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Deliverable 4.5

Scope for accelerating urban mobility development processes in rapidly growing economies: the case of Adana, Amman, Bucharest, Skopje and Tallinn

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Contents

I. Introduction

The Horizon 2020 project CREATE assesses evolutionary processes related to urban mobility in five of the most progressive[1] capital cities in Europe: Berlin, Germany; Copenhagen, Denmark; London, UK; Paris, France; Vienna, Austria. One of CREATE's core objectives is to examine the extent to which growing urban economies can accelerate their urban mobility development processes to avoid, or shorten, the costly car-oriented phase which has been experienced by the five cities mentioned above.

There is evidence internationally that there is a positive association between an increase in GDP[2] per capita and urban population, and growing car use in cities[3];[4]. Car-dependent urban development almost invariably leads to congestion in large cities and results in strong negative externalities, such as high CO_2 emissions, air pollution, urban sprawl, road accidents, social exclusion, spatial segregation and serious health issues linked to increased lack of physical activity[5];[6];[7];[8]. The promotion of sustainable and inclusive mobility supports the United Nations and the European Union's agendas. It responds to eight of seventeen Sustainable Development Goals (SDGs), to the New Urban Agenda (NUA) and to the 12 key areas covered by Urban Agenda for the EU.

This report examines barriers and opportunities for five rapidly growing cities to speed up the implementation of sustainable urban mobility policies. It is a cross-city comparison which aims to identify common urban mobility patterns and differences between five growing cities: Adana, Turkey; Amman, Jordan; Bucharest, Romania; Skopje, Republic of Macedonia; and Tallinn, Republic of Estonia. It examines past, present and potential future opportunities and challenges linked with urban mobility and planning in five cities with different geopolitical and socio-cultural contexts. The report examines and discusses the extent to which sustainable urban mobility policies can be accelerated in those cities and identifies the key barriers and opportunities for this change to take place. It aims to provide insights which can inform rapidly growing cities in developing economies across Eastern Europe and the Global South.

The study's research questions include:

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[1] From the point of view of urban mobility

[2] Gross Domestic Product

[3] International Transport Forum (2012) Transport outlook, seamless transport for greener growth. OECD/ITF

[4] Ecola, L., Rohr, C., Zmud, J., Kuhnimhof, T., Phleps, P. (2014) The Future of Driving in Developing Countries. RAND Corporation

[5] Dimitriou, H.T. (2013) Transport Planning for Third World Cities. Routledge

[6] Banister, D. (2005) Unsustainable Transport: city transport in the 21st Century. London: Routledge

[7] Jones P; Lucas K (2012) The social consequences of transport decision-making: Clarifying concepts, synthesising knowledge and assessing implications, Journal of Transport Geography

[8] Cervero, R. (2013) Linking urban transport and land use in developing countries. Journal of Transport and Land Use, 6 (1) (2013), pp. 7-24

- What are the common urban mobility patterns and differences between those five growing cities?
- Which factors have led and contributed to a car-oriented development in those cities?
- What are the most common challenges or barriers that prevent growing cities from establishing sustainable mobility policies?
- To what extent can growing cities accelerate their sustainable mobility processes?

First, the report describes the research methods used. Second, it provides an overview of the key characteristics associated with the five case study cities. Then the research results section highlights urban mobility issues and opportunities in those five cities; it is divided into three parts: 1) past, 2) present and 3) future. The discussion session draws from findings from the research work and from a participatory workshop which took place in February 2018. It highlights the most pressing issues in rapidly growing cities and interrogates the potential to generate change to foster sustainable mobility. Finally, key recommendations are provided.

II.   Methods

This cross-city comparative analysis draws on findings from the five CREATE city reports which were produced in the context of deliverable D4.4. The city reports examine past, present and future mobility challenges and opportunities in Adana, Amman, Bucharest, Skopje, and Tallinn. Those reports are based on the combined analysis of the 'city profiles' (see questionnaire in Annex i), including quantitative and qualitative data provided by each city partner, and the analysis of the focus groups conducted in each city between January 2017 and July 2017 (for further details see CREATE City Reports and focus group topic guide in Annex ii). Between 12 and 17 participants attended each focus group. The participants were carefully chosen as stakeholders representing different key sectors in each city. A range of experts, who all demonstrated a deep understanding of their city's past, present and future transport and urban planning took part in the focus groups. Note that the term 'participant', used throughout the report, refers to the participants who took part in the focus groups which were run in each of the five case study cities.

To cross-analyse findings from the five city reports, a framework matrix was established following the topic guide used during the focus groups (see Annex iii). The matrix is divided into main themes and sub-themes which were systematically cross-analysed to compare and contrast content. Thematic content analysis and coding methods were also applied using qualitative data analysis computer software NVIVO.

The discussion section of this report (Section VII) was also informed by a CREATE workshop organised in February 2018 in Skopje. The workshop involved 16 policy-makers from Adana, Amman, Bucharest, Skopje, and Tallinn, two policy-makers from England, three academics from London and Paris and two consultants based in Europe. Several themes were addressed (as

highlighted in the agenda in <u>Annex iv</u>) including challenges and opportunities for cities to 'accelerate' sustainable mobility policies, skills required to do so and policies to prioritise.

III.   Five uniquely different cities

The five case study cities examined in this report have unique characteristics. This section briefly outlines some of the key aspects that differentiate each city. It is necessarily succinct and selective.

i.   Geography

Tallinn, Estonia is located in Northeast Europe; Bucharest, Romania and Skopje, Republic of Macedonia in Southeast Europe; Adana, Turkey and Amman, Jordan in the Middle East (as illustrated in figure 1 below).

Figure 1 CREATE cities

ii.   Population and density

The five case study cities have significant differences in terms of population. Estimates suggest that the city of Amman has over 4 million inhabitants and the city of Adana has over 2 million. Bucharest has over 1,800,000 inhabitants whereas Skopje has over 500,000 and Tallinn circa 400,000 (as highlighted in table 1 below). Table 1 below provides approximate data for the annual

growth rate of population and the population density in each city. It suggests that the annual growth rate of population is very high in Amman compared to the other cities. Bucharest, Tallinn and Amman seem to have high population densities compared to Skopje and Adana. Adana's relatively low population density is explained by the fact that since 2014 the Adana municipality includes the entire Adana metropolitan area.

	Year	Estimated Population	Annual Growth Rate of Population (%)	Population Density
Adana[9]	2017	2,216,475	0,90	158/km^2
Amman	2015	4,008,000	6.8% between 2004 and 2015 in Jordan	2,348/km^2
Bucharest	2016	1,844,312	Decrease since 2002 but growing metropolitan area circa 2.3 million	7,749/km^2
Skopje	2016	548,300	0.56%	960/km^2
Tallinn	2018	448,764	Not known	2,819/km^2

Table 1 Population and density in Adana, Amman, Bucharest, Skopje, Tallinn

iii.   Climatic and geographic conditions

The five cities have very different climatic and topographic conditions (as illustrated in table 2 below). Amman, notorious for being built on seven hills, is an undulating city with a semi-arid climate (as illustrated in figure 2). Adana, constructed along the Seyhan River, is mostly flat and has a hot-summer Mediterranean climate with humid summers. Bucharest was built along the Dâmbovița River; the city is mostly flat with moderate elevation in several areas and a humid continental climate. The city of Skopje is built along the Vardar river in the Skopje valley and has a continental sub-Mediterranean climate. Tallinn is a flat city bordering the sea with a humid continental climate and cold snowy winters.

	Climate[10]	Topography	River/Lake/Sea
Adana	Hot-summer Mediterranean climate	Çukurova plain	Seyhan river
Amman	Semi-arid	Seven hills	
Bucharest	Humid continental climate	Romanian plain with hills	Dâmbovița river/ Lake Herăstrău, Lake Floreasca, Lake Tei, and Lake Colentina

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[9] Note that since 2014 the Adana municipality includes the entire Adana metropolitan area
[10] According to Köppen climate classification *Dfb*

Skopje	Continental sub-Mediterranean	Skopje valley	Vardar river
Tallinn	Humid continental climate	Flat, sea level	Seaside (Gulf of Finland), Lake Ülemiste/ Lake Harku/

Table 2 Climatic and geographical conditions in Adana, Amman, Bucharest, Skopje and Tallinn

Figure 2 'Amman's Citadel atop Jabal al-Qal'a, the historical center of the city' Source: David Bjorgen (https://en.wikipedia.org/wiki/Amman_Citadel#/media/File:Amman_Citadel.jpg)

iv.   Socio-cultural and political contexts

The five cities experience very different socio-cultural and political situations which are briefly outlined in this section. Four of them (all except Adana) are capital cities, major political, financial, cultural and educational centers in their country. Estonia, Romania and the Republic of Macedonia were communist countries until the late 1980s. The Republic of Estonia was part of the Union of Soviet Socialist Republics until its breakup in 1991 and joined the European Union in 2004. Romania was a socialist republic until the 1989 revolution. It became a full member of the European Union in 2007. The Republic of Macedonia declared independence from the former socialist Yugoslavia in 1991 and has been a candidate for joining the European Union since 2005. Adana is one of largest cities in the Republic of Turkey. It is located in Southern Turkey, close to the border with Syria. Amman is the capital of the Hashemite Kingdom of Jordan, a sovereign Arab state which has been welcoming refugees from neighboring countries for over five decades.

v.   Public and collective transport infrastructure

As illustrated in table 3 below, public and collective transport facilities vary from one city to another.

Collective transport facilities	Adana	Amman	Bucharest	Tallinn	Skopje
Publicly operated buses (number of vehicles)	293	200	1,147	412	428
Privately operated buses (number of vehicles)	419	11,390 (mostly minibuses)	Data not available	Data not available	206
Privately operated minibuses (number of vehicles)	1,085		Data not available	Data not available	-
Trolley buses (number of lines)	-	-	15	4	-
Underground (number of lines)	-	-	4 (71.14 km double track, 47 stations; 1 line under construction)	-	-
Tram/Light rail (number of lines)	1 (13.5 km 13 Stops)	-	24 (286 km)	4	-
Total kilometer of bicycle lanes	The city does not have cycle routes for commuters. It has cycle lanes for leisure; 40.5 km in total but the lanes are not connected with each other.	-	*Approximately 19.02* and 2.2 km of bicycle lanes under development	273	2 km bicycle lanes (80 km bicycle paths)

Table 3 Collective transport facilities in Adana, Amman, Bucharest, Skopje and Tallinn

In addition to the collective transport facilities highlighted above, the city of Amman also has 3100 shared taxis and 302 publicly operated minibuses.

IV.   Understanding the past

"Those who cannot remember the past are condemned to repeat it"[11], George Santayana.

i.   Introduction

The first part of this report examines the evolution of urban mobility in five growing cities: Adana, Amman, Bucharest, Skopje, and Tallinn. Investigative work taking place in the five cities aims to better understand what has led to congestion in those growing urban economies. Several research questions have informed this section, including: *How has urban transport and land-use evolved over the past 10 to 15 years? How have public authorities responded to those changes? How have urban transport and land use policies evolved over the past 10 to 15 years?* Those questions formed the central part of the topic guide which guided the focus groups (Annex ii). Additional quantitative and qualitative data was obtained from city partners via the 'City Profile' (see questionnaire in Annex i). The latter focused on relevant socio-economic data such as historic and current demographic data or data about transport use. This section summarises the key themes that have emerged from the analysis highlighting common trends and patterns across the five case study cities.

ii.   Rapid growth in urban population

A common historical trend that has affected all five cities is the rapid growth in urban population. Quantitative data indicates that urban population in those cities has been growing rapidly since the 1980s (See figures 3, 4, 5, 6 and 7 below). Continuous rural-urban migration flows, coupled with sharp immigration influx in some countries, has led to fast expanding metropolitan areas.

In Amman and in Adana, urbanisation rates rose sharply following the start of the Syrian civil war in 2011. Estimates indicate that Amman's population has doubled within less than a decade (see figure 4), and it is likely that refugees' numbers are not fully accounted for in the Census and that real population numbers are higher. Skopje also experienced sharp population growth in the 1990s and early 2000s due to the influx of refugees during the Yugoslav Wars in Slovenia, Croatia, Bosnia and Kosovo. However, in the case of Bucharest and Skopje population has remained stabled or has tended to decrease in the city centre but has continued to rise in the metropolitan area. This trend is partly caused by the relocation of inhabitants from the city centre to the city's suburbs and peri-urban areas, as illustrated in the case of Bucharest and its region Ilfov in figures 8 and 9. This phenomenon will be further discussed in this report.

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[11] Reference: *The Life of Reason: Reason in Common Sense.* Scribner's, 1905: 284
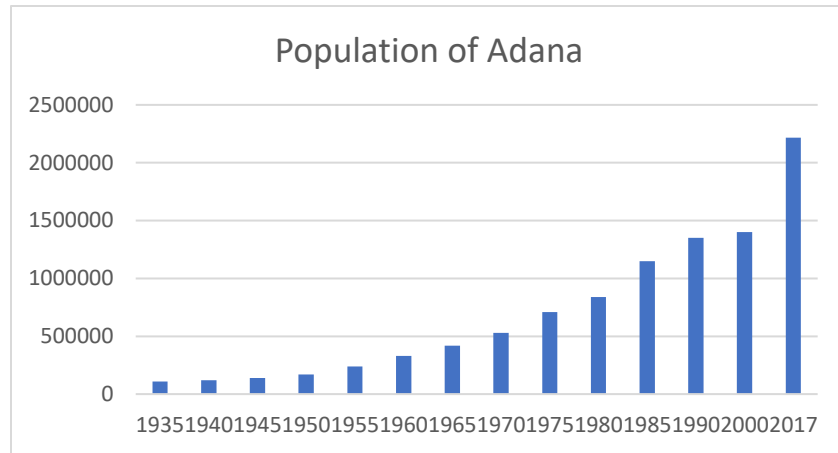
Figure 3 Population increase in Adana. Source: Alphan, H. (2003) Land-use change and urbanisation of Adana, Turkey. Land Degradation & Development. Vertical axis: Population; Horizontal axis: year
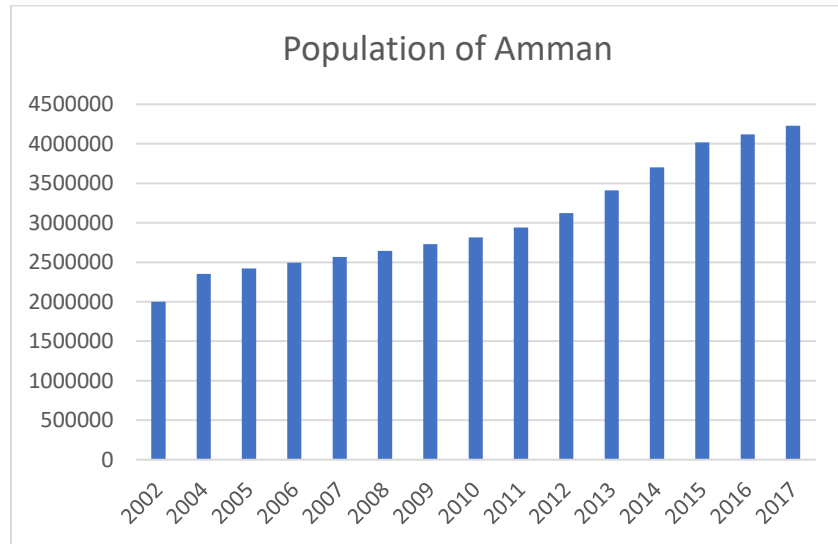
Figure 4 Evolution Population Amman since 2002. Source: Department of Statistics. Vertical axis: Population (in millions); Horizontal axis: year
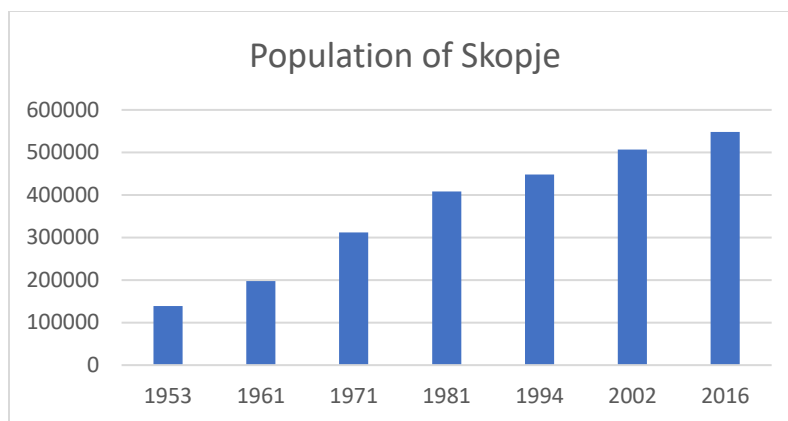
Figure 5 Evolution population Skopje since 1953. Source: State statistical office. Vertical axis: population; Horizontal axis: Year
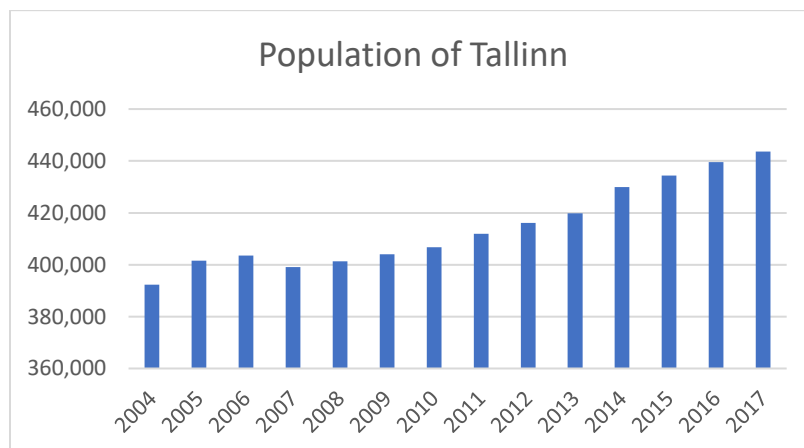
Figure 6 Tallinn's population growth since 2004. Source: Estonian Ministry of the Interior, Population Register. Vertical axis: population; Horizontal axis: Year
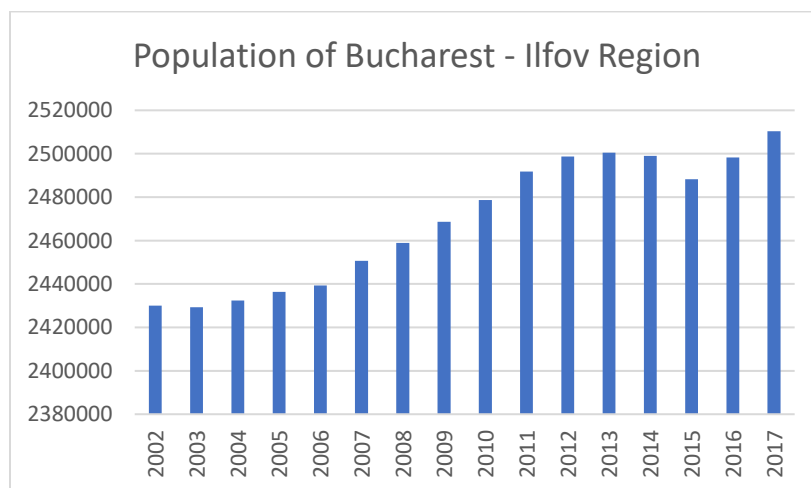
Figure 7 Evolution of population for Bucharest - Ilfov Region, 2002-2017 period. Vertical axis: population; Horizontal axis: Year Source: INS (National Institute of Statistics) data, http://statistici.insse.ro/shop/?lang=ro, accessed February 2018
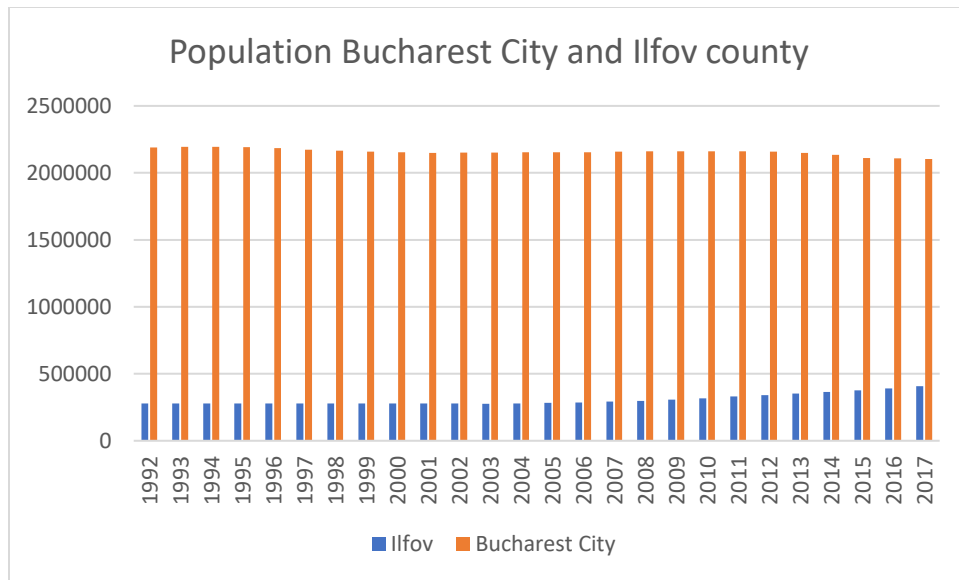
Figure 8 Evolution of population for Bucharest City and Ilfov County, 1992-2017 period. Source: INS (National Institute of Statistics) data, http://statistici.insse.ro/shop/?lang=ro, accessed February 2018

Dynamic Population Change in Bucharest and Ilfov, 2002-2011
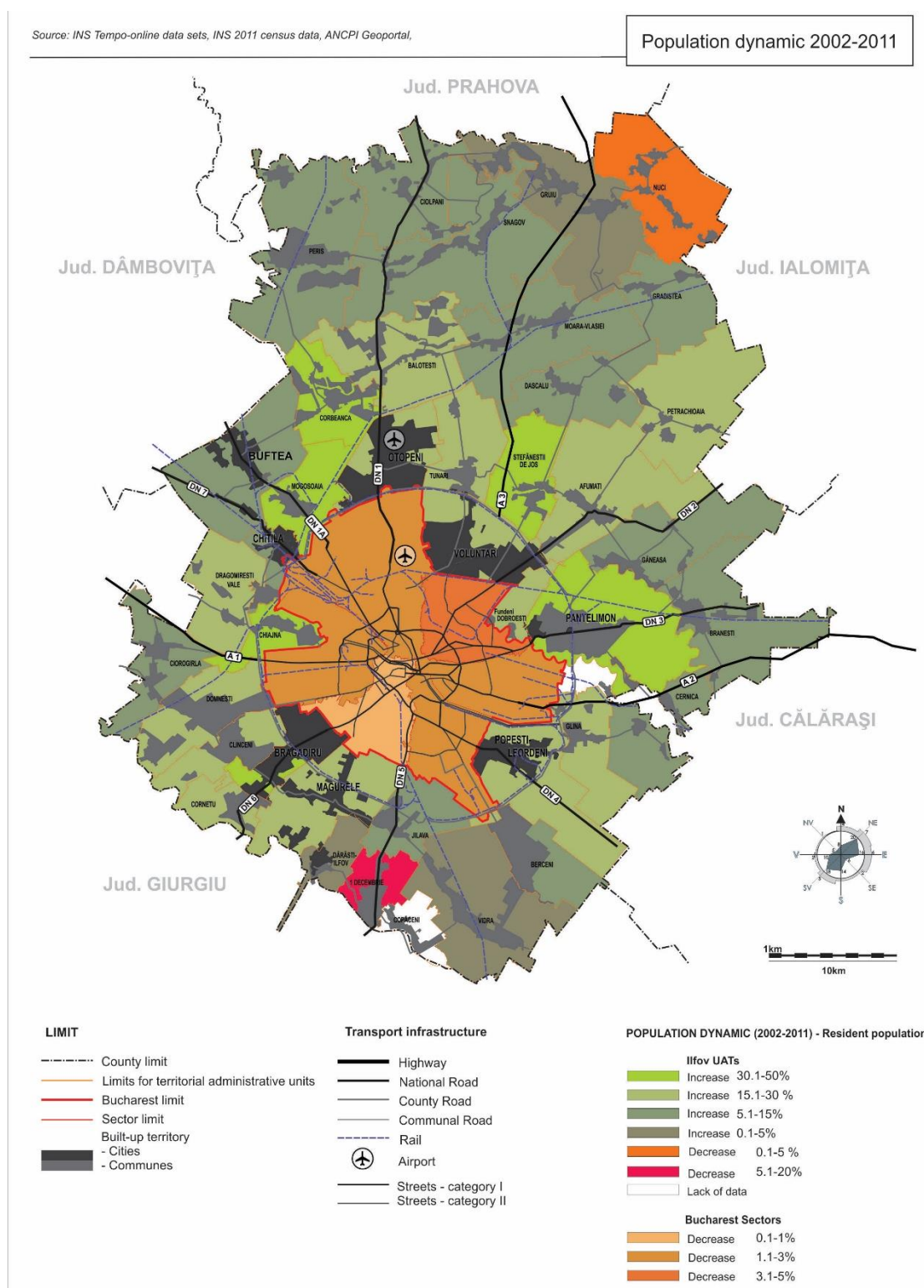
Figure 9 Dynamic Population Change in Bucharest and Ilfov, 2002-2011. Source: 2002 and 2011 INS data processed for BI SUMP

In most cities references were made about 'unmanaged urban growth'. Public authorities in Adana and in Amman have had difficulties responding to the growing demand for housing and transportation since the 2010s; "*Naturally the government could not provide for all these people*", describes a participant in Adana and numerous "*informal settlements started to mushroom around the city*". Referring to the sudden growth of population in the late 1990s, participants in Skopje made similar comments, highlighting the fact that public authorities were not "*prepared*" for this sudden growth in population.

iii. Urban Sprawl

The rapid urban growth experienced in the five case study cities led to an unplanned vertical expansion of the cities. Figure 10 below illustrates the changes in land-use experienced by Adana between 1984 and 2000. In Bucharest, the peri-urban densification and expansion areas planned and built between 2002 and 2011 are illustrated in green and light green in figure 11 beyond the red line that represents the city's administrative boundary.

Unplanned urban sprawl was highlighted as one of the most problematic issues linked to transport across the five case study cities. It is when "*transport problems started*", recalls a participant in Adana. In Bucharest, post 1989 it became possible to build low density buildings and houses – prior to this, regulations only allowed for high density buildings. "*After 1989 everyone wanted to have their own house*", highlights a participant from Bucharest and this is when "*the city started to spread*". A similar situation occurred in Tallinn, which experienced strict urban planning regulations during the soviet times when building on agricultural lands was forbidden. The mass privatisation of the land and the general de-regulation which took place post-independence led to unplanned low-density developments in Tallinn. Residents who could afford a private motorised vehicle started to move to Tallinn's suburbs aspiring to live in privately owned houses. As highlighted by one participant:

"*Soviet cities were very much concentrated in apartments, [90% of residents in Tallinn's city centre live in apartments], so the opportunity to live in a privately owned suburban house was very important for people*".
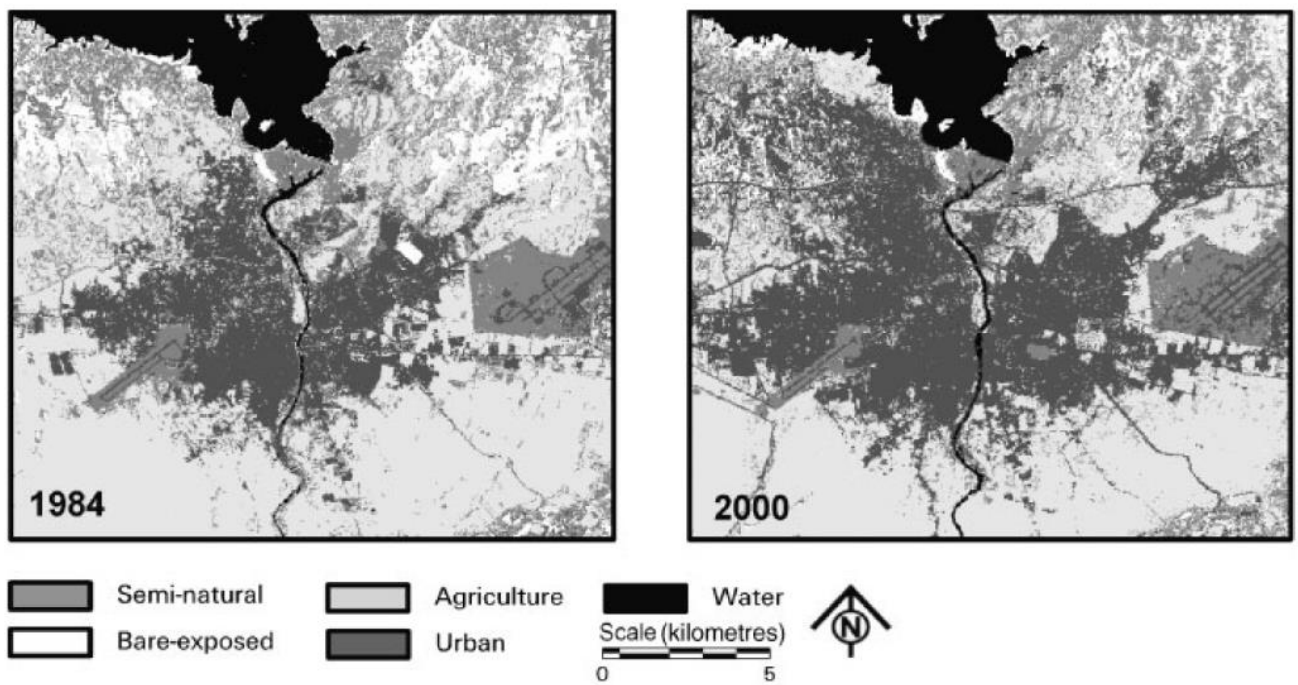
*Figure 10 Land Use Changes in Adana. Classified images showing Land-use Land-cover categories of the study area in 1984 and 2000. Source: Alphan, H. (2003) Land-use change and urbanisation of Adana, Turkey. Land Degradation & Development.*

Densification and expansion areas[12] in Bucharest-Ilfov (2002-2011)

Figure 11 Dynamic Regions in Bucharest-Ilfov (2002-2011) Source: Bucharest Ilfov SUMP, Interim Report 1, chapter 2.6 Current Trends and Policy

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[12] The densification and expansion areas were established based on planned and approved developments and on-going/finalised developments

The changes referred to above led to the development of car-dependent low-density areas in the outskirts of cities and in neighbouring municipalities, in effect expanding cities into metropolitan areas. The rise of urban sprawl happened in parallel with, and was facilitated by, the rise in the use of private motorised vehicles. This unmanaged urban sprawl increased pressure on transport networks creating daily pendulum flows from the suburbs to the city almost exclusively reliant on car-based movements. Figure 12 below illustrates the vicious circle of car-dependent low-density development and unmanaged urban sprawl. One leads to and accentuates the other making it difficult to provide sustainable alternatives.
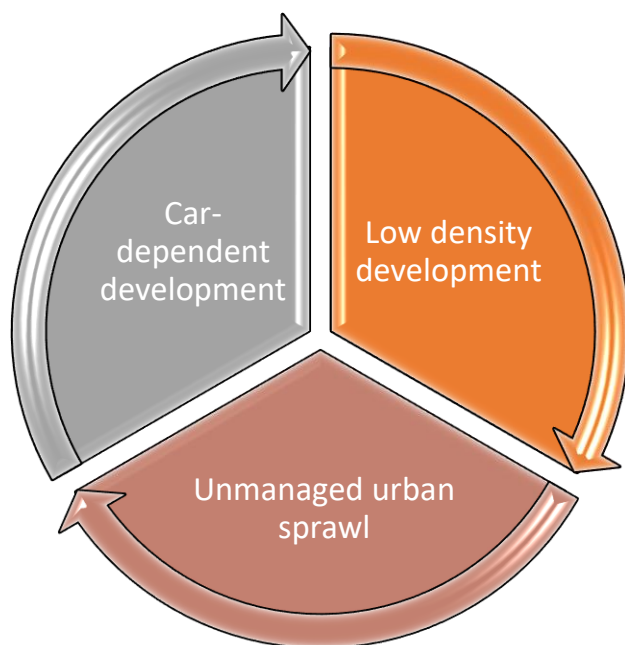
Figure 12 Vicious circle of car-dependent low-density development and unmanaged urban sprawl

iv. Increase in GDP per capita

Another common element across cities has been the continuous growth in Gross Domestic Product (GDP) per capita, as illustrated in figures 13, 14, 15, 16 and 17. GDP growth has been particularly strong in the post socialist era in Tallinn, Bucharest and Skopje. Since the 1990s Estonia's GDP has been gradually increasing making Estonia one of the strongest economies of the new EU member states. Bucharest's GDP per capita is the highest in Eastern Europe and has been growing steadily since the 1990s; this contributed to position Romania as the fastest growing economy in the EU (figure 13).

The correlation between GDP growth and increased car ownership and car use is well documented.[13] As GDP grows, residents' purchasing power increases enabling them to acquire a private motorised vehicle. The motivation behind this decision can be explained by multiple factors (e.g. practical, psychological, etc.) as will be discussed further in this report.
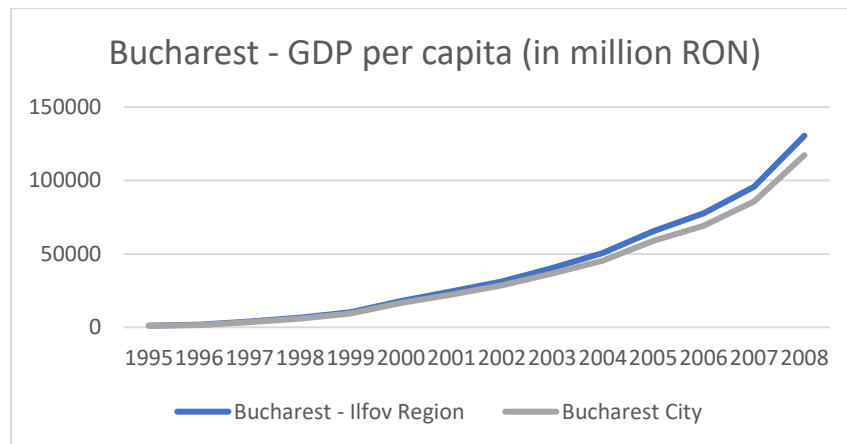
Figure 13 Evolution of GDP per capita in Bucharest 1995-2008 period. Vertical axis: GDP per capita in RON, Horizontal axis: year. *Source: INS (National Institute of Statistics) data, http://statistici.insse.ro/shop/?lang=ro, accessed February 2018*
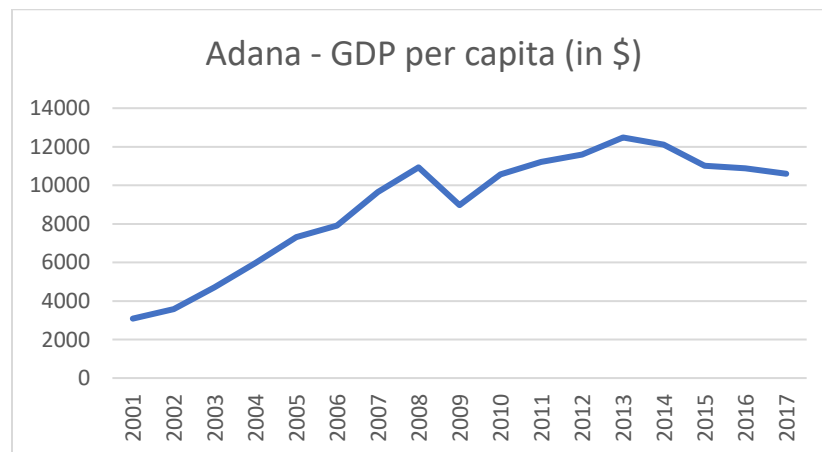
Figure 14 GDP Growth in Adana since 2001 (in dollar). Vertical axis: GDP per capita in Euro, Horizontal axis: year. Source: OECD

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[13] International Transport Forum (2012) Transport outlook, seamless transport for greener growth. OECD/ITF.

Ecola, L., Rohr, C., Zmud, J., Kuhnimhof, T., Phleps, P. (2014) The Future of Driving in Developing Countries. RAND Corporation
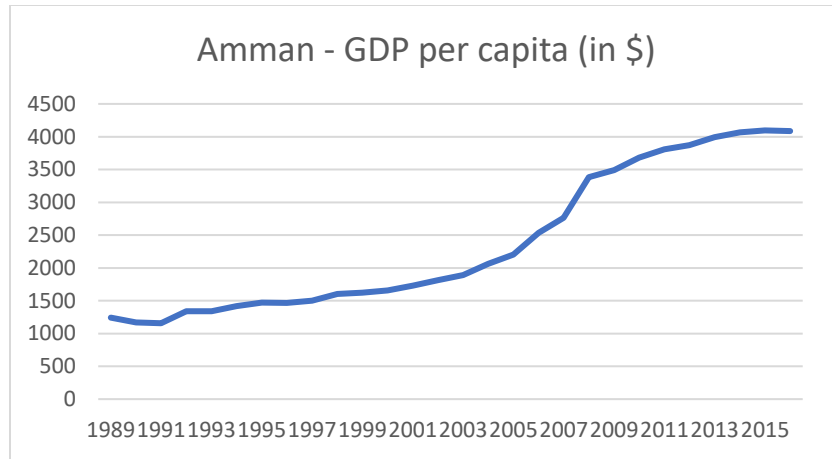
Figure 15 Evolution of GDP per capita in Amman since 1989 in US Dollar. Vertical axis: GDP per capita in Euro, Horizontal axis: year. Source: World Bank national accounts data, and OECD National Accounts data files
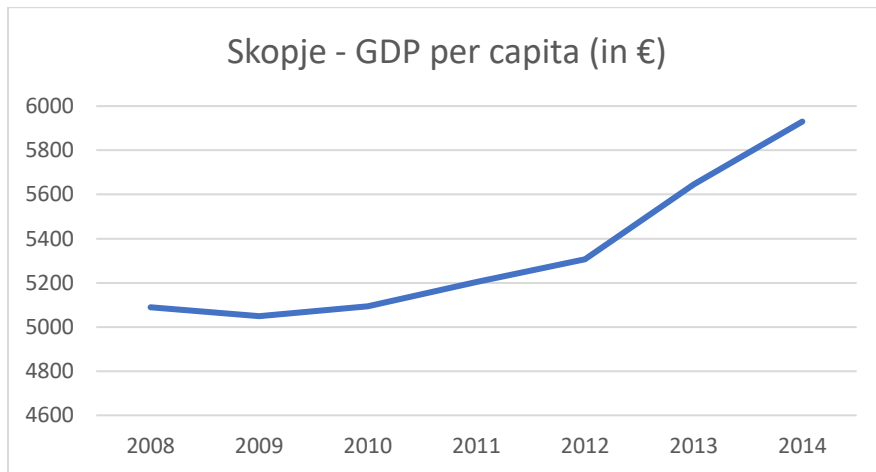
Figure 16 Gross domestic product (GDP) per capita in Skopje metropolitan area. Vertical axis: GDP per capita in Euro, Horizontal axis: year. Source: State statistical office of the Republic of Macedonia
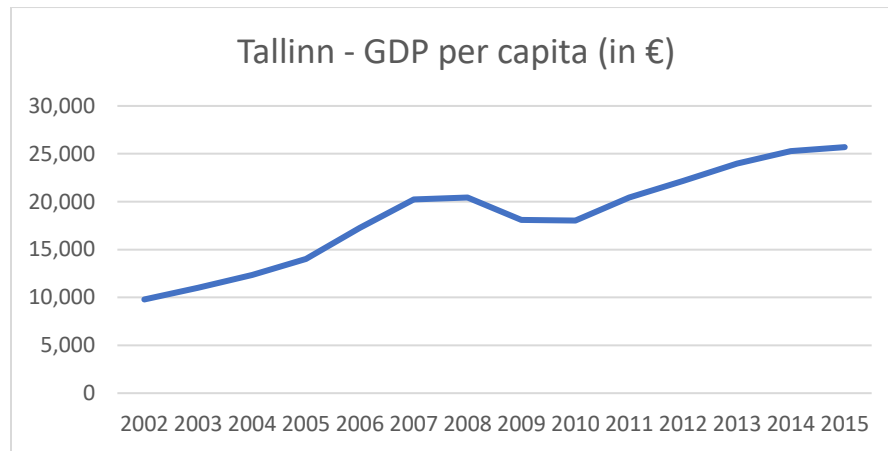
Figure 17 Evolution of GDP per capita in Tallinn in Euros. Vertical axis: GDP per capita in Euro, Horizontal axis: year. Source: Statistics Estonia

v.   **Decrease in fuel prices**

Another factor that is likely to have contributed to increased car use is the drop in fuel prices that certain countries have experienced. Overall, fuel costs have been going down since 2010 in Jordan, the Republic of Macedonia, Estonia and Romania (see figures 18, 19, 20 and 21). One exception is Turkey where the national government has been imposing fuel taxes for the past decade.
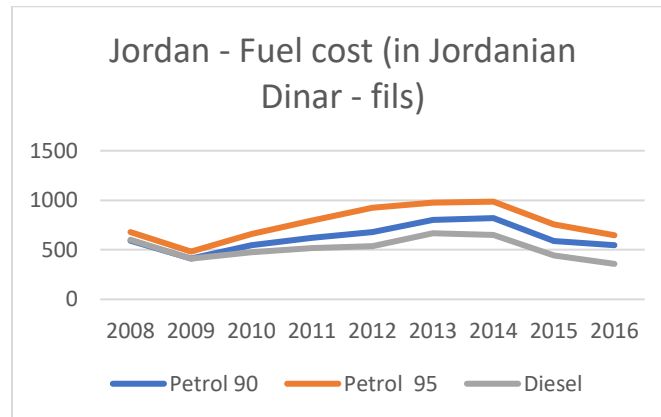
Figure 18 Evolution of Fuel cost in Jordan (1 Jordanian Dinar equals 1000 fils). Vertical axis: fuel cost in Jordanian Dinar in Fils (1 Jordanian Dinar equals 1000 fils); Horizontal axis: year Source: www.jopetrol.com.jo
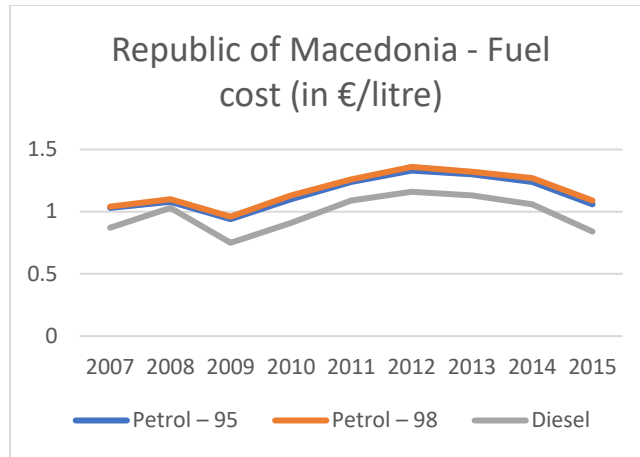
Figure 19 Annual average fuel prices (diesel and petrol) Republic of Macedonia. Vertical axis: fuel cost in €/litre; Horizontal axis: year . Source: Energy regulatory commission of the Republic of Macedonia
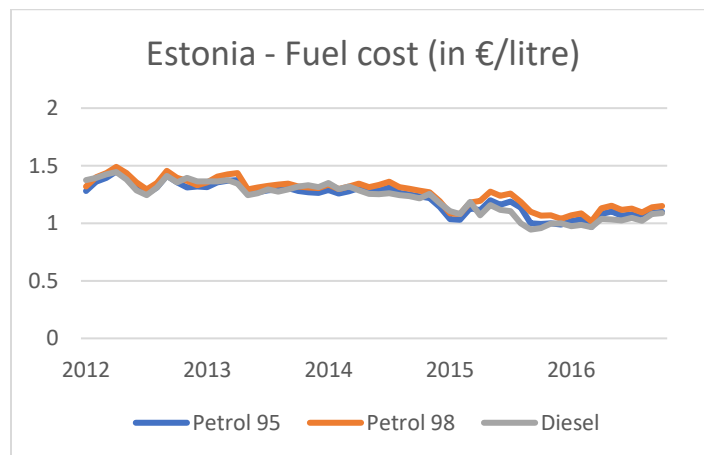
Figure 20 Evolution Fuel Prices in Estonia. Vertical axis: fuel cost in €/litre; Horizontal axis: year. Source: Liiklusloenduse tulemused 2016. aastal Maanteeamet. https://www.mnt.ee/sites/default/files/content-editors/Failid/Liiklusloendus/2016/aruanne_2016.pdf

Romania - Fuel cost evolution (in % of Consumer Price Index)
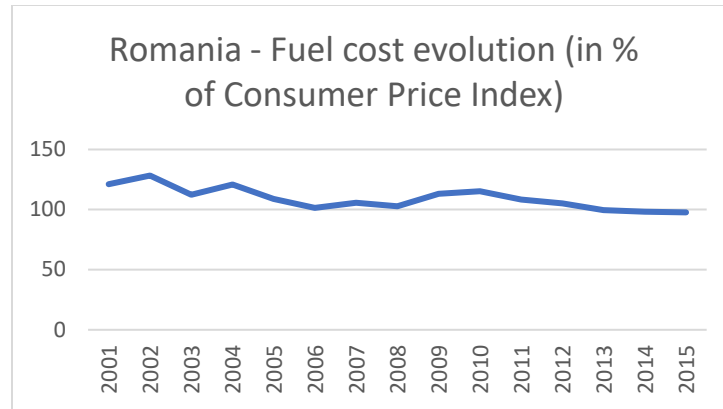
Figure 21 Evolution of fuel prices in Romania. Vertical axis: % of increase / decrease of fuel cost compared to the previous year[14]; Horizontal axis: year. Source: INS (National Institute of Statistics) data, http://statistici.insse.ro/shop/?lang=ro, accessed February 2018

vi.   Easy access to private motorised vehicles

In parallel with decreasing fuel prices, purchasing and owning a private motorised vehicle has become easier in the five case study cities. The import of second hand vehicles started immediately after 1989 in all of the eastern European cities. In Tallinn and in Bucharest it became "*very easy to buy a car*" from the 1990s following the end of the communist era. Prior to this, purchasing a private vehicle was a complex process. In Bucharest, "*There were no imports at the time*", highlights a participant, and the price of privately owned cars was high compared to salaries. Cars were considered "*luxury objects*" mentions a participant in Tallinn. In Estonia and Romania, buying new and second-hand cars has become easier since the two countries joined the EU common market.

In Skopje, buying a second-hand vehicle became particularly affordable since the late 2000s when the national government approved the import of Euro 1 & 2 second hand vehicles from Western Europe which were being removed from utilisation. "*These vehicles are available at a very low price*" and as a consequence "*Even students who used to take public transport started buying motor vehicles*" describes a participant in Skopje. In addition to increasing car use levels in the city, it also contributed to an increase in pollution levels.

Access to loans have become easier in the five case study cities and overall interest rates are relatively low allowing a growing percentage of the population to own a vehicle. As a result, owning and commuting by private car has become increasingly affordable in all of the five cities studied.

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[14] *The data for fuel prices represents the "Consumer Price Index (CPI)", it is expressed in % and shows the evolution of CPI for December of every year, compared to December of the previous year. The evolution of CPI is determined based on prices (RON) identified in selected stores or service providers*

vii.   Increase in car use and car ownership levels

All the factors mentioned above contributed to a sharp increase in car use and car ownership in the five case study cities (as illustrated in figures 22, 23, 24, 25, 26 and 27). Behavioural changes also contributed to this trend. It was very prevalent in post-communist countries where owning a private vehicle has been perceived as a sign of newly found freedom since the 1990s. The increase in car use and car ownership was also influenced by successful mass marketing techniques used by major car companies. In Adana, a participant highlights the fact that car manufacturers have been "*very successful in promoting cars*" in the city. In Amman, automobile manufacturers even advertise their product by comparing "*a happy person in a car with a sad person in a bus*" recalls a participant. In all five cities, owning and using a car is perceived as a sign of higher social status, as further described in this report.

In Amman, the reliance and dependence on car use is so severe that "*a lot of people now have more than one car per household, even if they are not economically well-off*" and "*people will spend all their time and money on buying a car*", highlight participants. In Jordan's capital city, the percentage of a household's income ear-marked to purchase, maintain and use private vehicles is very high. In Bucharest, estimates suggest that circa 55% of Bucharest's population owns a private vehicle, and 46% has a driving license. Romania's capital has nearly 1.1 million vehicles registered for a population of 1,855,351 inhabitants (according to the 2011 census). This data does not include data from Bucharest's metropolitan area where car ownership levels have been rapidly increasing (as illustrated in figure 25 below). In Skopje, estimates suggest that in the 1990s there were approximately 150 vehicles per 1000 inhabitants, whereas now it is closer to 330 vehicles per 1000 inhabitants.
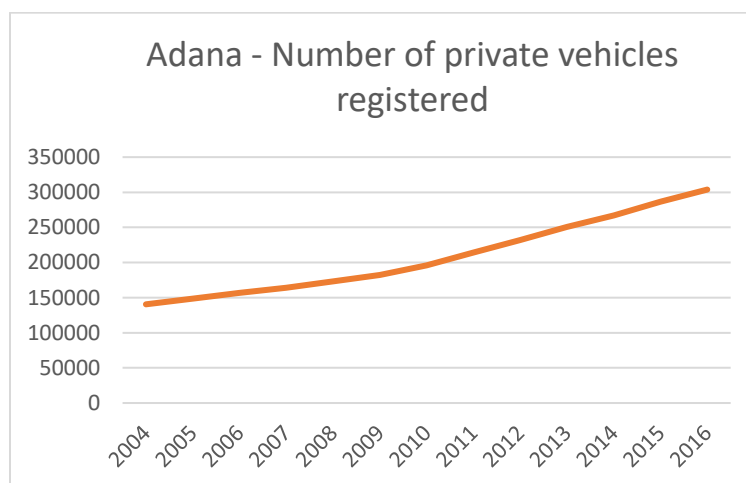
Figure 22 Number of private vehicles registered in Adana. Vertical axis: number of private vehicles registered in Adana; Horizontal axis: year. Source: Turkish institute of Statistics

Amman - Number of private vehicles registered (in millions)
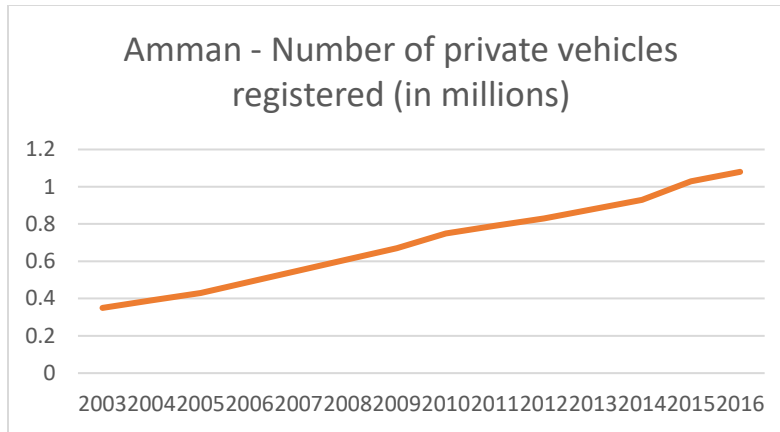
Figure 23 Private vehicles registered in Amman since 2002 (including cars, trucks, vans and pick-ups). Vertical axis: number of private vehicles registered in Amman (in Millions); Horizontal axis: year. Source: DoS (department of statistic), MoT (ministry of transport) and DVLD (driver& vehicle licensing department)

Bucharest metropolitan area- Number of private vehicles registered
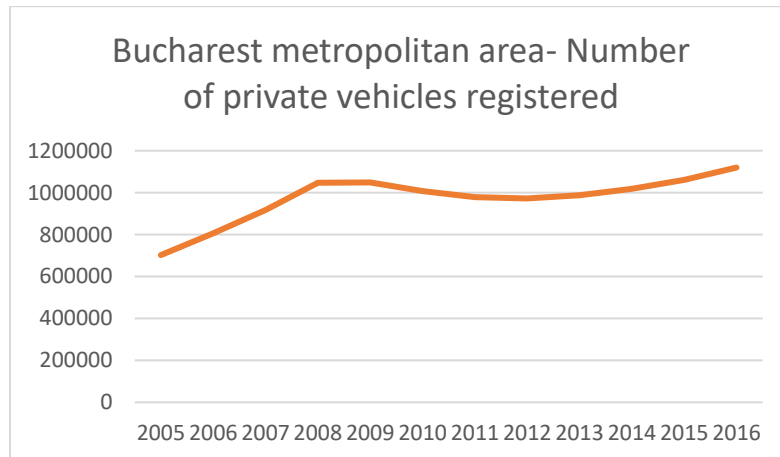
Figure 24 Car ownership (private car) Bucharest Ilfov Region (Bucharest city + Ilfov county), 2005-2016. Vertical axis: number of private vehicles registered in Bucharest Ilfov Region; Horizontal axis: year Source: INS (National Institute of Statistics) data, http://statistici.insse.ro/shop/?lang=ro, accessed February 2018

Bucharest metropolitan area Ilfov County - Private vehicles registered
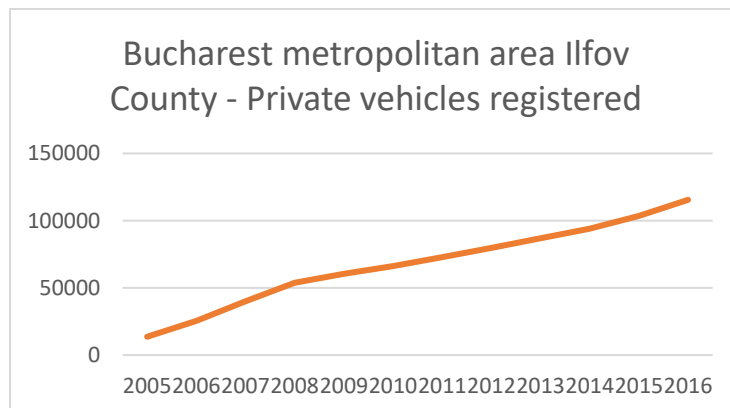
Figure 25 Car ownership (private car) Ilfov County (Bucharest metropolitan area), 2005-2016. Source: INS (National Institute of Statistics) data, http://statistici.insse.ro/shop/?lang=ro, accessed February 2018

26
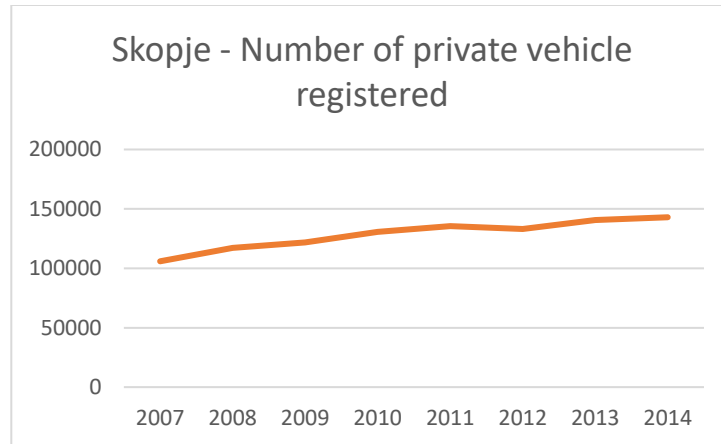
Figure 26 Number of private vehicles registered in Skopje since 2007. Vertical axis: number of private vehicles registered in Skopje; Horizontal axis: year. Source: State statistical office of the Republic of Macedonia
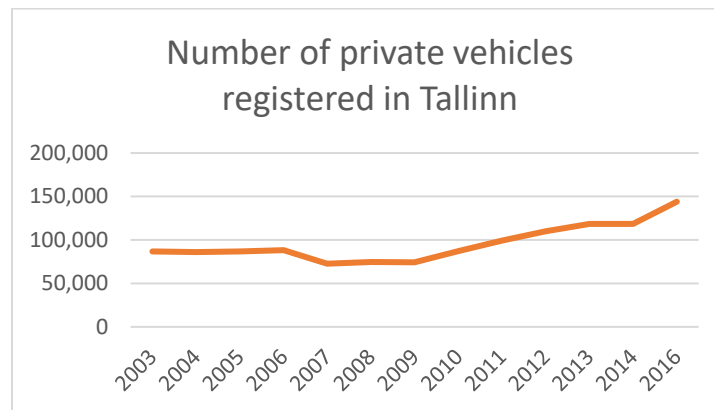
Figure 27 Number of private vehicles registered in Tallinn. Vertical axis: number of private vehicles registered in Tallinn; Horizontal axis: year. Source: Estonia Road Administration[15]

viii.   Planning for vehicles and lack of investment in public transport

A common characteristic across the five case study cities is that until recently, public policies and investments have mainly focused on accommodating the growing demand for car use in cities. For the past three decades, a very high percentage of the cities' resources and investments dedicated to transport has been used to build highways and parking facilities, primarily for car use. A participant from Skopje highlights that as a result 'Skopje has now become "*a paradise for motor vehicles*" and "*a city for fast motorways*". In Amman, a participant notes that public authorities are building a "*vast road network and are providing free public parking space*" for car users (as illustrated in figure 28). By doing so "*the government is subsidising private transport*", highlights

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[15] Note that the drop in the number of vehicles in 2007, 2008 and 2009 is due to data cleaning as explained by local technicians in Tallinn.

a Jordanian participant. Similarly, "*In Bucharest all parking is free*" points out a participant. In many instances, foreign investments such as investments coming from Gulf countries in Jordan or EU structural funds in European countries have incentivised road building. "*Transport planning is more driven by these things than by an assessment of what the city needs*" highlights a participant in Amman.

Figure 28 Amman's highways. Source: The Jordan Times, article by By Dana Al Emam on Feb 21,2015

Meanwhile, and in comparison, there has been a significant lack of investment in public transport across the five case study cities over the past three decades. In Amman, until recently almost no public subsidy was available for public and collective transport and to date it remains limited compared to the resources spent on highway investment. "*Public transport has declined slightly whilst the population has increased dramatically*" and the quality of public transport service '*is worsening',* stresses a participant in Amman. In Jordan's capital city, "*The car is a necessity, because there is no public transport*" or "*the existing public transport is very poor*", summarise participants. The cities of Tallinn, Bucharest and Skopje have been relying on the public transport network mostly inherited from the communist era. Since then, apart from some exception, those networks have not been sufficiently expanded or upgraded despite the increase in urban population. "*We did not invest sufficiently in public transport*", particularly "*as it became very easy to purchase individual cars*" reflects a participant in Bucharest. In Skopje, participants explain "*Cars are a basic need at the moment*" due to the lack of alternatives. The lack of quality and capacity of public transport is one of the factors that leads people to rely on their private vehicles to commute, as illustrated in figure 29 below.
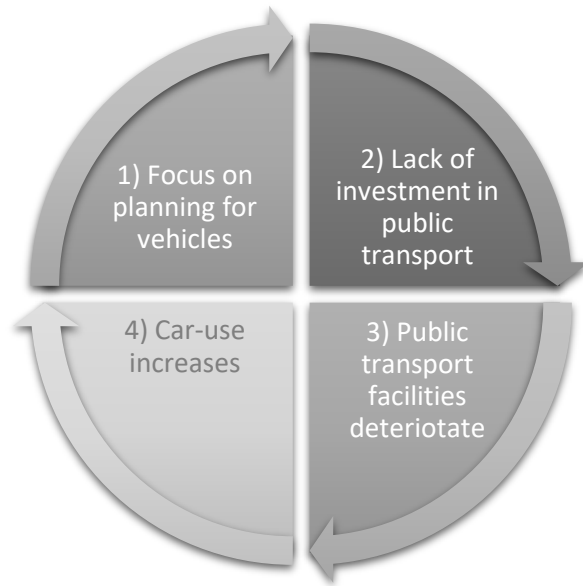
Figure 29 Car-oriented vicious cycle

Data indicates that in Tallinn, Skopje and Bucharest modal share has shifted towards more car use and less public transport use (see figures 30, 31 and 32 below) since the 1990s. Similar trends are likely to be found in Amman and Adana but relevant data is not available. Current estimated modal share for car use is close to, or above, 40% in Tallinn, Skopje, Bucharest and Amman and could even be close to 50% if the use of taxis is included as illustrated in figures 33, 34, 35 and 36.

Evolution Modal Share in Tallinn
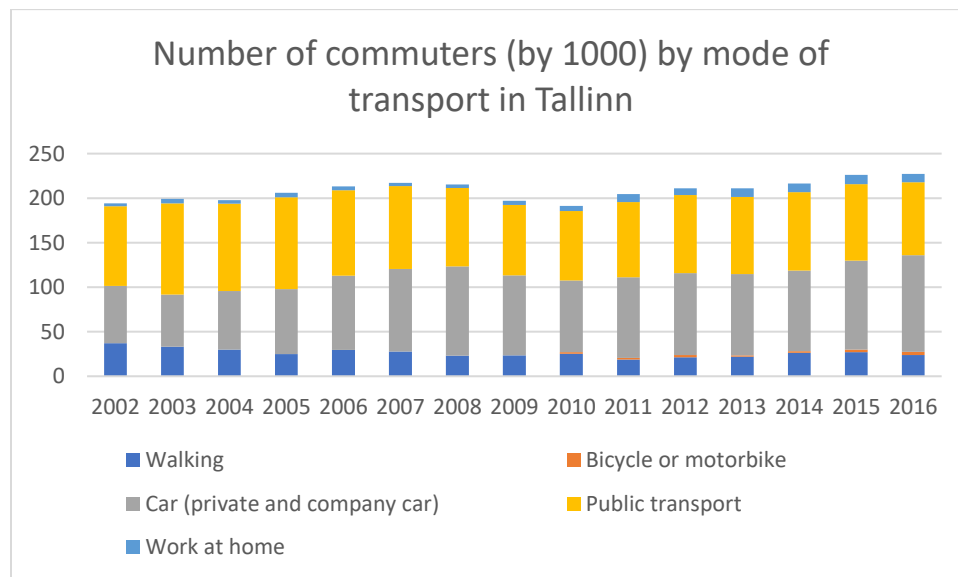
Figure 30 Number of commuters (by 1000) by mode of transport in Tallinn. Source: Statistics Estonia; Labour Force Survey, testimony-based

Evolution Modal Share in Skopje
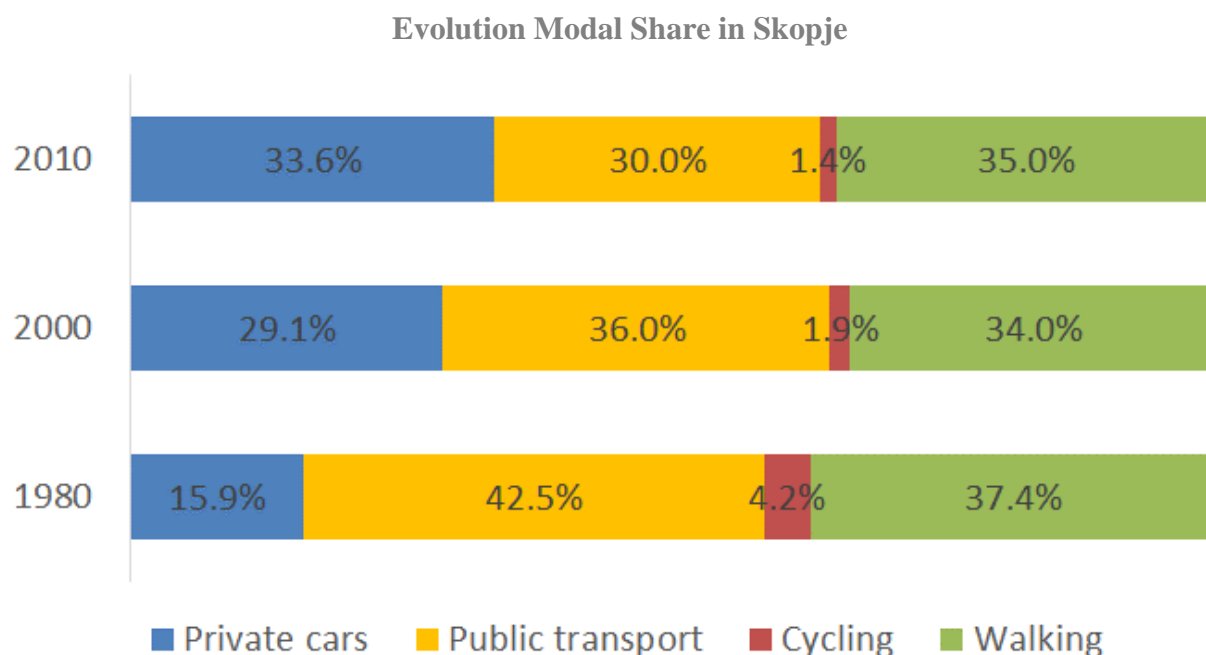
Figure 31 Evolution of Modal Share in Skopje. Source: Traffic studies for transport system in Skopje and Study for Development of public transport system in Skopje till 2000

Estimated evolution modal share in Bucharest

	Car driver and Car passengers	Active travel (Walking & Cycling)	Public transport
2015 (SUMP data)	36%	31%	27%
2007 (Urban Transport Master Plan – Bucharest, 2008)	23%	22%	48%
1999 (The Comprehensive Urban Transport Study of Bucharest city and the metropolitan area, 2000, chapter 4.6 Modal split)	28%	No data	52%

Figure 32 Estimated evolution modal share in Bucharest

Modal share Bucharest in 2015
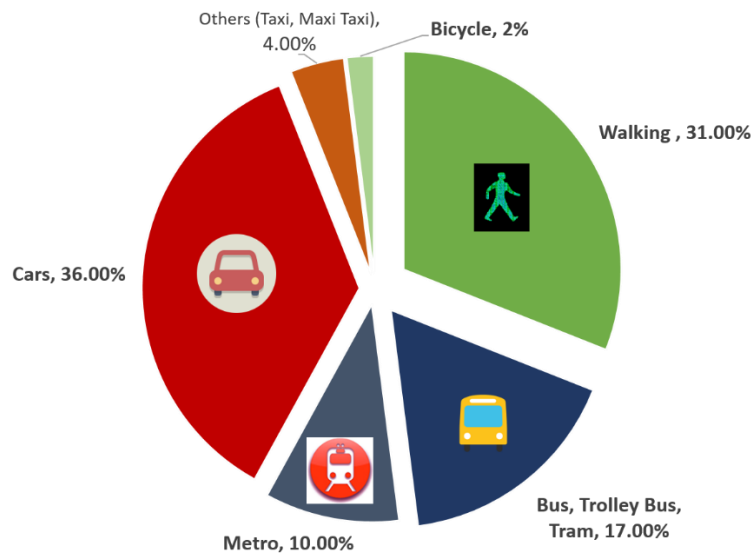
Figure 33 Bucharest estimated modal share 2015. Source: Bucharest SUMP

Modal share in Tallinn in 2016
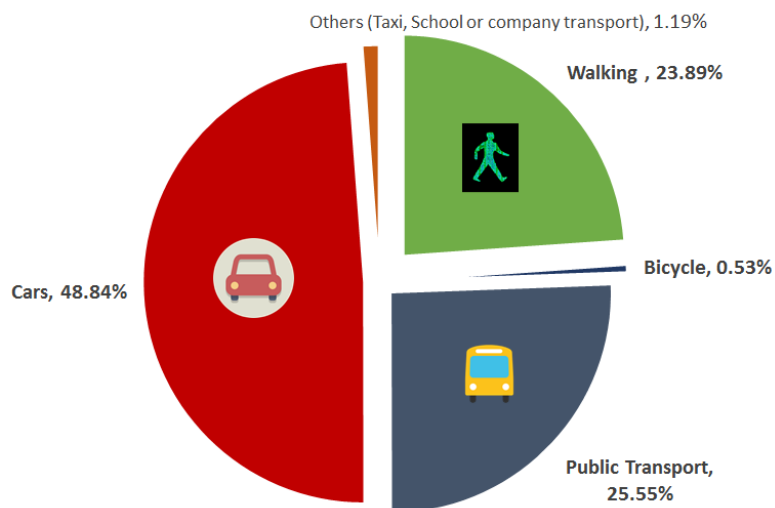
Figure 34 Estimated modal share in Tallinn

Modal share in Skopje in 2009
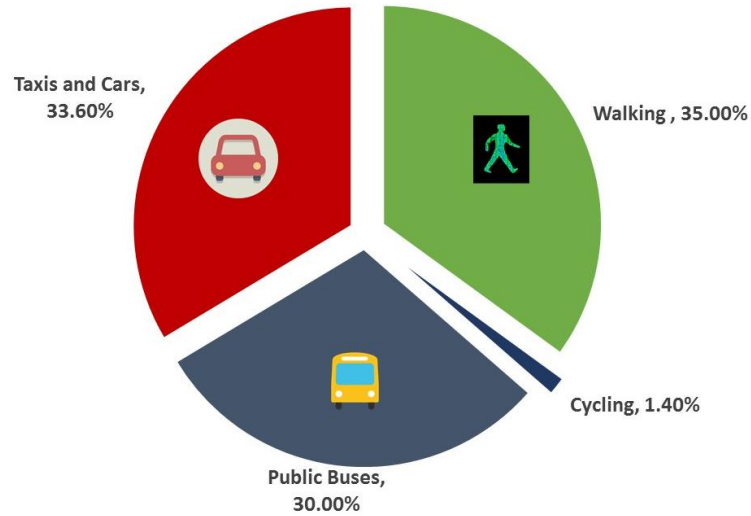
Figure 35 Modal Share Transport in Skopje in 2009. Source: Skopje's regional transport plan, IDOM

Modal Share in Amman in 2008[16]
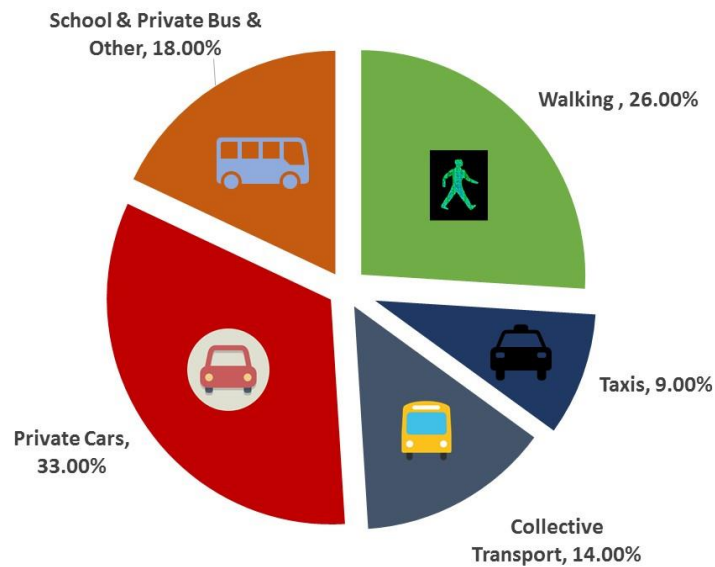
Figure 36 Modal Share in Amman in 2008. Source: Amman Transport mobility master plan

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[16] *Over the past 8 years car use has increased significantly so the current % of private car use is likely to be much higher

ix.   Lack of transport and urban planning

By far the most problematic issue stressed by participants across the five cities is the lack of urban planning and the lack of integration between land-use and transport planning. This has been a common issue across the five case study cities and, along with the other factors mentioned above, has led to increased car-dependency and traffic in cities. This sub-section summarises the most common urban planning issues that emerged from the analysis done in the five cities under examination (table 4 below summarizes the key issues).

Most common urban planning issues
Lack of updated urban plans
Lack of regional urban plans
Lack of integration between land-use and transport plans
No density requirements
Lack of access to and control over land

Table 4 Most common urban planning issues in Adana, Amman, Bucharest, Skopje and Tallinn

a. Lack of updated urban plans & regional urban plans

First, most participants highlighted the general lack of urban planning and long-term urban strategies in their city. General urban plans (or equivalent) have not been recently updated in most of the cities looked at, despite some significant changes such as increase in urban population (see table 5 below). Tallinn General (spatial) Plan was established in 2001, but it has not been revised since then. There is "*an absence of comprehensive plans*" for the city and the metropolitan area, describes one participant in Tallinn. The city of Tallinn does not yet have a sustainable urban mobility plan – although the city is in the process of establishing one - and the city has no comprehensive action plan related to transport. In Amman and in Adana, urban plans have not been suitably updated to face the new demographic realities that both cities have been experiencing since the end of the 2000s.

In addition, another issue common across all five case study cities is the lack of co-operation between regional and local urban planning authorities. There is a lack of coherent planning strategy at the regional or at the metropolitan level. In Bucharest, participants stress that part of the problem is that there has never been a joint urban planning strategy between Bucharest's local authority and the neighbouring cities. Bucharest City Council has no control over local policies in neighbouring cities. "*This is a major problem for us*" states a participant. Similar comments were made in the other four cities. Despite the fact that several cities have established regional plans for

transport (as illustrated in table 5) the lack of joint urban planning policy between large urban areas and adjacent cities remains problematic.

The lack of action plans related to transport policies was also mentioned by several participants across cities. In Tallinn, participants explained that existing urban plans lack action plans with a specific timetable.

	General urban plan for the city	Date of adoption	Transport Plan	Date of adoption	Urban plans for the metropolitan area
Tallinn	General spatial plan	2001	Sustainable Urban Mobility plan	On-going	None (but the SUMP will cover the metropolitan area)
Skopje	General urban plan for 2012 - 2022	2012	Transport Master Plan for Greater Skopje and SUMP	2011	Spatial plan for Skopje`s Region 2005 - 2020 (not adopted)
Bucharest	General Urban Plan	2000 Last modified in 2016	Sustainable Urban Mobility plan SUMP 2016-2030 Bucharest-Ilfov Region	2017	2014 Regional Development Plan' for the Bucharest - Ilfov Region. 2014 – 2020 & SUMP 2016-2030 Bucharest-Ilfov Region
Amman	Urban Plan	2009	Transport Mobility Master Plan	2010	2011 Amman Downtown Plan & Revitalization Strategy
Adana	Urban Plan scale 1/5000	2013	Transport Master Plan	1992	2015 Five-year strategic plan for the Metropolitan area of Adana

Table 5 Urban and Transport Plans in Adana, Amman, Bucharest, Skopje and Tallinn

b. Lack of integration between land-use and transport

The lack of integration between land-use and transport policies and plans was highlighted by most participants in the five case study cities. This continuous policy issue has led to the development of numerous car-dependent urban areas within cities and in particular in the outskirts. There are no planning rules that make public transport links compulsory for new-build developments within and outside cities. More generally, urban plans are being approved without plans which anticipate the traffic and mobility needs new developments are likely to generate. "*Development comes first*" summarises a participant in Amman. In Amman, the "*lack of co-ordination between land-use planning and transport planning*" has led to the construction of numerous residential areas that lack basic facilities and are almost exclusively reliant on private motorised vehicles. In those areas, the reliance on a car is an 'absolute necessity', "*whether people are wealthy or not*" even to go and "*buy bread*". Similarly, in Bucharest several '*dormitory districts*' have been built in the outskirts of Bucharest that can only be accessed via private vehicles. Similar issues are highlighted in

Tallinn, where the lack of public transport provisions in suburbs and other basic facilities (such as schools or medical centres) has led to car dependent patterns for trips between Tallinn and its suburbs.

c. No density requirements

Another urban planning issue frequently mentioned by participants is the lack of regulation regarding density which has led to the construction of extensive low density urban developments. In many post-communist countries, ownership reforms did not specify requirements for density. According to a participant in Tallinn it "*went too far*" and led to unplanned low-density developments (as illustrated in figure 38 below). Similarly, in Bucharest, post 1990s, it became possible to build low density buildings and houses. This led to a rapid increase in low-density areas in the outskirts of Bucharest. In Amman, planning regulations restrict the construction of high rise buildings and allow the construction of low density houses in newly built residential areas. As a result, the maximum height in the majority of the city is four storeys, contributing to the horizontal expansion of the city.

A notable exception is Adana where strict national planning rules established in the 2000s require any new building to have high density. In Adana, density has been increasing since the 2000s as illustrated in figure 40 below. However, participants highlighted that transport plans were not put in place to cope with the increased density and this resulted in increased traffic and parking management issues in the city centre.
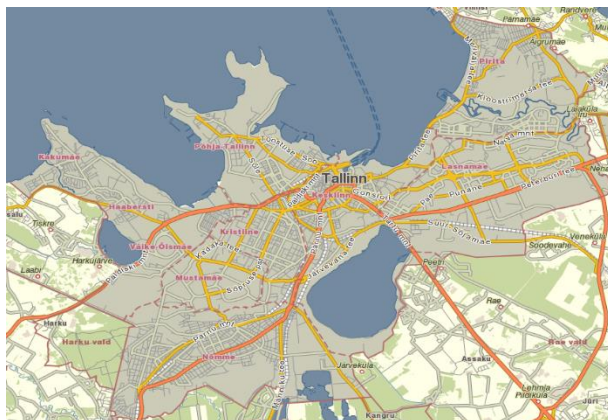
Figure 38 Map Tallinn in 2017. Th grey colour represents the administrative boundary of the city. Source: www.tallinn.ee
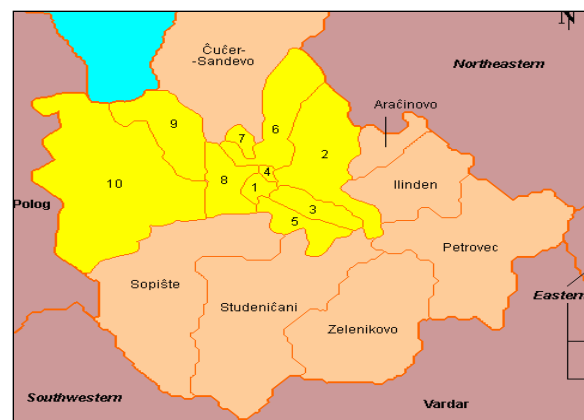
Figure 37 Skopje's ten municipalities in bright yellow and its metropolitan areas in light pink
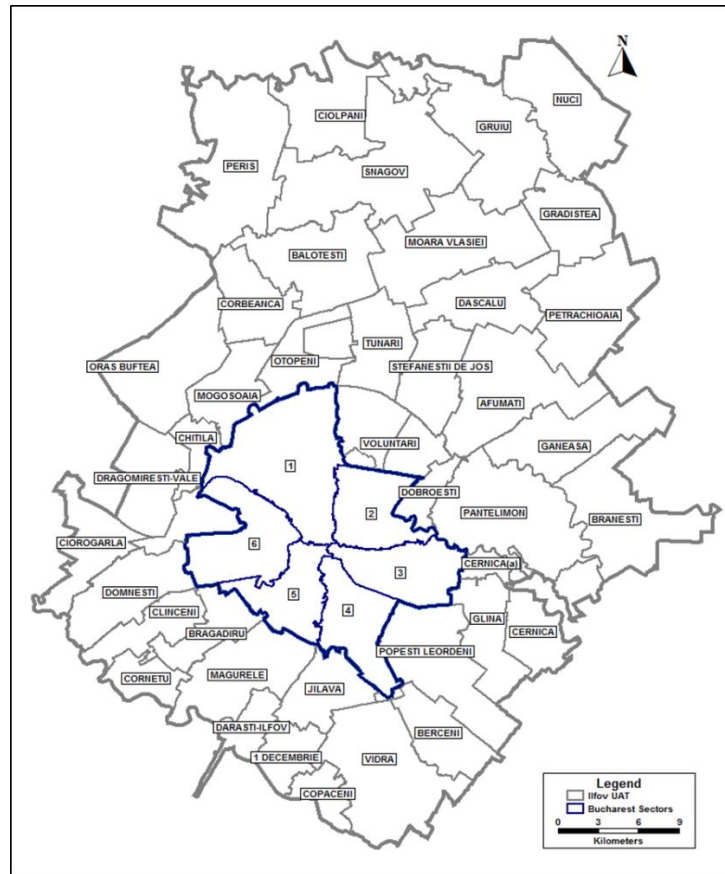
Figure 39 Bucharest and its metropolitan area 'Bucharest-Ilfov Region'. Source: BI SUMP (final report), chapter 1 Introduction
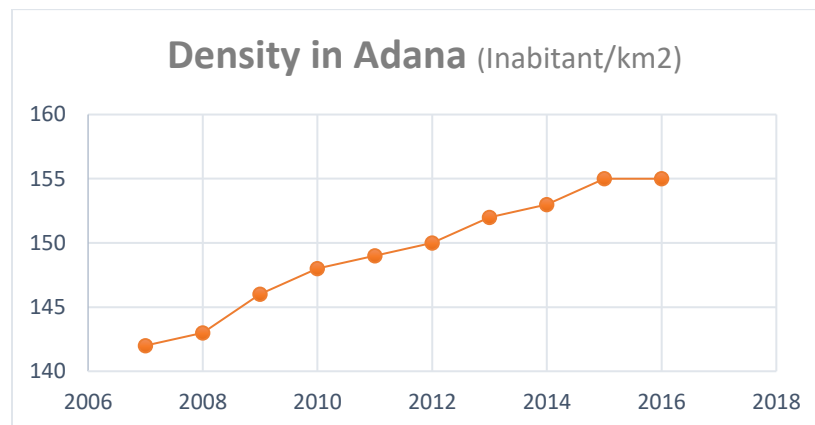
Figure 40 Density in Adana since 2006. Source: Turkish institute of Statistic

d. Public authorities lack access to public land and control over private land

A common turning point experienced by post-communist countries was the ownership reforms which occurred shortly after the fall of communism. Ownership reforms in Tallinn, Skopje and Bucharest led to waves of mass privatisation of the land. Since then, public authorities have limited

access to public land and have limited control over private land. As stressed by a participant in Bucharest: "*In communist times all buildings were state property*". In Tallinn, as far as planning permission is concerned, the priority is given to private developers and the city council has limited control over how private land is used. In Skopje, the change of ownership that occurred post communism led to a construction boom which was not fully controlled by public authorities as private developers and private land owners took control over the planning process. Similar issues are experienced in Amman where the majority of the land is privately owned and public authorities lack funding to buy land from private owners and lack planning rights to control development projects in privately owned land. Similarly, in Adana the local authority has limited control over the use of the land, and limited decision-making power over urban planning. Consequently, public authorities find it difficult to find the necessary space to establish public transport facilities.

x. Acute congestion

The demand for and dependence on car use and the factors described above have led to severe congestion and parking issues in the five case study cities (as illustrated in pictures 41, 42, 44 and 45). As stated by participants in Bucharest and in Amman, the city's streets are becoming "*a giant car park*". In Bucharest participants mentioned that the centre of the city has become less attractive, partly because of congestion issues, "*Now the poorest people are living in the centre and the richest are going outside to get some fresh air*" summarises a participant. Bucharest-Ilfov Region Sustainable Urban Mobility Plan (SUMP) 2016-2030 - approved in 2017- highlights the fact that if current trends continue, car use levels will increase leading to worsened congestion (as highlighted in figure 46 below). Surveys conducted by GPS producer TomTom rank Bucharest the 5th most congested city in the world out of 189 cities surveyed[17]. Table 6 below compares average congestion index between Bucharest and Copenhagen[18].

Indicator	Bucharest	Copenhagen
Average congestion index	50%	23%
Morning peak congestion index	90%	47%
Evening peak congestion index	98%	40%

Table 6 Average congestion index in Bucharest and in Copenhagen

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[17] TomTom Traffic Index based on 2016 data. Source:
https://www.tomtom.com/en_gb/trafficindex/list?citySize=LARGE&continent=ALL&country=ALL
[18] *Ibid.*

Figure 41 Pictures cars parked in Bucharest city centre. Source: Cavoli C.

Figure 42 Traffic Jam in Adana. Source: Cavoli C

Figure 44 Congestion Amman. Source: N. Tarawneh

Figure 45 Traffic jam in Skopje. Source: Cavoli, C.

Predicted congestion levels in 2030 compared to 2015 in Bucharest
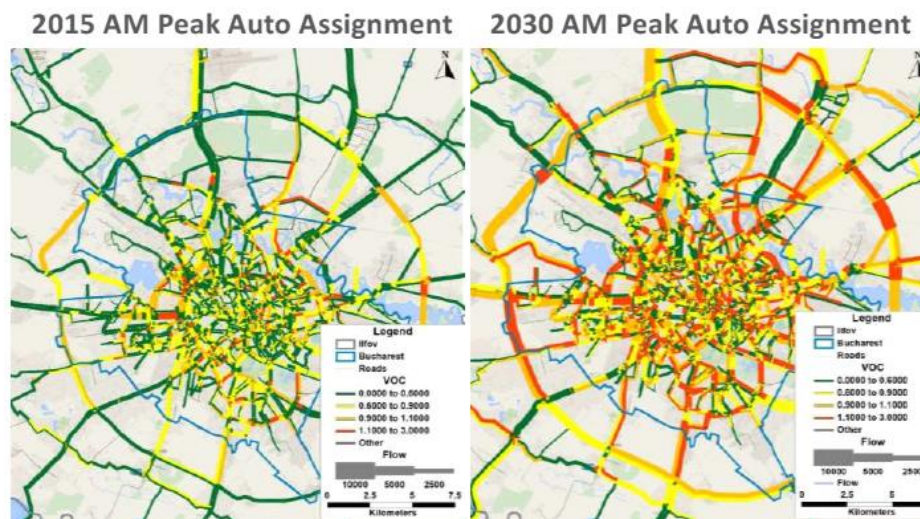
Figure 46 Predicted congestion levels in 2030 compared to 2015 in Bucharest. Source: Bucharest SUMP, AVENSA, ROM transportation engineering

xi.   Urban form: Monocentric/polycentric

Certain participants in Adana, Amman and Bucharest argue that the concentration of activities in the city centre generates traffic problems. In those three cities, commercial and economic activities are concentrated in the city centre, often called Central Business District. This monocentric urban form (as described in figure 47 below) is perceived negatively by some stakeholders and policy-makers. According to several participants, this configuration has been '*a mistake*' as it has led to increased transport demand towards the same focal point and transport facilities were not established to accompany this change. As explained by one participant in Adana "*The main problem is having one centre which generates pendulum commuting*".

Several participants recommend incentivising the creation of new '*city centres*' or "*little centres*" to create a more Polycentric city to spread the movement of people. In Adana, a participant mentions that shopping malls, schools and official buildings should be built or relocated in the outskirts of the city to alleviate congestion in the city centre by redirecting the traffic; "*If we move that building there, we will solve the congestion there*". However, Turkey's central government does not support these plans.
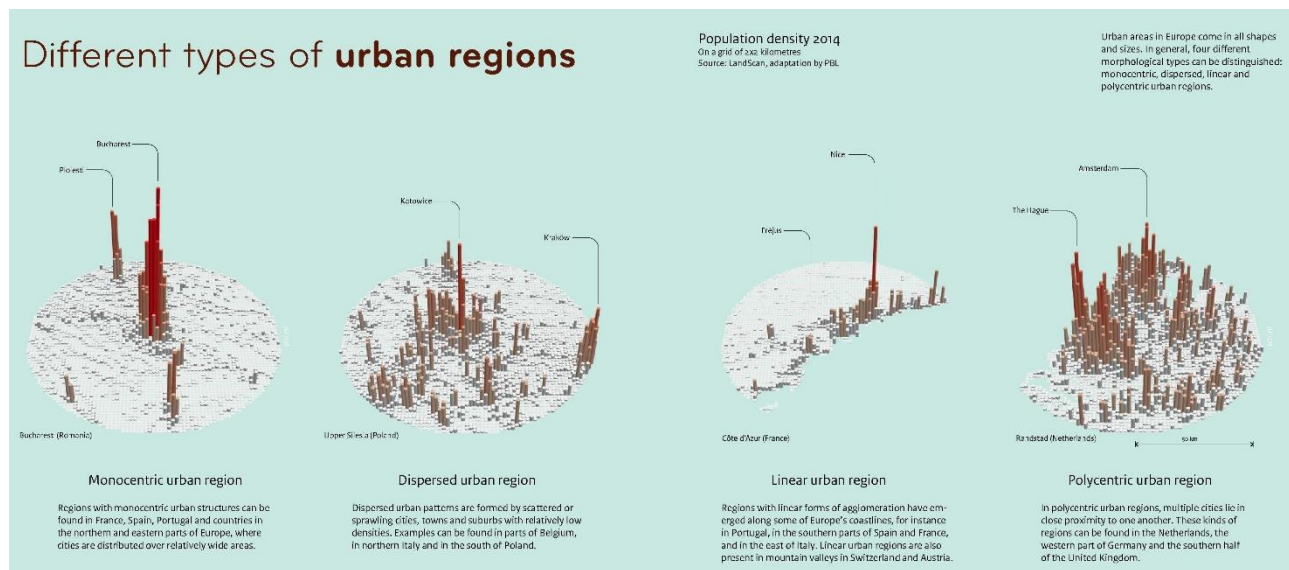
Figure 47 Different types of urban regions. Source: PBL Netherlands Environmental Assessment Agency, Different types of urban regions, http://www.pbl.nl/en/infographic/different-types-of-urban-regions

xii.   Increasing efforts to improve public transport

A common historical development to all five case study cities has been the recent efforts to improve and expand public transport. In the case of Bucharest investments to improve the tram, bus and metro systems were put in place in the mid-1990s with support from various European

and international donor agencies such as the EBRD[19]. But despite the efforts for "*maintaining the high level of patronage in public transport*" in Bucharest, investments have been insufficient as the demand outweighs the provision. In Tallinn, in 2012 the city council established a corridor of circa 23 kilometers of connected bus priority lanes (see picture 49 below). In 2013 the city council took the extraordinary decision to make all public transport completely free in Tallinn, the first city in the world to do so. More recently the city of Tallinn has started to establish tram corridors. Over the past five years the city of Skopje has made efforts to re-organize and improve its bus transport system by integrating public and private bus networks using an integrated timetable, payment and real-time information systems. In addition, between 2009 and 2013 the city of Skopje renewed its bus fleet (as illustrated in picture 48 below), and smart ticketing, automatic location and real-time information systems were established in 2015. As further described in the following section, the city of Adana and Amman have also recently started focusing their efforts on improving public transport.

Figure 49 Trolley Bus and bus priority lane in Tallinn, 2012, Guillaume Speurt

Figure 48 New Bus Fleet in Skopje. Source: Skopje's local authority

xiii.   Understanding the past – Conclusion

In this first section, qualitative and quantitative data analysis indicate that similar patterns and issues have occurred in the five different cities studied. Despite their different geographical, demographic, climatic, socio-cultural and political contexts and histories these five cities have experienced rapid growth in urban population, urban sprawl, sustained increase in GDP per capita and an overall decrease in fuel prices (except in Adana). Since the 1990s, access to private motorised vehicles has become easier in the five cities and is positively associated with social status. Car use and ownership levels have increased significantly, and the five cities suffer from chronic congestion. Public authorities have prioritised planning for vehicles, and investments in alternatives to car use have been lacking. A common issue strongly highlighted is the lack of transport and urban planning, in particular at the metropolitan level. These factors are characteristic of a policy stage where the dominant policy-mindset focuses on planning for car use.

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[19] *European Bank for Reconstruction and Development*

V.   Defining the present

"We cannot solve our problems with the same thinking we used when we created them." – Albert Einstein

i.   Introduction

The second part of this report examines urban mobility issues and policies in Adana, Amman, Bucharest, Skopje, and Tallinn. The aim is to better understand why so many growing cities face congestion. Several research questions have informed this section, including: *What are the biggest challenges for urban transport and mobility in cities? What influences transport policies in cities?* Participants were also asked to describe current policy priorities for urban transport in in their city. Additional quantitative and qualitative data was obtained from city partners via the 'City Profile' (see questionnaire in Annex i). This section summarises the key themes that have emerged from the analysis highlighting common trends and patterns across the five case study cities.

ii.   Institutional capacity building and policy issues

Addressing the question *What are the biggest challenges for urban transport and mobility in cities?* common institutional and policy issues were identified across the five case study cities, as described below.

a.   Reducing car use

Reducing car use and car dependence was listed as one of the biggest challenges for urban transport in Amman, Bucharest, Skopje and Tallinn. In Bucharest, several participants expressed a concern that public authorities do not currently have "*measures to discourage car use*". The fact that many private companies provide their employees with service cars further complicates the situation in Romania's capital. In Skopje, policy-makers are concerned that alternatives to car-use (such as bus lanes to foster bus use) will worsen congestion. "*The fear is that by reducing road capacity for car users to give it to other modes, traffic congestion will worsen*" highlights a participant in Skopje. It is a "*political risk*" which is difficult to take for most politicians. In Tallinn, participants mention the fact that car taxation policies are politically unpopular and not aligned with many political parties' philosophies.

b.   Lack of collective transport

The lack of collective transport was identified as one the biggest challenges in the five case study cities. Public transport services need to be updated to reflect current demand. Skopje "*needs a high-performance public transport system, in particular regarding capacity and speed*" stresses a participant. In Bucharest too, public transport capacity should be increased to provide viable

alternatives to car use, highlight participants. In Amman and in Adana, local authorities have little control over the private collective transport sector (mostly privately-owned minibuses). Yet this sector provides most of collective transport services in both cities. Participants points out that in Amman the sector is largely unregulated and "*It is hard to regulate them*". A new law which was passed in 2017 in Amman makes it compulsory for individual operators to merge within five years or to sell their lines to the municipality. The objective is to centralise operations to better organise and regulate the system and to integrate the different modes of transport within the city. Similar developments are happening in Adana. Adana's municipality aims to "*gather all the actors of public transport under one umbrella*" and to expand the light rail system.

c. Lack of planning and integrated planning

The absence of comprehensive planning strategy at the metropolitan level and the lack of integration between transport and land-use was mentioned as one of the key challenges the five case study cities face (as described in [section IV, ix](#)). Participants in Tallinn highlighted the "*institutional gaps relating to the organisation of public transport at the regional level*" and the fact that the city-region "*lacks an integrated planning for housing, spatial and mobility issues*". There is a need to put in place institutional changes to foster collaboration between the national, regional and the local level to deliver integrated urban and mobility planning. Similarly, in Adana the lack of consultation and co-ordination between the national and local level makes it difficult for the local authority to plan. Skopje's regional transport plan adopted in 2011 recommends that Skopje's city council 'combines' land-use and transport policies and establishes a Metropolitan Authority for Transport.

d. Parking management and enforcement issues

One of the most problematic issues in Amman, Bucharest, Adana and Skopje is related to parking management and enforcement. In those four cities parking is mostly free, even in the city centre. Despite this policy, car users commonly park in areas that are not designated parking spaces (as illustrated in figures 50, 51, 52 and 53). This obstructs and frequently damages pedestrian facilities and in some cases, bus or cycle lanes. "*Almost all the lanes on the roads are full of car parks*", highlights a participant in Adana, "*making it difficult to allocate space to a bus lane*". "*Illegal parking in Bucharest is difficult to handle*" as it is mainstream, highlights a participant in Bucharest. Similar comments were made in other cities.

The lack of enforcement is a common issue across cities. Three specific issues are often mentioned. The most problematic one is the fact that enforcement is managed by the police which is under the authority of the national government. The lack of institutional collaboration between the police and the local authority was highlighted in several cities. Secondly, the fact that the driver cannot be fined, only the vehicle. "*You have to track the driver of the car*" mentions a participant in Bucharest, which complicates administrative procedures. Thirdly, the lack of political willingness to address the issue. Proposals have been made to establish parking fees in Bucharest but "*No mayor wants to take money from on-street parking*" as it is seen as an "*unpopular measure*", highlight participants.

Tallinn is an exception as it successfully introduced parking fees and parking management in the early 1990s. Parking fees have been gradually increased since then. The parking zone has also gradually expanded throughout the city.

Figure 51 Cars parked on a side walk in Adana. Source: Cavoli, C.

Figure 50 Illegal parking in Amman. Source: Cavoli, C.

Figure 53 Illegal parking in Skopje. Source: Cavoli, C.

Figure 52 Pictures cars parked in Bucharest city centre. Source: Cavoli, C.

e. Lack of decentralisation

The lack of decentralisation, in other words the lack of transfer of authority from central to local government, is an issue mentioned by participants in Adana and Amman. Turkey is a highly centralised country. Several participants highlight the fact that in Adana "*the local authority has little power of decision*" and *"The decision maker is the national state"*. The lack of decentralisation, consultation and co-ordination between the national and local level makes it difficult for the local authority to plan effective urban policies in Adana. In Amman, towards the late 2000s and beginning of 2010s institutional and administrative changes were put in place to increase decentralisation. Powers linked to transport policy were transferred from the national level

to the local level. From that moment, "*the thinking started to change*" records a participant and the local authority started to put in place plans for collective transport. Despite those recent changes, the system remains highly centralized. Tallinn's city council can take decisions independently from the national government. However, private property laws are regulated at the national level and the local authority has limited control over privately owned lands or buildings.

f. Limited number of expert transport planners & civil servants in charge of public transport or active travel

The lack of expert transport planners and civil servants in charge of public transport or active travel was mentioned by various participants across cities. In Adana until 2014 the local authority did not have a dedicated transport department. Since then transport specialists, including "*architects and civil engineers*" have been hired, but participants stress that there are still institutional issues and insufficient qualified staff. Similarly, in Amman only very few employees have the expertise to implement policies related to public transport or transport planning. The majority of the employees who work for Amman's transport department are in charge of traffic related issues.

iii. Other challenges

a. Limited understanding of transport demand & lack of evidence-based policy-making

One of the issues that public authorities face in the five case study cities is the lack of understanding of transport demand and the lack of evidence-based policy-making. Data related to mobility in metropolitan areas is missing. "*There is a need to understand mobility patterns around Tallinn*" highlights a participant in Tallinn. In Adana, in Amman and in Skopje public authorities lack data about privately-operated minibuses and do not have maps of collective transport. The lack of data negatively affects policy-making and decision-making but also users who lack information about existing transport. There is a need to "*study the real needs of transportation for people*" stresses a participant in Skopje. In Amman "*Numbers are missing*"; the data available is not up-to-date and might not reflect the present traffic situation. The lack of evidence base policy-making was emphasized by a participant in Tallinn "*it is also about the political will to base our decision on actual scientific research, perhaps that is not yet common practice*" and is not reflected in current budget allocations.

b. Poor walking environment does not encourage people to walk

In Adana, Bucharest and Amman participants highlighted the fact that many inhabitants have lost the habit of walking. "*People do not walk*" mention participants in Adana, they "*rely on door-to-door vehicle use*", including for short trips. Poor walking environments contribute to the decrease in walking. As previously mentioned, illegal parking obstructs and often damages side-walks (as illustrated in figure 54). In Amman, the sidewalks are "hard to use", "paved with obstacles", and crossing facilities for pedestrians are non-existent or insufficient. Generally, Amman's roads were described as unsafe for pedestrians, especially for vulnerable road users (e.g. disabled or senior).

This also discourages inhabitants from using the public transport system, since "*a good public transportation service needs to be supported by a good pedestrian environment*". This generates a vicious cycle as illustrated in figure 55 below.

Figure 54 Illegal Parking in Amman. Source: Nisreen Tarawneh

Figure 55 Vicious cycle parking issues in cities

c. Social Status

Car ownership is strongly associated with social status in the five case study cities. Many urban residents aspire to own a vehicle not solely for practical reasons but also for social reasons. As described by a participant in Skopje, "*the size of the motor vehicle corresponds to the individual's wealth*". In Amman the young generation "*sees owning a car as the ultimate goal*", and as more important than owning a house. For many urban dwellers, owning a car is a symbol of prestige and success.

d. Political recognition associated with highway construction

Participants in several cities mentioned that highway construction (road or bridge) is popular for politicians. Political representatives tend to favour road or bridge building as an easy way to achieve political recognition. As stated by a participant in Amman, "*Every Mayor wants to show an achievement*" and building a road is an "*easy way*" to do so. In Tallinn, several participants mention that politicians want to make popular decisions that are not necessarily contributing to the common good or that are not always based on rational urban planning.

Figure 56 Amman's Abdoun Bridge, photographed from the en:4th Circle. April 2008. Source: [Ldud](#) at English Wikipedia

e. Current policy priorities for urban transport

Current policy priorities for urban transport were identified by participants in all five case study cities. What emerged from this discussion is that all cities seem to have contradictory policies. On the one hand, policies and investments still support highways construction and planning for car use in the hope that it could relieve or disperse traffic, and for political reasons. On the other hand, policies and investments are increasingly supporting sustainable mobility policies focused on collective transport, cycling, walking, parking management and place-making. This sub-section will further describe these contradictory policies.

In the five case study cities, public authorities still plan to invest large amounts of money to build additional highways, or bridges, expand roads or create new parking facilities to accommodate car use. Several participants across the five cities refer to "*multi-level intersections", "secondary road network" and "bridges"* as keys to solve congestion issues in their city. "*The aim is to improve traffic flow and provide connections in the city*" explains a participant in Adana. In several cities, highway extension is viewed as necessary to "*relieve the primary traffic network*" and *"contribute to the reduction of congestion in the city",* as stated by a participant in Skopje. Similar rationale is described in Bucharest where public authorities also plan to complete a ring road project which was planned in the 2000s. The city of Tallinn has on-going plans to build a new road to improve connectivity to the city centre. It would "*allow 30% to 40% more cars into the city centre*" explains a concerned participant. As explained by a participant in Tallinn "*These contradictory policies are explained by the fact that political decisions are made to 'please' different lobby groups, including car owners who tend to be "very vocal" But also, this is the continuation of infrastructure projects that have been planned for decades.*". Relocating certain centres of activity to disperse traffic was discussed as a solution in several cities. Adana plans to relocate Adana's main farmers' market to the outskirts of the city, close to the highway. This would disperse the traffic and "*move the congestion to the outskirts of the city*" explains a participant. Figure 57 summarises the rationale behind the car-oriented policy mindset.

Rationale behind the car-oriented policy mindset

"Increasing highway capacity will relieve traffic"

"Accomodating car use 'pleases' car users"

"Highway infrastructure projects have been long planned & need to be completed"

Traffic conditions become easier = traffic increases
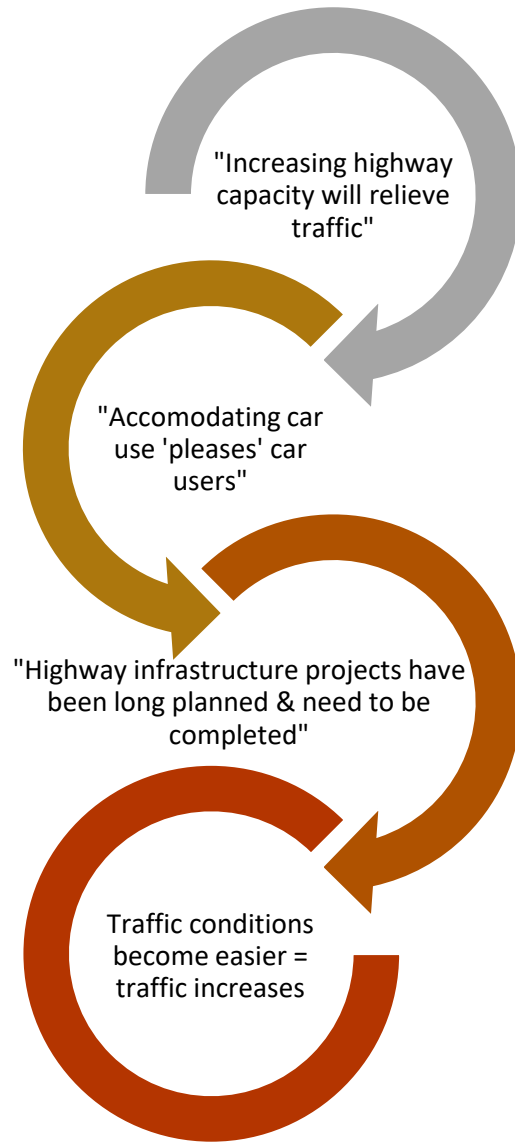
Figure 57 Rationale behind the car-oriented policy mindset

On the other hand, and in parallel, the five cities also plan to put in place sustainable urban mobility policies. As summarised by a participant in Skopje "*We have a mixture of policies, on the one hand the use of motor vehicles is being encouraged by the construction of highways, and on the other hand the city tries to encourage alternative mobilities*". In the five cities sustainable urban mobility policies focus on collective transport, active travel, such as cycling or walking, parking management and place-making.

All five case study cities plan to improve and expand their collective transport services. Adana's local authority plans to add 10 kilometers to its light rail system (as illustrated in figure 58) and

purchase new public buses. The city of Amman plans to invest in 100 new public buses, and establish a Bus Rapid Transit (BRT). In Skopje the objective is to introduce a connected network of bus lanes. Skopje's local authority is also considering purchasing 50 electric buses (18 meters long) to increase public transport's capacity and reduce pollution in Skopje.

Figure 58 Adana's metro (2011), Adana metrosu at Huzurevi district. Source: Worldisblack

Both Bucharest and Skopje are in the process of establishing park and ride projects. Bucharest's metro operator, METROREX, is planning to establish a "*big parking lot at the entrance of the city*" connecting with a new metro station to "*limiting car access to the city and decreasing emissions*". In Tallinn, four park and ride facilities were introduced in 2013 at the outskirts of the city (as illustrated in figure 59). The park and ride system targets residents who live outside Tallinn and who commute to Tallinn by car. The city council plans to build more park-and-ride facilities.
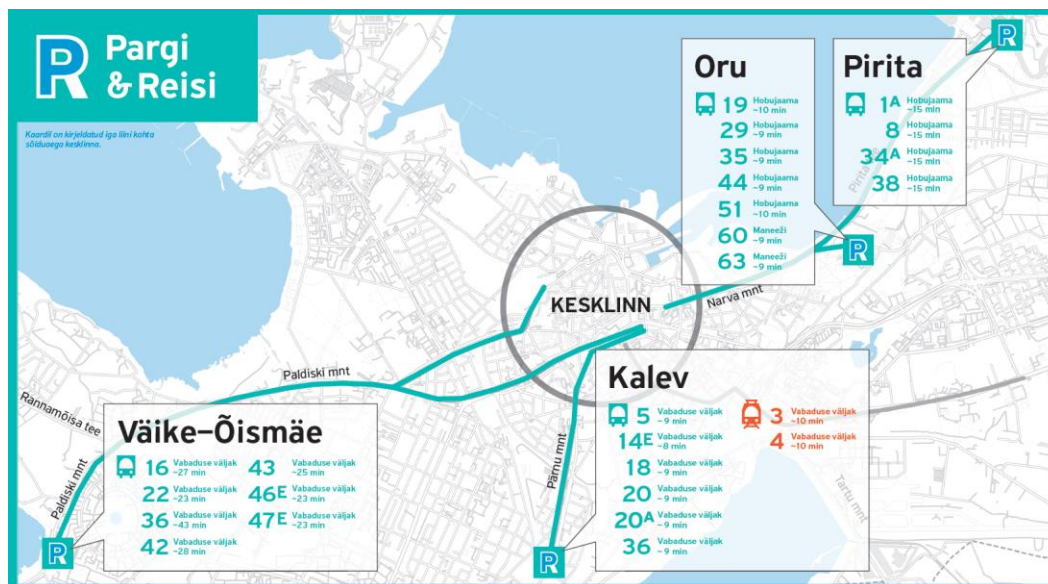
Figure 59 Park and Ride sites in Tallinn. Source: www.tallinn.ee

Plans to integrate various transport modes are being established in Adana, Amman, Bucharest and Skopje. In Adana and in Amman, the local authority aims to encourage minibus operators to merge and ultimately to be better integrated with public transport (see picture of minibus in Adana in figure 60 below). A similar exercise is being undertaken in Bucharest where the local authority has been encouraging the creation of co-operatives. The city of Skopje followed a similar process which led to the formation of two large minibus associations regrouping various owners. These associations are now able to engage with the local authority. The local authority put in place an automatic payment system in all collective transport modes and is now able to monitor operations and operators "*are subject to sanctions if they do not respect the rules*". Before, operators "*were operating only during peak hours and were not regular*" mentions a participant in Skopje. Bucharest local authority plans to integrate different modes of public transport at the city and the regional level by establishing a Metropolitan Transport Authority. One of the project's aims is to connect the railway network to the metro.

Figure 60 Minibus in Adana at night. Source: Cavoli Clemence

Plans to improve public transport systems in cities also include putting in place or expanding bus lanes. Skopje's city council plans to implement dedicated bus lanes to improve public transport flow. Initially, bus lanes (or yellow lanes) will be established "*in segments*" in certain parts of the city, "*so that people can get used to it*". The plan is then gradually to increase the number of bus lanes and ultimately to create corridors.
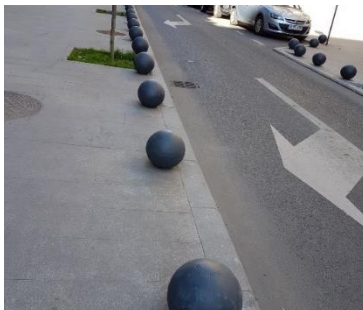
Figure 61 Measures to discourage illegal parking in Bucharest. Source: Cavoli, C.

The city of Bucharest, Amman and Skopje plan to implement parking management policies. On the one hand by putting in place physical barriers to prevent drivers from parking on the pavement, as illustrated in figure 61 in Bucharest. Bucharest's local authority has plans to establish a public entity or a "*municipal company*" that would manage parking in the city. In Amman pilot projects are being established to initiate parking management policies.

The cities of Skopje and Bucharest are actively encouraging the use of bicycles in the city. In Bucharest the local authority launched the "Cyclists in Bucharest" project subsidizing the purchase of bicycles for residents and is planning to implement additional cycle infrastructure in the city. In Skopje the local authority also plans to subsidise the purchase of bicycles. The local authority has invested in bicycle infrastructure as part of the "*Velo Skopje*" project (illustrated in figure 62). In 2014 a working group was established to design plans for four bicycle lanes, "*uninterrupted*" that could connect the 10 different boroughs within Skopje. Local Non-Governmental-Organisations have been involved in the process. Two cycle routes of circa 30 kilometres were successfully built.

Figure 62 Cycle Lane in Skopje. Source: Skopje's local authority

The cities of Amman and Skopje are subsidizing the purchase of electric vehicles to address air pollution and CO_2 emissions issues. In Amman, pilot projects are in place to introduce electric taxis. The city of Skopje joined the Covenant of Mayors in 2009 and since then it has invested in a range of electric vehicles, including 10 electric motorbikes, two communal electric vehicles (used to clean streets), 10 electric buses, several municipal electric vehicles and two charging points for the use of electric vehicles for citizens (as illustrated in figure 63 below). In addition, when pollution levels are extremely high in Skopje public transport becomes free for all citizens.

Figure 63 Skopje's municipality's electric vehicles

Place-making and designing liveable cities has been given increasing importance in several cities, in particular in Tallinn. The 'Main Street Project' is an on-going collaborative project between the

national government and the city council to redesign a street in the city centre (see illustration in figure 64). The objective is twofold: firstly, to improve the public space by reducing car traffic, secondly to improve the street's connection with the popular harbour area. The Bucharest Municipality plans to establish a pedestrian area in the city centre: one of the objectives is to improve accessibility for tourists.
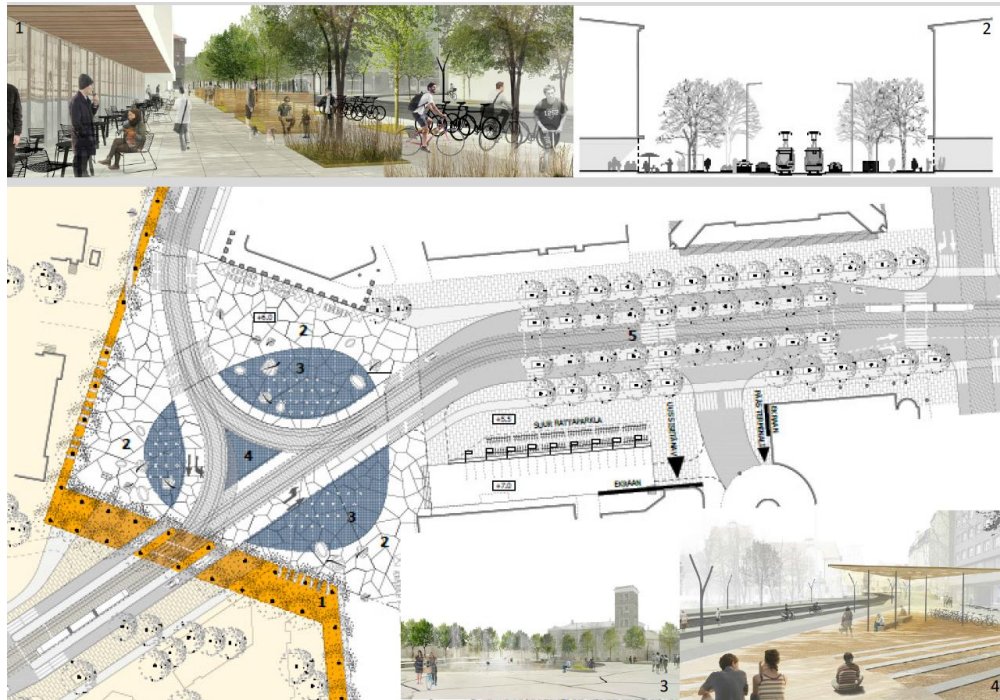
Figure 64 Tallinn 'main street' project. Source: www.tallinn.ee

iv.   What influences policies in cities?

In Adana, Amman and Tallinn, participants mentioned that the national government in their country has a strong influence on local policies. This is particularly the case in Amman and in Adana, two very centralized countries. In Amman, until recently the national government did not give priority to transport issues as the focus tends to be *"on the refugee crisis, water supply, foreign investment or unemployment"*. In Adana, key decisions related to transport and land-use are made at the national level without consultation with the local government. In Adana and in Amman, major transport infrastructure projects require support and approval from the central government. It is also the case in Skopje, Bucharest and Tallinn, but to a lesser extent.

In Skopje, Bucharest and Tallinn, the city's involvement in EU funded projects and European financing has had a strong influence on decision-making and planning. The three cities have been involved in research and development programmes and/or have benefitted from structural funds and/or have received loans from European banks. The city of Tallinn has been involved in EU funded projects since 2005 when they participated in the EU funded CIVITAS SMILE project

focusing on sustainable mobility. As stated by a participant in Tallinn: "*It was a big step for Tallinn to participate in EU research and development projects*", and it has steered investment and policy decisions related to transport. The city of Skopje participated in several EU funded projects, including the CIVITAS Renaissance project. As highlighted by a participant in Skopje: "*Taking part in European projects has changed mindsets within the Transport Department in Skopje*".

v. Defining the present - Conclusion

The most problematic transport issues currently faced by Adana, Amman, Bucharest, Skopje and Tallinn are caused by high traffic levels. The car-oriented stage and other external factors (such as an increase in GDP per capita), which the five case study cities have experienced (as described in section IV), have led to severe congestion issues in those cities. In addition, local authorities struggle to deal with widespread illegal parking issues -which obstruct and damage pedestrian facilities - and high pollution levels.

Most public officials and stakeholders interviewed recognise that there is a need to reduce car use and to increase collective transport in those cities. Institutional capacity issues (such as the lack of skills and access to data), and the lack of autonomy at the local level (i.e. high centralization) prevent efficient policy-making in some of those cities.

Current transport policy priorities are contradictory in the five case study cities. On the one hand, public authorities have started (or have continued) investing in public transport facilities (e.g. BRT in Amman, new bus fleet in Adana, bus lanes in Skopje), active travel (e.g. fostering cycle use in Bucharest) and place-making (e.g. in Tallinn). On the other hand, investments in building new highway infrastructure and planning for car use are still on-going. This is partly in an effort to try and solve congestion issues by relieving or dispersing traffic, and for political reasons (i.e. building highway infrastructure is still associated with political success). The reasons why continuing to build new highway infrastructure is often problematic will be discussed in the final section of this report. Finally, participating in EU research and development projects has contributed to foster sustainable mobility policies in the cities involved.

VI.   Shaping the future

"The future world may be a murky world but it is one that we have to enter, interrogate and hopefully reshape." Urry 2016, 192

i.   Introduction

The third part of this report examines future challenges and opportunities for urban mobility in five growing cities: Adana, Amman, Bucharest, Skopje, and Tallinn. It summarises the analysis of the cross-city comparison mainly drawing from the results of the focus groups which took place in the five cities. Participants were first asked '*What are the future challenges the city is likely to face in the coming years*'. Finally, the discussion focused on potential innovative policies that could accelerate sustainable mobility in each city. This section summarises the key themes that have emerged from the analysis highlighting commonalities between the five case study cities.

ii.   Future challenges that cities are likely to face in the coming years

a.   Increasing demand for car-use

In Adana, Amman and Skopje, participants express concerns that car-use levels and the demand for car-use will continue to increase. Skopje's General Urban Plan (for the years 2012 – 2020) predicts that car ownership levels will continue to increase, up to 31% by 2030. The predicted number of registered cars and car ownership level in Skopje's region is illustrated in table 7 below. In Amman, the concern is that as the young population – which represents a large percentage of the total population as illustrated in figure 66 - becomes legally able to drive, and because most of them "*dream of having a car*", car use and car ownership levels could increase sharply.

Predicted number of registered cars and car ownership level in Skopje

Year	Predicted number of registered cars	Predicted car ownership level (motorisation rate) in cars/1000 inhabitants
2020	170508	267
2025	187425	285
2030	205240	304

Table 7 Predicted number of registered cars and car ownership level (motorisation rate) in Skopje. Source: General Urban Plan for Skopje 2012 – 2020

Predicted Population Growth in Amman
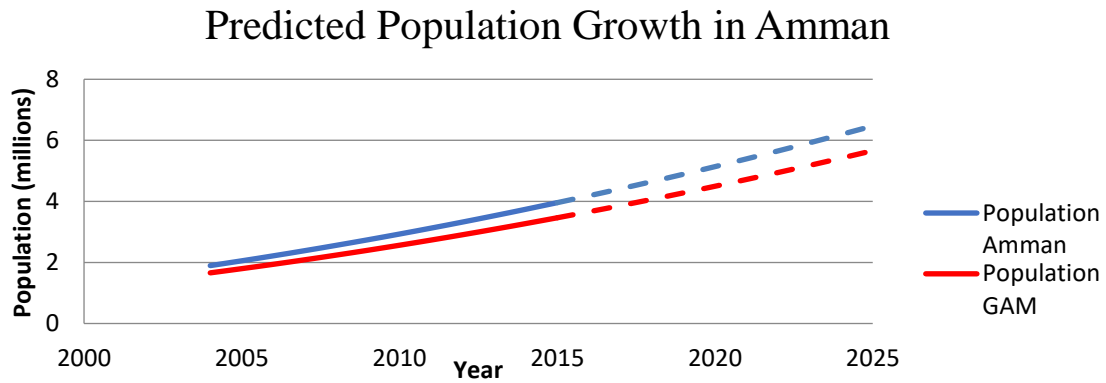
Figure 65 Predicted Population Growth in Amman. Source: 2008 Amman Plan

Population pyramid for Amman in 2015
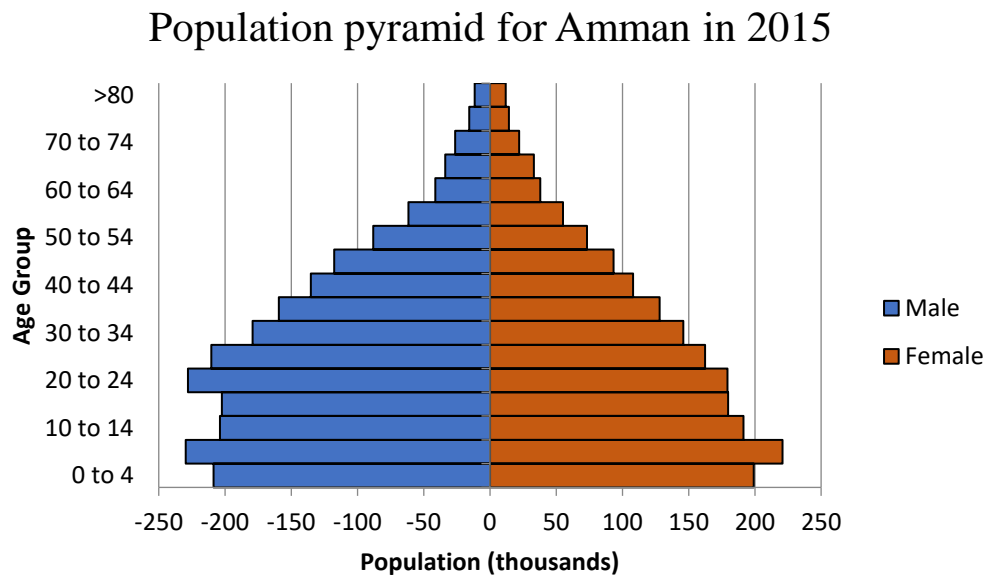
Figure 66 Population Pyramid for Amman in 2015. Source: (department of statistics)

b. Continued urban sprawl

Another concern mentioned by participants in Amman and in Bucharest is the continued urban sprawl. In Bucharest, as the city centre is becoming increasing polluted, a growing percentage of the population plans to relocate to the outskirts of the city. In Amman the lack of regulations on building density is likely to lead to increased horizontal expansion.

c. Public Transport peak capacity during rush hour

Officials in Bucharest highlighted the issues faced by public transport during rush hour where the system has reached maximum capacity. Public operators "*can hardly manage*" at present, stresses a participant.

iii.   Opportunities to accelerate sustainable urban mobility processes

12 themes emerged from the discussion on opportunities to accelerate sustainable urban mobility processes in cities. Participants were asked the question "*Which innovative policies and future opportunities could accelerate sustainable mobility in your city*?". Table 8 below summarises the key themes which are listed in order of frequency (references to each theme across the five cities) – theme 1 was the theme most frequently highlighted, theme 12 the least frequently mentioned. This sub-section summarises each of the themes.

Opportunities to accelerate sustainable urban mobility processes
1. Improving public transport
2. Better and more integrated urban and regional planning
3. Reducing the need to travel
4. Initiating cross-sectorial collaboration and consultation
5. Fostering a shift in modal share
6. Creating a liveable city
7. Supporting on-demand transport and mobility as a service
8. 'Utilising' congestion and pollution
9. Fostering behaviour change
10. Encouraging active travel
11. Using the city as a laboratory
12. Exploring new modes of transport

Table 8 Opportunities to accelerate sustainable urban mobility processes in Adana, Amman, Bucharest, Skopje and Tallinn

a. Improving public transport

Participants in all five case study cities referred to expanding and improving public transport as a way to accelerate sustainable mobility processes in their city. The potential IT improvements have in optimising and improving the quality of public transport was frequently mentioned. Providing real-time information to users was often cited. In Amman, a participant suggests using GPS data from large buses to link it to an app so that users can track their bus. Multi-modality or better integrating all modes of transport is viewed as key to optimise public transport systems. "*Transport corridors need to be connected and a comprehensive network should be developed*" highlights a participant in Skopje. The need to improve public transport reliability was also discussed. For this to happen, "Institutional innovation" is needed, as stated by a participant in Tallinn. "*People are ready to use buses more if their bus is reliable*" mentions a participant from Amman. In Bucharest, participants refer to the possibility of increasing the price of public transport to improve the quality of its service; "*if we want quality we have to pay*" stresses a participant. The need to increase public transport capacity was discussed. In Skopje, participants suggest that the bus network is

insufficient and "*we should start thinking about public transport with better performance such as light rail transit*" and use buses as feeders.

b. Better and more integrated urban and regional planning

The second topic most frequently raised is the potential for improved and integrated urban and regional planning. Long-term urban and regional plans and 'vision', combined with short-term action plans - unaffected by political changes - are key to put in place sustainable mobility policies. As previously mentioned in this report, transport and land-use plans should be further integrated to ensure sustainable planning decisions are taken. Urban developments should not be authorised without sustainable transport and mobility plans in place. Increased density should be a mandatory policy of urban planning in cities. Existing and on-going SUMPs represent an opportunity to ensure policy continuity in cities.

c. Reducing the need to travel

The third topic most frequently mentioned is the opportunity to reduce the need to travel in cities. Fostering teleworking and flexible hours at work has the potential to reduce congestion, in particular during peak hours. "*We should convince CEOs to offer flexible hours*" – stresses a participant in Bucharest. Internet connection, either using Ethernet, WiFi, 3 or 4 G, is becoming increasingly reliable and common across all five case study cities. In some of those cities (e.g. Bucharest), internet speed outstrips high income cities such as London. Planned investments in new communications infrastructure (and virtual mobility options that follow) are likely to have a substantial impact on mobility in those cities. E-services, including e-governance, also present an opportunity to reduce the need to move in the city. Greater Amman Municipality aims to become a paperless municipality by the end of 2018. The city of Tallinn has been pioneering e-services since the 1990s and declared internet access to be a human right in 2000.

d. Cross-sectorial collaboration and consultation

The potential increased cross-sectorial collaboration and consultation offers to foster sustainable mobility policies was highlighted by several participants. Implementing sustainable mobility solutions requires the participation of different actors across sectors; such as Non-Governmental-Organizations, public officials, experts, traffic officers, police, media, etc.. It is also important to "*engage the public*" and debate these issues in public, stress participants in Skopje. In Amman, a participant suggests creating a consultative transport committee involving a range of different stakeholders representing experts and the society. The potential public-private partnerships have is highlighted in Amman and in Tallinn. Partnering with private transport companies or developers could be a "new driver" for public policies and help cities overcome financial challenges. References were made to the potential that increased collaboration between universities and public authorities represents to improve policy-making (for instance by generating transport data or by evaluating policies).

e. Fostering a shift in modal share

Putting in place alternatives to car-use can enable a shift towards more sustainable modes, as highlighted by several participants. As states a participant in Skopje: "*We should enable the introduction of solutions which would alleviate the use of cars.*" Various solutions were mentioned, such as park and ride, improved bicycle facilities or car-pooling. Participants in Amman suggested that the government could give private companies which encourage sustainable modes a tax break to encourage this practice. The need to target 'captive audiences', in particular students who do not yet drive cars, and encourage them to use different modes of transport was mentioned. This could help to prevent them from becoming car users in the future.

f. Creating a liveable city

The concept of 'liveable city' was referred to by several participants. "*We should use the space well to make a liveable city*" states a participant in Adana, where the potential to create 'traffic-free areas' was discussed. "*The city should become green, smart, sustainable, pleasant for living, healthy. The vision for the city should go towards that direction*", summarises a participant in Skopje. Making cities more liveable could decrease car dependency, mention participants in Tallinn.

g. On-demand transport and mobility as a service

On-demand transport and mobility as a service have the potential to improve transport systems in cities, according to several participants. In Skopje, a participant refers to the potential that on-demand services via smart phones have to improve services such as cycling. In Amman, participants discussed the potential, and possible drawbacks, companies such as Uber and Careem (e-hailing company) offer. Some concluded that if well-regulated, those systems could contribute to improved accessibility in some areas which are not well-served by conventional taxis and could potentially complement public transport. In Tallinn, participants also expressed their concerns that those systems could be disruptive and replace 'things' that are working well, such as public transport.

h. Congestion and pollution

Interestingly, in several cities, participants referred to congestion and pollution as "opportunity" to put in place sustainable mobility policies. Congestion might encourage people to start using other modes of transport, such as walking, cycling or public transport, if it goes faster than driving a private vehicle. "*Traffic congestion is an opportunity to change transport*", "*It is an opportunity to send the right message to the people*", states a participant in Amman. In Skopje, where pollution levels are high, air quality issues might represent an opportunity for policy-makers to justify taking unpopular transport measures.

i. Behaviour change

Implementing behaviour change policies presents an opportunity to foster sustainable mobility in cities, stress participants in Amman and in Skopje. "*There is a need to convince people that public transport is good for them*" argues a participant in Amman. Participants in Skopje agreed that raising public awareness on transport issues could be an opportunity to generate behavioural change.

j. Encouraging active travel

Encouraging citizens to walk or to cycle more has the potential to improve mobility and public health, stress participants in Adana and in Skopje. "*Walking is and will always be an essential part of living in a city*" highlights a participant in Skopje. To encourage citizens to walk more the city's urban environment should be 'pleasant'. "*Individuals will always walk, so the walking environment should be pleasant*" stresses another participant in Skopje, adding that the "*Journey itself is more important than the destination*" and that there should be 'excitement' in walking. In Adana suggestions were made for school pupils and students to be "*trained to cycle (to cycle) from a very young age*".

k. The city as a laboratory

In Amman and in Bucharest participants mention that the city should be used as a laboratory to test policies or projects. There is a need to show inhabitants that the changes proposed will be effective to ensure acceptability. Universities are a good place to test innovative policies or unpopular ideas as the resistance is likely to be less strong. There are opportunities in Bucharest to test parking management and bus lane priority policies in specific streets before applying it to a larger zone. As highlighted by a participant "*Step by step we will spread it across the city*".

l. New modes of transport

In Adana, Amman and Skopje references were made to new modes of transport. In Adana, certain participants suggested that river transport along the river Seyhan presents opportunities to improve mobility in the city (as illustrated in figure 67 below). "*It could be very enjoyable, especially with the heat and humidity in Adana*", highlights a participant. A participant in Amman suggests shared autonomous vehicles could solve traffic issues in the city and a participant in Tallinn argues that the hyperloop could provide opportunities in Tallinn.

Figure 67 A view of the banks of Seyhan River in Dilberler Sekisi Park in Yenibaraj Mah. in Seyhan, Adana - Turkey. Source: Zeynel Cebeci

i. Shaping the future - Conclusion

Pressing challenges that cities are likely to face in the coming years include the increasing demand for car-use and the continued urban sprawl. In certain cities, such as Bucharest, public authorities are concerned that public transport does not have the capacity to cope with the demand during rush hour.

Participants in the five cities highlighted opportunities to accelerate sustainable urban mobility developments in their city. The two points which were most frequently mentioned are: opportunities to improve public transport (through investments and innovation) and the scope to improve and integrate urban and regional planning (which was one of the most problematic issues mentioned in the sections on past, IV, and present, V). Reducing the need to travel (through IT innovations and flexible working), implementing cross-sectorial collaborations and consultations (with a range of different stakeholders such as academics) and fostering a shift in modal share towards more sustainable and efficient modes (e.g. through infrastructure such as park and ride facilities or financial incentives), were also highlighted across the five case study cities. Several participants referred to the opportunities technological innovation, such as on-demand transport or mobility-as-a-service, can offer. The benefits that 'liveable' cities offer and the need to foster active travel and behavioural change were also mentioned.

VII. Discussion, conclusion and recommendations

"If you are unable to understand the cause of a problem, it is impossible to solve it." – Naoto Kan

This section draws on findings from the cross-city comparison summarised in this report. In addition, it was informed by a workshop involving policy-makers from the five case study cities which took place in January 2018 in Skopje (as described in the methods section). Several themes are discussed in-depth below.

i. Factors leading to congestion and high car-use levels

To solve congestion issues in cities, one must first examine why congestion occurs in the first instance. What are the underlying factors that contribute to congestion in a city? Are those factors common across different cities?

The research undertaken in the five case study cities suggests that similar trends and patterns have led to congestion in the five growing cities examined in this report. Figure 68 below illustrates some of the key factors that have contributed to car-dependent developments and subsequently congestion in the five case study cities. In most cases those factors are inter-connected and have occurred in parallel. Rapid urban population growth and a lack of planning (land use and transport) at the metropolitan level has contributed to low density developments and urban sprawl in those cities. The combination of increasing GDP per capita and a decrease in fuel prices has contributed to an increase in car-use. The availability of cheaper cars and new financial streams for their purchase has also been a contributing factor.

The focus on accommodating car use by investing in infrastructure primarily dedicated to car use combined with the lack of investment and policies fostering the use of public transport, walking and cycling has led to increased levels of car use and car dependency. The lack of urban planning at the regional level and the lack of integrated transport and land-use planning as contributed to reinforce car-oriented urban developments. Various socio-cultural and behavioural factors and macro factors have also reinforced these processes. One of the most prominent is the association between private car ownership and freedom and/or social status which has led to high car ownership and car use levels. A macro factor often mentioned is the influence international investments and trade agreements have had; for instance the access to affordable second-hand cars was facilitated by trade deals with Western European countries and various investments in highways were financially supported by international associations or neighbouring countries. The combination of the factors mentioned above has led to car-dependent developments in those cities, subsequently leading to increased car use levels and congestion.

It is interesting to note that ex-communist countries, in particular Romania and Estonia, had a comprehensive public transport network prior to the fall of communism. Several participants highlighted the fact that these networks have not been sufficiently maintained and expanded since

the 1990s. This contributed to decreasing percentage of modal share for public transport in those countries for the benefit of car use.
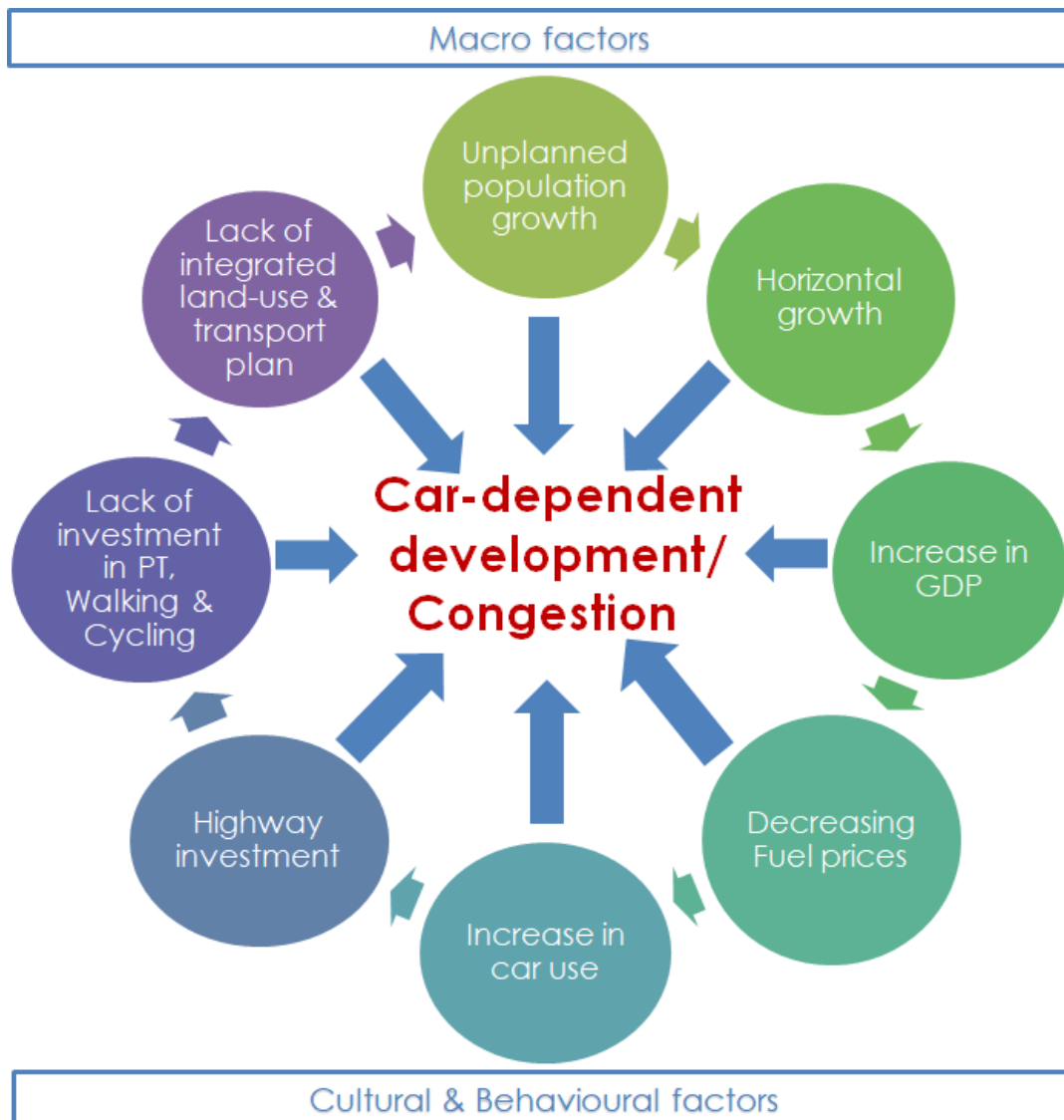
Figure 68 Key factors that have contributed to car-dependent developments in Adana, Amman, Bucharest, Skopje and Tallinn

ii.   A black hole?

Research findings and discussions with workshop participants seem to confirm the theory of the highway investment black hole first described by Plane in 1995[20]. As congestion rises in those cities, public pressure to add capacity increases and public authorities react by adding highway

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[20] Plane, D. A. (1995). Urban transportation: policy alternatives. In Hanson & Giuliano (Eds.) The geography of urban transportation. (2nd ed.) New York ; London: Guilford Press.

capacity. This improves traffic flow – temporarily - attracting a greater number of car users from the metropolitan area and contributing to urban sprawl. Eventually traffic increases and leads to further congestion, and the cycle repeats itself.

As Pane states: "*Initial investments in improved highway facilities result in greater ease of travel and hence altered travel patterns, including an increase in average trip length and in the number of trips being made. Over time, as shown in Figure [69], this increased demand, stimulated by the initial investment in increased transport supply, fuels the need for even more facilities, and the feedback process repeats itself. This familiar phenomenon has been called the black-hole theory because some people claim that investing in highways is like throwing money into a black hole*"[21].
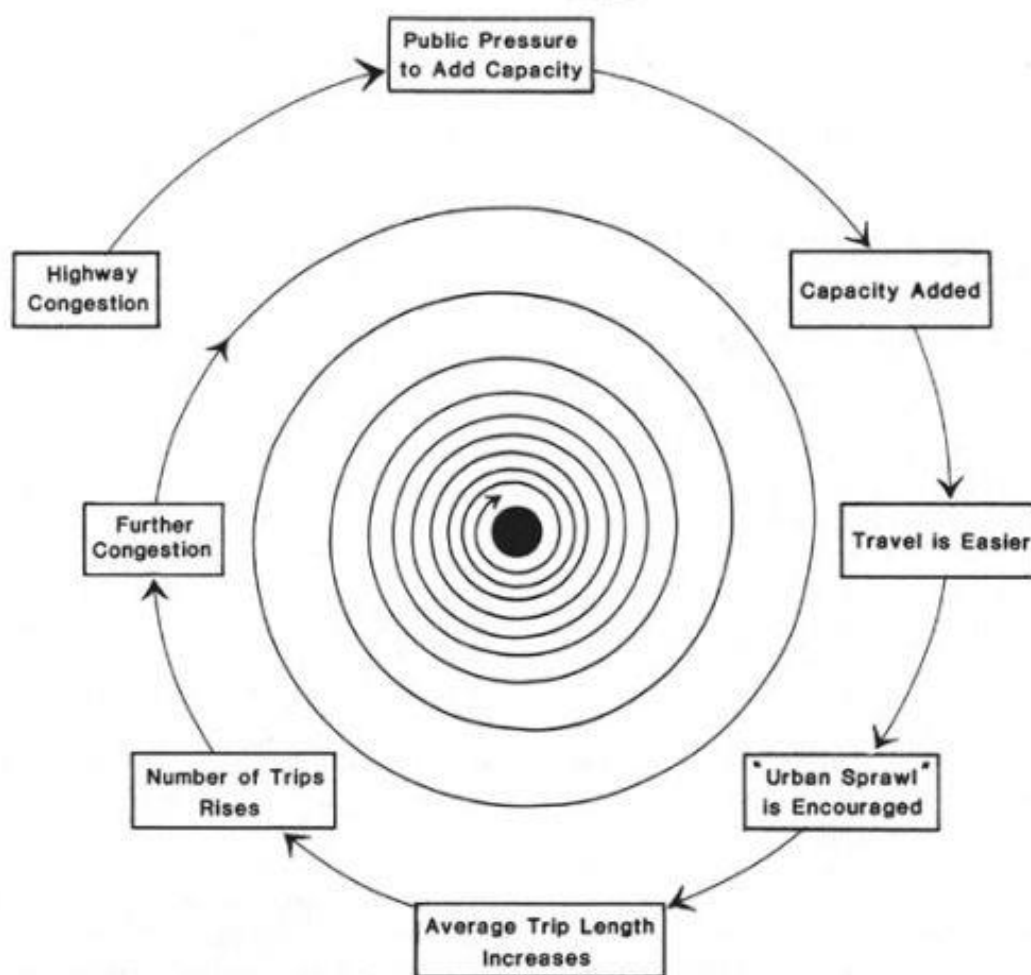
Figure 69 Plane, D. A. (1995). Urban transportation: policy alternatives. In Hanson & Giuliano (Eds.) The geography of urban transportation. (2nd ed.) New York ; London: Guilford Press, p439.

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[21] Plane, D. A. (1995). Urban transportation: policy alternatives. In Hanson & Giuliano (Eds.) The geography of urban transportation. (2nd ed.) New York ; London: Guilford Press, p439

iii.   Growing urban economies: at a crossroads?

Evidence indicates that there is a correlation between GDP growth and increased car ownership and car use in cities.[22] As discussed in this report, GDP per capita has been steadily growing in the five case study cities. In parallel, and as a result, car ownership and car use levels have also been increasing in those cities.

As illustrated in the cross-sectional analysis in figure 70 below, data suggests that there is a correlation between the level of local GDP per capita and car use. While low GDP cities tend to have a lower percentage of car use, the data suggests that among higher GDP cities there have been different urban transport development paths, one that leads to reliance on car use (very common across cities in the USA or in high GDP cities in the Middle East), and the other with lower – and apparently declining - levels of car use (such as the five Western European cities that participate in CREATE).

Figure 70 is based on data dating from 1995. Unfortunately, comparable GDP and modal share data is not available in the five case study cities. However, research findings suggest that in 1995 the five cities were most likely amongst the blue cluster illustrated below. Available modal share data from each city indicates that the percentage of motorised vehicles ranges between 30% and 50% (as illustrated in table 9 below).

Those results suggest that the five growing cities examined in this report seem to be at a turning point in their urban development process. Depending on the policy choices made at the local and at the national level (and to a degree at the international level), processes could either lead to further car-oriented land-use and transport development, or to an alternative development less focused on private vehicle use. The car-oriented development will invariably lead to increased congestion levels, as experienced by numerous cities in the USA[23].

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[22] International Transport Forum (2012) Transport outlook, seamless transport for greener growth. OECD/ITF.
Ecola, L., Rohr, C., Zmud, J., Kuhnimhof, T., Phleps, P. (2014) The Future of Driving in Developing Countries. RAND Corporation

[23] Reference: INRIX (2017) INRIX Global Traffic Scorecard. http://inrix.com/scorecard/
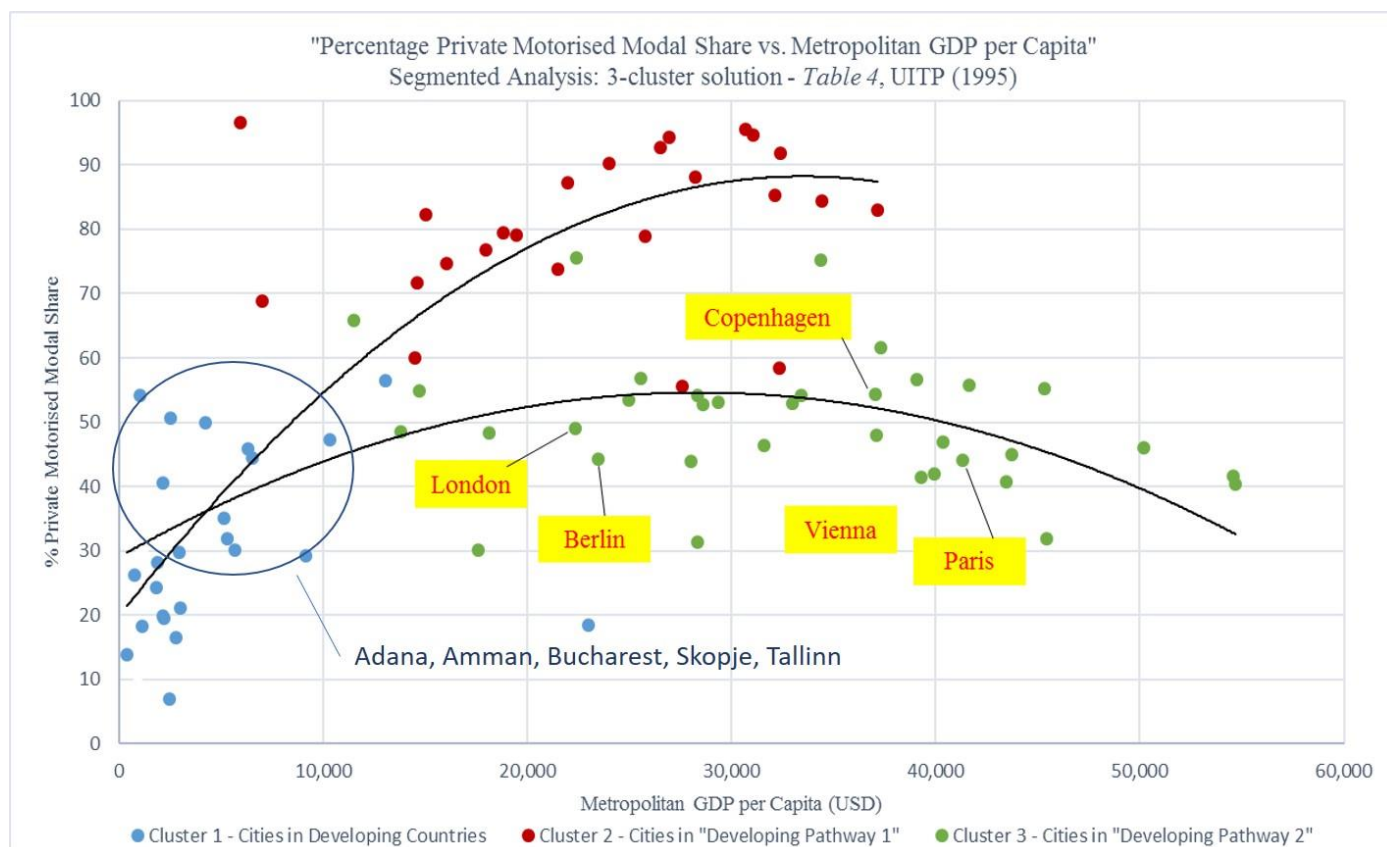
Figure 70 Different development pathways of cities depending on different policy approaches. Source: Roger Teoh, Master Dissertation

Estimated percentage of private motorised modal share

	% of private motorised modal share
Tallinn (2016)	49%
Bucharest (2015)	36%
Skopje (2009)	34%
Amman (2008)	33%

Table 9 Estimated percentage of private motorised modal share in Tallinn, Bucharest, Skopje and Amman

iv.   From planning for vehicles to planning for people movement and for liveable cities

Evidence indicates that until recently in the five case study cities, the focus has primarily been on planning for vehicles (characterised as stage 1 of automobility in the context of CREATE, as illustrated in figure 71 below). However, several signs indicate that there has been a gradual policy shift towards planning for people movement and in some cases, planning for liveable cities.

In the five case study cities, public authorities have focused on accommodating the needs for car use by building extensive highway networks, expanding road space, establishing (mostly free) parking facilities, improving traffic flow or dispersing traffic by relocating centres of activities. All five cities face congestion issues and public and political pressure to solve the problem by adding road capacity. Meanwhile, investments and policies supporting collective transport and active travel modes have remained limited or insufficient to maintain a high patronage and to face growing urban population rates. Available historical modal share data confirms that over the past two decades a high percentage of public transport users have shifted to become car drivers. A common political concern is the fact that by reallocating road space to other modes congestion will worsen. To varying degrees, the 'planning for vehicles movement' is still a priority in all of the five cities examined in this report, as even in Tallinn there are projects to expand road capacity.

However, growing importance is given to planning for people movement, and in some cases for city life or place-making. This could indicate that a shift in policy mind-set is taking place where the dominant policy objective is less and less about planning for vehicles. Lively debates took place during the focus groups in various case study cities, where several participants highlighted the incoherency of current policy priorities and the limitations of road building policies in their city. Commenting on Skopje's plans to build new roads, a local policy-maker stated: "*We will reach great conditions for the use of motor vehicles*", "*the more we increase traffic capacity the more traffic we will generate*", "*The question is whether we should build a city to have more motor vehicles or build a city where people's quality of life will be better*".

In the five case study cities, a growing focus is given to planning for people movement. Public authorities in the five cities plan to improve and expand their public transport network. Various policies and projects are in place, including purchasing new buses (e.g. in Skopje, Amman), expanding existing network (e.g. expanding the tram in Tallinn and the light rail in Adana), investing in new public transport facilities (BRT in Amman), by integrating various modes of transport (e.g. Adana, Amman, Bucharest and Skopje), reallocating road space to public transport (e.g. bus priority lanes in Tallinn and Skopje), establishing park and rides (e.g. Tallinn and Bucharest) and making public transport more attractive and convenient (e.g. free public transport in Tallinn, real-time information systems in Skopje).

Meanwhile, various policies and projects have been, and are being, put in place to foster active travel, discourage unrestricted car use and establish place-making. In Skopje and Bucharest, a growing network of cycle lanes is being built and the use of bicycles is being subsidised. In Bucharest, Amman and Skopje plans are in place to implement parking management policies (which the city of Tallinn has been doing since the 1990s). The cities of Skopje and Bucharest already have a sustainable urban mobility plan in place and Tallinn is in the process of establishing one. Place-making and designing liveable cities has been given increasing importance in several cities, in particular in Tallinn and in certain touristic areas in other cities.
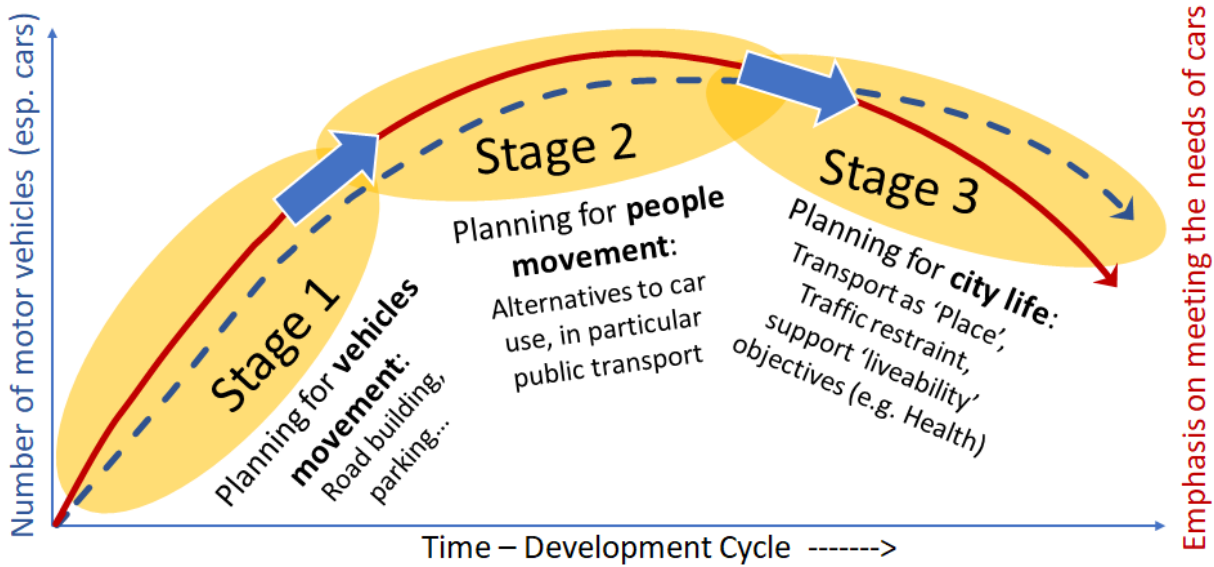
Figure 71 Urban mobility development process since automobility. Source. Peter Jones, CREATE

v. To what extent can growing cities accelerate their sustainable mobility processes?

The various 'stages' were discussed during the workshop, and the possibility for cities to avoid going through the 'planning for vehicles stage'. The importance of offering attractive alternatives to car use before penalizing users was highlighted. Participants agreed that basic highway infrastructures are necessary in urban environment but that these infrastructures need to support the planning 'for people movement' and for liveability principles. For instance, building a road might be necessary, but its primary purpose should be for collective transport, active travel, deliveries and place instead of prioritizing private car use. As summarised by a workshop participant: "*Infrastructure should encourage the change in people's behaviour*" towards sustainable mobility.

When asked to describe opportunities to accelerate sustainable urban mobility processes, focus group participants highlighted the following key priorities:

- Improving public transport
- Better and more integrated urban and regional planning
- Reducing the need to travel
- Initiating cross-sectorial collaboration and consultation
- Fostering a shift in modal share (encouraging active travel)
- Creating a liveable city

vi.   Urban planning, a major issue

When discussing past, present and future challenges, urban planning emerged as one of the most problematic issues in the five case study cities. The most common urban planning issues are summarised in table 10.

The lack of integrated planning, between urban and regional authorities and between transport and land-use planning, has been one of the leading causes of increased car dependency and traffic in the five case study cities. It has led to unmanaged urban sprawl and to the development of residential areas which are completely reliant on car-use and which lack basic facilities.

Solving urban planning issues was highlighted as one of the key challenges to address in the five cities. Potential solutions to do so include: establishing density requirements in cities and their metropolitan areas; changing regulations to give greater control to local authorities over land-use; and establishing metropolitan authorities responsible for transport and land-use.

Participants also highlighted the need for long-term urban, metropolitan or regional plans and 'vision', combined with short-term action plans - unaffected by political changes. Existing and on-going SUMPs represent an opportunity to ensure policy continuity in cities.

Most common urban planning issues
Lack of updated urban plans
Lack of regional urban plans
Lack of integration between land-use and transport plans
No density requirements
Lack of access to and control over land

Table 10 Most common urban planning issues

vii.   Workshop discussion

This sub-section summarises some of the key points which were highlighted during the CREATE workshop held in February 2018 in Skopje. The workshop involved 16 policy-makers from Adana, Amman, Bucharest, Skopje, and Tallinn, two policy-makers from England, three academics from London and Paris and two consultants based in Europe.

a.   Are monocentric cities unsustainable?

Several focus group participants argued that the concentration of economic activities in the city centre is problematic as it generates 'pendulum' movement towards the same focal point. The five case study cities tend to have a monocentric urban structure with a Central Business District (or equivalent) located in the city centre. Several participants stated that this configuration is a 'mistake' and that economic activities should be relocated to disperse traffic. In Adana, plans are on-going to relocate a major market to the outskirts of the city to "*move the congestion to the outskirts*".

Discussions held during the workshop highlighted the fact that there is no clear evidence that polycentric cities generate less congestion. In fact, there is a risk that if not properly planned, 'polycentricism' could lead to disperse development which could in turn encourage car use and car dependence. High density levels offered by monocentric urban structures, are a key factor contributing to economic activity and accessibility. It also offers the right conditions for mass transit and active travel (cycling and walking).

b. Congestion, a necessary evil?

One of the conclusions from the workshop is that large cities all face congestion to varying degrees. Table 11 below indicates the average congestion levels in seven out of 10 CREATE cities. Although the city of Bucharest has the highest levels, Paris and London also have high congestion levels. The key difference is that it affects a smaller percentage of the population since the percentage of car use has been decreasing. As road space has been reallocated to public transport and active travel modes in Paris, London, Vienna, Berlin and Copenhagen, congestion for car users has remained stable whilst public transport users, cyclists and pedestrians have been able to move more efficiently in cities. In those cities congestion affects a smaller percentage of the population and the discussion has been reframed away from congestion being a problem, and more about how to build liveable cities.

Indicator	Bucharest	Paris	London	Vienna	Berlin	Adana	Copenhagen
Average congestion index	50%	40%	40%	31%	29%	27%	23%
Morning peak congestion index	90%	62%	64%	46%	43%	29%	47%
Evening peak congestion index	98%	75%	68%	54%	50%	36%	40%

Table 11 INRIX global traffic scorecard. Source: http://inrix.com/scorecard/

Several workshop participants noted that usually congestion must be high before alternatives – in particular public transport - become attractive. Mode shifts tend to occur when users realise that taking public transport (or walking or cycling) would save them time (for instance when people see buses overtaking cars) and would be more efficient (and pleasant) compared to driving a car.

However, it is possible and highly advisable for public authorities to anticipate an increase in traffic by putting in place alternatives before congestion becomes out of control. For example, by putting in bus or cycle lanes before traffic levels increase.

c. How to generate change?

How to generate change at the local level? was one of the questions discussed during the workshop. How can local authorities put in place changes to accelerate sustainable mobility processes? Previous studies[24] suggest that several key elements need to 'align' for change to happen in cities. Figure 72 below illustrates this process, in no chronological order. The right structural and political context needs to be in place for change to happen. But a change in political party is not always needed, as political parties can change their policies if there is a demand from the public to do so. Legal and administrative structures which can support a transition towards sustainable policies need to be in place. Marketing and the use of media play a key role to convince power holders and citizens that change is necessary; for example, public authorities can use awareness campaigns to nudge citizens to change. Active grass-root movements are an important part of the puzzle, such as Non-Governmental Organisations campaigning and lobbying for change. Ensuring that key stakeholders, such as local businesses, support transition policies is another key element. For change to be generated, the right political conditions should occur, such as a change of political party. Another key element which contributes to generating change is having brave policy officers and politicians in charge. The combination between these top-down and bottom-up elements create the conditions for change to occur. Public authorities and policy officials can put in place certain of the elements listed above to create the conditions for a momentum. Other elements are more sporadic such as political elections. Even though the process described above might not be fully relevant in certain countries - due to socio-cultural or political reasons for example - it provides a useful baseline to discuss how change can be generated.

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[24] Cavoli, C. Jones, P (2016): *Achieving Sustainable and Liveable Communities: Identifying and addressing barriers*. UCL. Link here.
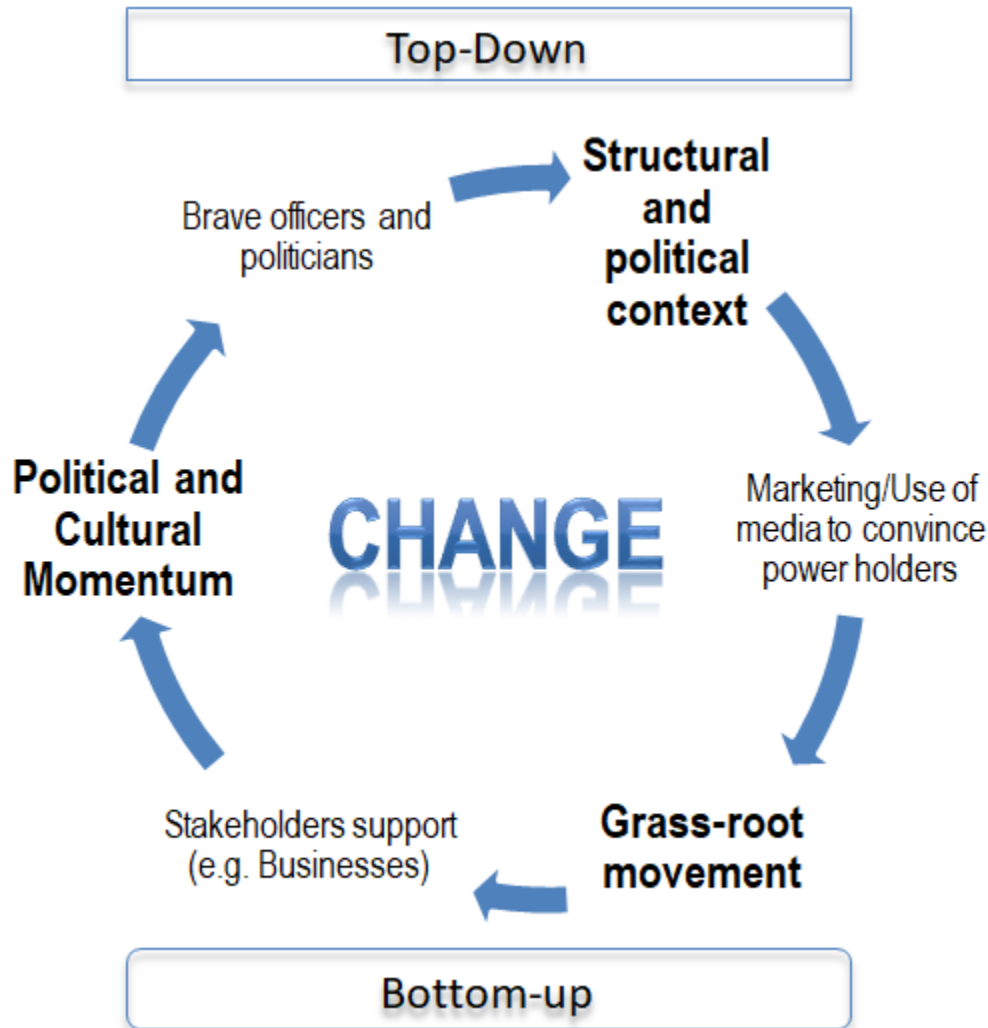
Figure 72 Factors that generate change. Source: Cavoli, C. Jones, P (2016): Achieving Sustainable and Liveable Communities: Identifying and addressing barriers. UCL

viii.   Conclusion

This cross-city comparison has focused on identifying common patterns and trends related to urban mobility development in five uniquely different cities. Although each of the five case study cities examined has unique characteristics, similar issues and opportunities were identified across all five cities. All of the cities have gone through, and are still going through, a policy stage focused on accommodating the demand for car use. This stage (described in section IV and VII) has led to car-dependent patterns with high car-use levels and congestion in cities.

The most problematic transport issues currently faced by Adana, Amman, Bucharest, Skopje and Tallinn are caused by high traffic levels - such as congestion, widespread illegal parking issues or high levels of pollution (see section V). A common issue strongly highlighted is the lack of

integration between transport and urban planning, in particular at the metropolitan level (further details in IV ix and V ii c). The need to reduce car use and to increase collective transport in those cities is increasingly acknowledged, but, in many cases public authorities lack institutional capacity to put in place the necessary changes (V ii). Current transport policy priorities seem to be contradictory in the five case study cities (V iii). On the one hand investments in public transport, active travel and place making are increasing, on the other hand investments in building new highway infrastructure and planning for car use are still on-going. The unsustainable nature of a car-oriented development focused on accommodating the demand for car use was highlighted in the discussion session.

Opportunities to accelerate sustainable urban mobility developments in the five case study cities were highlighted (VI iii). It included opportunities to improve public transport, to integrate urban and regional planning, to reduce the need to travel, to implement cross-sectorial collaborations and consultations and to foster a shift in modal share towards more sustainable and efficient modes. The opportunities technological innovation, active travel and behavioural change can offer were also mentioned.

The five case study cities seem to be a cross-road (VII iii). As their GDP is increasing they have an opportunity to embark on a more sustainable development path focused on sustainable, efficient and inclusive mobility and liveable cities. This path can vary from one city to another (i.e. different solutions or policy measures could be implemented in different cities) providing the dominant policy focus supports the key principles for sustainable mobility (highlighted in the recommendation section below).

ix.   Recommendations

Some of the key recommendations that have emerged from this investigation include:

1. **Establish a vision**. The priority for public authorities should be to establish a vision for their city. Investment in infrastructure and innovation should contribute to achieving this vision and transport policy should be aligned with it. A long-term vision and strategy (e.g. a SUMP) should be combined with short-term action plans, and incremental targets to monitor progress towards goals.
2. **Integrate urban planning**. Integrated planning, between urban and regional authorities and between transport and land-use planning is crucial to avoid unsustainable car-oriented developments leading to high traffic levels and congestion. Urban developments should not be authorised without sustainable transport and mobility plans in place. High density developments should be mandatory in cities and metropolitan areas.
3. **Provide good alternatives to car use to foster modal shift**: There is a need to anticipate congestion problems before traffic gets worse by providing attractive and efficient alternatives to car use, in particular collective transport and active travel. Infrastructure should be built primarily for people movement and place-making instead of vehicles movement. Investments should focus on sustainable mobility solutions, including public

transport, cycling and walking. Young students who rely on public transport represent a "captive audience". If alternative mobilities are provided to those users they will be less likely to rely on car use in the future.

4. **Integrate governance**. Establishing a Metropolitan Authority for transport (or equivalent) integrating all modes, and land-use and transport entities across the metropolitan area can help solve key transport and land-use problems, particularly the integration aspect.

5. **Be bold - experiment.** Experience from Stage 3 cities suggests that policies once dismissed as radical, infeasible or impractical can, over time, gain widespread acceptance and even become orthodoxy. This is the essence of the CREATE findings. This is necessarily an evolutionary process, but there is evidence of success elsewhere - and it is always necessary to start somewhere.

6. **Engage with stakeholders but don't try to be 'all things to all people'**. Public authorities should actively engage with, and consult, key stakeholders and citizens, including the media. It would usually be expected to be the case that any city-wide transport plan has the broad support of the population, albeit that difficult choices sometimes have to be made. Significant change requires a clear set of priorities and a clear policy direction – which will not, at first, please everyone. Public authorities should provide information and data to campaign groups which can in turn inform the Public.

7. **Increase institutional capacity**. Increasing human resources capacity focused on planning for movement and liveability (e.g. including urban planners, public transport experts, health experts) is key to support a transition towards sustainable mobility. These people should reflect a diverse range of disciplines and should contain an appropriate level of technical expertise.

8. **Decentralise decision-making but within a consistent city framework**. Evidence suggests that increased autonomy at the local level improves decision making and action at this level. Local authorities should generate sources of funding, for example through land value capture, to support sustainable transport, such as parking management or local infrastructure for sustainable transport. However, local decision making needs to be within a consistent and agreed city-wide framework.

9. **Foster multi-level and cross-sectorial governance**. Collaboration between policy-makers across sectors and levels of governance (i.e. regional, national and international) is needed. For example, improved internet access and e-governance could reduce trips whilst maintaining agglomeration benefits. For this to happen transport policy-makers should collaborate with the city's communication/technology department (or equivalent). Regard must however be had to potential adverse social and economic impacts – for example social isolation and the continuing health of retail centres.

10. **Generate and analyse data**: Public authorities should generate and analyse transport, travel and land-use data. There is a need to build a strong evidence-based policy-making and analysis process, and to understand where progress is or is not being made in relation to priorities. The cost of a really good monitoring programme is typically less than 1% of capital/revenue budgets, but findings based on it can 'make the business case' for much larger budgets and new schemes.

11. **Change legal framework.** Changes in the law may be necessary to address key transport issues, such as enforcement and how people pay for the use of roads.

12. **Discourage car use.** Once alternatives to car use are in place, public authorities can discourage car use and a shift to more active and sustainable modes by making it more expensive, slower and less convenient than the alternatives (e.g. by taxing private vehicles or their use, by increasing parking fees, by decreasing the space allocated to car use) - provided that this is in line with the local policy and stakeholder climate. Parking management and restricting parking is particularly efficient.
13. **Communicate the benefits of sustainable mobility measures.** Inform the public about the importance and the benefits of sustainable mobility measure for their life, such as improving their health and well-being, access to opportunities, more pleasant and liveable urban environment, etc.

VIII. Acknowledgement

IX. Disclaimer

All data provided for Bucharest city and analysis developed based on this data were done for the purpose of the CREATE project. Each time the author(s) of a report, analysis or other study use(s) this data and/or information for public purpose (studies, presentations, conferences, workshops, interviews, courses, etc.) it is mandatory to provide the following source: "data for Bucharest city, provided within and for the purpose of the CREATE project, year 2018".

This report should be referenced as: Cavoli, C. (2018). Scope for accelerating urban mobility development processes in rapidly growing economies: the case of Adana, Amman, Bucharest, Skopje and Tallinn. CREATE Deliverable 4.5. CREATE Horizon2020.

X. Annexes

i. Questionnaire City Profile

City Profile Questionnaire

Stage 1 cities

CREATE

Introduction:

The topic guide below has been compiled to provide the CREATE project basic data about your city. We would like you to complete the questionnaire below by collecting/gathering information about your city. The data should be **official public data** as far as possible. However, we understand that at times it might be difficult to find the relevant data within your organisation. Even though we would recommend that you not provide unofficial data, if you do provide unofficial data (for example online data from Wikipedia) please make an explicit reference in the document.

Your city's administrative structure

- Could you please define the boundary of your city's administration?
  - When we talk about transport in your city, which territory are we talking about? (e.g. city centre, metropolitan area, other?)
  - Could you provide surface of land use area (km2) data, an indicative map, and/or any other useful indicators.

Demography

- How many inhabitants does your city have?
- Do you have historic data about the total number of inhabitants in your city (throughout the past decade or two)?
- Do you have predicted population growth?

Transport institutions

- Which entities are responsible for transport policies and operations in your city? (e.g. which department within your local authority? Any national entities? Any private transport operators?)

Transport Demand and Car Ownership

- What is the modal share/split (% of trips per average workday) in your city?
- Do you have historic data recording the evolution of modal share?

- Could you provide information about the development of the number of private cars (car ownership levels) and the number of driving licences per inhabitants (city-wide)
- Do you have predictions related to future transport demand in your city?

Economy

- Could you provide data about the development of GDP (Gross Domestic Product) per capita in your city (over the years)?
- Could you provide current and historic data about the development of annual average fuel prices (diesel and petrol) distinguished between net values and taxes [€ per litre]

Local transport plan

- Does your city have a local transport plan and/or business plan or any other equivalent policy-making document? If so, do you have an English version?

Additional data

- Do you have additional data which would be relevant to establish an initial city profile?

Thank you very much for your collaboration. We would be grateful if you could complete and complement the questionnaire in the coming weeks. We need as much information as possible before the mid-term review report to be submitted to the EU Commission at the end of the year. Early next year we will ask you to gather further qualitative and quantitative information about urban transport and transport policy in your city.

ii.   Topic Guide Focus Group

Stage 1 cities CREATE

Topic Guide Focus Group

Understanding the past

1. How has urban transport evolved over the past 10 to 15 years? (for example, linked to societal and cultural changes, mobility demand, demographics…)

       a. How about land use?

2. How have urban transport policies evolved over the past 10 to 15 years?
   a. How about land use and planning policies?
   b. To what extent have those changes been affected by policies or legislation at the national or supranational level (for example changes at the EU level)?

Defining the present

1. What are the biggest challenges for urban transport and mobility in your city?
   a. What are biggest challenges at a policy level?
   b. What are the biggest political challenges?

2. What are the current policy priorities for urban transport in the city?
   a. What are the challenges in delivering those priorities?

3. What influences transport policies in the city? (for example, regional, national or supranational influences or demands coming from local citizens such as lobby groups or the press, or competition with other cities…)

4. Where do you get your guidelines from (for instance to design roundabouts)?

5. Which funding agencies do you approach if you want to get funding?

Shaping the future

1. What are the future challenges the city is likely to face in the coming years (for example, demographic changes…)
   a. And the future opportunities?

2. What is the overall strategy for future urban transport policy in the city?

3. To what extent can technological developments help solve urban transport problems in your city?

4. Which innovative policies could accelerate sustainable mobility in your city?

iii.   Screen shots framework matrix

	Summary	Unplanned growth in urban population	Urban Sprawl	Increase in GDP per capita	Decrease in fuel prices/ Easy access to cars	Increase in car use and car ownership levels	Planning for vehicles and lack of investment in public transport	Congestion	Lack of transport and urban planning	Urban form: concentric/polycentric	Summary car-dependent development/ congestion
	How have urban transport and land use evolved over the past 10 to 15 years? (for example, linked to societal and cultural changes, mobility demand, demographics...)										
	How have public authorities responded to those changes?										
	How have urban transport and land use policies evolved over the past 10 to 15 years?										
Adana	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓
Amman	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bucharest	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Skopje	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓
Tallinn	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓

		Unplanned growth in urban population	Urban Sprawl	Increase in GDP per capita	Decrease in fuel prices/ Easy access to cars	Increase in car use and car ownership levels	Planning for vehicles and lack of investment in public transport	Congestion	Lack of transport and urban planning	Urban form: concentric/polycentric	Summary car-dependent development/ congestion
Adana	Information	continuous rural-urb	As the city started	Adana . As a result	despite the increase in crude oil prices and fuel taxes imposed by the national government						
	Quotes	Adana is "an attract	this when "transport problems started", recalls a p	car manufacturers have been *"very successful in promoting cars"* in Adana							
Amman	Information	Estimates indicate th	The lack of integ	Amman's GDP p	In Amman, it is relatively easy to purchase a private motorised vehicles. Banks provide easy access to loans; interest rates are relatively low. However, the						
	Quotes				As mentioned by a	On the other hand, a participant noted that public authorities are building a "vast road network and are providing f					
Bucharest	Information	Population census (	from the 1990s	The *National Co*	Before 1989, pu	Estimates suggest that circa 55% of Bucharest's population owns a private vehicle, and 46% has a driving licence. In Bucharest there ar					
	Quotes		*"After 1989 everyone wanted to*	In Bucharest, *"There were no imports at the time"*, highlighted a participant, and the price of privately owned cars was high compared to salaries.							
Skopje	Information	From the 1990s ru	This urban migra	Gross Domestic I	Fuel prices in the Republic of Mace	The lack of quality and capacity of pub	The lack of cohesion between land-use and mobility policies in Skopje was hig				
	Quotes	The city was not "p	The city developed following the "	Another factor that explains why ca	A participant describes how the local a	This lack of integration has "caused pressure on the overall infrastructure ne					
Tallinn	Information	Tallinn's population	Participants repc	Since the 2000s E	fuel prices have been going down in Estonia. These changes led to improve	Those developments were not part of a spatial planning strategy and were not i					
	Quotes		*"Soviet cities were very much co*	Cars consi	and cars started to be viewed as *"practical affordable obje*	As described by one participant, there is "an absence of comprehensive plan					

			Adana	Amman	Bucharest	Skopje	Tallinn
Cross-sect collabo & consult	6			3		1	
Modal share shift	5	1		2		1	
On-demand transport	4			1		1	
Liveable City	4		2			1	
Congestion & pollution	3			1		1	
New modes & tech	3	1		1			
Behavioural change	2			1		1	
Walking	2	1				1	
Decentralisation	2	1				1	
City as a Laboratory	2		1		1		
		1	Improved signalling	E-services	Integrated public transport	Improving public transport	Congestion
		2	Increased capacity and efficiency PT	Vertical expansion	Improved pricing policies for Public Transport	Foster shift modal share	Shift in modal share
		3	Traffic-free areas	Behaviour change	Small pilot project to implement parking management and bus lanes	Improved walking environment	Comprehensive transport and urban
		4	Park and Ride	Congestion	Flexible working hours	Raising awareness	Private developers are increasingly i accessibility
		5	Encourage people to walk or cycle	Public/Private Partnership	Teleworking	Pollution	Need to assess the impact public and investments have
		6	Liveable city	Stakeholders' consultation	Travel plans	Cross-sectorial collaboration & Public debate	Cultural changes with a focus on urb
		7	River Transport	Teleworking	Harmonised land-use and transport policies at the regional level	Smart city and liveable city	Teleworking
		8	Increased autonomy	E-Hailing	Alternate-day travel	Mobility As A Service	Schools should be near residences
		9	Master planning	Autonomous Vehicles	SUMP	Decentralisation	Demand-based public transport
				ITS innovation for public transport			Improved public transport connectiv

iv. Agenda CREATE workshop in Skopje

79

CREATE Workshop & Events

Challenges & Opportunities to accelerate urban mobility development processes

29th, 30th, 31st

January 2018

Venue: Holiday Inn, Filip Vtori Makedonski, 5, Skopje, Republic of Macedonia

Training session

Objectives

The objective of this workshop is to discuss the challenges and opportunities for S1 cities to accelerate urban transport development processes in their city based on the CREATE concepts. The following questions will be addressed: How do S1 cities perceive the different stages? What does 'leapfrogging' or 'accelerating' really mean? What skills are required to accelerate these processes? What are the main barriers and how to overcome them? What practical insights can we learn from S3 cities? What policies to prioritise and how to initiate this paradigm shift?

Structure of the workshop

The workshop will be divided into several sections including presentations and discussion sessions. The findings of the workshop will inform WP5, WP7 and the CREATE 'insights' which S1 cities will be able to disseminate within their city.

This workshop is specifically designed for CREATE S1 cities. Inputs from S3 cities representatives and CREATE experts will be included.

Programme – DAY 1

09.30-09.40: Welcome and introduction (Lovren Markic, Head of International Relations Department, City of Skopje; Prof Laurie Pickup, Vectos)

- Welcome (Lovren Markic)
- Objectives of the session (Laurie Pickup, Chair)

09.40-11.10: Opportunities and challenges for S1 cities to accelerate their urban mobility processes (Dr. Clemence Cavoli, UCL)

- Highlights from the cross-city comparison
- Q&A and Discussion

11.10-11.30: Coffee break

11.30-12.30: How do S1 cities perceive the different stages? (City representatives from Amman, Adana, Skopje, Bucharest, Tallinn) (Facilitated by Prof Laurie Pickup, Vectos)

- Round table discussion where each city representative describes how he/she perceives the different CREATE stages and what it means in the context of his/her city

12.30-13.30: Lunch

13.30-15.00: What does 'leapfrogging' or accelerating really mean? (City representatives from Amman, Adana, Skopje, Bucharest, Tallinn and Mike Keegan, Transport for London) (Facilitated by Prof Laurie Pickup)

- Round table discussion where each city representative discusses what 'leapfrogging' or accelerating means in the context of his/her city. What are the most challenging barriers and where are the opportunities?

15.00-15.20: Coffee break

15.20-16.40: What skills are required to accelerate these processes? What practical insights can we learn from S3 cities? What mistakes can be avoided in moving towards S3? (Mike Keegan, Transport for London, David Bull, CREATE advisory board member and former politician, Laurie Pickup, Vectos) (Facilitated by Peter Jones)

- Panel discussion presenting insights from S3 cities.

16.40-17.00: Wrap-up (Clemence Cavoli)

Programme – DAY 2

09.00-12.30: CREATE conference and press release organised by the city of Skopje

12.30-13.30: Lunch

13:30-14:45 Site visit Skopje – Examples of S3 policies

- Guided tour organised by the City of Skopje showcasing Skopje's innovative policies.

14.45-14.50 Welcome and debrief from day 1 (Laurie Pickup)

14:50-16:30 What policies to prioritise and how to initiate this paradigm shift in cities? (City representatives from Amman, Adana, Skopje, Bucharest, Tallinn and Mike Keegan, Transport for London) (Facilitated by Charlotte Halpern)

- Round table discussion where each city representative discusses what policies to prioritise and how to initiate this paradigm shift in the context of his/her city.

16:30-16:40 Coffee break

16:40-17:40 Financing and funding options for S1 cities (Paul Green, Vectos)

- Highlights from S3 and S1 cities
- Q&A and Discussion

17:40 – 18.00 Final thoughts (Peter Jones, David Bull)

18.00 – 18:10 Wrap up and next steps (Clemence Cavoli)

Programme – DAY 3

09.30-12.30: CREATE Open Steering Committee meeting

12.30-13.30: Closing Lunch