highly developed in Konya. The city is using railway for domestic shipping and the port of Mersin for sales abroad.	
Izmir	Izmir has a big port that serves between and outside of Mediterranean countries. Major freight companies use this port.	<ul style="list-style-type: none"> Waterborne freight sector can be improved by green and low carbon technologies.

Integrated Planning/Sustainable Urban Mobility Plans (SUMPs)

Konya and Istanbul are the only two cities that have implemented ITS systems for their traffic control and planning centers. On the other hand, under the new regulation, the Turkish National Police is developing a new ITS system called “Traffic Electronic Control System – TEDES” to be implemented in all Turkish cities. This system will help municipality and Provincial National Police authorities to have better traffic control and vehicle counting.

Cities should build capacity on the integration of public and non-motorized transport in collaboration with sustainable urban mobility plans (SUMPs). However, it should be noticed that local authorities are not familiar with EU’s SUMPs, whereas they are familiar with urban transport master plans and they only have some general knowledge on SUMPs. However, according to EU pre-accession period central and local authorities should have more knowledge on SUMPs.

Table 8 summarizes the current situation regarding integrating planning/sustainable urban mobility plans in the five Turkish considered in the analysis and highlights their needs, gaps and priorities as expressed by Turkish city officials.

Table 11. Integrated planning/SUMP solutions identified by Turkish city officials

City	Current situation	Needs, Future Projects and Priorities
Istanbul	<p>The efficient integration of different transport modes is a major concern. For example, the numbers of piers which are connected to railway systems is very low. There is also no railway connection to Sabiha Gokcen Airport. The number of transfer stations and their quality is quite low.</p> <p>A supply line model was developed and a main-line optimization model is currently being developed.</p>	<ul style="list-style-type: none"> Cooperation with municipalities and local governments for human and nature based solutions. Increased visibility of a sustainable approach in transport and urban plans Coordination between all plans and also between investment and plans.

Kocaeli	In 2011, a Logistic Master Plan was prepared and since then, investment plans and projects have been carried out in accordance with strategic plans. Among them, the most important one was human oriented transport infrastructure. The aim is to create a sustainable and livable space.	<ul style="list-style-type: none"> ▪ Technical assistance for the determination of road the standard roads. ▪ Development of integrated transport modes in order to provide sustainable mobility (tram, BRT system, transfer centers etc.) ▪ Encourage the use of bicycles. ▪ Development of passenger information systems
Konya		<ul style="list-style-type: none"> ▪ Integration of all transport modes with their transfer centers. ▪ Decrease of the use of private cars.
Ankara	Ankara had an urban transport master plan in 1989 which being revised since 2012.	<ul style="list-style-type: none"> ▪ Coordination between all plans and also between investment and plans.
Izmir	Izmir has the potential to improve bike and walking facilities due to landscape conditions. The city works on an urban transport plan according to this vision.	<ul style="list-style-type: none"> ▪ Improved and newly designed public spaces are projects of districts municipalities.

Main conclusions for all four thematic clusters

The main conclusions that were derived from the interviews in Turkey, for all thematic clusters, can be summarized to the following:

1. The main means of public transport are buses, minibuses and “Dolmus” while in some major cities, BRT systems have been implemented. The need to reorganize the public transport system and achieve a better integration of the different transport mode is a major priority highlighted in cities’ future plans.
2. There is a high dependency on road vehicles causing significant problems for the cities. Integrated urban mobility plans leading to integrated public transport and infrastructure are much needed in order to address the different problems. Emphasis has been placed on extending pedestrian zones and bike paths while technical assistance and funds are needed for efficiently realizing the planned infrastructure projects.
3. Strategies and targeted policies on city logistics are not well developed in Turkey leading to disorganized and not carefully planned urban freight operations. The

presence of several industrial and logistics facilities in many cities urges the development and organization of urban freight operations. Efficient connections between the cities and their surrounding airports and ports are identified as a major priority.

4. Turkish cities should build capacity on the integration of public and non-motorized transport within the context of sustainable urban mobility plans (SUMP). However, it should be noticed that local authorities are not much familiar with EU's SUMPs, but they are with urban transport master plans. They only have some general knowledge on SUMPs. To this end, their participation in relevant knowledge-sharing events will be beneficial for them.

3.3. Morocco

Morocco is a country located in Northern Africa along the Atlantic Ocean and the Mediterranean Sea. It is officially called the Kingdom of Morocco and it is known for its long history, rich culture and diverse cuisine. Morocco's capital city is Rabat but the largest city is Casablanca.

The transport sector in Morocco is very important especially in economic and social terms:

- It represents 6% of GDP and 9% of the added value of the tertiary sector
- All transport modes consume 34% of the national consumption of energy
- It employs 10% of the urban population
- Tax revenue contributes 15% to the General Budget of the State

Road transport is the predominant mode for domestic trips. The transport sector employs 80% of the workforce. It provides mobility to 90% of people and 75% of goods on a long road network of about 60,000 km. Furthermore, there are more than 751 km in 2011 and it is expected to reach 1.014 km of expressways in 2015.

The various transportation networks in Morocco include:

- The ferrovier (rail) network

It covers a length of 2,120 km, including:

- 1.060 km electrified lines;
- 1.702 km single-track lines;
- 418 km of double track lines.

The Morocco will build a high-speed TGV between Tangiers and Casablanca late 2015 and then a TGV line between Casablanca and Marrakech in late 2017 and finally two TGV high-speed lines between Marrakech and Agadir from Casablanca Oujda 2030.

- Urban transport

Urban transport in Morocco has grown significantly in recent years.

RER: Al Bidaoui, RER Casablanca that crosses the entire city of Casablanca to the Mohamed V airport. RER Bouregreg through the capital and its suburbs through the Bouregreg river separating Rabat Salé.

SUBWAY: The metro Casablanca is a future project that will serve the economic capital of Morocco.

TRAMWAY: Rabat has received two tram lines in December 2010 (Tramway Rabat-Salé). Casablanca has benefited from the tram in December 2012. The tram is currently being evaluated for the cities of Meknes, Fez, Tangier and Marrakech.

BUS: There are various companies involved in the network of bus transport in Morocco. Casablanca: M'dina Bus, Bus Chennaoui, Lux Transport , Rabat: Stareo, Marrakech : Alsa Marrakech

Casablanca

Grand Casablanca is located in northwest central Morocco and has about 50.7 km of coastline on the Atlantic. The area is bounded on the north, south and east by the Chaouia-Ourdigha and west by the Atlantic Ocean. It extends over an area of 140.5 km². The total built up area is about 227.8 km². In the early 1980s, urbanized areas covered approximately 100.0 km². Grand Casablanca, as shown in Figure 5, consists of:

- The Prefecture of Casablanca, which includes eight districts and prefectures of a municipality
- The Prefecture of Mohammedia
- The Province of Médiouna
- The Province of Nouaceur



Figure 5 - Administrative Division of the Grand Casablanca

The population of Grand Casablanca is approximately 3.6 million, according to the 2004 census, with 91.6% of them living in urban areas. The rate of urbanization has increased in recent years from 94.4% in 1994 to 95.5% in 2011 (Figure 6).

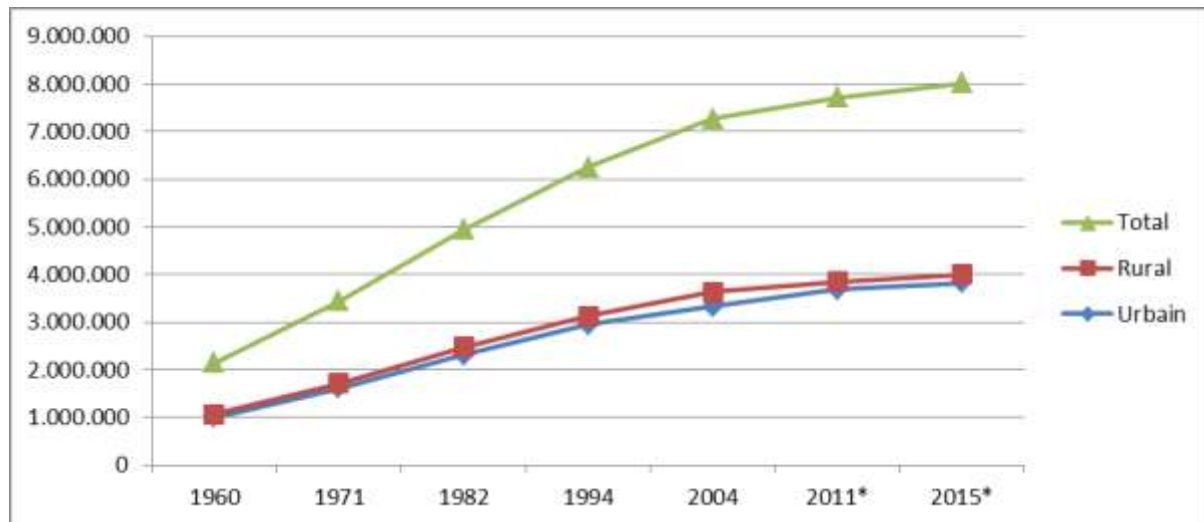


Figure 6 - Morocco Rural and Urban Population (Source: RGPH 1960, 1971, 1982, 1994 and 2004, Population Projections – CERED)

The road network in the Grand Casablanca Region extends over a length of 573 km of which 512 km are paved. Grand Casablanca has well-developed infrastructure, including:

- **The Port of Casablanca.** It is a commercial port, which accounts for nearly 35.5% of freight traffic through the ports of the Kingdom. Port traffic accounted for 24.5 million tonnes in 2012. It is the second largest port in Africa.
- **The port of Mohammedia.** It is considered the primary oil port in the country with 74.7% of the national oil traffic. It also has a vocation of trade and fishing. Port traffic accounted for 12 million tonnes in 2012.
- **Mohamed V airport.** In this airport the transport movement of people and goods accounted for approximately 48.3% of passengers and 90.5% of freight nationally in 2008.
- **Al Bidaoui.** RER Casablanca that crosses the entire city of Casablanca to the Mohamed V airport.
- **The first line of Casablanca Tramway.** It was given to the public in December 2012. The 31 km tram lines link the south-western and eastern suburbs of Casablanca to the city center, covering 47 stations along the route.
- **Bus transport network.** Various companies involved in the network of bus transport (M'dina Bus, Bus Chennaoui, Lux Transport)

The transport sector is a major source of greenhouse gas emissions and it is responsible for nearly 15% of total emissions of Morocco.

Rabat

Rabat-Salé-Zemmour-Zaer is located northwest of the country, including the capital and its hinterland. This region is 9,580 km², consists of prefectures (predominantly urban) and province (predominantly rural) following:

- Prefecture of Rabat, area of 8305 km²;
- Prefecture of Salé, area of 672 km²;
- Prefecture Skhirate-Temara;
- Province Khemisset.

Rabat is the capital of Morocco and the capital of the Rabat-Salé-Zemmour-Zaer. It is located along the Atlantic Ocean and on the left or south of the mouth of the river Bouregreg, opposite the city of Salé. The city's population was 627,932 inhabitants in 2004

The transport network of Rabat consists of buses which are operated by STAREO, a company managed by the prefecture. The tramway is managed by TRANSDEV tram. A railway line with electrified double track connects the neighbouring cities of Rabat, Salé and Casablanca. The majority of people commuting between Casablanca and Rabat use the TNR (fast train shuttle) that provides a service with a frequency of half to one hour. Rabat has two stations: Rabat City in the borough of Hassan Rabat-Agdal and the Agdal. People living in distant suburbs generally use personal vehicles to reach the urban network.

For the parking space, the cost is very high and the difficulty of finding a place discourages car use. The international Airport Rabat - Sale has a capacity of 3.5 million passengers and traffic volume was 485,000 passengers in 2013.

Marrakech

Marrakech, known as the Pearl of the South or South Gate and red ochre, is a city in Morocco, in the interior, at the foot of the Atlas Mountains. Marrakech has about 909,000 inhabitants, according to the 2012 census, spread over an area of 230 km². The city is divided into two distinct parts: the Medina or historic and the new city. In recent years, the city expanded in the periphery, which resulted to the creation of two satellite cities, the Tamansourt and the Shwider.

3.3.1. Description of the Data Collection Process

Interviews were conducted with different transport stakeholders (Table 12) including local authorities, the Ministry of Transport, the Interior Ministry and private transport companies. Each official was familiar with at least two of the four thematic clusters included in this research. During the interviews, the SOLUTIONS project and its objectives were initially described. Based on the "city needs identification" questionnaire, the needs, gaps and priorities of different cities, as expressed by the interviewees, regarding urban mobility solutions for the four thematic clusters were recorded next. All interviews were held in French and Arabic. The information obtained from Moroccan city officials along with the characteristics of the transport system in Morocco provided a good basis for drawing some initial conclusions for the

four thematic clusters as well as their relative importance. It should be noted that in order to avoid introducing bias, the researchers refrained from speaking while participants were answering the questions.

Table 12 City officials interviewed in Morocco

Name	Organization	Position
M. ABDELMALEK BOUT	AODU	General Director
MLLE. HABIBA EL ALAMI EL KAMOURI		On Charge of the service mapping data
MLLE. FATIMA EZZAHRA CHOURAICHI		Responsible for operating
M. BRAHIM BELAGZOULI		Head of the Planning Division
MR. SAFOUANE MEHDI	Medina BUS	Director of operations, and development study Division
MR. AZIZ BERRAHOU	CasaTransport	Head of development department
MRS. ZAHRA OUACIFI	The program strategy and coordination of transport Department/ Transport Ministry	Head of the Coordination of Transport Modes Division
MRS. HALIMA LESSIQ		Head of cost studies and pricing department
MR. YASSINE JARI	Wilaya of Rabat	The General Secretary of the prefecture RABAT
MR. ABDELAZIZ B-IDRISSI		Charge of the mission from Mr. Wali of Rabat
MRS. LEILA BEN EL MOSTAFA	Interior Ministry	Supervisor traffic and roadwork
MR. ALBERTO PEREZ	ALSA BUS Company	General Director, Morocco
MR. MUSTAPHA BOULMANE	Prefecture of Marrakech	Chief of technical studies and facilities Division

3.3.2. Needs, gaps and priorities of Moroccan cities for each of the four thematic clusters

Public transport

According to the city officials in Morocco, the future public transport system will be planned based on public transit. The introduction of new transport modes (tram, metro, etc.) in combination with relevant policies, have the potential to shape the future public transport in Moroccan cities.

Table 13 summarizes the public transport solutions for Morocco and describes the current situation as well as the future plans and priorities per city.

Table 13 Public Transport Solutions identified by Moroccan city officials

City	Current situation	Needs, Future Projects and Priorities
Casablanca	<p>The means of public transport are buses, tram, train and big and small taxis. There are 866 buses which however are of poor quality.</p> <p>The imbalance between supply and demand and low education level of professional drivers are among the most evident problems.</p> <p>Rail systems are carrying a high percent of passengers per day and are getting a bigger share from public transport.</p> <p>A line of tramway opened to the public in December 2012. A network of 31 km links the south-western and eastern suburbs of Casablanca to the centre of the city, including 47 stations along the route with 250,000 travelers per day.</p> <p>For intercity transport, highway is used.</p>	<ul style="list-style-type: none"> ▪ The most important priority is the development of public transport infrastructure. ▪ Better accessibility to public transport for everyone ▪ Better use of railway. ▪ Implementation of RER ▪ Completion of a 2nd tram line (31km realized) ▪ <i>Future project:</i> Completion of the 3rd and 4th line of the tramway. ▪ Give priority to the bus ▪ <i>Project awaiting funding:</i> Metro <p><u>Scenario in 2015 involves:</u></p> <ul style="list-style-type: none"> ▪ Restrict the movement of big taxi on some roads. ▪ Spatial redistribution of trips and decrease the routes of small taxis ▪ Reduced travel time in big taxis ▪ Manage signalling ▪ Improve road accessibility ▪ Equilibrate the axes through Mohammedia in favor of public transport

Rabat	<p>The means of public transport are buses, tram, train and big and small taxis. Buses are however are of poor quality.</p> <p>The imbalance between supply and demand and low education level of professional drivers are among the most evident problems.</p> <p>Rail systems are carrying a high percent of passengers per day and are getting a bigger share from public transport.</p> <p>2 lines of tramway between Sale and Rabat (Line 1: 11,7 km and line 2: 7,8 km with 180,000 travellers per day).</p>	<ul style="list-style-type: none"> ▪ Retrofitting of buses by STAREO ▪ Extension of the tramway lines (10km each line)
Marakkech	<p>The means of public transport are buses, motorcycles, bikes, big taxis and small taxis. 100 buses are used for urban transport and another 100 for the inter-urban transport. The bus fleet is being renewed since 2007.</p> <p>Alsa (bus private company) requires a high level of skills of drivers (professional card requires). To this end, it has installed a training center with a simulator in order to train its employees. They also implemented the security plan DOH (Driving Out How). Drivers are evaluated 2 times per year (Initial and continuous training & Highly personalized training).</p> <p>All these measures have helped to reduce the accident rate. Private vehicle: 120 PV per 1000 inhabitants. Motorcycle and bicycle: 240 per 1000 inhabitants.</p>	<ul style="list-style-type: none"> ▪ The most important priority is the development of public transport infrastructure. ▪ Fleet renewal ▪ Installation of a BRT system and operation with a high level of service (in 6 months) ▪ Integrated planning of public transport network

Transport Infrastructure

Based on the outcomes of the personal Interviews, the most important priority proves to be the development of public transport infrastructure which is today underdeveloped and unable to cope with the daily movement of people.

Table 14 summarizes the transport infrastructure solutions for Morocco and describes the current situation as well as the future plans and priorities per city.

Table 14. Transport infrastructure solutions identified by Moroccan city officials

City	Current situation	Needs, Future Projects and Priorities
Casablanca	Transport infrastructure today is underdeveloped and unable to cope with	<ul style="list-style-type: none"> ▪ Development of public transport infrastructure

	daily movements of people within the framework of their professional activity.	<ul style="list-style-type: none"> ▪ Technical support for infrastructure projects is important for the future of this city. <p><u>Projects:</u></p> <p>The introduction of:</p> <ul style="list-style-type: none"> ▪ Dedicated bus lanes ▪ Intermodal interchanges ▪ Pedestrians infrastructure ▪ Master plan for parking
Rabat	<p>Implementation of:</p> <ul style="list-style-type: none"> ▪ New bridge and tunnel Hassan II-Oudayas ▪ The railway ▪ The beltway 	<ul style="list-style-type: none"> ▪ Development of public transport infrastructure ▪ Technical support for infrastructure projects is important for the future of this city. <p><u>Projects:</u></p> <ul style="list-style-type: none"> ▪ Extension of tram line (10km each line) ▪ Establishment of urban travel plan (PDU) <p>The introduction of:</p> <ul style="list-style-type: none"> ▪ Dedicated bus lanes ▪ Intermodal interchanges ▪ Pedestrians infrastructure ▪ Relay parking <p>NB: Cycling is not a priority</p>
Marakkech	<p>Implementation of urban travel plan (PDU) on 2009.</p> <p>Transport infrastructure today is underdeveloped and unable to cope with daily movements of people within the framework of their professional activity.</p>	<ul style="list-style-type: none"> ▪ Development of public transport infrastructure ▪ Technical support for infrastructure projects is important for the future of this city. <p><u>Projects:</u></p> <p>The introduction of:</p> <ul style="list-style-type: none"> ▪ Dedicated bus lanes ▪ Intermodal interchanges ▪ Pedestrians infrastructure ▪ Relay parking <p>NB: Cycling is not a priority</p>

City Logistics

Although some initial actions (e.g. vehicle restriction, night deliveries, etc.) have been undertaken in Morocco for improving urban freight operations, city logistics are still found to be not well organized or planned. To this end, there is a great interest of local authorities to improve the urban logistics system following a structured and integrated approach.

Table 15 summarizes the city logistics solutions for Morocco and describes the current situation as well as the future plans and priorities per city.

Table 15. City logistics solutions as identified by Moroccan city officials

City	Current situation	Needs, Future Projects and Priorities
Casablanca	In Casablanca, logistics center areas are disorganized and unplanned, which is also a problem for transport.	<p>The delivery of supplies involves four parameters which must be combined to provide the most appropriate solution:</p> <ul style="list-style-type: none"> • Parking spaces dedicated • Road hierarchy • Delivery schedules • The template of the delivery vehicle. <p>HGV (Heavy goods vehicle) traffic:</p> <ul style="list-style-type: none"> • The transmission of heavy vehicles is prohibited; • Parking for trucks • Networks of pick up points <p>Prefecture of Mohammedia (for 2015)</p> <ul style="list-style-type: none"> • Use of three interchanges right Mohammedia • Gratuity the highway (between Casablanca and Mohammedia East)
Rabat	<ul style="list-style-type: none"> • Setting up off-hour deliveries • Networks of pick up points • Prohibition of HGVs in the city 	Local authorities want to improve the system set up

	<ul style="list-style-type: none"> • HGV use the bypass (ring road) 	
Marakkech	<p>Logistic center areas are disorganized and unplanned into the city, which is also a problem for transport. However, the municipality set up some restriction for the deliveries in the old medina</p> <p>The HGV use the bypass (ring road) for the intercity transport.</p>	Logistic center areas need to be improved

Integrated Planning/Sustainable Urban Mobility Plans (SUMP)

The implementation of Urban Transport Plans is a good basis for integrated planning. Several issues are being taken into consideration and relevant targets are set. The vision of the local authorities for the near future is being integrated in the new urban transport plans which are being developed according to SUMP guidelines. To this end, further knowledge on EU SUMP may be of value to them.

Table 16 summarizes the integrated planning/SUMP solutions for Morocco and describes the current situation as well as the future plans and priorities per city.

Table 16. Integrated planning/SUMP solutions as identified by Moroccan city officials

City	Current situation	Needs, Future Projects and Priorities
Casablanca	<p>There is insufficient knowledge of the park and ride technical term. Furthermore, 50% of vehicles are non-compliant.</p> <p>The implementation of the PDU (Urban Transport Plan) in these 3 cities provides a visibility on the current situation for the implementation of the necessary measures:</p>	<ul style="list-style-type: none"> ▪ Accordance between transport and urban development plans with investments. ▪ Improved and newly designed public spaces are projects of districts municipalities. ▪ New urban transport plan according to this vision.
Rabat	<ul style="list-style-type: none"> ▪ Improving safety of all trips ▪ Decreasing road traffic ▪ Develop public transport and efficient means of travel and less polluting to the environment, including the use of cycling and walking ▪ Development and operation of networks of 	

<p>Marrakech</p>	<p>cities and roads</p> <ul style="list-style-type: none"> ▪ Organization of on-street parking and parking lots ▪ Transport and delivery of goods, while streamlining the supply conditions of the urban area in order to maintain trade and craft activities ▪ The establishment of an integrated pricing and ticketing for all trips ▪ The incentive for companies and public authorities to promote the transport of their staff, including the use of public transport and carpooling, realizing a plan for moving company <p>The urban transport plan must be evaluated after five years.</p>	<ul style="list-style-type: none"> ▪ Improving fuel quality. ▪ Vehicle performance ▪ Infrastructure development and privatization of the public transport ▪ They are working on current urban transport plan according to sustainable Urban Mobility plans ▪ Marrakech is a city where people prefer to use bike and motorcycle and it should be improved.
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Main conclusions for all four thematic clusters

The main conclusions that were derived from the interviews in Morocco, for all thematic clusters, can be summarized to the following:

1. The future public transport system will be planned based on public transit. The introduction of new transport modes (tram, metro, etc.) in combination with relevant policies, have the potential to shape the future public transport in Moroccan cities.
2. The most important priority proves to be the development of public transport infrastructure which is today underdeveloped and unable to cope with the daily movement of people.
3. Although some initial actions (e.g. vehicle restriction, night deliveries, etc.) have been undertaken in Morocco for improving urban freight operations, city logistics are still found to be not well organized and planned. To this end, there is a great interest of local authorities to improve the urban logistics system following a structured and integrated approach.
4. The implementation of Urban Transport Plans is a good basis for integrated planning. Several issues are being taken into consideration and relevant targets are set. The vision of the local authorities for the near future is being integrated in the new urban transport plans which are being developed according to SUMP's guidelines. To this end, further knowledge on EU SUMP's may be of value to them.

3.4. Algeria

Algiers

The city of Algiers covers a total area of 809,220 km² including 13 administrative districts which comprise 57 municipalities out of which 22 occupy the coastal part of the Wilaya. The Wilaya d'Alger has approximately 3 million inhabitants, according to the last census of 2008, with a density of 3826 inhabitants/km². Algiers is the capital city of the country and the economic, administrative and political decision-making centers of the whole country are located there. To this end, the city of Algiers comprises an important center of service and industrial jobs. Also, Algiers has the largest port and airport in the country.

Since the early 1990's, the city of Algiers has been experiencing an unprecedented urban sprawl. Influenced by new forms of residential mobility, urban decongestion and de-densification of its central areas, the Algiers conurbation has spread to new, outlying districts. This urban sprawl is triggering new dynamics in demand for travel and the need to adapt transport provision. The boom in motorized mobility and difficulties with improving public transport provision are fuelling traffic congestion, accompanied by marked deterioration in quality of the environment and of life.

Liberal reforms were taken by the Algerian State including, liberalization of the land and property market. These first steps have clearly accelerated urban sprawl around the Algiers conurbation. Within the space of 25 years, from 1987 to 2013, the city's built-up area tripled. The "center of gravity" of Algiers conurbation would have moved gradually towards the interior, at odds with the dynamics of urbanization that had prevailed until then.

Recent measures have resulted in increasing transport provision. However, despite this increase in provision due to heavy investment projects (metro, tram, cable cars, electrification of commuter trains), urban transport could not keep pace with the constantly evolving urbanization under the double impact of densification and extension, which resulted in:

- Mismatch between transport supply and demand as a result of a spatial dysfunction and lack of coherent urban planning highlighting transportation and land use.
- The regulatory and institutional shortcomings impacting the regulation of urban planning in general and urban transport in particular

Laws and legislative texts have accompanied the first two measures. In fact, despite the legislative and legal arsenal, there is still a gap between transport planning and urban planning. Altogether, the laws and regulations are not coordinated with the actions and the roles attributed to the various actors in urban planning and transport. These actors are stuck in inappropriate operating logic.

Demonstrating rapid urbanization and urban sprawl, the issue of urban mobility in Algiers raises major questions in terms of sustainable development.

3.4.1. Urban transport in the city of Algiers

The organization of urban transport is entrusted to different entities including the Ministry of transport, the Wilaya Transport Department (DTW) and the Municipality. The other Ministries involved indirectly in the organization of urban transport are the following: Ministry of Spatial Planning and Environment, Ministry of Mining, Ministry of Public Works, Ministry of Trade, Ministry of Housing and Urbanism, Ministry of Interior and Local Communities.

Priorities should be given in shaping and coordinating diversified multi-modal supply. The restructuring of transport supply will involve reorganizing transport provision which comes from numerous of small private operators by promoting inter-modality and pursuing efforts with public transport projects using exclusive lanes, including metro and tram. Such steps can already build on the principles established by the legal provisions of Law 01-13 of 7 August 2001 on the organization of land transport and on sector institutional capacity building: definition of a transport strategy, regulation of collective transport supply, and connection between the modes.

Multiplicity of actors forming the urban transport institutional framework in Algiers and the absence of an actual coordination body generates many overlapping jurisdictions that cause inefficiency and inconsistency. Therefore, in practice, the importance given to the transport department of the Wilaya partly offsets the skills of other players in charge of urban transport.

3.4.2. Description of the data collection process

In this case, data were collected from the following sources:

- Urban mobility in Algiers: trends and prospects. This document was prepared by Julie Enjalbert, on the basis of :
 - The report by Madani Safar Zitoun and Amina Tabti-Talamali
 - The overview prepared by Julien le Tellier
 - The survey on urban transport situation in the Middle East and North Africa, by Sylvain Houpin
 - The websites of the National Statistics Institute and the Ministry for development and International Cooperation

3.4.3. Needs, gaps and priorities of the city of Algiers for each of the four thematic clusters

Public transport

Deregulation of the transport sector, increased the TCU supply and partially met the trip needs, whereas it did not constitute a satisfactory and sustainable response to the mobility of Algiers. This proves that privatization and deregulation do not improve the TC themselves, but it is rather the introduction of carefully managed competition with a good definition of the regulatory bodies' roles.

Table 17 summarizes the public transport solutions for the city of Algiers and describes the current situation as well as the future plans and priorities.

Table 17. Public transport solutions identified

Current situation	Needs, Future projects and priorities
<p>In le Wilaya d'Alger, public transport is provided by the following public and private operators:</p> <ul style="list-style-type: none"> - ETUSA is the main public operator that provides public transport in le Wilaya d'Alger. City extension and the excessively slow improvement in its service provision have affected the increase in motorized trips using private cars. - L'Entreprise Métro d'Alger (EMA) provides urban passenger transport, including subways, trams and cable transport. - The National Company for Rail Transport that operates two lines in Algiers. - Student transport is operated by «Tahkout Mahieddine Transport», which since 2004 has held a monopoly on university transport in the wilaya of Algiers. - Walking, favored by a restricting geography and the congestion of road networks, keeps a dominant place in the daily transports in the wilaya d'Alger - The different projects for public transport using exclusive lanes (metro, tram) should improve transport conditions for the people of Algiers. Their efficiency, however, will depend on the degree to which they are integrated within global, coordinated multi-modal provision. This will only be possible once the sector's institutional capacity has been consolidated. 	<ul style="list-style-type: none"> ▪ Further develop collective transport and improve its attractiveness to limit the use of other modes of transport (PC, two-wheelers) and thus ensure secure trips. ▪ Reduce energy consumption and pollution and the improvement of environment by promoting soft modes of transport (public transport and two-wheelers) ▪ Improve the quality of services in terms of public transport ▪ Improve the integration of the different operators. ▪ Improve pedestrian crossings, as the majority of passengers are pedestrians.

Transport Infrastructure

The urban transport sector in Algiers is now witnessing complete remodeling. The heavy investment in infrastructure and the reengineering of organizational system, aim to overcome the many shortcomings of Algiers TCU. They are part of the new

vision of the Algerian authorities aiming to make Algeria the “Dragon of the Maghreb”.

Different studies conducted over the last two decades confirm that the selected options are the most likely to respond to Algiers mobility issues; however, one should remain alerted that these projects are actually accompanied by institutional reforms. One should also remain patient because the establishment of an urban transport organizational authority is a long-drawn-out job.

Table 18 summarizes the transport infrastructure transport solutions for the city of Algiers and describes the current situation as well as the future plans and priorities.

Table 18. Transport infrastructure solutions identified

Current situation	Needs, future projects and priorities
<p>The TCU network in the Wilaya d’Alger is dual. It consists of a collective public transport network and specialized collective transport network. The network of collective public transport is made of:</p> <ul style="list-style-type: none"> - 207 lines across all operators - 2 suburban train lines: the suburban line East Algiers-Thenia, in double-track along 53 km including 18 stations and stops, extended to single track up to Tizi Ouzou, 52 km far from Thenia ; - Western suburb line, Algiers- Blida- El Affroun, 68 KM in double-track including 10 stations and stops. - 4 cable transport lines (cable cars) - 2 mechanical lifts - 21 collective taxi routes <p>As for specialized collective transport network, it consists of:</p> <ul style="list-style-type: none"> - A 52-line Student transport network - An Employer transport network <p>The public bus transport lines are largely radial. The remaining 25% are suburban. This public collective transport network is based on 43 urban stations. As for stops, only the ones located on the latter network of the national operator (ETUSA) are marked by poles and sometimes by bus shelters. Thus, many stops are not marked.</p> <p>Despite the huge amounts of investment granted for transport infrastructure in Algiers, it is clear that:</p>	<ul style="list-style-type: none"> • Complete the basic road networking • Complete mass transport infrastructure works: metro, tram, cable transport, rail transport. • Implement macro-networking (Only-bus lanes) • Reduce railway noise black spot • Regulate and some lanes • Complete parking construction works of multi-storey car parks and multi-modal stations. • Modernize suburban train lines by electrification

Current situation	Needs, future projects and priorities
<ul style="list-style-type: none"> • Generalized congestion along the main thoroughfares and, consequently, a drop in travel speed • Recurrent shortcomings in public transport provision in terms of servicing, level of service, run-down fleets, and inter-modality. • A constant rise in GHG emissions related to the transport sector, mainly road transport which is heavily dependent on fossil energy. 	

City Logistics

No input was provided for the City Logistics cluster indicating that other clusters as being considered as more important.

Integrated Planning/Sustainable Urban Mobility Plans (SUMP)

It is evident that much effort is made in the fields of infrastructure and urban transport, but much remains to be done. The multimodal transport service is provided by metro, tram, cable cars, suburban train, bus and minibus companies, taxis and artisanal and informal operators. The late establishment of an organizing authority or its inefficiency of it (for lack of stakeholders' representation) induces competition between the modes ("free rider" strategies). The offer remains overabundant and inconsistent.

Table 19 summarizes the integrated planning/SUMP solutions for the city of Algiers and describes the current situation as well as the future plans and priorities.

Table 19. Integrated planning/SUMP solutions identified

Current situation	Needs, future projects and priorities
<p>A transport system is not simply the match between supply and demand, there are multiple and different issues regrouping the urban transport systems, for Algiers: urban qualities, capacity to pay for trips, social integration, external environmental impact, etc.</p> <p>The most popular lines are subject to fierce competition, while other lines are abandoned. Arch links are poorly organized, downtown center are therefore stressed. In fact, the reduction of distance-time on center to center links encourages people using arch links to stop in the center to change the mode. The absence</p>	<ul style="list-style-type: none"> • The completion of the bus stations construction program • Extensions of Tram, Metro and cable cars. • Completion of urban stations • Fight Road laxity • Set-up a legal and institutional framework in place • Apply technological innovations • Integration of different networks • Planned, developed, managed,

Current situation	Needs, future projects and priorities
<p>of fare integration weighs heavy on household budgets making it hard on some operators. Due to TCU low attractiveness, their modal share increases only by population growth but does not attract new users among pedestrians and owners of private cars. The financial expectations of the metro project are not met while all the extensions are not implemented.</p>	<p>operated and maintained networks in accordance with national rules and international standards and best practices</p> <ul style="list-style-type: none"> • Adopt the urban transport master plan in Algiers • Establish a horizontal coordination committee including urban transport • Establish the Social fund for urban transport development • Establish a collection system (ticketing) privileging the integration of the urban transport system. • Establish an integrated fare system for urban transport. • Create a traffic control center • Clarify the institutional framework to adapt it to the new forms of mobility of Algerian households

Main conclusions for all four thematic clusters

The main conclusions that were derived from the data collected for the city of Algiers, for all thematic clusters, can be summarized to the following:

1. Deregulation of the transport sector, although it has increased the TCU supply of Algiers and partially met the trip needs, it does not constitute a satisfactory and sustainable response to the mobility of Algiers. This proves that privatization and deregulation do not improve the TC themselves, but it is rather the introduction of a carefully managed competition with a good definition of the regulatory bodies' roles.
2. The urban transport sector in Algiers is now witnessing complete remodeling. The heavy investment in infrastructure and the reengineering of organizational system, aim to overcome the many shortcomings of Algiers TCU. They are part of the new vision of the Algerian authorities aiming to make Algeria the «Dragon of the Maghreb». The different studies conducted during the last two decades confirm that the selected options are the most likely to respond to Algiers mobility issues; however, one should remain alerted that these projects are actually accompanied by institutional reforms. One should also remain patient because the establishment of an urban transport organizational authority is a long-drawn-out job. Although some initial actions (e.g. vehicle restriction, night deliveries, etc.) have been undertaken in Morocco for improving urban freight operations, city logistics are still found to be not well organized and planned. To this end, there is a great interest of local authorities to improve the urban logistics system following a structured and integrated approach.

3. No input was provided for the City Logistics cluster indicating that other clusters as being considered as more important ones with relevant needs been reported.
4. It is evident that much effort is made in the fields of infrastructure and urban transport, but much remains to be done. The multimodal transport service is provided by metro, tram, cable cars, suburban train, bus and minibus companies, taxis and artisanal and informal operators. The late establishment of an organizing authority or its inefficiency of it (for lack of stakeholders' representation) induces competition between the modes ("free rider" strategies). The offer remains overabundant and inconsistent.

3.5. Tunisia

Sfax

Sfax has a population of 522,670 inhabitants and it is the second most important city and the second economic center of Tunisia. Sfax is a port city located at the country's eastern center, at about 270 km from the capital city of Tunis. Geographically extended, it includes Sfax and the municipalities of Sakiet Eddayer, Sakiet Ezzit, Chihia, Gremda, El Aïn, and Thyna. The governorate of Sfax includes 16 delegations, 16 municipalities and 126 rural and communal centers.

The population growth transferred to the suburbs and the emergence of the peripheral centers spurred the development of several local services (schools, high schools, health services, food trade). The induction of such public facilities will be a catalyst for transport mobility.

Sfax has a primarily agricultural economy. Besides agriculture, the economy of Sfax focuses also on industrialization covering different industries (wood, furniture, etc.). A chemical industry with linked activities related to oil and natural gas has also been developed. The industry is located in Miscar and covers a total area of 352 km²

According to the different texts, laws and regulations, urban transport involves different institutions but those directly involved are the Ministry of Transport, the Ministry of Equipment, the Governorate of Sfax, the Municipality of Sfax and the General Directorates. Other institutions are indirectly involved in transport policy in Sfax.

3.5.1. Urban transport in the city of Sfax

The transport system of Sfax is characterized by massive energy consumption, high pollution, invasion of private cars and the phenomenon of collective taxis. Following the deterioration of the public transit, including the services offered by SORETRAS, citizens of the city had to use private cars or resort to collective taxis.

Given this situation, there is a common consent on the importance of the establishment of a transport authority which will be able to promote sustainable mobility. The subway is only one component which is not expected to have any impact on improving the existing mobility conditions. An integrated approach is

required which covers several fields: urban planning, institutional framework for transport, public transport priority, control of traffic and parking, pedestrians and two-wheelers ways, etc.

3.5.2. Description of the data collection process

To complete this task data have been collected from:

- Studies conducted in the field of transport and circulation in Sfax metropolis. Mainly the Regional Transport Master Plan of Grand Sfax was used as a reference document.
- The websites of the National Statistics Institute and the Ministry for development and International Cooperation

3.5.3. Needs, gaps and priorities of the city of Sfax for each of the four thematic clusters

Public transport

Sfax metropolis has been affected by the suburbanization phenomenon for years; its inhabitants moved from the CBD to the suburbs. The peripheral municipalities are witnessing major demographic and economic dynamism, which has an impact on the daily life of their inhabitants, and especially their mobility.

The problem is caused by a public transport system that is neither attractive nor abundant and the citizens of these municipalities use mostly their own cars or motor-scooters to travel. Based on this situation, Sfax metropolis is facing serious congestion problems, especially during peak hours that further deteriorate public transport services, operated mainly by the SORETRAS bus.

The regional authorities have realized the problem and have put in place various transport measures to assess and improve the current conditions. The update of the Regional transport Master Plan of Grand Sfax is one of the measures taken to develop the public transport and improve its attractiveness.

Table 20 summarizes the public transport solutions for the city of Sfax and describes the current situation as well as the future plans and priorities.

Table 20. Public transport solutions identified

Current Situation	Needs, Future Projects and Priorities
<p>In the Governorate of Sfax, public transport is provided by the following public and private operators:</p> <ul style="list-style-type: none"> • The SORETRAS is the operator that covers the passengers' public transport by bus on urban and regional 	<ul style="list-style-type: none"> • Develop public transport and improve its attractiveness to limit the use of other modes of transport (cars, two-wheelers) and accordingly ensure safe travel • Reduce energy consumption and pollution and improve the environment by

Current Situation	Needs, Future Projects and Priorities
<p>lines. The bus company is characterized by low frequencies and an excessive waiting time at stations. The inadequacy of its offer and urban sprawl make the company unable to meet the needs of commuting between the center and the periphery.</p> <ul style="list-style-type: none"> • It is also witnessing a continual decrease of the share of public transport. • The National Tunisian Railways Company is also present in the governorate of Sfax with the operation of the line Tunis • The Individual Taxis have become an attractive alternative for public transport. In terms of generalized cost, the use of Taxi is cheaper for the users that the use of bus, since they gain a lot of time using the collective that are always available. • The individual car is a dominant mode of transport for all trips, especially for commuting. The modal share of cars has been growing since the 80's at the expense of public transit. • These combined transport operators create severe congestion, especially during peak hours, increasing pollution and uncontrolled parking of individual cars mainly in the downtown, and the transit of heavy goods vehicles through downtown. 	<p>promoting soft transport (public transport and 2 wheels).</p> <ul style="list-style-type: none"> • Increasing the availability of public transport by purchasing new buses of different types (standard, articulated bus, and minibus) • The fare integration by revising pricing to improve the transport conditions between the lines and promote the attractiveness of public transport • Improve the attractiveness of SORETRAS services by improving the quality of service (information available on the network, punctuality respected, improved frequencies, Smooth transfers) • Restructuring SORETRAS network • Reorganization bus routes in the city center

Transport Infrastructure

Insufficient investments to expand and improve road infrastructure are the basis of the inability of the road network to absorb the increased traffic and maintain acceptable transport conditions. The low level of development, maintenance, organization, and insecurity is reflected in the increasing trend of road traffic accidents. Infrastructure related needs and priorities cover a wide range of transport solutions, including bus stations and stops, bridges, parking areas and highway. Table 21 summarizes the transport infrastructure solutions for the city of Sfax and describes the current situation as well as the future plans and priorities.

Table 21. Transport infrastructure solutions identified

Current Situation	Needs, Future Projects and Priorities
<ul style="list-style-type: none"> • The road network in Grand Sfax consists of 14 radial roads including 6 nationally roads (RN and RR), 8 intended to penetrate the city of Sfax and for local service. This network also includes four ring roads providing lateral traffic exchanges. Sfax city center has also a fairly dense and well-connected road network. • The road network of Grand Sfax consists of two types of radial roads: radial road with a regional focus and radial roads for the penetration in the city and for local service. • They are arranged in two lane radial roads reaching 11 km, except Saltnia roads that are partially developed into two-lane roads (about 6 km) and Kaied Mhamed whose lane is fully bidirectional. • The absence of parking policy and the anarchic parking along the main roads contributed to the traffic congestion. • Quantitative and qualitative deterioration of the bus network has resulted in a decrease in the market share of public transport 	<ul style="list-style-type: none"> • The partial restructuring of the network by creating a circular line in the central part of the city of Sfax • Improve operation conditions optimizing inter-stops distances and creating bus-only lanes. • Create a right-of-way transport network consisting of a suburban railway and 5 radial light rail lines • Develop an Urban Transport Plan • Duplication and street lighting for the 11 km ring road (2 x 2 lanes) located between Tunis and Gabes roads extended over 28 km. • Widening of 6 bridges on the ring road. • Develop 21 roundabouts. • Reorganize parking areas in the city center. • The Construction of a depot for SORETRAS buses. • The construction of a bus station. • Pedestrianization of the Hedi Chaker Avenue. • Increase the supply of parking areas near the center. • Gradual introduction of short-term paid parking systems. • Reactivation of wheel clamps • The organization of taxi and hire car stations • The construction of an interchange (Bouassida) at the crossroads NR1 • Double lane development of National Highway No.1 Sfax city to Mahrès city. • Construction of two multi-storey car parks with a capacity of 500 and 700 places in the region of Sfax El Jadida. • The construction of the coastal North/South urban freeway. • The development of inter-commune ring road. • The construction of two interchanges on Menzel Chaker Road and the Airport Road at the KP4 of the ringroad.

City Logistics

No input was provided for the City Logistics cluster indicating that other clusters are considered more important.

Integrated Planning/Sustainable Urban Mobility Plans (SUMP)

Urban sprawl and the inability of public transport system to meet demand in the city of Sfax have led citizens to use personal modes of transport. This situation has also facilitated the emergence of unofficial "collective" taxis. This new mode, although unofficial, benefits the population by providing adequate service. It is obviously much more competitive than the public transport which uses the SORETRAS buses. Moreover, customer transfer from bus to "collective" taxis is increasingly noted in the urban landscape of Grand Sfax.

Much work has been done by the municipal authorities and large-scale projects have been developed, to recover the position of public transport mobility in Grand Sfax. The implementation of these projects depends on the involvement of municipal authorities and private actors.

Table 21 summarizes the SUMP solutions for Sfax and describes the current situation as well as the future plans and priorities.

Table 22. Integrated planning/SUMP solutions identified

Current Situation	Needs, Future Projects and Priorities
<ul style="list-style-type: none"> All political and administrative officials both in central and local levels as well as the civil society and private actors are willing to recognize the need to develop sustainable transport modes to improve the mobility of the population, quality of life and environment of Grand Sfax. Studies have been carried out to establish sustainable transport. In this context, the Development Strategy of Grand Sfax (GSDC), which pays special attention to the transport sector, must be fully applied. <p>Several obstacles hamper the implementation of transport projects, including:</p> <p>Technical/institutional problems:</p> <ul style="list-style-type: none"> Difficulty and expropriations cost, release of the needed land for 	<ul style="list-style-type: none"> The implementation of activities under GSDC the action plan in 2016 Ensure the evaluation of the traffic plan, parking areas. Continued implementation of the blue zones Assessment of SORETRAS's degree of performance The launching of the Urban Mobility Plan (PDU) The realization of the right-of-way projects- for light rail or tram Create a structure in charge of projects within the technical services in the Municipality of Sfax, in coordination with and within various ministries involved in the GSDC transport sector Identify/appoint a project manager/leader Develop a communications strategy to

Current Situation	Needs, Future Projects and Priorities
<p>expropriation, possible difficulties</p> <ul style="list-style-type: none"> • Operating SNCFT expropriation and risk of SNCFT reluctance • Availability of funding <p>Institutional Barriers:</p> <ul style="list-style-type: none"> • Current institutions are ill-equipped or prepared to develop sustainable transport project. Lack of coordination between services (structure, procedures), the heavy weight of daily management prevents officials from having a strategic vision • Insufficient skills in urban transport, especially technical skills is not covered by academics • Lack of political to prioritize PT • Lack of participation of civil society, local and regional actors are not sufficiently joining efforts • Low involvement of local communities • Absence of an UT organizational authority in Grand Sfax. • Absence of a "master"/project manager • The dissipation of regulations to implement Law No. 2004-33 related to land transport. Land transport activities remain marked by the breakdown of the governing legal text • The multiplicity of actors and the division of powers undermines the efficiency in the transport sector • The current organization of public transport system with public companies under the Ministry of Transport does not allow efficient system operation. • Regional companies face major challenges despite the state subsidies that remain insufficient • Lack of technical capacity of companies, which makes monitoring the implementation of new projects challenging. 	<p>promote the project</p> <ul style="list-style-type: none"> • Acquire relevant information about the transport system in which the project would be part of Bus-only lane • Launch transient short-term actions (minibus, right of way) before achieving long-term projects • Carry out a reform aimed to combine these texts • Continue with the decentralization of local entities and provide a financial base that could help to support the financing of transport projects • Establish public companies, corporations • Create monitoring units to implement new projects in public transport companies • Creation of a Municipal Agency to operate the parking management • The development of a transport NAMA in the city of Sfax

Main conclusions for all four thematic clusters

The main conclusions that were derived from the data collected for the city of Sfax, for all thematic clusters, can be summarized to the following:

1. Public transport services prove not to be that is nor attractive nor abundant. As a result, the citizens of Sfax use mostly their own cars or motor-scooters to travel. To this end, Sfax metropolis is being experiencing serious congestion problems, especially during peak hours that further deteriorate public transport services. The regional authorities have realized the problem and have put in place various transport measures to assess and improve current conditions. The update of the Regional transport Master Plan of Grand Sfax is one of the measures taken to develop the public transport and improve its attractiveness.
2. Insufficient investments to expand and improve road infrastructure are the basis of the inability of the road network to absorb the increased traffic and maintain acceptable transport conditions. The low level of development, maintenance, organization, and insecurity is reflected in the increasing trend of road traffic accidents. Infrastructure related needs and priorities cover a wide range of transport solutions, including bus stations and stops, bridges, parking areas and highway.
3. No input was provided for the City Logistics cluster indicating that other clusters as being considered as more important ones with relevant needs been reported.
4. Urban sprawl and the inability of public transport system to meet demand in the city of Sfax, have led citizens to use personal modes of transport. This situation has also facilitated the emergence of unofficial "collective" Taxis. This new mode, although unofficial, benefits the population by providing adequate service. It is obviously much more competitive than the public transport which uses the SORETRAS buses. Moreover, customer transfer from Bus to "collective" Taxis is increasingly noted in the urban landscape of Grand Sfax. Much work has been done by the municipal authorities and large-scale projects have been developed, to recover the position of public transport mobility in Grand Sfax. The implementation of these projects depends on the involved of municipal authorities and private actors.

4. Common urban mobility factors for the Mediterranean Region

Based on personal interviews that were conducted with city officials in Israel, Turkey and Morocco and the input provided for Algeria and Tunisia, the common urban mobility needs, gaps and priorities of Mediterranean cities were identified for each of the four thematic clusters. As already mentioned, those outcomes will set the basis and will be further elaborated through relevant discussions that will take place within the context of three local workshops. The outcomes of these workshops will be presented in a final Mediterranean event where the common urban mobility needs, gaps and priorities for the Mediterranean region will be validated and finalized.

Public transport

All interviewees pointed out the need to develop an efficient and integrated public transport system considering all different transport modes. Such a system will contribute towards enhancing its overall performance attracting passengers to use public transport instead of their personal vehicles. BRT and LRT systems and their efficient integration with other transport modes have increased the share of public transport compared to private cars. The prioritization of public transport as well as the introduction of transport modes that move on fixed guideways may contribute significantly to the reduction of traffic congestion, a major problem for most cities. Great focus is also being placed on sustainable modes of transport i.e. cycling and walking with relevant infrastructure need for its further promotion. Of course the different measures have to be coupled with appropriate policies providing incentives to passengers to use more efficient and sustainable transport modes.

Transport Infrastructure

Transport infrastructure in the Mediterranean region is lacking integrated planning. Existing infrastructure is insufficient for supporting existing transport demand in the different Mediterranean cities. Several challenges are related to the insufficient provision of transport infrastructure, including poor level of service, run-down fleets as well as lack of intermodal passenger transport. The impact on the environment is also profound with a constant increase on GHG emissions being reported, particularly from road transport. Interviews showed that the most important need in the Mediterranean region is the development of public transport infrastructure which is inadequate to cope with existing daily transport demand. It was also mentioned that the extension or construction of dedicated bus lanes and bridges as well as the addition of extra bus stops and parking areas are necessary to move the transport system towards sustainability. Pedestrian zones and bike routes were also identified as essential needs in urban areas where personal vehicles are the predominant mode of transport. In summary, Mediterranean countries showed that priorities related to transport infrastructure envision a sustainable transport system that will be able to provide accessible public transport, bicycle and pedestrian routes.

City Logistics

City logistics appeared not to be so advanced for the countries in the Mediterranean region. Urban freight operations are either underdeveloped or not developed at all. The strategic location of Mediterranean cities urges the development and organization of logistics activities. Although Mediterranean cities identified different specific priorities, the need to connect major logistic centres with ports, airports and rail terminals was acknowledged by all countries' representatives. Additionally, the planning and implementation of logistics villages, efficiently connected to the transport network and the exploitation of underutilized terminals, are expected to improve logistics and operations management.

Integrated Planning/Sustainable Urban Mobility Plans (SUMP)

Integrated planning/Sustainable Urban Mobility Plans (SUMP) was identified as the most important cluster out of the four. Sustainable urban mobility planning is a diverse cluster that encompasses various processes. The objective of SUMP is to create the foundations for long-term sustainable mobility planning in urban areas. A SUMP has an overall impact on the quality of life that raises the city attractiveness to investments. One of the most important needs for all cities was found to be the integration of transport modes in urban areas and major city centres. Additionally, it was mentioned by the interviewees that transport, urban planning and development in accordance with local and regional investments are necessary to promote sustainable transport. Other major needs identified are related to the: 1) improvement of public space (i.e., changing the design-approach of community roads to respond to local conditions) to balance the needs of all users and to encourage usage of green modes, 2) collaboration between municipalities and local governments, and 3) establishment of policies, guidelines and evaluation criteria to plan, operate, manage and maintain the transport system in an efficient and effective way.

5. Annex

Urban transport in Mediterranean partner countries:

City needs identification questionnaire

Scope of the city needs identification questionnaire

The following questionnaire aims to identify the specific framework conditions of each participating Mediterranean city with regard to the 4 thematic clusters considered for the Mediterranean region i.e. Public Transport, Transport Infrastructure, City Logistics and Integrated Planning/Sustainable Urban Mobility Plans (SUMP)s. More specifically, it aims to build a common understanding of the existing conditions in each city with regard to the 4 thematic clusters and identify their respective needs, priorities, future plans and areas of interest.

The findings of the questionnaires will serve as the starting base for the discussions that will take place within the regional workshops that will be organized in each participating country resulting in framing the priorities in terms of innovative and green urban transport solutions implementation. Building on this, experiences from the implementation of the selected, by each city, solutions will be shared and their potential vis-à-vis the specific framework conditions of these cities will be assessed.

A1. General Contact Details

Organization/Authority			
Short name			
Street		No.	
City		ZIP	
Country		Department (if applicable)	

A2. Contact Person

Last Name				
First Name				
Middle Name				
Title/Position		Gender	<input type="checkbox"/> Male	<input type="checkbox"/> Female
Phone		Mobile		
Fax		E-Mail		

B. General description of the project

Transport is a key enabler of economic activity and social connectivity. While providing essential services to society, transport is also an important part of the economy and it is at the core of a number of major sustainability challenges, in particular climate change, air quality, safety, energy, security and efficiency in the use of resources.

“SOLUTIONS – Sharing Opportunities for Low carbon Urban transportatIOn” is a research project, funded by the European Commission’s 7th Framework Programme, aiming to support the exchange and uptake of innovative, sustainable and green urban mobility solutions in Europe and other regions in the world, in particular in Asia, Latin America and the Mediterranean. Building upon previous and on-going research projects and initiatives, SOLUTIONS brings together a wealth of experience and technical knowledge from international organisations, consultants, cities and experts involved in transport issues and solution with the overall objective of bridging the “implementation gap” between the potential of innovative, sustainable, mobility and transport solutions and solutions packages and the actual level of uptake and quality of the deployment mechanisms.

Improving the sustainability of urban transport in Mediterranean partner countries is a key issue to be addressed in SOLUTIONS. More specifically, experiences from the implementation of innovative and green urban transport solutions that will be selected as priorities by each participating Mediterranean city will be shared and their potential vis-à-vis the specific framework conditions of these cities will be assessed. The solutions to be considered for the Mediterranean region are focusing on the following four Thematic Clusters:

1. **Public Transport:** A high-quality, modern and energy-efficient public transport system that is well integrated with other modes is key to offering a fast and convenient alternative to the private car and creating an appealing urban environment. Public transport systems that want to be successful and remain competitive in 2020, should take into account four main trends, which are predicted for this time:

- increased public debt,
- ageing population,
- oil price increases and
- the expansion of metropolitan areas.

The stimulation of public passenger transport involves improved quality of service by means of introducing a set of measures in the fields of technology, organization, integration and information. Clean and energy-efficient vehicle fleets contribute towards saving costs and emissions at the same time. The integration of non-conventional elements assists in matching the public transport systems to the user needs. Indicative examples are the bus rapid transit (BRT) systems or demand responsive transport/flexible transit services. A crucial point is also the integration of public transport with walking, cycling and other modes, by integrating for example pricing systems with public bikes, car sharing or carpooling. Innovative organizational, financing and management schemes may

further assist in facing the challenges of scarce public funds and improve the efficiency of the systems. For public transport to attract more users, it is necessary to improve security, safety and increase passenger comfort. Particular attention is also placed on the accessibility of mobility impaired people. Integrated ticketing is also a crucial issue for making public transport and intermodal travel attractive options. Examples include smart cards that allow users to travel on different modes of public transport, or Park and Ride services that integrate parking fees and public transport fares. Public transport organization is of major concern of public authorities and transport operators. There are a few major schemes of public transport organization, with substantial differences according to the scope of market structure, liberalization or contracting.

Examples of solutions in the area of Public Transport are: (1) BRT system construction and operating with high level of service, (2) trolley bus systems, (3) metro systems, (4) use and operation of clean vehicles such as CNG, LPG, LNG in public transport system, (5) use of vehicles with new technology such as electric and hybrid vehicles in public transport system, (6) ITS for public transport, (7) integrated planning of public transport network, (8) financing public transport, (9) integrated fare system, (10) eco-driving for professional drivers, (11) bus priority and (12) bike sharing and public bicycles.

2. **Transport infrastructure:** The transport infrastructure cluster will focus on infrastructure for public transport (tramways, bus lanes, passenger waiting and boarding areas), infrastructure for soft modes (e.g. cycle routes, pedestrian facilities) and infrastructure for urban freight systems. The development of improved passenger transport is highly dependent on improved infrastructure whilst continued efficient operations are reliant on adequate and timely maintenance. This element will also include better sharing of road-space between guided vehicles (e.g. trams and guided buses) and bus lanes as well as separate dedicated public transport routes. Considerations of noise and vibration will be also included. Facilities for passengers to board and alight from trams and buses (including special provisions for the less-able transport users) and maintenance issues will be included. Walking and cycling could readily substitute the large share of trips of less than 5 km, which would lead to a reduction of greenhouse gas and noise emissions. Issues that would be looked into include: improving the quality and safety of infrastructure, design of cycle ways and pavements, parking spaces for bicycles, street furniture, pedestrian crossings etc. With regard to freight transport infrastructure issues to be considered in this cluster measures that can accommodate apparently differing objectives including loading areas, appropriate access control including signage as well as other measures to improve productivity with reduced disruption for others will be included.

Examples of solutions in the area of Transport infrastructure are: (1) dedicated bus lanes, (2) intermodal interchanges, (3) pedestrians infrastructure, (4) improving non-motorized infrastructure – improving public space and urban road designs for cycling and walking, (5) innovative safe cycling infrastructure, (6) cycle highways, (7) infrastructure for car and bike sharing and (8) pedestrianisation of city centres and streets.

3. **City logistics:** City Logistics is involved in all the means over which freight distribution can take place in urban areas in an optimized manner, as well as in the strategies that can improve its overall efficiency and sustainability, such as mitigating congestion, energy consumption and environmental externalities. Urban freight represents up to a quarter of transport related CO₂ urban emissions, a third of transport related NO_x urban emissions and half of transport related PM urban emissions. Freight is an essential factor for economic activity and is crucial in meeting new urban demands, including e'-commerce and home deliveries, waste recycling and reverse logistics, etc. However, it also imposes significant impacts on the environment and health of the most vulnerable residents, especially in cities of emerging countries. More and more attention is paid to these issues, by public authorities and operators, and a variety of new schemes have been investigated to improve city logistics.

Examples of solutions in the area of City logistics are: (1) Urban deliveries with cargo-cycles, (2) forums, portals, labels and training programs, (3) promotion of off-hour deliveries, (4) networks of pick up points, (5) larger use of rail and water, (6) urban consolidation centres, (7) municipal procurement reorganization, (8) lorry lanes for urban freight transport and (9) pricing schemes, taxes and tolls.

4. **Integrated planning/Sustainable Urban Mobility Plans (SUMP):** The Sustainable Urban Mobility Planning (SUMP) concept is strongly promoted by the EU (Action Plan on Urban Mobility, Transport White Paper 2011) and follows an integrated approach. It focuses on planning for the people's needs of urban mobility and quality of life rather than putting a one-dimensional focus on motorized private transport. The characteristics of SUMP are a pledge for sustainable mobility and for a multimodal/integrated planning approach; the involvement of stakeholders and citizens in a structured collaborative process; the implementation of integrated packages of measures that build on different types of instruments like planning, technical measures, pricing, information etc.; the process coordination regarding project timeline, spatial coverage and participating institutions; and a focus on achieving measurable targets. SUMP present an important step forward for existing practices by creating synergies and integrating sustainability targets in transport planning.

Examples of solutions in the area of Integrated planning and SUMP are: (1) general preparation of SUMP, (2) vision building for future sustainable urban mobility, (3) participation (involving stakeholders and engaging citizens), (4) participatory budgeting in SUMP context, (5) SUMP audit schemes and quality management, (6) measure(s) package selection strategies, (7) monitoring and evaluation of SUMP, (8) modelling and visualization tools in SUMP, (9) SUMP framework conditions, (10) capacity building and training schemes in SUMP and (11) engaging external support for SUMP development.

C. City priorities and contact persons for each of the 4 thematic clusters

	Cluster priority*	Contact person	Email	Phone number
Public transport	Choose priority level			
Transport infrastructure	Choose priority level			
City logistics	Choose priority level			
Integrated planning / Sustainable Urban Mobility Plans (SUMP)	Choose priority level			

*1 indicates the highest priority

D. Current situation per thematic cluster

Please describe the current situation in the city under your responsibility or in the urban areas under your responsibility with regard to each of the following 4 thematic clusters.

D1. Public transport

D2. Transport infrastructure

D3. City logistics

D4. Integrated planning/Sustainable Urban Mobility Plans (SUMP)

E. Needs, future plans and priorities per thematic cluster

Please describe the needs, main plans, priorities and fields of interest in the city under your responsibility or in the urban areas under your responsibility with regard to each of the following 4 thematic clusters.

E1. Public transport

E2. Transport infrastructure

E3. City logistics

E4. Integrated planning/Sustainable Urban Mobility Plans (SUMPs)

Detailed description of the responses of Israeli city officials¹

Public Transport

Solution	City Name	Description	Considerations for selection and preconditions for implementation	Challenges, difficulties, and recommendations for transferability
BRT system	Haifa	<p>The Matronit system is the first BRT system in Israel. It operates in the metropolitan area of Haifa.</p> <p>Currently the Matronit includes three lines: Line 1 (25 km, operates 24/7, trip estimated duration 55 minutes), Line 2 (18 km, 45 minutes), and Line 3 (16 km, 45 minutes). The Matronit operates at high frequency 24/7.</p> <p>A separate lane is dedicated to the Matronit buses. Priority at signalized intersections is planned for the entire route, but is currently only partially implemented.</p> <p>The Matronit uses special extra-long buses (18.75 m) with several doors that open simultaneously. The buses have a capacity of 140 (40 seats and 100 standing passengers).</p> <p>Payment and validation of tickets is performed at the station before boarding, through automated ticket sales.</p>	<p><u>Main reasons for choosing BRT:</u></p> <ol style="list-style-type: none"> 1. Demand levels in the Haifa metropolis better match the capacity of a BRT system. 2. Simpler statutory procedures enabled implementation in a shorter timeframe . 3. Because of Haifa's location in northern Israel, it was perceived that obtaining MOT approval for the large budget allocation required for an LRT system would not be possible. 4. In contrast with LRT, a BRT system enables gradual implementation, mainly with respect to the construction of dedicated lanes, and thus makes it possible to start operations (at least partially) earlier. 5. A high level of flexibility makes it possible to modify routes and change location of stations. 6. The damage caused to local businesses and commerce during the construction 	<ol style="list-style-type: none"> 1. Must consider feasibility of BRT in terms of budget constraints and volume of demand. 2. High density of signalized junctions increases the complexity of priority to the BRT along the route, and hence some delays at junctions are sometimes inevitable. 3. To minimize bunching and delays, buses with higher capacity should be implemented at the expense of frequency, at least to some extent . 4. The use of conventional bus lines as feeders from neighborhoods with low population density is inefficient. Demand Responsive Transport

¹ The number in the parenthesis brackets indicates the city official (Table 2) providing the respective input

		<p>Matronit stations are accessible through a network of feeder lines of buses whose routes are adjusted according to those of the Metronit.</p> <p>Real time information is provided through signs installed at the stations.</p> <p>As of February 2014 (7 months after initial operation) – 80,000 rides per day (about 30% more than expected).</p> <p>The three lines operating currently are part of a larger BRT system planned to be implemented in the Haifa metropolis.</p>	<p>period is less critical for BRT than LRT. Considerable and ongoing negative impact on the daily routine might jeopardize the success of the project even after completion of the construction works.</p> <p><u>Important preconditions for implementation:</u></p> <ol style="list-style-type: none"> 1. A network of feeder lines to allow access to and from all areas of the metropolis. Currently, this feature is partially implemented in Haifa. 2. Feasibility of implementation that satisfies all safety criteria. 3. Design of signal priority to minimize delays at junctions. 4. Comfortable transfer points/hubs. 5. Integrated payment system to allow the use of all relevant transportation systems with one card. This includes the use of one payment method and an integrated pricing scheme for all systems. 6. Synchronization with other transport modes. 7. Different stakeholders should be engaged early in the planning process. Stakeholders should include various social groups (e.g. students, vulnerable populations, representatives of different geographical locations in the city). 8. Safety feasibility and considerations 	<p>(DRT) should be considered. Such services will provide private car users with a reasonable level of comfort and might attract them to use public transport.</p> <ol style="list-style-type: none"> 5. Planning an integrated card system is challenging and not yet fully implemented in Haifa due to administrative considerations and multiple operators. 6. Combine with policy measures such as control of parking availability in Central Business Districts (CBD). 7. It might be tricky to attract new passengers to public transport due to employment agreements that encourage the use of private cars (Through benefits such as employer participation in insurance costs).
LRT system	Jerusalem	The Jerusalem Light Rail system includes a fleet of 23 vehicles. Each car is 32.52 meters long and 2.65 meters wide and		

		<p>has a capacity of about 500 passengers (with 112 permanent seats and 12 folding seats). The line is 14 km long and has 23 stops. Travel time along the route is about 50 minutes.</p> <p>The network of feeder lines is designed so they arrive in coordination with the light rail. Three Park&Ride facilities are located adjacent to LRT stations. LRT tickets enable travel on the LRT and on Egged buses for 90 minutes from the time of first validation. Tickets are validated inside the LRT.</p> <p>A total of 130,000 – 150,000 trips are conducted on a daily basis.</p>		
LRT system	Tel Aviv-Yafo	<p>The Tel Aviv LRT system is a national project, and so for the most part is not the responsibility of the Tel Aviv municipality. However, the municipality is involved in promoting the design and implementation of the system.</p> <p>The LRT system is part of the Tel Aviv Metropolitan Area Mass Transit System, a long-planned mass transit system for the Tel Aviv metropolitan area. The system will include several different types of rapid transit, including BRT and buses in addition to light rail.</p> <p>Implementation of this project has recently begun following several years of preparatory works and overcoming some unforeseen delays.</p>	<p><u>Important preconditions for implementation:</u></p> <ol style="list-style-type: none"> 1. Synchronization between different modes of transport. 2. Easy and convenient transfers. 3. Integrated ticketing. 	
Revised planning of PT	Holon	One line of the Tel Aviv metropolitan LRT is expected to pass through the main	<u>Preconditions for implementation:</u>	

		<p>streets of Holon. The city's current public transportation scheme will be revised in order to integrate it with the new LRT. Plans for this revision include:</p> <ul style="list-style-type: none"> • Planning public transport corridors with priority, including links to metropolitan areas and city neighborhoods. • Planning based on demand. • Promoting a multi-modal approach with reasonable walking distances and appropriate modern infrastructure for the convenience of passengers. • Limiting some of the main city roads to pedestrians and public transportation. • Ensuring quality measures such as high frequency, reliability, and accessibility. • Improving connectivity to employment centers that generate high demand during specific hours. 	<p>While actively promoting the priority of sustainable transport modes, it is essential to also ensure a reasonable level of service for private car users, as this mode of transport will always exist.</p>	
Special event solutions	Jerusalem	<p>The city of Jerusalem hosts a large number of events during the year. Preparations for events include:</p> <ul style="list-style-type: none"> • Shuttles from train station and parking lots to event locations. • Utilization of all parking lots around event locations. • Ticket to any event includes allocation to a specific parking lot. Parking fees are included in the ticket 		

		<p>price.</p> <ul style="list-style-type: none"> • Special timing plans for traffic lights. • Interchangeable lanes. 		
Bike-sharing (Tel-O-Fun)	Tel Aviv-Yafo	<p>Tel-O-Fun is a public bicycle-sharing service comprising 1,500 bicycles located at more than 150 stations throughout the city of Tel Aviv.</p> <p>It can be used through purchase of a daily, weekly or yearly subscription.</p> <p>There are currently about 110 kilometers of bike paths throughout the city, of which 70 km exclusively serve bikers, about 35 km are shared with pedestrians, and about 5 km are shared with motorized roads.</p> <p>The municipality has installed more than 3,000 bicycle parking spaces throughout the city, positioned near activity centers such as public buildings, commercial centers, workplaces, and public transportation hubs.</p> <p>The number of rides rose dramatically between the years 2007 and 2012 (+82%).</p> <p>The Tel-O-Fun is operated by the private sector, with support from the municipality for construction of the infrastructure (e.g., the rental stations).</p>	<p><u>Main reasons for choosing:</u></p> <ol style="list-style-type: none"> 1. This project is part of a long-term strategic program of the Tel Aviv municipality to promote sustainable transportation solutions and particularly the use of non-motorized transportation. 2. Tel Aviv suffers from a shortage of parking spaces and it is difficult to locate available parking spots in many locations throughout the city. 3. The city also suffers from heavy traffic congestion, and travel time over the main roads is very high. 4. Cycling is an appropriate solution for Tel Aviv due to its mild weather and flat topography. 5. The city center is relatively compact, and thus the vast majority of journeys require less than 30 minutes of cycling. 70% of the trips in Tel Aviv are less than 5 km. <p><u>Important preconditions for implementation:</u></p> <ol style="list-style-type: none"> 1. Availability of widespread cycling paths throughout the urban network prior to the implementation of such a transportation service. 2. Existence of rental stations within a short walking distance from every major route source and destination, available for use 	<ol style="list-style-type: none"> 1. It is important to create a critical mass of rental stations from day one of the operation. Gradual construction of rental stations over a long time period might jeopardize success. 2. The project must be examined in terms of its suitability to the characteristics of the population and their ability and willingness to adopt it. For example, in Tel Aviv cycling is considered part of a "green" trend. 3. Even where cycling fits in with environmental and health trends, awareness campaigns based on these trends are essential to attract private car riders to move to cycling. 4. Continuous cooperation between the municipality (authority) and the private operator is crucial. For example,

			<p>at the initial phase of the implementation.</p> <p>3. Availability of rental stations at transportation hubs and Park&Ride facilities.</p>	<p>cities must provide real-time information about station locations and cycle availability on the city's website or a mobile application.</p>
Bike-sharing	Rehovot	<p>Rehovot, like Tel Aviv, is a flat city. A bike-sharing service will be available throughout the city via a dense network of rental stations.</p>		
DRT	Various cities in Israel	<p>Demand-response transport solutions are offered in some urban areas in Israel—usually smaller cities, regional councils, and small neighborhoods.</p>	<p>This is considered a suitable solution where there is no consistent demand that justifies conventional PT lines.</p> <p>This is suitable for neighborhoods with diverse topography.</p>	<p>1. Higher cost of services.</p> <p>2. The procedures required for approving such services by the Ministry of Transportation are sometimes complicated.</p>
Sectorial solutions	Various cities in Israel	<p>As a diverse country Israel includes some unique groups with unique characteristics that affect public transportation.</p> <p>Some services are designed to meet special demands, such as services set up for particular days of the week or to serve particular populations (e.g., students on their way to and from academic institutions, religious people visiting holy places etc.) or a need coordinate schedules based on periodic and random demand.</p> <p>Urban lines are particularly designed and scheduled to provide a solution for "the last mile" of intercity trips, including specific nightlines, in order to encourage</p>		<p>1. Level of subsidization of the services</p> <p>2. Awareness that sectorial services are planned based on specific sector needs yet it can be used by everybody, and not only the specific sector.</p>

		<p>using public transport for intercity trips.</p> <p>Jerusalem is particularly interesting in this sense, as there are three Central Business Districts (CBD), one for each of its three main population groups (Orthodox Jews, secular Jews, and Arabs), each of having its unique needs.</p>		
Shuttles	Rehovot	<p>Rehovot is a city of ~115,000 inhabitants, with a large and spread-out high-tech industrial area (the "Science Park") at its northern border.</p> <p>A new shuttle service using electric buses (e-buses) is planned from several locations in the city, including the nearby train station. Dedicated lanes for the shuttle will be constructed at the expense of parking lanes.</p>		

Transport Infrastructure

Solution	City Name	Description	Considerations for selection and preconditions for implementation	Challenges, difficulties, and recommendations for transferability
Bicycle paths	Tel Aviv-Yafo	<p>Cycling routes have been part of the Tel Aviv master plan for over 15 years. The city thus far has 110 km of bike paths (integrated with bike rental stations and parking).</p> <p>This section in the municipal master plan was updated this year in response to changes in users' needs and demands.</p>	<p><u>Main reasons for choosing:</u></p> <p>This is a "green" solution to reduce congestion and parking needs.</p> <p><u>Important preconditions for implementation:</u></p> <p>The most important considerations when planning cycle paths concern safety</p>	<p>The main challenge is to integrate another type of user into the existing structure of the roads.</p> <p>Thus far, there is no agreement between the municipality and the Ministry of Transportation regarding</p>

			(preventing conflict with pedestrians and cars/public transport). Bike paths should be near the pavement on main transport routes with high speeds permitted and near the road on low-speed roads.	crossing intersections, which means parts of the cycling network are not contiguous.
Bicycle paths	Haifa	<p>Haifa's unique topography encompasses mountains and valleys. Therefore, the city's network includes a relatively large number of "stair trails".</p> <p>Bike paths are planned throughout the entire metropolis, both in the flat areas of the city (e.g., along the shore) and on hilly roads, where the use of electric bicycles is more appropriate.</p> <p>In addition to the bike paths, an infrastructure of cycle parking stations is planned at different locations around the city.</p>	<p><u>Important Preconditions for implementation:</u></p> <p>Integrating cycling routes with other transportation services, e.g. by providing bike parking near transportation hubs or ensuring availability of public transportation along cycling routes (2).</p>	<ol style="list-style-type: none"> 1. Regulation of the use of electric bikes. 2. Promoting public awareness and creating a positive image for biking. 3. Consideration of potential safety problems, especially with children. 4. Regulation of routes passing within natural reserves or national parks (2).
Bicycle paths	Ashdod	<p>Completion and densification of the arterial trail system, comprising interior neighborhood trails and connections between different quarters of the city to high schools, the local college, the central bus station, the train station and the beach.</p> <p>Maximum separation from pedestrians and motorized traffic will be implemented.</p>		
Green routes	Tel Aviv-Yafo	Tel Aviv's master plan includes six green routes. These are priority routes for pedestrians and cyclists, either new-built or based on existing streets. The routes will have a uniform design, with street		<ol style="list-style-type: none"> 1. An internal challenge within the municipality is to convince city officials to support the project, to agree on the best

		plantings and restrictions on commercial frontages. Planning includes removal of obstacles and priority for pedestrians and cyclist at junctions.		alternative solutions, and to raise the required budget from the different departments involved. 2. Road users must adjust to the change in priorities (in favor of pedestrians and cyclists).
Park&Ride	Tel Aviv-Yafo	The city has two Park&Ride facilities, one near its northern border and the other in the city center, which is accessible directly from the city's ring road. Another Park&Ride facility is located approximately 15 km east of the city, linked to a toll fast lane. This facility offers a free shuttle service to the city center.		
Shared space	Tel Aviv-Yafo		The municipality of Tel Aviv promotes shared space in some areas of the city. For safety reasons the municipality supports clear and unique markings for every transport mode. The alternative approach is a fully shared space with no separation between different modes of transport, in which safety is secured by setting and enforcing speed limits.	
New transportation hub	Holon	A new transportation hub is planned in the city. The hub will integrate all transport modes. A Park&Ride facility and nighttime truck parking will be located near the hub. Planning principles include convenience, short walking distances within the hub, synchronization between different modes		

		of transport, and integrated payment.		
Shared space & improving pedestrian infrastructure	Ramat Gan	<p>A solution planned for the city center gives preference to pedestrians and public transport. Private car traffic will be limited, and some major streets will be for pedestrians only or pedestrians with public transportation. Many parking spaces along the streets will be abolished.</p> <p>Two public parking lots are planned, one of them underground. This will allow visitors to drive close to the city center, to park, and then to use public transport or walk to their final destination.</p>		
Restrictive & sustainable parking policy	Kfar Saba	<p>Abolition of 462 parking spaces along public transport preference lanes.</p> <p>Extra time-limited paid parking spaces on the street will be established in two high-demand locations – the city center and the industrial area.</p> <p>Three Park&Ride facilities will be established.</p>		

City Logistics

Solution	City Name	Description	Considerations for selection and preconditions for implementation	Challenges, difficulties, and recommendations for transferability
New roads from the port	Haifa	The port of Haifa is located in the city center. This has been a great challenge	Minimizing unnecessary freight traffic on urban roads.	

to bypass city center and access intercity roads directly		for years, since most freight traffic traveled through the city center and the most congested roads in the city. A new road infrastructure now connects the port directly to intercity roads without traveling through the city center.		
Heavy vehicle restrictions	Holon	The city of Holon restricts truck activity in the city. Most trucks weighing more than 10 tons are prevented from entering the city. There are also some parking restrictions on trucks weighing more than 4 tons.		
Nighttime truck parking lot	Holon	The city plans to allocate a parking lot for trucks. The parking lot will be located near a public transportation hub, with accessibility to city neighborhoods to allow drivers easy access.		
Nighttime truck parking lots	Haifa	Trucks will be prevented from entering the city center or residential neighborhoods and from parking in residential streets (especially in narrow roads).	<ol style="list-style-type: none"> 1. Safe parking for trucks 2. This solutions is favored by truck drivers' organizations 	<ol style="list-style-type: none"> 1. Drivers will need to travel from the parking lots to residential neighborhoods and back (especially at night and early in the morning). Typically the parking lots should be accessible through BRT/LRT or bus routes . 2. Consider an option to provide services such as fueling facilities. 3. Determining the responsible body to

				operate the parking lots.
Nighttime truck parking lots	Nazareth	<p>Nazareth is a city of ~73,000 inhabitants and an area of ~ 14,000 km². Much of Nazareth consists of its historic old city, in which the streets are very narrow.</p> <p>A nighttime parking lot for heavy vehicles will help reduce the number of heavy vehicles inside the residential parts of the city.</p>		

Integrated planning/Sustainable Urban Mobility Plans (SUMPs)

Solution	City Name	Description	Considerations for selection and preconditions for implementation	Challenges, difficulties, and recommendations for transferability
Long term master plan and strategic thinking	Haifa	<p>Expansion of BRT system in Haifa (Carmel neighborhoods and Neve Sha'anani) and its integration with the planned funicular and the Carmelit subway.</p> <p>This integrated solution provides extensive coverage for most of the city's key areas and a large portion of its residential neighborhoods.</p>	Long-term planning and strategic thinking, including cooperation with other authorities, such as authorities responsible for urban planning and providing construction permits.	Different objectives and conflicts with other authorities.
Vision of sustainable mobility as part of the municipal strategic plan	Tel Aviv-Yafo	<p>The main issues are promoting a sustainable, multi-modal and effective transport system.</p> <p>The city's strategic plan sets out the policies outlined and the means proposed to implement the vision.</p>		1. The vision includes policy and implementation measures that are beyond the municipality's scope of responsibility. This is essential in order

				<p>to create an overall vision, but influencing other authorities' decisions and priorities might be a challenge.</p> <p>2. Including the policy and implementation phases in the work plans of different municipal departments, and integrating them with other departmental objectives, is not trivial.</p>
<p>Evaluation criteria to monitor progress in implementation of the sustainable mobility vision.</p>	<p>Tel Aviv-Yafo</p>	<p>The municipality considers an evaluation process as supplementary to implementation of the urban vision.</p> <p>The first set of evaluation criteria were defined in 2010, followed by an initial measurement of the different criteria. Based on the conclusions, an updated set of evaluation criteria is currently being developed.</p> <p>The evaluation criteria will be assessed periodically for each measure included in the sustainable mobility plan.</p>	<p><u>Preconditions for implementation:</u></p> <p>The evaluation process should be periodic (every 3-4 years), as monitoring over time is very important.</p>	<p>The process requires cooperation between different municipal units. Results might impact a future vision or necessitate re-consideration of the existing vision.</p>