



# It is time to implement congestion charging in Budapest

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## Introduction

It was a historical moment when, on 25th May 2015, István Tarlós, Mayor of Budapest joined the petition<sup>1</sup> to prevent climate catastrophe. The petition states the following:

*“In order to protect our future, we, Hungarians have to do our part as well.”*

Transport is one of the main emitters of carbon-dioxide (CO<sub>2</sub>) and particulate matter (PM) which cause global warming. PM exerts also serious effects on human health. One of the most efficient methods for reducing CO<sub>2</sub> and PM emission is to adjust the number of motor vehicles on the road to fit the capacity of the road concerned. Such a measure would substantially decrease harmful emissions: partly because there will be less vehicles on the roads, but mostly because there will be practically no congestion (harmful emissions are much greater when vehicles are moving slowly, braking and accelerating all the time than in the case when they move at a constant and normal speed).

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<sup>1</sup> A Fővárosi Közgyűlés is csatlakozott a klímaváltozás elleni kampányhoz,  
<http://budapest.hu/Lapok/2015/a-fovarosi-kozgyules-is-csatlakozott-a-klimavaltozas-elleni-kampanyhoz.aspx>



Moreover, congestion is causing an enormous loss to our economy. Budapest is one of the most congested cities in the world.<sup>2</sup> The European Commission's 2016 Country Report on Hungary states the following: "Urban congestion may become a barrier to productivity in Hungary as the employment rate and motorisation restarted to grow. ... According to JRC calculations, urban areas in Hungary were among the 5 most congested in Europe in 2013 (in terms of average ratio of actual speed versus free-flow speed)."<sup>3</sup>

The best tool for eliminating congestion and reducing car use in cities is urban road pricing (URP) which depends among others on the amount of traffic on the road. We can always set a tariff which would decrease the number of motor vehicles to an optimal number at a given time and in a given area. Another way to fight air pollution is to reduce the fuel consumption of vehicles. If the congestion charge is higher for less fuel-efficient cars, then the owner will use them less or swap it for a more environment-friendly one. The charge should be differentiated also according to the PM emission of the vehicle.

The introduction of a congestion charge in Budapest would mean an application of two basic principles of the European Union. These are: "*the user pays*" and "*the polluter pays*" principles. By enacting the congestion charge, István Tarlós would provide a good example of an environmentally conscious mayor, and protect the climate as well as the health of the inhabitants of Budapest.

Clean Air Action Group proposes an urban road pricing (URP) in Budapest which would serve three functions:

- Those who pollute would be charged for contributing to the lower quality of life of everyone, thus encouraging more environment-friendly transportation modes, and also producing revenue for preventing further pollution or help repair the damage.
- Drivers would pay directly and proportionately for the use of the road, which eliminates the "middleman", the state, thus providing funds directly to the Municipality for maintaining and developing roads.
- A premium price would be added to the charge on the use of roads in time periods when otherwise the traffic would be usually unbearably slow.

To summarize, what Clean Air Action Group is proposing is an URP which depends on the distance driven and the emission of the vehicle, combined with an adaptive congestion charge.

As a first step, we propose the implementation of a daily Budapest vignette which should be paid for all cars moving in Budapest. The owners of cars registered in Budapest could pay a reduced annual or monthly fee.

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<sup>2</sup> TOMTOM TRAFFIC INDEX (2016): Measuring congestion worldwide,

[https://www.tomtom.com/en\\_hu/trafficindex/](https://www.tomtom.com/en_hu/trafficindex/)

Worst Corridors: INRIX 2015 Traffic Scorecard, <http://inrix.com/worst-corridors/>

<sup>3</sup> Country Report Hungary 2016, Commission Staff Working Document, SWD(2016) 85 final, Brussels, 26.2.2016, [http://ec.europa.eu/europe2020/pdf/csr2016/cr2016\\_hungary\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/cr2016_hungary_en.pdf)



If it is desirable to motivate the residents of Budapest not to use their car in the most congested periods, an even lower fee could be applied to those who will not move with their car during the peak hours. Such a variant could be quite popular for most of the car owners in Budapest, because two-thirds of them do not use their car on working days.

Control could be carried out by automatic license plate recognition by fixed cameras in places with high traffic volumes and cars equipped with cameras which would park at frequently varying places in a planned way.

Trucks with a permitted total weight of more than 3.5 tons already today must pay a distance- and pollution-based toll on most motorways and many main roads. On this basis, it would be possible to make it mandatory for all trucks moving in Budapest to be equipped with a GPS unit, and, in cooperation National Toll Payment Services Company, the toll could be extended to Budapest.

The increased demand for public transport due to the URP can be satisfied with minor corrections, if the URP fee is not very high. This is supported by the fact that after the economic crisis in 2008, car traffic in Budapest decreased by 12%, and this did not cause any problems for the Budapest public transport system. (In the last few years, car traffic increased again, and the situation became even worse than before 2008.<sup>4</sup>)

Also, we do not think that the increase in multimodal transport (people coming from the agglomeration who change from cars to public transport in the city) would require thousands of new P+R parking slots to be built. Especially if the implementation is multitiered as we propose.

We present the potential benefits and opportunities of the urban URP in a SWOT table, as well as its possible disadvantages.

We briefly summarize the proposed structure of URP as well as what tools would be most suited for collecting it and for the enforcement. We propose a communication plan to be carried out before implementing URP, and we point out the opportunity to create an intelligent transport information service. We also show that a well prepared and implemented URP would bring an annual economic benefit equalling to about 1% of the national GDP.

We have been discussing our proposal with wide range of stakeholders, including experts and official representatives of the Budapest Mayor's office and district mayors as well as hauliers' associations and we found that most of them are in favour of implementing. We plan to continue this discussion. We held several presentations on the topic, including a presentation at the prestigious Annual Conference of the Hungarian Economic Association in September 2016. During all these events our proposals received very positive appreciations.<sup>5</sup>

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<sup>4</sup> See: Budapestet felzabálják az autók (*Budapest is eaten up by cars*), Index.hu, 24.10.2016, [http://index.hu/belfold/budapest/2016/10/24/budapest\\_egyre\\_nagyobb\\_dugokra\\_szamithat/](http://index.hu/belfold/budapest/2016/10/24/budapest_egyre_nagyobb_dugokra_szamithat/)

<sup>5</sup> [http://www.mkt.hu/wp-content/uploads/2016/09/Lukacs\\_Andras.pdf](http://www.mkt.hu/wp-content/uploads/2016/09/Lukacs_Andras.pdf)



## SWOT analysis of the Budapest urban road pricing

Strengths	Weaknesses
<ol style="list-style-type: none"> <li>1. Congestion is reduced on roads.</li> <li>2. Air pollution is reduced, and because of this, people become healthier, their life expectancy increases.</li> <li>3. Healthcare costs of illnesses related to air pollution are reduced for individuals and the social security system.</li> <li>4. The carbon dioxide emission of Hungary drops, and with it our contribution to global warming decreases.</li> <li>5. Our crude oil import decreases.</li> <li>6. Support from the national budget for car use decreases.</li> <li>7. Car traffic from the agglomeration decreases.</li> <li>8. Demand for parking spaces drops.</li> <li>9. The number of minor traffic accidents falls off.</li> </ol>	<ol style="list-style-type: none"> <li>1. The cost of vehicle use increases for its owner.</li> <li>2. The URP creates a hostile attitude in some car owners.</li> <li>3. Traffic accidents can increase because vehicles might speed up on some roads.</li> </ol>

(Continued on the next page.)

Opportunities	Threats
<ol style="list-style-type: none"> <li>1. The additional revenue can be used to improve transport in the city.</li> <li>2. There could be more money for road maintenance.</li> <li>3. More money could be spent on public transport.</li> <li>4. The revenue could also be used to improve the conditions of pedestrian and bicycle traffic.</li> <li>5. URP would help the transition from cars to other modes of transport.</li> <li>6. People who don't use their cars could save money.</li> <li>7. People who sell their cars would relieve themselves of a considerable financial burden.</li> <li>8. The traffic morals would improve.</li> <li>9. A rehabilitation process could begin in the city districts which have been full of cars previously.</li> <li>10. The system could become an example for other major European cities.</li> <li>11. A lot of people would move back to Budapest from the its surroundings, increasing the use of urban infrastructure.</li> <li>12. People would become healthier, because they walk and bike more.</li> <li>13. The shift to public transport, carpooling and carsharing would create savings for individuals.</li> <li>14. There would be more space for green areas.</li> <li>15. The revenues of local businesses could increase.</li> <li>16. Carpooling would become more popular.</li> <li>17. Car sharing services would become popular.</li> <li>18. The use of the least environment-friendly vehicles would decrease because of their punitive tariffs.</li> <li>19. Car usage would become more rational, people would plan their route more efficiently.</li> <li>20. People in vehicles could get real-time traffic information, and local residents could get an alarm if any air pollutant has a high concentration somewhere.</li> <li>21. URP can be flexibly adjusted to the prevailing conditions – not only in time, but on any road, by which traffic could be regulated in an optimal manner.</li> <li>22. The system can be easily used for charging for parking, which would enable a flexible and unified parking control system.</li> </ol>	<ol style="list-style-type: none"> <li>1. If the urban road pricing is poorly introduced, then it could lead to an adverse situation similar to that in London.</li> <li>2. URP will not be profitable.</li> <li>3. There will be some places where the traffic and congestion increase.</li> <li>4. The time spent commuting will increase.</li> <li>5. The revenue from excise duty will drop.</li> <li>6. If the zones are poorly planned, then the demand for P+R parking will increase in some residential areas.</li> <li>7. A bad-conceived URP would increase the traffic through the city center.</li> </ol>



## Recommendations for the main characteristics of urban road pricing

### 1. *The basic principles*

Everyone who uses the roads of Budapest has to pay a charge based on the emission levels of his/her vehicle. The driver can decide whether to pay it based on time or on the distance driven.

The usage-based road pricing is determined by the distance driven, the route the driver takes, and the time of day (congestion charge).

### 2. *The rate*

The charge has three components. The basic component applies “the polluter pays” principle, the usage-based component applies “the user pays” principle, and the congestion charge component is for regulating the traffic during periods of congestion. The first and second component follows the logic of the law (Act LXVII of 2013) which introduced the distance-based road toll for trucks on motorways and other major roads in Hungary. This toll also has a distance-based and pollution-based components.

#### 2.1 *Environmental pollution charge*

The part of the URP paying for the pollution is calculated on the basis of the vehicle’s pollution characteristics.

#### 2.2 *Charging road infrastructure usage*

That is an added component for the infrastructure usage, which is based on the kilometers driven (in the case of trucks<sup>6</sup>, it is also based on axle weight).

The usage-based component has to incentivize routes that do not include the city center if that is not the driver’s destination. This component has to be introduced on the basis of preliminary tests and models. It also has to be reexamined every year based on its measured effects on road traffic.

One possibility for a zone where this can be introduced is the area between Hungária boulevard and the Buda boulevard. Outside this area, this part of the charge could be zero HUF, and it would gradually increase as we get closer to the city center. A citywide standard rate is another possible scenario, and in this case, the usage-based component can be refined later.

#### 2.3 *Congestion charge*<sup>7</sup>

That is an added component of URP based on location, time of day, and historical traffic data.

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<sup>6</sup> This way it would be possible to extend the national road tolling system to Budapest.

<sup>7</sup> See: William Vickrey’s Principles of Efficient Congestion Pricing. Columbia University, June 1992. Introduction. [www.vtpi.org/vickrey.htm](http://www.vtpi.org/vickrey.htm)



### 3. *Payment options*

#### 3.1 *Payment of the time-based URP*

Budapest pass for one or multiple days.

- The Budapest pass would fit into the national time-based road charge system for cars.
- The price of the pass would have to be reevaluated every year, and it would have to incentivize frequent drivers in Budapest more and more to choose the kilometer-based payment option.

#### 3.2 *Payment of the pollution and usage-based URP*

The system would get data from either an onboard GPS device in the vehicle, or an application installed on the driver's smartphone. The system records the route the vehicle takes along with the date and time. The payable amount can be calculated either in the vehicle by the GPS (or Galileo or GLONASS) device, or the smartphone application, or in the center of the system.

### 4. *Enforcement*

The Budapest pass would be tied to license plates.

The combination of the above components offers several efficient and cheap methods of enforcement. Clean Air Action Group recommends the quick and costly punishment of those who were caught without a pass (similarly to the everyday practice of the Budapest public transport company). In other words, the aim is not to discover every cheater, but to have a discouragingly high penalty for those who are caught, and a relatively high probability of getting caught. The penalty has to be collected quickly and efficiently.

### 5. *Reduced rates*

There should be no reduced rates. If there are certain groups which the municipality would like to treat favourably, then it can create a separate fund for them. By separating the subsidies from the enforcement system, the risk of corruption can be reduced. The national government can also designate beneficiaries, whom it compensates for the payment they make in the URP system in Budapest.

### 6. *Helpful projects and measures which can be implemented before introducing urban road pricing*

The following measures would ease the introduction of urban road pricing, but are not necessary prerequisites of it.

- P+R capacity needs to be expanded, but this can mostly be achieved by collaborating with major shopping malls. The building of new P+R parking lots must not come at the expense of any city parks or trees. Every parking space has to have a tree or roof with a solar panel above it within three years.
- Free shuttles must be implemented between the P+Rs and the nearest public transport nodes in the outer districts of Budapest. The shuttles' frequency needs to be dependent on the time of day. They must be free of charge, because the



people using them would switch to public transport anyway. (This way enforcement would be necessary which saves money.) If there is available public transport nearby (10 minutes or less on foot) then there is no need for additional public transport, but the already existing options need to be able to satisfy the additional demand. In general, the public transport connections between the outer districts and Hungária boulevard need to be improved.

- In the suburbs, the connections between trains and bus lines need to be improved as well. In Budapest, carpooling meeting points should be established in order to incentivize this mode of transport. Car sharing parking lots also need to be established to promote this mode of transport.
- The BUBI bike sharing system has to be expanded to reach the Hungária boulevard.
- The parking system must be modernized. The introduction of the URP necessitates the reevaluation of the parking system, including the prices, duration, and allowed areas. The parking system should be integrated into the URP system, because this allows for an easier and cheaper way of collecting fees and monitoring.

## **Comparison of the zone-based system and the kilometer-based system**

The Budapest Municipality has proposed to implement a zone-based congestion charge (CC). Clean Air Action Group has been proposing the kilometer-based urban road pricing (URP) system. The main advantages of the latter are the following:

- It will cover the whole area of Budapest.
- It could be very easily optimised at any time: the level of the pricing could be flexibly modified in time and space.
- As all movements will be priced, there will be less incentive to drive more than necessary.
- The revenues of the Municipality will substantially surpass the expenses.
- The system could be used also for many other purposes (e.g. traffic analyses and forecasting, providing real-time information on road conditions).

In the table on the following page we summarize the main characteristics of the two systems.



*Comparison of the main characteristics of  
the congestion charge (CC) proposed by the Budapest Municipality  
and the urban road pricing (URP) system proposed by Clean Air Action Group*

	<b>CC (Municipality)</b>	<b>URP (CAAG)</b>
<b>Area</b>	Central Budapest	Whole of Budapest
<b>Price variability</b>	In time	In time and space
<b>Point of pricing</b>	Border of the zone	During all movements
<b>Environmental price differentiation</b>	One-fold, very limited correlation with the real environmental pollution of the vehicle	Continuous, strong correlation with the real environmental pollution of the vehicle
<b>Congestion pricing</b>	Very limited	Perfectly adaptable
<b>Parking control (paid parking)</b>	Cannot be used	Can be used
<b>Use for other purposes</b>	Very limited	Widely usable (traffic analysis, real time information on road conditions etc.)
<b>Revenues</b>	Lower than expenses	Substantially higher than expenses
<b>Motor vehicle traffic</b>	Does not decrease significantly (those who are inside the zone can drive as much as they wish without further payment)	Might decrease significantly
<b>Air quality</b>	Does not improve (only some relocation occurs)	Improves
<b>Congestion</b>	Overall does not decrease, it is only relocated to the areas outside the zone	Decreases
<b>Public acceptance</b>	Very low. The residents and local governments outside the planned zone are already fiercely protesting against the plan	Might be slightly positive because it is socially, economically and environmentally just
<b>Revenues of the Municipality</b>	The revenues are expected to be lower than the expenses for the investment and operation of the system	The revenues are expected to be significantly higher than the expenses for the investment and operation of the system

## Recommendations for communication

Thanks to urban road pricing, car traffic in Budapest will decrease. A lot of people will switch to public transport, bicycle, carpooling, carsharing, or just start to walk more. They will try to travel more efficiently<sup>8</sup>. In some cases, they will cease to be car owners altogether. This has a lot of advantages. We collected 17 reasons why urban road pricing can be good for Budapest, and we believe that by communicating and discussing these with the inhabitants of the city, most of them can be convinced to be a supporter of urban road pricing.

### *1. The revenues will be used for public purposes*

The revenues will be used for improving public transport, etc. This cannot occur otherwise, because public acceptance of URP is highly dependent on how the revenues are to be used (and how this is communicated to the public, even in advance).

### *2. We will save money*

As Clean Air Action Group previously pointed out<sup>9</sup>, if one drives less than 15 thousand kilometers per year by his or her car, then owning a private car in Budapest is uneconomic. In this case it is generally cheaper to use a mix of public transport, cycling, taxi and rental car (carsharing).

### *3. Taxes can be reduced*

The revenue gained from the URP can be used to reduce certain taxes, or to increase the quality of service that the municipality or the government provides. The best case scenario is that both of them can be achieved. One can calculate with indirect effects as well, including reduced healthcare costs, lower number of accidents, etc.

### *4. More money will remain in the country*

Hungary spends thousands of billions of forints every year to import crude oil and vehicles. This import is mostly required to satisfy the demand of road traffic. If vehicle use is reduced, the country can save a lot of money, which can be spent inside the borders.

### *5. The revenues of local businesses can grow*

Thanks to the URP, traffic calming can be implemented on several roads where many local businesses can be found (like Kossuth Lajos street or Rákóczi road in the city centre). There are countless international examples of how local businesses start to flourish in such places after traffic calming. People will also have more money to spend in these businesses for the reasons we explained above.

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<sup>8</sup> Seattle study shows positive impact of congestion charging road toll, [http://fleetowner.com/management/seattle\\_study\\_shows\\_variable\\_tolls\\_impact\\_0425](http://fleetowner.com/management/seattle_study_shows_variable_tolls_impact_0425)

<sup>9</sup> A személygépkocsi-használat valós költségei Budapesten (*The real costs of car use in Budapest*), [http://www.levego.hu/sites/default/files/sajtohatter\\_kmop\\_autohasznalat.doc](http://www.levego.hu/sites/default/files/sajtohatter_kmop_autohasznalat.doc)



### ***6. Travel time can decrease***

Traffic jams will mostly disappear, and the remaining ones will be much more bearable. Those who pay the congestion charge can travel unobstructed. The lives of people who cannot work without a car will be much easier. Public transport will be faster as well, and transportation companies will have huge savings.

### ***7. Urban road pricing will create a fair way of sharing burdens***

In a successfully implemented urban road pricing system, people who use their car on less busy roads will have to pay less. This is “the user pays” principle in practice.

### ***8. The use of existing infrastructure will be cheaper and more efficient***

It will be less advantageous for people to move out of the city, and more and more people will start to move back from the suburbs. This means that the infrastructure of Budapest will be used by more people, which decreases the per capita costs of their operation and maintainance.

Several studies have shown that in heavily populated neighborhoods, the building and maintenance of infrastructure is much cheaper than in less populated areas. This will also create savings.

### ***9. There will be more free parking spaces***

Each day 350 thousand cars enter Budapest and a 100 thousand cars go from the outer districts to the city center. This creates a heavy burden on the parking system, a big part of the traffic consists of cars just looking for free parking lots. With the introduction of the URP, it will be easier to find a place to park.

### ***10. The popularity of carpooling will increase***

More and more people will come together to go to work, or take their children to school in the same car.

### ***11. Car sharing will become popular***

“Nobody buys a cow just to have a glass of milk every morning.” Most cars are not used for more than 95% of the time. For those who don’t need to use their car every day, it is better to use a car sharing service. (Which is a convenient and easy-to-use way of renting a car.) This form of car use is fairly popular in many cities of Europe, but it has not spread its wings in Budapest yet.

### ***12. Air quality will improve***

More than 14 thousand people die prematurely in Hungary every year because of air pollution.<sup>10</sup> In Budapest, the main source of air pollution is road traffic. Air quality will improve not just because there will be less vehicles thanks to URP, but also because the ones that remain will drive more efficiently, without major traffic jams.

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<sup>10</sup> Air quality in Europe – 2016 report, [http://www.eea.europa.eu/publications/air-quality-in-europe-2016/at\\_download/file](http://www.eea.europa.eu/publications/air-quality-in-europe-2016/at_download/file)



### ***13. More space for parks, trees***

Less cars mean more space for green areas, for plants, which improves city climate as well.

### ***14. More physical exercise***

According to WHO, the second biggest risk to the health of people in Europe is the lack of physical exercise (number one is smoking). URP encourages a healthier lifestyle, with more walking and cycling.

### ***15. Human relations will improve***

Studies have shown that people who live in streets with fewer cars have more and better social relations than those who live near busy roads. The quality and quantity of social interconnections has an important influence on people's health and well-being.

### ***16. We protect the global climate***

Emission from vehicles contribute heavily to global climate change. URP will reduce fuel use, air pollution, and with it, the threat of a climate catastrophe.

### ***17. "The user pays" principle will be better implemented***

It is not easy to communicate, but it would be advantageous to let people know that, contrary to popular belief, car use creates huge losses for the government.<sup>11</sup>

## **Intelligent traffic information service**

Every information gathering system which is capable of determining a vehicle's location in real time can also be used to spread this information as well. Intelligent transport systems (ITS) like this already exist all around the world. The most simple ones aggregate the data from cell informations to determine the amount of traffic on highways. These results can be relayed to drivers either on a smartphone or by radio, so they know what to expect several kilometers ahead.

The traffic data from vehicles paying the URP fee can also be collected, and this can help us estimate the traffic in Budapest. This can be displayed on a map available on the internet, just like in London<sup>12</sup>. If we add the pollution characteristics of the vehicles as well, and combine them with the data from air pollution measuring stations, then we can create a much better air pollution map, which can also be used to warn us if pollution levels are too high.

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<sup>11</sup> See: The social balance of road and rail transport in Hungary,  
[https://www.levego.hu/sites/default/files/social\\_balance\\_transport\\_hungary\\_20110131.pdf](https://www.levego.hu/sites/default/files/social_balance_transport_hungary_20110131.pdf)

<sup>12</sup> <https://tfl.gov.uk/traffic/status/>

## The expected social benefit of the proposed URP

Below we make a rough estimate of the benefits of the URP proposed by us, expressed in monetary terms.

According to European Commission data, the loss caused by congestion on EU level equals to about 1 % of the EU's GDP.<sup>13</sup> As this is an average value, the loss in cities certainly greater. This is even more so in Budapest which is one of the most congested cities in the world.<sup>14</sup> Taking a very conservative estimate, we assume that the economic loss caused by congestion in Budapest equals to 1 % of its GDP. Budapest produces 40 % of Hungary's GDP. In 2015, Hungary's GDP was HUF 34,000 billion, 40 % of which is HUF 13,600 billion, and 1 % of the latter is HUF 136 billion.

According to WHO data<sup>15</sup>, the annual health cost of air pollution in Hungary equals to 19 % of the GDP, i.e. HUF 6500. We assume that this cost in Budapest is proportional to the number of inhabitants, and thus its annual cost due to air pollution is HUF 1300. I we assume that as a result of urban road pricing the damages due to air pollution decrease by 10 %, then the loss avoided is HUF 130 billion.

There are other economic benefits of urban road pricing (see the chapter *Recommendations for communication*), which we did not monetize. However, even from the above numbers it is evident that the implementation of urban road pricing in Budapest would result in a total economic benefit of at least HUF 300 billion, i.e. nearly 1 % of the Hungarian GDP.

Budapest, September 2015

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<sup>13</sup> Urban Mobility. European Commission,

[https://ec.europa.eu/transport/themes/urban/urban\\_mobility\\_en](https://ec.europa.eu/transport/themes/urban/urban_mobility_en)

<sup>14</sup> TOMTOM TRAFFIC INDEX (2016): Measuring congestion worldwide,

[https://www.tomtom.com/en\\_hu/trafficindex/](https://www.tomtom.com/en_hu/trafficindex/)

Worst Corridors: INRIX 2015 Traffic Scorecard, <http://inrix.com/worst-corridors/>

<sup>15</sup> Economic cost of deaths from air pollution (outdoor and indoor) per country, as a percentage of GDP, WHO European Region, 2010,

[http://www.euro.who.int/\\_data/assets/pdf\\_file/0008/276956/PR\\_Economics-Annex\\_en.pdf?ua=1](http://www.euro.who.int/_data/assets/pdf_file/0008/276956/PR_Economics-Annex_en.pdf?ua=1)

Press release, 28.04.2015: Air pollution costs European economies US\$ 1.6 trillion a year in diseases and deaths, new WHO study says, [http://www.euro.who.int/en/media-centre/sections/press-releases/2015/04/air-pollution-costs-european-economies-us\\$-1.6-trillion-a-year-in-diseases-and-deaths,-new-who-study-says](http://www.euro.who.int/en/media-centre/sections/press-releases/2015/04/air-pollution-costs-european-economies-us$-1.6-trillion-a-year-in-diseases-and-deaths,-new-who-study-says)