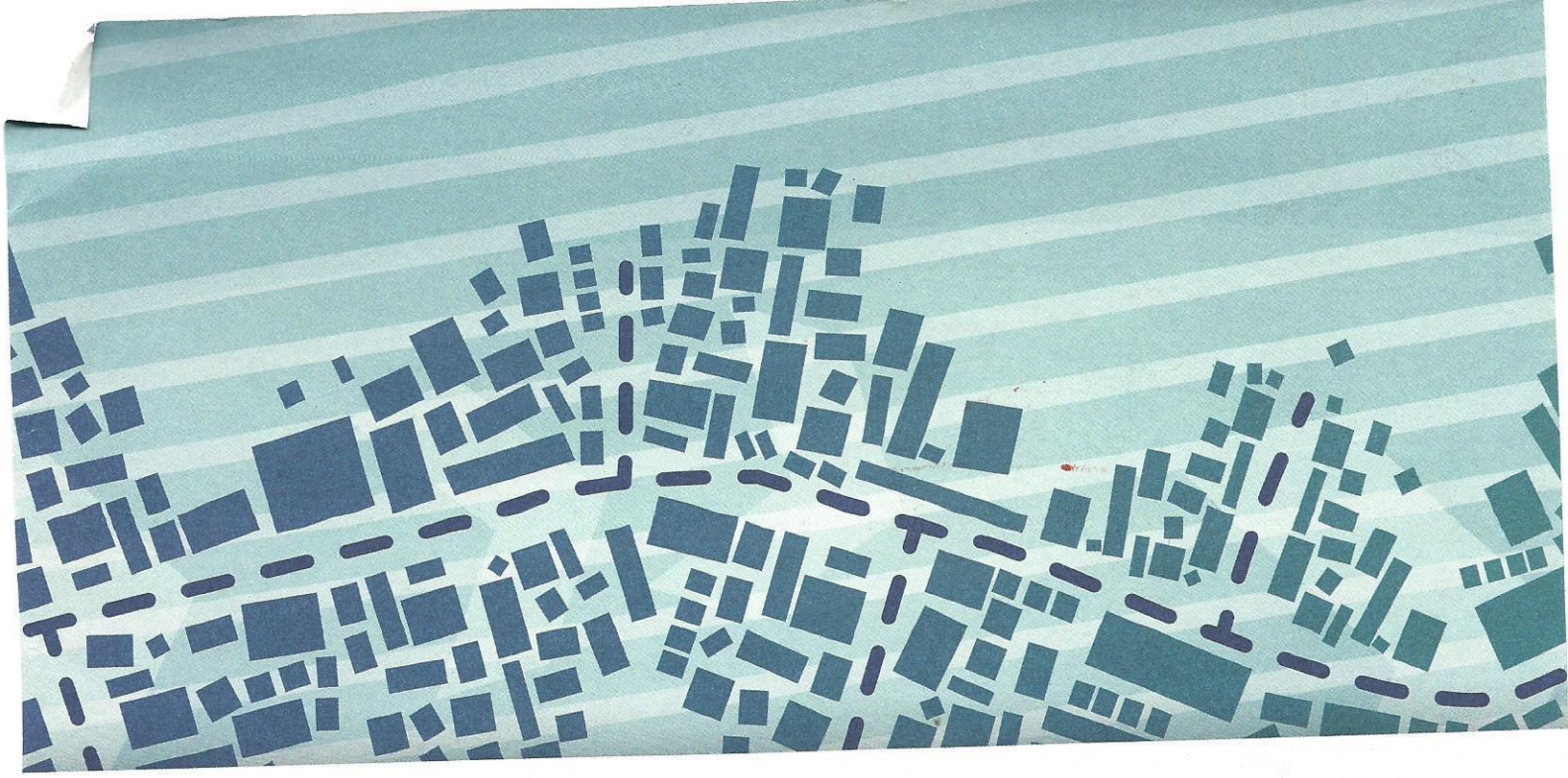

solutions

SOLUTIONS in the Mediterranean

Urban mobility needs, policy barriers and the uptake of sustainable solutions in Mediterranean partner countries

CONTENTS

IMPRINT

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EXECUTIVE SUMMARY

Cities around the world have a need to establish sustainable transport systems, to provide efficient and safe mobility for their citizens with minimal environmental impacts. With limited opportunity to build new infrastructure, many cities need to increase the efficiency and capacity of their transport systems and are turning to innovative and technically advanced systems to contribute to this objective.

The take-up of urban mobility and transport solutions between global regions is particularly challenging as socio-economic conditions and policy frameworks differ substantially across the regions. Within Europe, a number of projects have successfully demonstrated take-up between cities, which confirms the value of collaborative learning and exchange of experiences within different cultures and planning practices.

Cities, regions and countries around the world often share similar urban mobility challenges with some cities being more or less progressive than others. While there are advantages to sharing best practices, examples and lessons learnt, it is beneficial for city officials and other relevant stakeholders to have a robust methodology in place, which they can follow to implement and harmonise successful urban mobility policies, measures and technologies.

Indeed, the experience gained by several leading European cities following advanced approaches towards sustainable urban transport can be extremely helpful for other cities, regions and countries seeking to improve urban mobility conditions. Such is the case for Mediterranean Partner Countries (MPCs), which are diverse in their urban mobility characteristics. These include rapid rates of urbanisation, the consequent proliferation of informal settlements leading to urban sprawl, the difficulties for public transport to meeting growing demand, and increasing incomes and car ownership rates in different parts of the region.

However, the status of urban mobility cannot be summarised into a single broad trend for the whole Mediterranean region as it proves to be strongly influenced by a spectrum of political, economic and social factors. To this end, there is a real need to analyse the conditions, trends and implications of sustainable urban mobility solutions in different Mediterranean partner countries, also taking into consideration the initiatives undertaken within the framework of the Union for the Mediterranean and other relevant programmes.

Such an analysis is presented within this report for three selected MPCs - Turkey, Israel and Morocco - following a structured approach developed in the EU-funded SOLUTIONS research project. The wide participation of city officials from the aforementioned countries in local events, in the cities of Koçaeli, Tel Aviv and Casablanca respectively, facilitated the identification of the cities' urban mobility needs, gaps and priorities with regard to four thematic clusters: public transport, transport infrastructure, city logistics and integrated planning/Sustainable Urban Mobility Plans (SUMPs).

Additionally, local policy frameworks in each city were also analysed. With the knowledge of the cities' challenges and policy frameworks, urban mobility solutions were recommended for each city, which should meet existing needs and address current gaps, along with advice on how to successfully transfer and implement them. The analysis undertaken in each country also enabled some common priorities for the Mediterranean region to be drawn regarding each of the four thematic clusters. Efficient and well-integrated public transport systems as well as the development of the appropriate infrastructure for promoting sustainable transport modes, such as walking and cycling, prove to be high priorities for the region due to their appropriateness in addressing the severe congestion present in most Mediterranean cities.

City authorities have also started favouring an integrated approach towards urban planning, realising the benefits that may be derived for the local community if the principles of the SUMP concept are followed. There is less attention placed on city logistics, but city authorities recognise the importance of addressing the negative externalities of urban freight operations. Overall, Mediterranean cities can greatly benefit from European experiences in addressing the urban mobility problems they are currently facing, paving the way towards sustainability.

INTRODUCTION

In December 2015, government representatives from around the world met in Paris for the 21st annual Conference of the Parties (COP) in order to review the implementation of the United Nations Framework Convention on Climate Change. The conference, known as COP21, reached, for the first time in over 20 years of UN negotiations, an unprecedented, legally binding and universal, agreement on limiting global warming to 1.5°C.

To meet the target, all countries will need to take important decisions and adopt actions for reducing their greenhouse gases emissions, the large majority of which are energy-related carbon dioxide (CO_2) emissions. Reducing energy consumption and improving efficiency is one of the most effective ways of reducing emissions at a global level, which, in 2012[1], reached approximately 34.5 billion tonnes annually.

The transport sector must play an immense role towards meeting the aforementioned target, as it accounts for almost 21% of global CO_2 emissions. The UN Secretary-General, Ban Ki-moon, also highlighted the importance of the sector earlier in 2015, issuing a challenge to "reshape the world's transport systems" and "find new green solutions".

Several cities around the world have successfully implemented sustainable urban mobility measures to enhance the efficiency of their urban transport systems, address major environmental challenges and improve the quality of life for their citizens. The local knowledge and experience gained by implementing such solutions is useful and significantly beneficial for other cities interested in introducing similar, positive changes.

The **SOLUTIONS in the Mediterranean report** – one of three regional project publications – presents the key findings from the assessment of urban mobility conditions in the selected MPCs and, in more detail, in **Israel**, **Morocco** and **Turkey**. After identifying and analysing a set of innovative and sustainable urban mobility solutions, clustered in six thematic areas, SOLUTIONS conducted a series of personal interviews and local workshops in the aforementioned countries. These facilitated an interactive and constructive dialogue with local city officials for identifying the main urban mobility needs, gaps and priorities of several Mediterranean cities.

SOLUTIONS, however, considered only four of the six thematic clusters for the Mediterranean region. The 'Network and mobility management' and 'Clean vehicles' themes were not taken into account due to their low transferability potential considering the main urban mobility characteristics of the Mediterranean region. The local workshops discussed and evaluated local and national policy frameworks, identified the main policy barriers and drivers, and provided targeted recommendations to be put forward in local agendas to facilitate the uptake of innovative and sustainable urban mobility solutions that best fit local conditions and targets. Following the conclusion of the workshops and the analysis of their main findings, a final Mediterranean event identified common urban mobility needs, gaps and priorities for the Mediterranean region - outlined at the last section of this report.

THE SOLUTIONS PROJECT

The Sharing Opportunities for Low carbon Urban transporTatION (SOLUTIONS) project aims to support the exchange of innovative and green urban mobility solutions between cities from Europe, Asia, Latin America and the Mediterranean. The project brings together a wealth of experience and technical knowledge from international organisations, consultants, cities and experts involved in transport issues and solutions.

The project's overall objective is to make a substantial contribution to the uptake of innovative and green urban mobility solutions across the world, by facilitating dialogue and knowledge-exchange, promoting successful policies, providing guidance and tailored advice to city officials and fostering future cooperation on research, development and innovation. Project activities are organised around following six themes:

- Public transport
- Transport infrastructure
- City logistics
- Integrated planning / Sustainable Urban Mobility Plans
- Network and mobility management
- Clean vehicles

For more on the SOLUTIONS project, visit:
www.urban-mobility-solutions.eu

1 European Commission Joint Research Centre (2013)

IDENTIFYING SUSTAINABLE URBAN MOBILITY SOLUTIONS

The SOLUTIONS project consortium consists of leading climate, mobility and transport experts from local authorities, consultancies and research institutes. All project partners have vast experience and expertise from working on sustainable urban mobility projects all over the world.

At an early stage of the project, the SOLUTIONS team identified and reviewed a large collection of sustainable urban mobility solutions, evaluating their transferability to cities in Asia, Latin America and the Mediterranean region. These were then "clustered" in six thematic areas and prioritised according to their relevance and transferability. However, it proved difficult to allocate some solutions into to a single cluster, as there were significant overlaps with other clusters. Following an evaluation, SOLUTIONS produced the following final six thematic clusters, listed below (Table 1) together with their respective urban mobility measures and solutions.

Table 1 - SOLUTIONS thematic clusters and respective urban mobility measures and solutions

1. Public transport	2. Transport infrastructure	3. City logistics	4. Integrated planning/SUMPs	5. Network & mobility management	6. Clean vehicles
BRT systems	Dedicated bus lanes	Urban deliveries with cargo-cycles	Stakeholder participation	Parking management	Registration restrictions / number-plate auctions
Trolley bus systems	Intermodal interchanges	Low Emission Zones	Institutional cooperation	Access restriction	Managing electric two-wheelers
Metro systems	Pedestrian infrastructure	Forums, portals, labels & training	Measure selection	Traffic management	Fuel economy / CO_2 standards
Alternative-fuelled public transport vehicles	Non-motorised infrastructure	Pick-up point networks	Monitoring and evaluation	Multimodal journey planning	Switching fuels: taxi fleets to EVs
Electric and hybrid public transport vehicles	Innovative, safe cycling infrastructure	Vehicle and operation restrictions		Cooperative ITS systems	Switching fuels: taxi fleets to LPG/ CNG
ITS for public transport	Cycle highways	Urban Consolidation Centres		Carsharing schemes	Taxing vehicles based on emissions
Integrated public transport network planning	Infrastructure for car- and bike-sharing	Reorganising municipal procurement			Clean vehicles in municipal fleets
Financing public transport	Pedestrianising city centres/ streets	Rail/ waterways for urban freight deliveries			Low Emission Zones
Integrated fare systems		Urban truck lanes			Informing about/ promoting clean vehicles
Eco-driving for professional drivers		Pricing measures			Infrastructure for clean vehicles
Bus priority measures					Clean modes of delivery in urban areas
Bike-sharing/ public bicycles					Replacing private cars / motorcycles with clean models

THE MEDITERRANEAN

SOLUTIONS targeted a number of cities from Israel, Morocco and Turkey. The project:

a) Analysed their urban mobility conditions

b) Identified their main urban mobility needs, gaps and priorities

c) Presented to city officials experiences from the implementation of selected urban mobility solutions in Europe, and

d) Analysed local and national policy frameworks to inform the evaluation of the transferability of solutions that best fit local conditions and the interests of local authorities

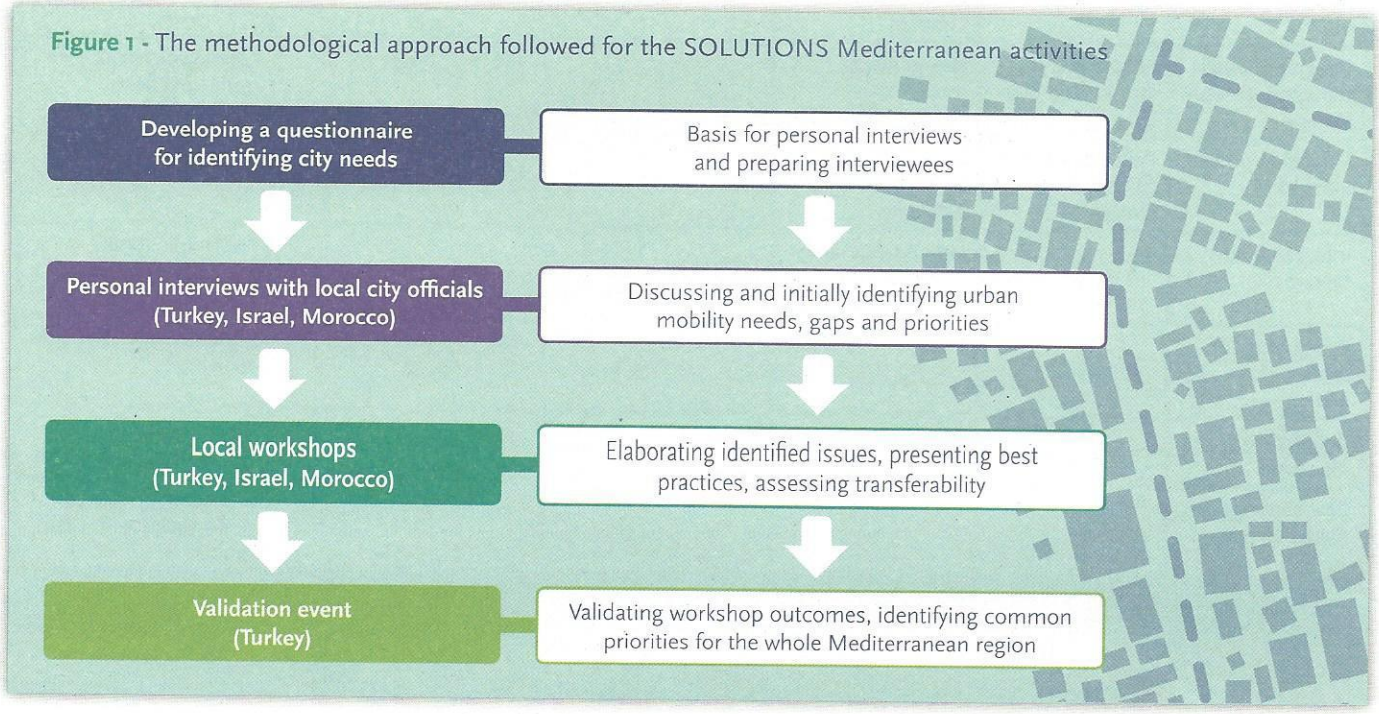
To meet the aforementioned targets and reach the expected results, the SOLUTIONS project partners developed a methodological approach (Figure 1), in which they:

- Developed a dedicated questionnaire used as the basis for personal interviews with city officials in Israel, Morocco, Tunisia and Turkey
- Organised three local workshops in Turkey (Kocaeli), Morocco (Casablanca) and Israel (Tel-Aviv). The workshops' main aim was to, (a) further discuss and elaborate on the issues raised by the interviewees, (b) present best practices of urban mobility solutions in Europe, (c) identify and prioritise promising solutions considering local needs, gaps and priorities and (d) evaluate local, regional and national policy frameworks
- Organised a final Mediterranean event in Turkey (Istanbul) where participants presented and validated the findings from the local workshops. This enabled SOLUTIONS to draft a set of common priorities for the Mediterranean region and build a common understanding of the region's urban mobility conditions

The **European Commission** identifies Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestine, Syria, Tunisia and Turkey as Mediterranean Partner Countries (MPCs)

Building upon the findings of the local workshops, the following sections of the report provide a short profile of each country and city and outline the main policy drivers and barriers for implementing the selected urban mobility solutions. The report also provides recommendations on how to transfer the solutions in each local setting, and indicates references to factsheets produced by the SOLUTIONS project that include a detailed description of each measure and a best practice real-world example.

Figure 1 - The methodological approach followed for the SOLUTIONS Mediterranean activities

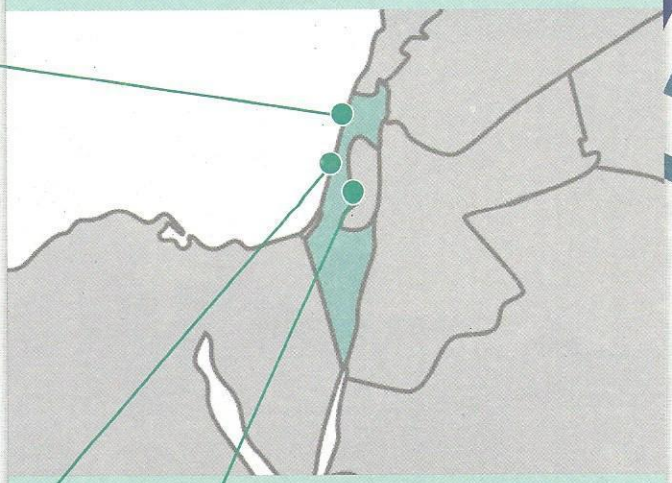


In February 2015, the final SOLUTIONS workshop for the Mediterranean region built upon the outcomes of the three local workshops that took place in Turkey, Morocco and Israel

Image: SOLUTIONS

ISRAEL

COUNTRY PROFILE: ISRAEL



Population: 8.216 million (2014)[2]
Area: 22,072 km²

HAIFA

Haifa's metropolitan area has about 1 million people. It is a hilly coastal city with many steep paths and steps for pedestrians. Haifa developed its city centre around the port, which remains busy and generates many traffic problems. Haifa Bay has been the traditional centre of Israel's heavy and petrochemical industries, including oil refineries. This makes it a significant source of air pollution, and heavily affects the quality of urban life. There are four train stations and two central bus stations in the city. Haifa developed the first BRT system in Israel, the Carmel Tunnels, which cross the city from north to south and vice versa and recently established Low Emission Zones.

TEL AVIV

The Tel Aviv metropolis, with 3.5 million people, is the most populated area in Israel. Around 1 million people and 500,000 vehicles enter the city daily. Private cars (52%) are used for the majority of trips into and within the city, while public transport (23%), walking (16%) and cycling (9%) present significantly lower shares. Four train stations connect the Tel Aviv metropolitan area with other Israeli cities, while one central bus station acts as the main departure point for buses operating within the metropolis and the whole country. To address the congestion in its major arteries, the city introduced a bike-sharing system and green routes for promoting walking. An LRT system is currently under construction. The flat landscape of the metropolitan area and the city, and the fact that a large percentage of urban trips are shorter than 5 km, favour the use of sustainable transport such as walking and cycling over private cars.

JERUSALEM

There are approximately 1.5 million people in Jerusalem's metropolitan area, 800,000 of whom live in the city. Due to its hilly topography, the city was hard to reach by train for many years. Today, however, Jerusalem has two train stations and is the only Israeli city with an intra-city LRT system. A central bus station serves as the main departure point for passengers visiting destinations throughout the country and as a transfer point for buses operating within the city.

2 http://data.worldbank.org/country/israel

NEEDS, GAPS AND PRIORITIES

Israel's high population density, with over 370 people per km², has a great impact on its transport system, for which the Ministry of Transport & Road Safety is responsible. The country has four metropolitan hubs: Jerusalem, the capital; Tel Aviv, the country's economic powerhouse; Haifa in the north; and Beer Sheva in the south. The National Public Transport Authority bears the main responsibility for public transport, though it has delegated some responsibilities to local transport authorities. Despite the limited control they have, the latter act as the main stakeholders.

To address traffic congestion, which many Israeli cities experience, a number of local and national actions have been undertaken to improve the public transport system, enhance existing transport infrastructure, address the negative impacts of urban freight operations and achieve a more holistic and integrated approach to urban planning. More specifically, the country's first Light Rail Transit (LRT) and Bus Rapid Transit (BRT) systems are operational in Jerusalem and Haifa, respectively. Additional lines in these cities and new lines in other cities (e.g. LRT in Tel Aviv and BRT in Netanya) are currently in various stages of planning and implementation. Prioritising public transport vehicles is an integral part of the aforementioned systems, while implementing a nationwide integrated fare system is encouraging an increase in the share of public transport. There is a greater focus on improving the efficiency of urban freight operations, as cities increasingly understand their negative impacts. Outside Tel Aviv, Israeli cities do not follow holistic approaches to urban transport planning, but other cities are adopting elements of the Sustainable Urban Mobility Plan (SUMP) process while updating their municipal master plans. Within this process, some municipalities are also involving relevant stakeholders and are introducing monitoring and evaluation measures, which are mandatory for a SUMP.

POLICY BARRIERS AND DRIVERS

Introducing sustainable urban mobility solutions in Israel is often challenging. Main difficulties relate to the division of responsibilities between the National Public Transport Authority and the various local transport authorities. There is a real need for a more coherent national transport policy, although some policy goals have already been defined, in line with the sustainable transport agenda, for certain areas such as the strategic road network, public transport and walking and cycling. Public transport policy is highly centralised with several regulations (e.g. for buses, trains, etc.) formulated at a national level. Local authorities are responsible for taking policy-related decisions on several aspects, some of which are relevant to the transport sector.

Most Israeli local authorities do not have any strategic plan analysing how they expect urban mobility to evolve (thus setting the necessary actions to be taken in order to accommodate future transport demand) or if they have such plans, they lack detail. Only a few authorities, such

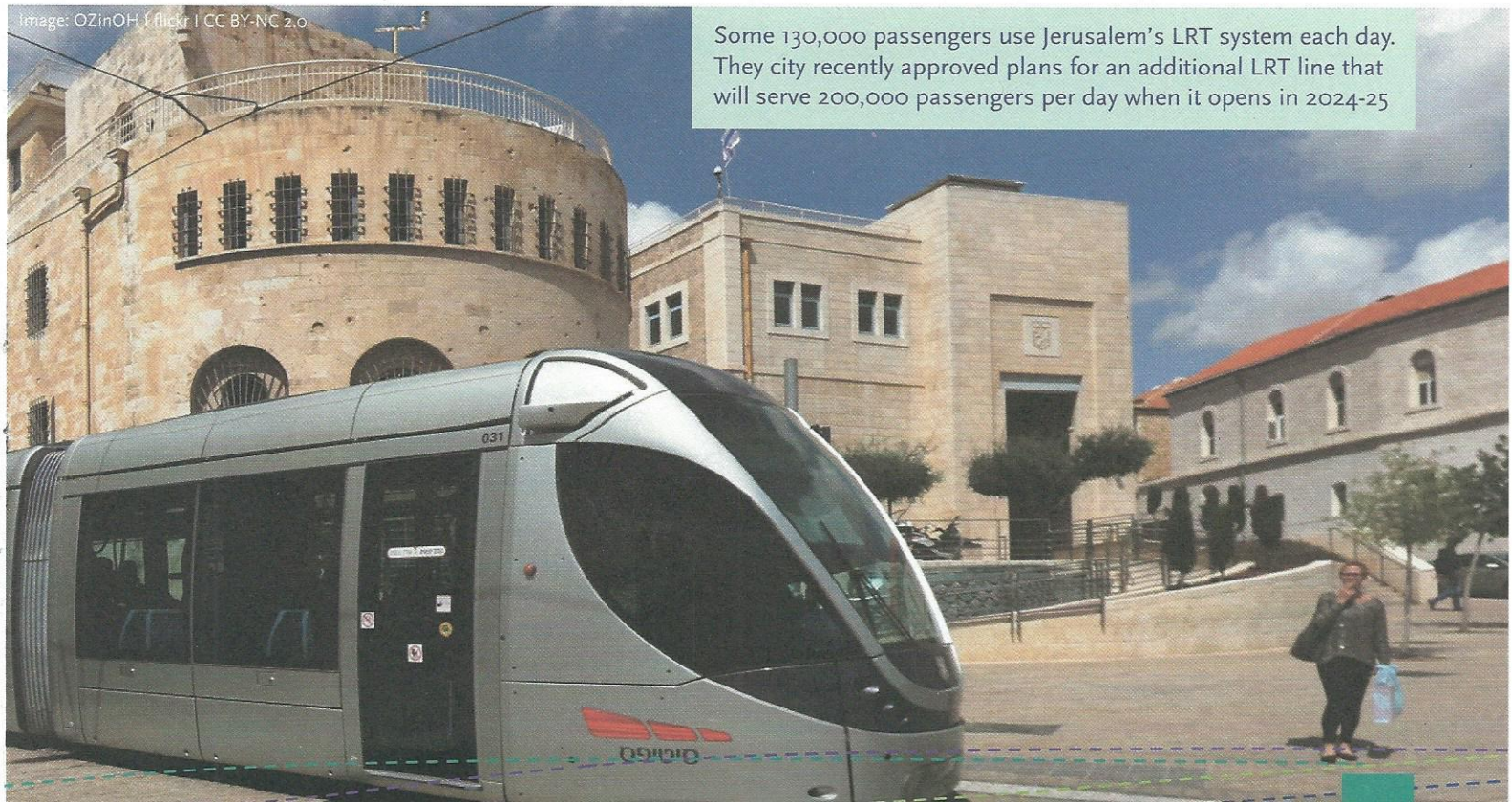


Image: OZinOH | flickr | CC BY-NC 2.0

Some 130,000 passengers use Jerusalem's LRT system each day. They city recently approved plans for an additional LRT line that will serve 200,000 passengers per day when it opens in 2024-25

as Tel Aviv, have well-established programmes facilitating the development of such detailed strategic documents. However, their ability to impose changes on the transport system is quite limited.

Local authorities cannot take transport-related decisions across a wider area or a major transport corridor, which extend beyond their jurisdiction. Made at a national level, these decisions often cause conflicts between the national transport authority and the local authorities affected by the respective decision. Governance on responsibilities between the national transport authority and local municipalities, and within local municipalities, is not appropriate. In most cases, several organisations share responsibilities; there is an extra challenge in reaching consensus and implementing a transport policy. The time it takes politicians to ensure the cooperation of all relevant stakeholders delays large-scale projects, which imposes a significant negative impact on traffic and commercial activities.

Another challenge that most cities face worldwide relates to checks and balances designed to ensure they efficiently implement policies. Large-scale transport projects also often take long to complete because of the short periods (2-3 years) government politicians serve in office, compared to mayors, who serve for longer. Furthermore, the absence of regional bodies to manage transport in metropolitan areas also imposes a number of challenges. In fact, Tel Aviv has carefully considered introducing such a regional body for many years but due to a number of political issues, it has not materialised yet. Only in some cities, such as Haifa, have the responsibilities of municipal traffic management centres been extended to also cover satellite towns and metropolitan areas.

Despite the aforementioned challenges, some policy drivers have facilitated the implementation of sustainable urban mobility solutions in Israel. More specifically, in 2011, the Ministry of Transport & Road Safety and the Ministry of Finance jointly invited medium-sized cities (between 70,000-250,000 inhabitants) to submit proposals for developing sustainable urban transport systems. They designed the competitive process in such a way so that only one municipality could receive funding to implement its proposal. However, the process encouraged many Israeli cities to develop plans that would efficiently integrate their different urban transport modes. So, despite being unsuccessful in being funded, many cities used their proposals as foundations to search for other funding opportunities - a good starting point for local authorities requiring further support in advancing the development of their plans.

Israeli citizens can also drive policy to a certain extent. Indeed, the interest of Tel Aviv's residents in physical exercise contributed towards promoting the city's bike-sharing system. Furthermore, residents understood that developing a sustainable urban transport system requires giving priority to public transport. They welcomed the proposal of providing priority to buses on the city's main roads. Such an increased understanding of the need to improve the city's urban transport system also led the residents of Jerusalem to favour the construction of a new tramline.

Tel Aviv's flat landscape favours the use of sustainable transport such as walking and cycling over private cars

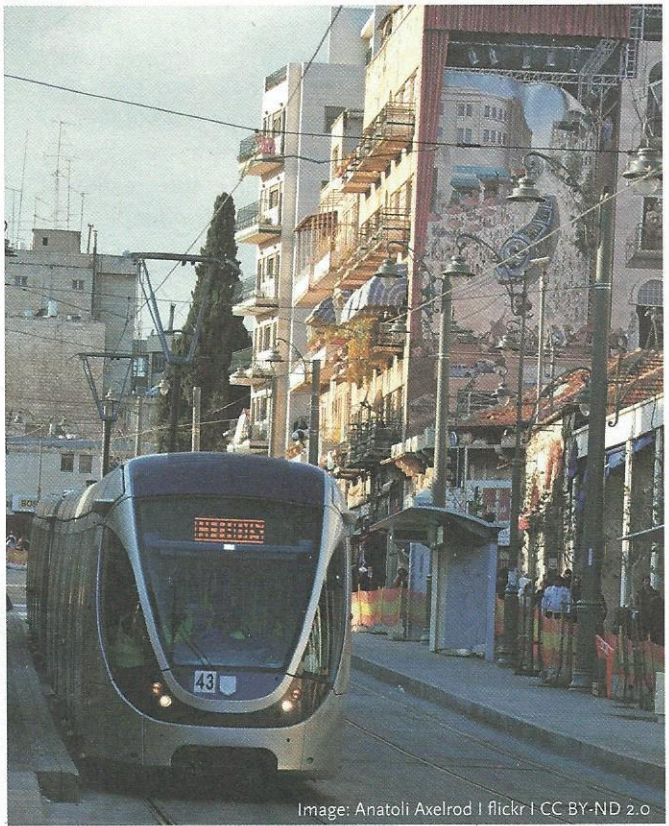
RECOMMENDATIONS AND SOLUTIONS

Existing efforts to improve and better coordinate national transport policy should continue, particularly as, due to the limited land and road space and the density of residential areas, local municipalities need to take unpopular actions for promoting sustainable urban mobility.

One possible measure that may stimulate a positive change towards sustainable urban mobility is to provide tax support to municipalities and a policy encouraging the transition from private cars to public transport. The process of clearly defining the distribution of responsibilities among Israeli local authorities and the national transport authority should continue and extend so that all relevant issues can be efficiently resolved. They should also consider transport in metropolitan areas as a whole and further explore establishing regional and metropolitan transport authorities with powers over public transport, rail and arterial roads - as is the case in many European cities.

Israeli city officials identified a number of promising solutions best fitting their cities, thus presenting the largest transferability potential and expected benefits: additional mass transport systems, prioritising public transport vehicles at intersections, constructing additional bus lanes, cycle and walking paths and intermodal interchanges. The increased understanding of the negative implications of urban freight operations led city officials to consider a number of different solutions to minimise the negative impacts. A more holistic approach towards urban planning and the development of SUMPs is also an emerging need for Israeli cities that are interested in learning from Europe.

Specific, transferrable measures that Israeli cities can consider implementing in order to tackle their urban mobility problems are in the table below:



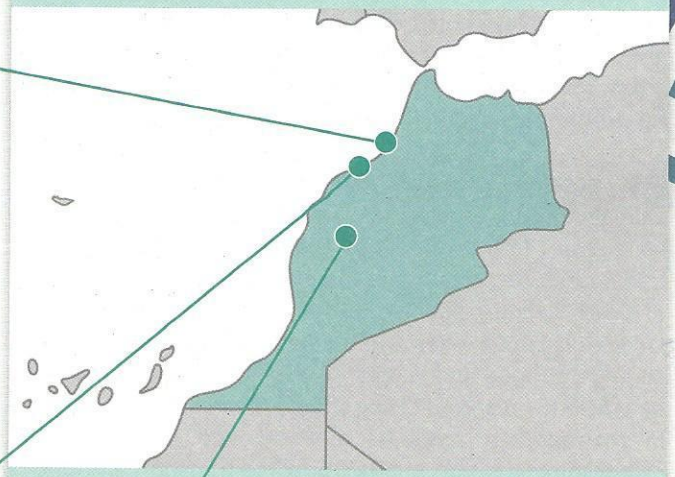
Jerusalem is the only Israeli city with an intra-city LRT system

Measure	SOLUTIONS Factsheet*
Public transport	
BRT systems	1.1
Trolley bus systems	1.2
Metro systems	1.3
Bus priority measures	1.11
Bike-sharing and public bicycles	1.12
Transport infrastructure	
Dedicated bus lanes	2.1
Intermodal interchanges	2.2
Innovative and safe cycling infrastructure	2.5
Pedestrianising city centres and streets	2.8
City logistics	
Low Emission Zones	3.2
Forums, portals, labels and training	3.3
Pick-up point networks	3.4
Vehicle and operation restrictions	3.5
Urban Consolidation Centres	3.6
Integrated planning / SUMPs	
Participation	4.1
Monitoring and evaluation	4.4

* SOLUTIONS Factsheets are available on www.urban-mobility-solutions.eu

MOROCCO

COUNTRY PROFILE: MOROCCO



Population: 33.92 million (2014)[3]
Area: 446,550 km²

RABAT

Rabat is the capital of Morocco and of the Rabat-Salé-Zemmour-Zaer region. It has a population of 577,827 (2014). The transport network consists of buses, a tramway, and a railway line equipped with an electrified double track, connecting Rabat with Salé and Casablanca. The majority of commuters between Rabat and Casablanca use a fast train shuttle which runs every 30 min to 1 hour. Rabat has two stations: Rabat City and the Agdal. People living in cities that are more distant generally use their personal vehicles in order to reach the urban network.

GRAND CASABLANCA

The Grand Casablanca region, which includes the city of Casablanca, is located in the northwest centre of Morocco. The region covers 1615 km² and homes approximately 4 million people, of whom 92% live in urban areas. Grand Casablanca's road network is 573 km, of which 512 km is paved. Transport infrastructure is well developed including a rapid transit system connecting Casablanca to the airport, a 31 km tramway connecting the eastern suburbs to the city centre (serving about 150,000 travellers per day), and a bus network. The transport sector is a major source of greenhouse gas emissions, accounting for approximately 15% of total emissions in Morocco. Established in 2008, the region's public transport authority was dissolved in 2015 due to institutional issues and the complexity in coordinating the cooperation with the different entities involved in urban transport.

MARRAKECH

Marrakech is located in the centre of Morocco at the foot of the Atlas Mountains. It has approximately 980,548 people (2014) spread over 230 km². The city is divided into two distinct parts: the Medina, or historic town, and the new city. In recent years, the city expanded in the periphery, resulting in the creation of two satellite cities, Tamansourt and Shwider.

3 http://data.worldbank.org/country/morocco

NEEDS, GAPS AND PRIORITIES

The transport sector plays a major socio-economic role in Morocco. It represents 6% of the country's GDP and 9% of the tertiary sector. It is also responsible for employing 80% of the workforce, and accounts for 34% of national energy consumption. Furthermore, the tax revenue from the transport sector constitutes 15% of the state budget.

Road transport is predominant within Morocco, responsible for 90% for domestic trips and 75% of goods transport on the 60,000 km road network. The country is still constructing expressways, with 1,014 km built by 2015. Morocco is also extending its 2,120 km rail network with four high-speed lines that will connect major Moroccan cities. The first line between Casablanca and Tangiers will go into service in 2018 and the others will follow until 2030.

In Casablanca, transport infrastructure has not developed as desired, failing to cope with the daily demand of citizens. The urban public transport system, which mainly consists of buses, trams, trains, and big taxis operating on certain routes, is poor, mainly due to the significant imbalance between transport supply and demand, and the low level of education of professional drivers. The high number of taxis further supports this imbalance. City officials acknowledge that developing the appropriate transport infrastructure is an important priority and will enhance the accessibility of all citizens to the urban public transport system.

District municipalities are responsible for implementing projects focusing mainly on improving public spaces (e.g. new designs) while Casablanca is currently working on the development of an urban transport plan according to the concept and vision of a Sustainable Urban Mobility Plan (SUMP). This is a good basis for integrated urban transport planning, and addresses several challenges and sets specific targets. To this end, sharing knowledge and exchanging experiences of the development of SUMPs in Europe is much needed and will provide significant benefit to the city officials.

POLICY BARRIERS AND DRIVERS

The economic development of Morocco is quite limited with government structures often being poor throughout the country. Public transport and cycling are associated with a low social status while the public regard private cars as more prestigious. Religious constraints generally exclude women from cycling or using scooters and motorcycles (with the exception of Marrakech).

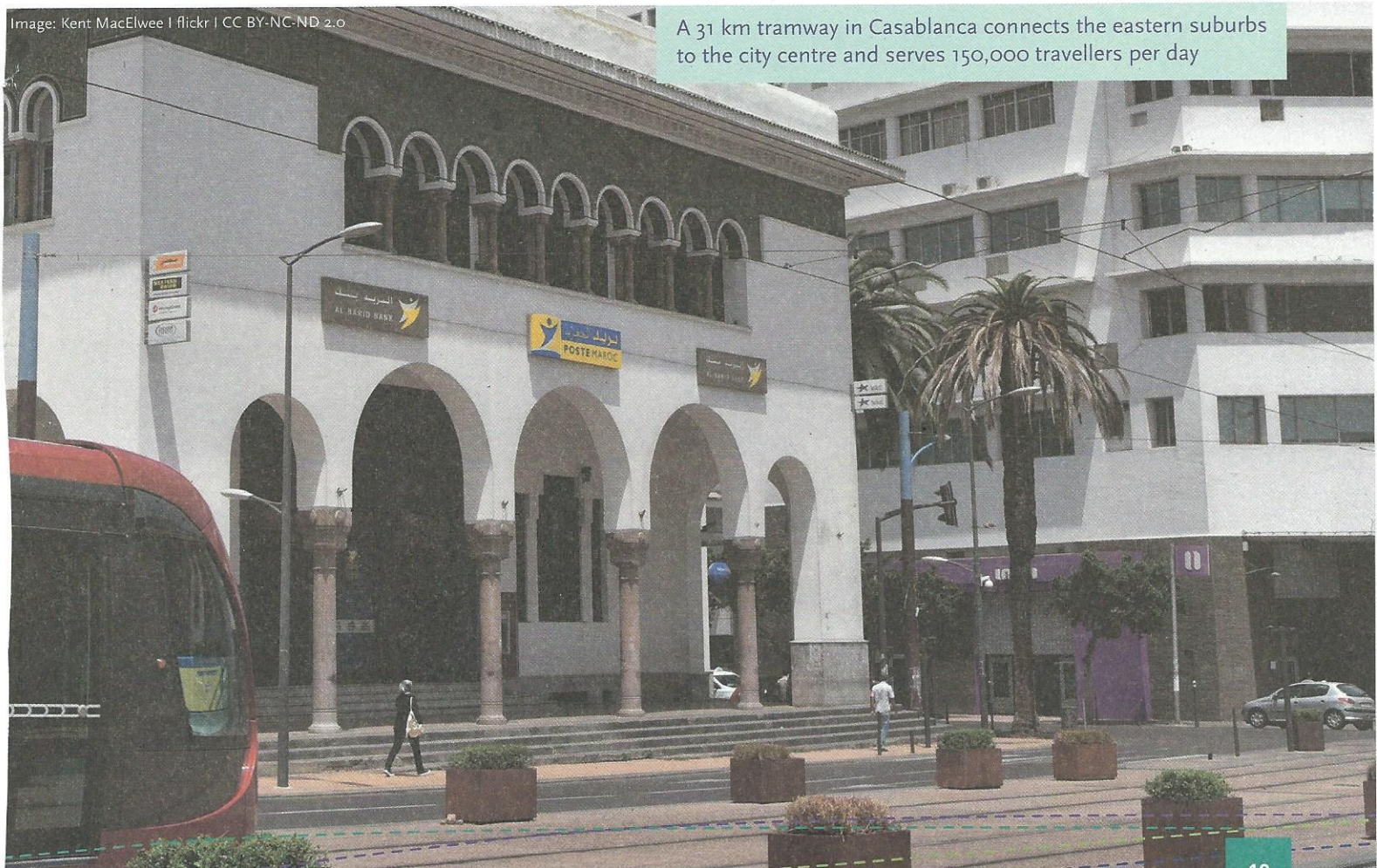


Image: Kent MacElwee I flickr I CC BY-NC-ND 2.0

A 31 km tramway in Casablanca connects the eastern suburbs to the city centre and serves 150,000 travellers per day

The Ministry of Transport is responsible for funding the majority of transport projects and provides policy directions. However, targeted policies towards sustainable urban transport are still quite limited with current urban transport plans (PDUs) covering broader transport planning. There is also no appropriate framework for adopting an integrated policy, as most existing regulatory frameworks are piecemeal. Local involvement exists to a certain extent, as in the case of Marrakech, where the municipality has enforced local regulations. In all cases, however, citizens are not involved in the implementation process of transport projects.

Positively, there are indications that existing transport policies encourage the reduction of car use. Rabat, for example, has introduced increases in parking charges, encouraging the use of public transport, and built a tramway to increase accessibility in public transport, thus relieving the already congested road network especially during peak hours.

As previously mentioned, some Moroccan cities such as Casablanca have drafted urban transport plans that provide an overview of urban mobility measures that can enhance transport safety and tackle traffic congestion efficiently. Such measures include:

a) further developing the public transport system
b) promoting sustainable transport modes (walking and cycling)
c) efficiently developing and operating road networks
d) optimising the urban freight transport system
e) establishing an integrated pricing and ticketing scheme covering all urban trips
f) providing incentives to private companies and public authorities for promoting car-pooling and public transport to their staff
g) involving the public in the consultation process of transport projects, and
h) improving the monitoring and evaluation process of the implemented measures.

Road transport is predominant within Morocco, responsible for 90% for domestic trips and 75% of goods transport

SOLUTIONS AND RECOMMENDATIONS

In the short term, the city of Casablanca should enhance its existing urban transport system by efficiently managing all available transport options including the big white taxis, which often operate in a similar way to buses (i.e. on specific routes). It can reach this goal by introducing access restrictions for big taxis and discouraging the use of small taxis by providing priority to buses, developing efficient intermodal interchanges and improving the infrastructure for pedestrians. Introducing new public transport modes and appropriate policies can efficiently reshape the urban transport system in Moroccan cities. Developing the relevant transport infrastructure and prioritising public transport vehicles will greatly enhance accessibility to public transport for all citizens and result in higher quality services.

Providing targeted incentives for promoting the wider use of rail is also important, including the development plan for a suburban rail network. Completing Casablanca's tramline and the planned construction of two more lines will result in a significant modal shift towards public transport. Considering the lack of a coherent urban transport policy, Morocco should also develop efficient mechanisms for ensuring the active cooperation of all relevant stakeholders in the urban transport planning process. The need to address social exclusion is a very important driver for improving the public transport system.

Specific, transferrable measures that Moroccan cities can consider implementing in order to tackle their urban mobility problems are listed below for three of the four clusters considered for the Mediterranean region. The cluster of "city logistics" was not considered due to the high priority the other three clusters present for Morocco.

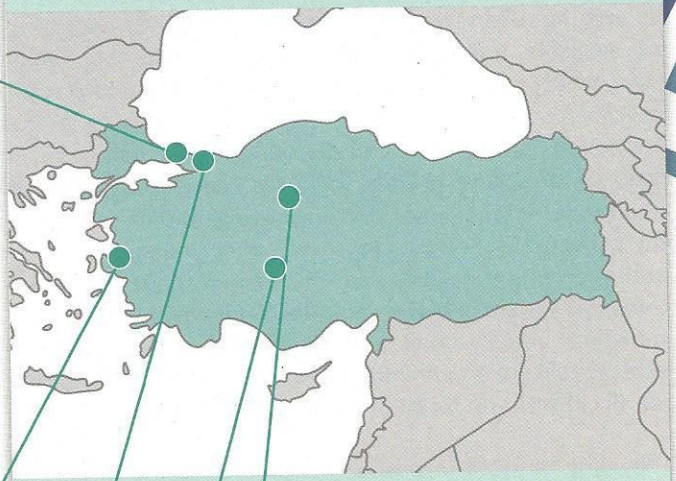
Image: Tim Adams I flickr I CC BY 2.0

Measure	SOLUTIONS Factsheet*
Public transport	
Metro systems	1.3
Integrated fare systems	1.9
Bus priority measures	1.11
Tram systems	1.13
Transport infrastructure	
Dedicated bus lanes	2.1
Intermodal interchanges	2.2
Pedestrian infrastructure	2.3
Integrated planning / SUMPs	
Stakeholder participation	4.1
Monitoring and evaluation	4.4

* SOLUTIONS Factsheets are available on www.urban-mobility-solutions.eu

TURKEY

COUNTRY PROFILE: TURKEY



Population: 75.93 million (2014)[6]
Area: 783,560 km²

ISTANBUL

With over 14 million people and covering 5,343 k, Istanbul is Turkey's biggest city. Due to urban sprawl, the city suffers from a variety of urban transport problems, especially traffic congestion. Three entities affiliated to the Istanbul Metropolitan Municipality provide public transport. The biggest, Istanbul Public Transport Authority (İETT) operates a fleet of 3,000 buses, the city's BRT systems and funiculars. İstanbul Transport Co., the next biggest, operates the city's metro and tram systems, which serve around 1 million passengers per day. The Ministry of Transport, Maritime and Communication is responsible for the Marmaray train system with a line constructed under the Bosphorus carrying approximately 800,000 passengers per day. The last company, İSPARK, manages the city's car parks and bike-sharing system.

İZMIR

İzmir is the largest port-city in the Mediterranean part of Turkey, with a metropolitan population of approximately 4.1 million. The city's population is growing at a rate of 5.3% a year, high compared to the rest of Turkey. High migration from rural areas is reshaping the metropolitan area. The city's overall vision is to improve quality of life for its citizens and support the economic activities in its metropolitan area by providing sustainable development and an efficient urban transport system.

KONYA

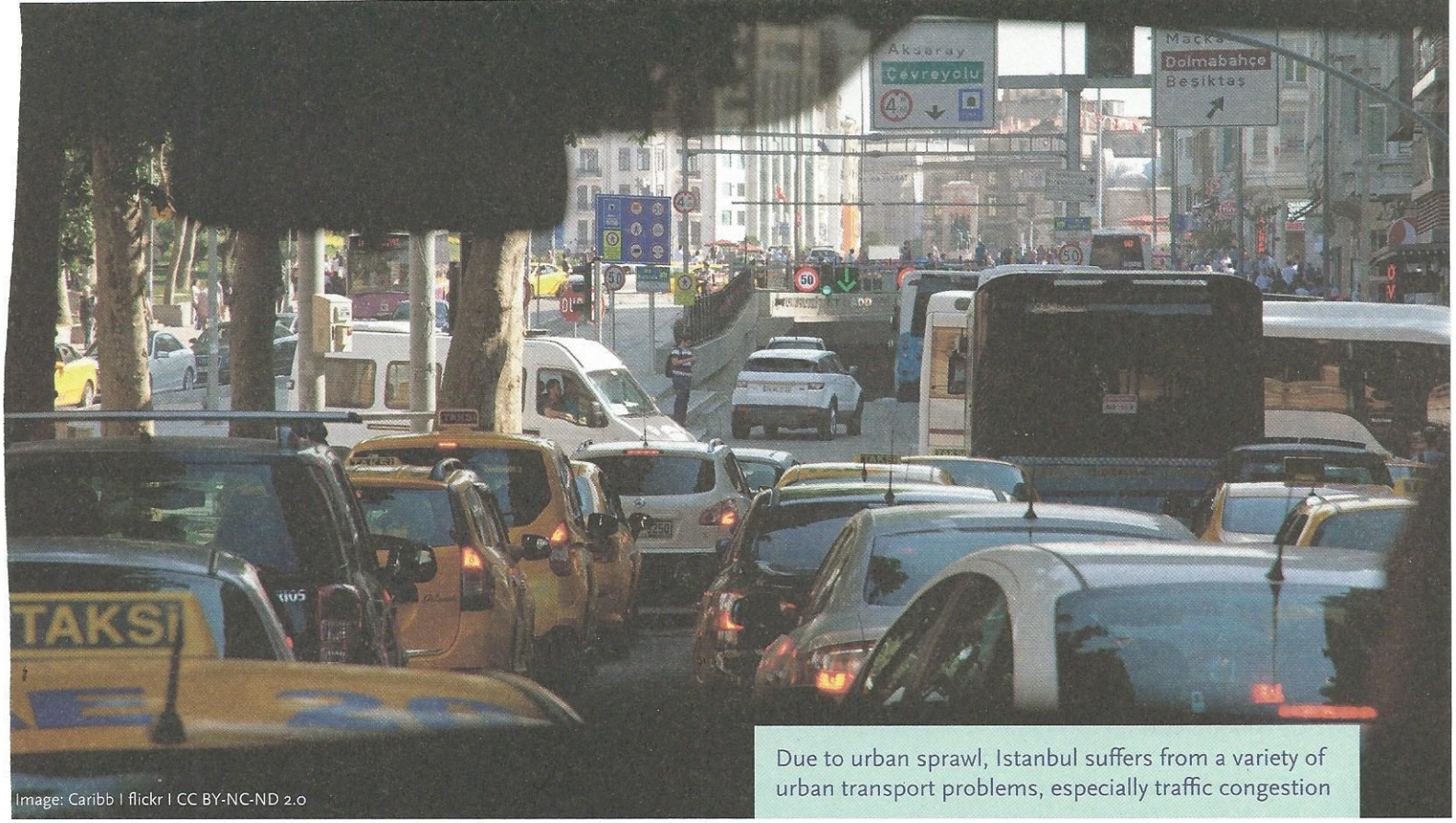
Konya covers the largest area in Turkey and has a population of approximately 2.1 million. Although the city's public transport system includes both buses and trams, Dolmuş (minibuses) present the highest share mainly due to the poor integration of the aforementioned modes. Although the city is equipped with ITS systems enabling it to obtain traffic data in order to control traffic and improve road safety, it still has not developed well-integrated urban transport plans. At over 250 km, Konya also has the longest cycle network in Turkey.

KOCAELI

Kocaeli is a major industrial and transit city in Turkey with a population of about 1.6 million. Located fairly close to Istanbul, it expects to play an important role in some of Istanbul's future transport developments, such as the construction of a high-speed rail line and the İzmir Gulf suspension bridge. The city offers high-quality public transport services through more than 50 privately owned bus operators. Considering its role as a transit city to Istanbul as well as the large number of industries located there, transport infrastructure is a major concern for the city.

ANKARA

Ankara is the capital of Turkey with a metropolitan population of about 2.1 million. In 1989 the city conducted its first urban transport master plan which is currently being revised based on a 2012 study. Both central and local authorities highlight the need for an integrated public transport system and better transport infrastructure. The city's vision for public transport focuses mainly on extending its metro. Private companies, in cooperation with the Ministry of Transport, have delivered two metro lines. Another is still under construction while a line connecting the airport to the city centre is still in the tendering process.



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Due to urban sprawl, Istanbul suffers from a variety of urban transport problems, especially traffic congestion

NEEDS, GAPS AND PRIORITIES

Buses and minibuses (Dolmuş) are the main providers of public transport services in Turkey, while some major cities, such as Istanbul, have also implemented Bus Rapid Transit (BRT) systems. Although buses are mostly preferred for urban trips, the number of minibuses is also quite high. The BRT system in Istanbul is also popular, providing high-quality services for a large number of passengers every day.

Several Turkish cities are interested in increasing the use of public transport over private cars, and specific targets have been set within their urban transport plans for achieving this goal. The dependency on private cars for urban trips often leads to bad congestion - a major issue for most Turkish cities. The lack of integrated urban mobility planning further intensifies the existing problems. Once finished, a series of transport infrastructure projects currently underway should contribute towards improving traffic conditions. There is a particular emphasis on extending pedestrian zones and cycle paths, and providing technical assistance and the required funds.

Urban sprawl is responsible for several urban transport problems in Turkey. Cities are mostly car-oriented, causing severe traffic congestion and significant safety and accessibility issues for the urban public transport system. Although cities promote cycling as a sustainable alternative to cars, the lack of the appropriate infrastructure hinders its wider use by Turkish citizens. On the positive side, due to the existence of various public transport modes, municipalities have significant knowledge and efficiently operate integrated public transport systems.

Following the example of Istanbul, several other Turkish cities are interested in BRT systems (Şanlıurfa has completed the first phase of a 17 km BRT corridor) and developing rail transport, with several large cities undertaking major construction projects over the last decade, using both EU and central government funds. However, as all of these projects fall under the responsibility of the central government, conflicts often occur with the provincial transport master plans.

Managing fares and implementing smartcard systems are also major priorities for Turkish cities to further increase the share of public transport and provide high-quality services. Istanbul, İzmir, Eskişehir, Antalya, Şanlıurfa and Kocaeli boast successful examples. In others, such as Bolu - a non-metropolitan city - such integration is currently underway. İzmir, however, which has a high population of elderly people, had to overcome problems related to ticket subsidies. Şanlıurfa, on the other hand, is the only Turkish city with a clear commitment to supporting disabled and vulnerable groups of passengers. However, the infrastructure needed for accommodating such groups is still missing, presenting another important challenge for Turkish cities.

6 http://data.worldbank.org/country/turkey

Turkey has not yet developed targeted and carefully planned strategies and policies dedicated to urban freight transport systems, which, as a result, are disorganised. Kocaeli is an exception, however, developing and implementing its urban freight master plan several years ago. Istanbul also has started work on a urban freight master plan. The presence of several industrial and logistics facilities in many Turkish cities actually urges the efficient development and organisation of urban freight transport operations. To this end, connecting Turkish cities efficiently with their surrounding hubs (i.e. ports, airports, etc.) is an emerging priority. ITS applications, such as the ones implemented in Konya and Istanbul for traffic control and management may further support this process. The Provincial National Police is implementing a new ITS system, which will enable municipalities to better control traffic operations.

POLICY BARRIERS AND DRIVERS

One of Turkey's main barriers to developing sustainable transport policy is the focus of transport master plans on large infrastructure projects rather than on smaller, softer measures. There is no specific provision for sustainable urban transport and no audit body for the planning process. Turkish cities often have the necessary legislative power to impose changes in their urban area; when they do not exercise this power, it is mainly because of the lack of political capital, the fear of public rejection or opposition from bodies with vested interests. Furthermore, politicians often make unrealistic manifesto commitments that can remove the focus from the goals.

A government-led initiative forces Turkish municipalities to develop urban transport master plans. This approach ensures that all urban areas have a transport planning method in place. However, in most cases, there is little focus on sustainability. With the development of such plans often outsourced, the municipality holds little ownership of the proposed measures, and there is no method for holding the municipality, mayor or governing body to account if they do not implement the plan. On the other hand, if they implement an action not included in the master plan, there can be repercussions. Turkey's central government is familiar with the Sustainable Urban Mobility Plan (SUMP) concept, which fits well with the existing process of developing transport master plans. Local authority urban planners also appreciate SUMPs, but do not have a detailed understanding.

The lack of technical capacity and assistance in local authorities is an important issue to address. Municipalities also have to cope with reductions in the available budget coming from the central government, mainly due to political issues. Despite this, several Turkish cities have successfully

Kocaeli expects to play an important role in some of Istanbul's future transport developments

implemented measures that enhance urban mobility, as in the case of İzmir, which managed to introduce sweeping changes on the bus management system, leading to an effective service thanks to implementing targeted policies. This was only made possible by a mayor who showed clear leadership and had the required political capital to counter vested interests and the status quo. In the İzmir case, some local experts stated that the national policy framework worked against this change, rather than assisting it.

SOLUTIONS AND RECOMMENDATIONS

Turkish cities have managed, especially within the last 5 years, to improve their urban public transport systems significantly, especially considering the increased concentration of the population in urban centres. However, there is still room for improvement, with the development of a coherent national transport policy being the first priority. City officials have expressed the urgent need to have such a policy efficiently guiding their actions. Despite the existing variety of metropolitan and non-metropolitan municipalities, there is a common need to increase technical capacity and for assistance in considering all relevant processes within the implementation and operation phases.

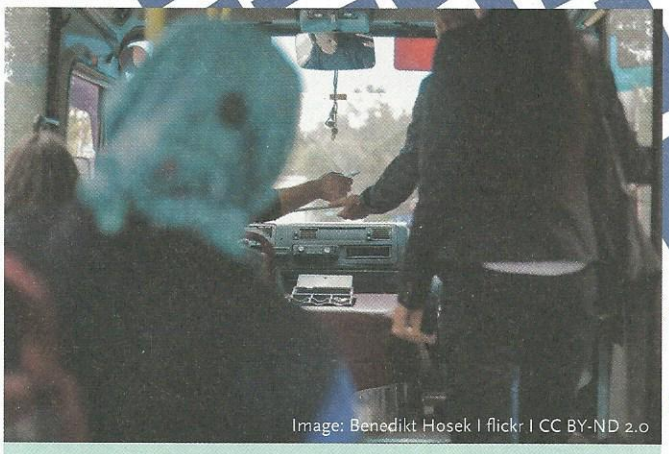
Considering that there is already a process requiring the development of transport master plans, the central government in Turkey should take sustainability issues into account within this process. It needs, for example, a coherent sustainable approach to better manage bus services. The heavy dependence of passengers on buses for their daily movements presents an opportunity for Turkish cities in achieving the goal of sustainable urban mobility. Planning and better managing bus services could play an important role to this end.

Nationally, there is a clear need to reorganise urban public transport systems and achieve a better level of integration between different urban transport modes. Better transport infrastructure and technical support for successfully implementing relevant projects is a high priority. Aiming to cope with the increased levels of traffic congestion, a direct result of rapid population growth and migration from rural to urban areas, Turkish cities need to allocate adequate resources for a reliable, efficient and green urban public transport system. Within the SUMP concept, cities should also build capacity for the efficient integration of public transport and non-motorised modes. However, as most city officials are not fully aware of SUMPs, municipalities should efficiently map out its main principles and fit them into the existing development process of the urban transport master plans.

Specific, transferrable measures that Turkish cities can consider implementing in order to tackle their urban mobility problems are in the table below for the four clusters considered for the Mediterranean region:

Measure	SOLUTIONS Factsheet*
Public transport	
BRT systems	1.1
Integrated public transport network planning	1.7
Integrated fare systems	1.9
Transport infrastructure	
Intermodal interchanges	2.2
Integrated planning / SUMPs	
Institutional cooperation	4.2
Measure selection	4.3

* SOLUTIONS Factsheets are available on www.urban-mobility-solutions.eu



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Buses and minibuses (Dolmuş) are the main providers of public transport services in Turkey.

CONCLUSIONS

Among the four thematic clusters considered for the Mediterranean region, "Integrated planning/SUMPs" and "Public transport" received the greatest attention and were identified as the most important ones by local city officials in Israel, Morocco and Turkey. Many of the solutions considered for the "Transport infrastructure" cluster also referred to public transport infrastructure projects, indicating the high priority of improving urban public transport systems and the significant overlap of the two clusters. "City logistics" was the least advanced cluster but there will be increased attention in the following years considering the expected greater freight volumes and the respective development of Mediterranean port-cities to efficiently cope with the increased demand.

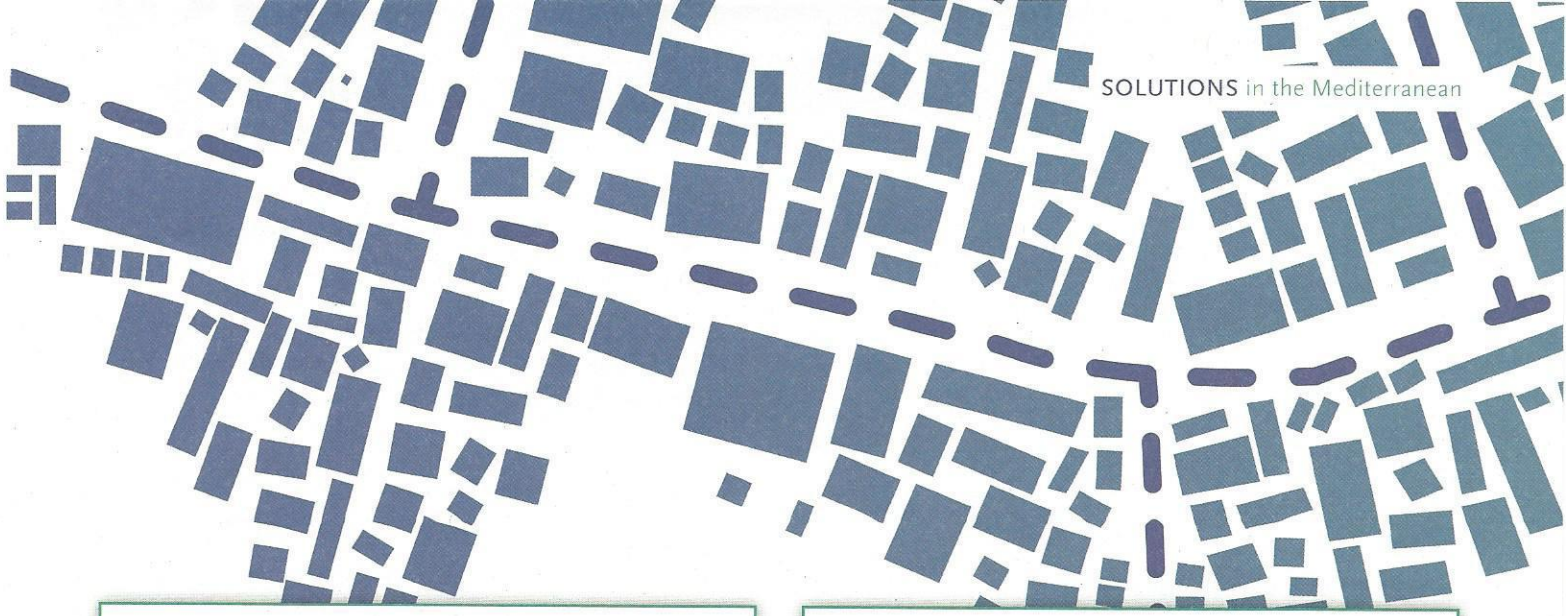
The common priorities for the Mediterranean region are:

PUBLIC TRANSPORT

- Developing an efficiently integrated public transport system that considers transport modes suitable for that region and build upon existing provision
- Improving the overall reliability of public transport services, leading to an enhancement in its attractiveness to users
- Reducing the negative public perception towards sustainable transport modes such as walking, cycling and buses
- Prioritising public transport and integrated fare systems to ensure a good level of service, and supporting the attractiveness of the system
- Many Mediterranean cities are considering the implementation of transport modes moving on fixed guideways (e.g. BRT, LRT), which are seen as more reliable, so more favourable to users
- In several Mediterranean cities, public transport vehicles are in poor condition, which diminishes their attractiveness. Upgrading fleets would go a long way to making them more attractive (and reliable)
- Appropriate and more coherent policies (national or local) should couple urban mobility measures and provide incentives for passengers to use more efficient and sustainable modes of transport
- National and local authorities, and private stakeholders, should establish efficient methods of cooperation and consensus (including the division of responsibilities) to effectively implement public transport provision

TRANSPORT INFRASTRUCTURE

- Transport infrastructure in the Mediterranean region lacks integrated planning at the municipal level and between public bodies. This makes the provision of a reliable service difficult to develop
- Mediterranean cities should develop adequate public transport infrastructure (such as dedicated bus lanes and bus stations) to meet transport demand and ensure a reliable service
- Developing dedicated pedestrian prioritisation and bike routes will help promote walking and cycling
- Local authorities should enhance their technical capacity internally or through third party provision, so that planned infrastructure projects can be efficiently realised (considering both the implementation and operation phases)
- In many cases, investments and available funds (either public or private) proved to be insufficient to expand or improve transport infrastructure to meet increasing transport demand and maintain acceptable transport conditions
- Considering that transport infrastructure plays a predominant role towards supporting urban public transport systems, there is a clear need for a coherent policy enabling the development of comprehensive and integrated solutions



CITY LOGISTICS

- Urban freight operations in Mediterranean cities are either underdeveloped or not developed at all. However, city authorities have started to pay attention to the efficient organisation of such operations, realising the growth potential they can present due to the strategic location of some cities, as well as for effectively addressing their negative externalities
- Mediterranean cities reported that a major priority is to connect major logistics centres efficiently with transport hubs (ports, rail terminals, airports)
- Carefully planning and implementing logistics centres/villages will ensure their efficient connection to the transport network. Cities should also consider underutilised terminals
- Trucks carry out most urban freight distribution trips. However, there is an increasing need to also consider other transport modes (rail, cycle freight), which reduce this dependency
- Mediterranean cities apply a limited number of city logistics measures, mainly focusing on parking areas. However, they found solutions such as off-hour deliveries interesting and transferable to their cities

INTEGRATED PLANNING/SUSTAINABLE URBAN MOBILITY PLANS (SUMPS)

- City officials identified this cluster as one of the most important ones for Mediterranean cities due to the fact that it encompasses various important processes
- A major priority is integrating transport modes in urban areas and major city centres
- Improving public space, enhancing collaboration between national and local authorities and establishing policies, guidelines and evaluation criteria can improve the planning, operation, management and maintenance of the transport system. Urban planning and development should be in accordance with local and regional investments for promoting sustainable transport
- All relevant stakeholders should be included in the development of urban transport plans
- Although several Mediterranean cities have undertaken developments similar to SUMPs (e.g. PDUs), local officials have little knowledge regarding SUMPs and their implementation in Europe. To this end, knowledge-sharing events will provide real benefits to Mediterranean city officials in advancing relevant developments within their city
- Local authorities should build capacity and technical support on SUMPs addressing all major challenges within their city

SOLUTIONS Factsheets

The SOLUTIONS Factsheets examine a number of sustainable urban mobility measures and include a case study on cities that have successfully implemented them.

To see the database of factsheets, go to
www.urban-mobility-solutions.eu/resources/factsheets

SOLUTIONS Network

The SOLUTIONS Network keeps alive the valuable collaborations on sustainable urban mobility created during the SOLUTIONS project and helps deliver on the UN's Sustainable Development Goals, the Paris Agreement and the New Urban Agenda.

It will broaden the original project's partnerships by inviting additional organisations that are working on implementing sustainable urban mobility actions across the world, link their activities to boost their impact, and also create new partnerships to develop targeted concepts and pilot projects for sustainable urban mobility solutions.

To join or to find out more about this exciting new initiative, please contact the SOLUTIONS project coordinator, Oliver Lah: oliver.lah@wupperinst.org

SOLUTIONS: Sharing Opportunities for Low carbon Urban transporTatION

Website: www.urban-mobility-solutions.eu

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PARTNERS

The SOLUTIONS project consortium, consisting of partners from all over the world, brings together a wealth of experience and know-how from organisations, consultants, cities, research and technical experts involved in transport issues and solutions.

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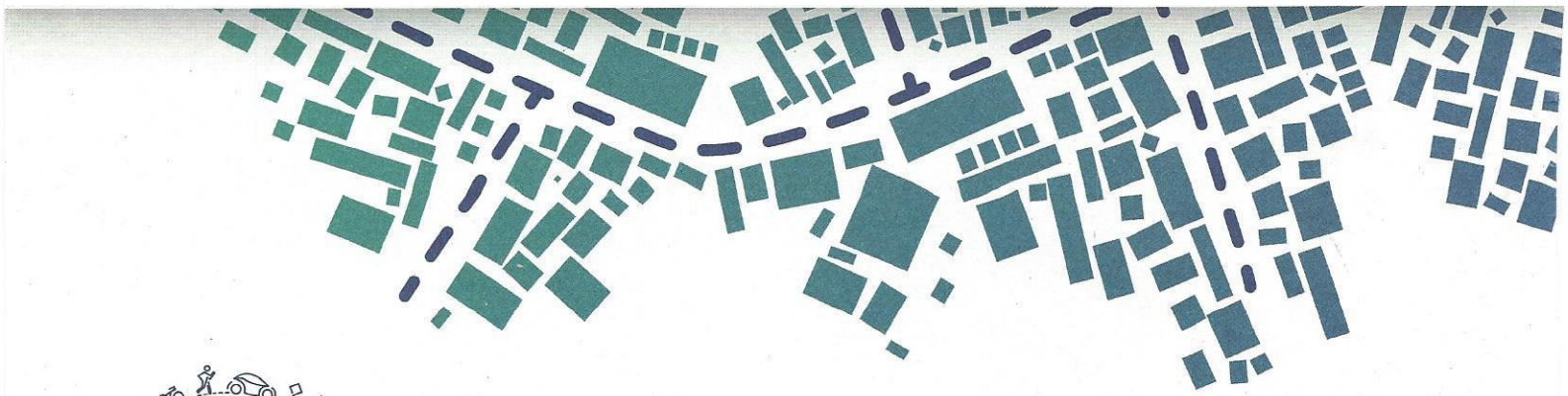

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