MOBILITY IN CITIES DATABASE
Lessons learned for the cities of the MENA region
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As a leading international public transport association, UITP has a long history in mobility data collection and analyses. The Millennium Cities Database for Sustainable Transport and the Mobility in Cities Database (MCD), published in 2001 (MCD1, data for 1995) and 2005 (MCD2, data for 2001) respectively, provided an important reference in the study of mobility across the world. Based on the successful results of previous editions of the MCD, UITP collected a vast number of indicators for more than 60 metropolitan areas worldwide, using 2012 as the reference year (MCD2015).

In the MENA region, data have been collected for five cities: Abu Dhabi (UAE), Casablanca (Morocco), Dubai (UAE), Mashhad (Iran) and Tehran (Iran). Further data have been recently collected for Amman (Jordan) and Dubai for the year 2015. This article summarizes the main lessons learned from the MCD for the MENA cities and provide the first results of a recently launched research project conducting at the UITP MENA Center for Transport Excellence.

As demonstrated in previous editions of the MCD, the higher the density in a city, the greater the use of non-motorised transport modes and public transport (MCD1). Regional trends have been identified: “Hyper-dense Asian megacities have relatively high shares of public transport, while sprawling, low-density urban areas in the US, Australia and the Middle East have comparatively lower shares of public transport use” (MCD2015). The negative impacts of high car ownership and large developed road infrastructure on public transport use have been also proved: the higher the car ownership and the motorway network per inhabitants, the lower the public transport use. The present booklet discusses the trend related to density, motorway network, public transport network and car ownership observed in the MENA cities in light of international comparisons. Lessons learned and recommendations are highlighted for further transport development to encourage soft mobility and public transport use in the MENA region.
ABU DHABI (2012)

Population: 0.9 million
Urbanised surface: 1,703 km²
Urban Density: 536 inh/km²

PRIVATE CAR
- 482,889 Private cars
- 529 /1,000 inhabitants

ROAD SUPPLY
- 8,147 km Road
- 1,492 km Motorway
- 8,923 metre of road/1,000 inhabitants

TAXI
- 7,539 Taxi

PUBLIC TRANSPORT SUPPLY

343 vehicles/million inhabitants | no reserved routes for public transport

AMMAN (GREATER) (2015)

Population: 3.6 million
Administrative surface: 800 km²
Urbanised surface: 250 km²
Urban Density: 14,418 inh/km²

PRIVATE CAR
- 958,000 Private cars
- 266 /1,000 inhabitants

ROAD SUPPLY
- 4,000 km Road
- 1,110 meter of road/1,000 inhabitants

TAXI
- 10,900 Taxi
- 3,100 Shared Taxi

PUBLIC TRANSPORT SUPPLY

181 vehicles/million inhabitants | no reserved routes for public transport
CASABLANCA (GREATER) (2012)

PRIVATE CAR

- 1,500,000 Private cars
- 370 /1,000 inhabitants

ROAD SUPPLY

- 644 km Road
- 64 km Motorway
- 159 metre of road/1,000 inhabitants

TAXI

- 14,270 Shared Taxi

PUBLIC TRANSPORT SUPPLY

- BUS & MINIBUS 866 Fleets
- TRAM 74 Fleets
- METRO 395 Fleets
- SUBURBAN RAILWAYS 201 Fleets

232 vehicles/million inhabitants | 8 metre reserved routes/1,000 inhabitants

DUBAI (2015)

PRIVATE CAR

- 1,287,908 Private cars
- 526 /1,000 inhabitants

ROAD SUPPLY

- 13,338 km Road
- 4,335 km Motorway
- 5,451 metre of road/1,000 inhabitants

TAXI

- 9,996 Taxi

PUBLIC TRANSPORT SUPPLY

- BUS & MINIBUS 1,518 Fleets
- BRT 77 Fleets
- TRAM 11 Fleets
- METRO 74 Fleets
- SUBURBAN RAILWAYS 201 Fleets

896 vehicles/million inhabitants | 35 metre reserved routes/1,000 inhabitants
MASHHAD (2012)

PRIVATE CAR
703,000
Private cars
246 /1,000 inhabitants

ROAD SUPPLY
580 km
Road
100 km
Motorway
203 metre of road/1,000 inhabitants

TAXI
8,212
Taxi
4,938
Shared Taxi

PUBLIC TRANSPORT SUPPLY

1,069 vehicles/million inhabitants | 18 metre reserved/1,000 inhabitants

TEHRAN (2012)

PRIVATE CAR
3,108,000
Private cars
370 /1,000 inhabitants

ROAD SUPPLY
2,914 km
Road
503 km
Motorway
347 metre of road/1,000 inhabitants

TAXI
7,423
Taxi
77,949
Shared Taxi

PUBLIC TRANSPORT SUPPLY

1,089 vehicles/million inhabitants | 30 metre reserved/1,000 inhabitants
UITP MENA CENTER FOR TRANSPORT EXCELLENCE (CTE)

UITP MENA CTE was funded in 2011 in a joint effort between Dubai’s Roads and Transport Authority (RTA) and the International Association of Public Transport (UITP).

MENA CTE aims to conduct researches and create cutting-edge knowledge for the development of effective transport policies, strategies and solutions to public and private institutions in the MENA region. It contributes to unifying regional efforts to foster sustainable mobility and enhance the quality of life in all MENA countries.

MENA CTE is organising several trainings and workshops that shed the light on the importance of having an integrated and sustainable public transport systems in the region. Major cities in the MENA region hosted different programs, which are directly related to public transport fundamentals.

More information: www.mena.uitp.org/cte

PTX2 STRATEGY: UITP’S CORE AMBITION BY 2025

At its 2009 World Congress in Vienna, UITP launched a vision and strategy for the sector which sets out to double the market share of public transport worldwide by 2025 (PTx2).

In an increasingly urbanised world, inclusive green growth depends on efficient urban mobility and adequate public transport infrastructure and services. If current mobility habits prevail – marked by the dominance of private motorised modes – urban congestion will gridlock cities, rapidly increasing greenhouse gas emissions and energy consumption.

Doubling public transport’s market share worldwide (PTx2) would:
- Save around 170m tons of oil and 550m tons of CO₂ equivalent;
- Reduce urban traffic fatalities by 15%;
- Double the number of jobs in public transport operators;
- Reduce the risk of obesity and heart disease by 50% thanks to the greater role of walking, cycling and public transport.
ABU DHABI AND DUBAI -
Wealthy, fast growing and car dependent cities

Abu Dhabi and Dubai, with low urban density and low share of public transport, currently follow urban development trends similar to American and Australian cities, as showed in figure 1. The urban development is characterised by single housing spread on a large urbanised area.

Regarding the road network, there is a strong correlation between motorway availability and public transport share on global level: the higher the length of motorway per inhabitants, the lower the public transport share. Figure 2 shows that Abu Dhabi and Dubai follow this trend with a high motorway network per inhabitants and low public transport share.

The urban structure of cities with low urban density and large motorway network usually encourages car ownership and car use. Mainly due to the car dependency to commute between residential areas (with low or even non-existent public transport services) and centres with high economic attractiveness. This trend is confirmed in figure 4: car ownership is high in Abu Dhabi and Dubai. Almost three quarters of daily trips are made by private vehicles in Abu Dhabi and Dubai (see modal share, p.2-3). Once again, Abu Dhabi and Dubai follow trends observed in American and Australian cities, with high motorisation rate and low public transport share.

Private car is a strong competitor of the public transport and remains the preferred mode of transport of urban dwellers living in urban area far from the city centre with a low public transport supply.

BUSINESS AS USUAL - The urban development of Abu Dhabi and Dubai have been particularly rapid during the previous decades, and further rapid developments are expected in the coming years. By encouraging the development of low dense residential areas and by enlarging road network infrastructure, mobility in Abu Dhabi and Dubai will remain strongly car oriented.

TOWARDS PTx2 (see p.5) - An integrated land use and transport development with investment in public transport infrastructure can mitigate car dependency and encourage public transport use. Since 2009, efforts have been invested in Dubai for the development of public transport infrastructure. The first positive impacts on modal shift from car use to public transport use are already visible (see p.8).
TEHRAN, MASHHAD, CASABLANCA AND AMMAN - Cities in transition

Tehran, Mashhad, Amman and Casablanca belong to cities with medium urban density, as highlighted in figure 1. In these cities, about one trip of four are made by public transport (see modal share, p. 2-3). While urban density of this group of cities is comparable to density of European cities, their public transport share remains below the European average.

Walking is one of the most common mode of transport in these cities where one third (Tehran and Amman) to a half of the daily trips (Casablanca) are made on foot (see modal share, p. 2-3).

This can be explained by several factors:
- High density - main activity centres can be reached on foot (as showed in figure 1)
- Lack of public transport between the main centres - the available length of public transport reserved routes per 1,000 inhabitants (figure 3) registered in these cities is comparable to cities in transition countries. The current public transport infrastructure does not match the growing transport demand
- Lower car accessibility - Although motorisation rate already reached the level of some European cities (figure 4), a large share of the urban population belongs to the low-income group in these cities in transition countries. It can be assumed that a large part of households cannot currently afford a private car and do not have alternatives other than public transport and walking

BUSINESS AS USUAL - The current economic growth happening in these cities will contribute to the rise of purchasing power of the population. Combined with insufficient public transport supply, it can lead to rapid motorization growth, as observed during the last decades in Tehran and Casablanca (see p.9). It can also worsen current traffic congestion and lead to other negative externalities due to private car use in these urban agglomerations.

TOWARDS PTx2 (see p.5) - Efficient public transport development by implementing mass rapid transit with reserved routes and strong enforcement, as well as compact and multi-functional urban development around main economic centres of the cities will mitigate the typically observed increase in motorisation seen in most of the cities in transition countries around the world.
INTEGRATED LAND-USE AND TRANSPORT DEVELOPMENT

Since the last decades a rapid urbanisation process is taking place in MENA cities due to natural population growth and attractiveness of the cities offering economic opportunities. At the same time, cities are facing urban sprawl challenges. In cities in transition countries, this trend is mainly due to strong economic disparities which force lowest income households to settle in more affordable areas, with insufficient transport infrastructure and often far from economic hubs. In wealthy cities, such as Dubai and Abu Dhabi, urban sprawl is the results of a land use development in favour of single housing. The lack of public transport infrastructures connecting suburban areas to the economic centres implies a higher private car dependency. In Dubai, motorisation rate continues to increase: starting from an already high motorisation rate 462 private car/1000 inhabitants in 2001 and reaching 526 private car/1000 inhabitants in 2015. Compact urban development and transit-oriented development can contribute to tackle urban sprawl and mitigate the raise in motorisation.

RESERVED ROUTES FOR PUBLIC TRANSPORT

Although private car is the main transport modes for a large part of the population in Dubai, a modal shift has been observed in Dubai between 2001 and 2015: daily trips made by public transport increased from 7% in 2001 to 14.4% in 2015. This can be directly correlated with the opening of the red and green metro lines, respectively in 2009 and 2011, and the launch of the tram system in 2014.

Increasing the length of reserved routes for public transport has direct impact on mobility patterns and on the overall traffic situation in cities.
RESTRICTIVE POLICY TO REDUCE CAR USE AND OWNERSHIP

Between 1995 and 2012 a drastic growth in motorisation has been recorded in Casablanca and Tehran: the number of private car/1000 inhabitants increased from 129 in 1995 to 370 in 2012 in Casablanca, and from 95 in 1995 to 370 in 2012 in Tehran. At the same time a decrease in public transport modal share has been observed: from 17% to 13% in Casablanca, and 20% to 13% in Tehran between 1995 and 2012. Despite efforts to develop public transport infrastructure, such as the metro and BRT system (since respectively 1999 and 2007) in Tehran and the tram system in Casablanca (since 2012), rapid motorisation growth continues to negatively impact public transport ridership. It can be concluded that restrictive car ownership and car use policy should be deployed in order to encourage public transport use rather than private car use. The rise of the parking fees in most congested areas of Dubai is a sign of the awareness and will of authorities to restrain private car access to certain neighbourhoods of the city. In Tehran, cars are banned from some areas of the city centre.

CONTINUOUS MONITORING TO ASSESS THE IMPACTS OF APPLIED STRATEGIES

The analysis of the transport data for Dubai shows the positive impacts of the strategy applied during the previous years. For the other cities, the impacts of the currently applied strategies for public transport development will be measurable in the coming years. In order to monitor and evaluate transport strategies it is crucial to record, measure and analyse transport indicators.

MENA Center for Transport Excellence (CTE) is starting the research project, called MCD MENA, to further understand transport supply and demand evolution in the MENA region and support local authorities to strengthen their data collection efforts. In the coming years, MENA CTE aims at building a transport database for all main cities of the MENA region.