Italian City Ranking
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Final Report | May 2018

Living. Moving. Breathing

Ranking of 4 major Italian cities on
Sustainable Urban Mobility

This report is the result of a study commissioned by Greenpeace UK. The sole responsibility for the report's contents and data lies with the authors.

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Project duration: October 2017–May 2018

Acknowledgements:

The authors would like to express thanks to the colleagues at Greenpeace Italy and to the colleague in the Wuppertal Institute for proofreading the report and ensuring that we have stated the facts based on the information available.

Contents

1 Sustainable Urban Mobility in Europe

Despite being known for their progressive approaches and standards in sustainability, European cities have an increasing trend in motorisation. Figure 1-1 shows the new registrations of passenger cars in the European Union as indicated by the European Automobile Manufacturers' Association (ACEA). Though the share of electric vehicles has moderately increased between 2016 and 2017, the car market has equally increased. In 2017, 15.1 million new passenger cars (all vehicles) were registered in the EU.

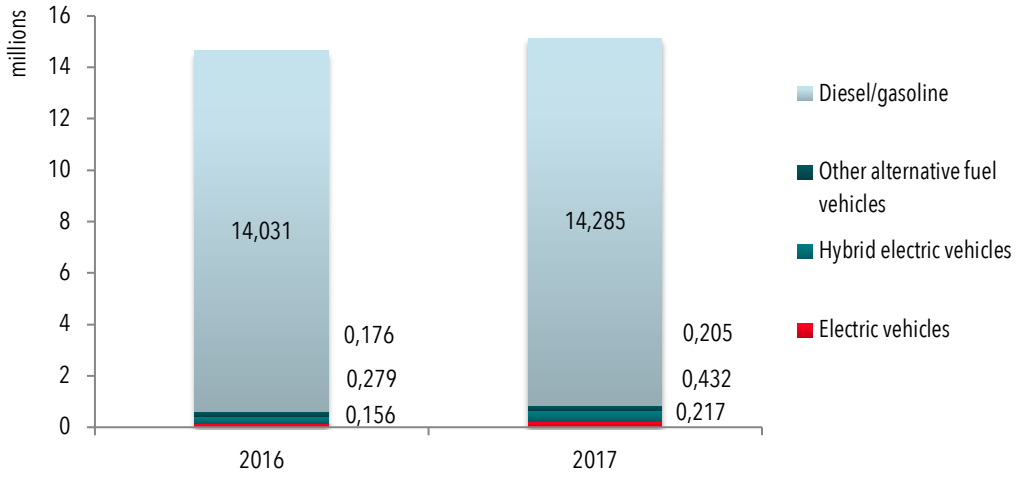

Fig. 1-1 Registrations of new passenger cars in the EU in 2016 and 2017. Source: Website ACEA

European cities, some burdened by deteriorating air quality and some with a green minded leadership, have embarked upon practices to create people friendly urban mobility i.e. promoting more walking, cycling and public transport. The European Union has enabled and encouraged planning, developing and implementation of sustainable urban mobility through its Sustainable Urban Mobility Plan (SUMP) initiative. The strategies in a SUMP include policies and projects to push motor vehicle drivers away from using personal vehicles in the city centres and making public transport and active transport more attractive.

Cities have realised that increasing dependence on personal motorisation will result in worsening air quality as a large share of motorised vehicles still run on (imported) fossil fuels. Cities acknowledge that an increase in motorisation also leads to lower quality of life due to loss of urban space to automobiles and economic losses due to congestion.

This study provides cities with a yardstick to measure their performance and benchmark their progress against some of their counterparts in the region. This study provides a verified basis for cities to further promote sustainable mobility and enable them to identify potential areas that need further development.

The study therefore aims to enable local authorities and other stakeholders to understand their current urban mobility situation through a point-based results framework.

Table 1-1 provides an overview of the cities, which are ranked in this study.

Tab. 1-1 European city ranking overview. Source: Own compilation

City	Country	Population	City Area (km²)	Urban Density (p/km²)
Milan	Italy	1,368,590.00	181.76	7,529.65
Palermo	Italy	676,118.00	158.90	4,254.99
Rome	Italy	2,877,215.00	1,285.00	2,239.08
Turin	Italy	886,837.00	130.17	6,812.91

The report's underlying study had the following objectives:

- Develop, review and revise sound indicators for measuring urban mobility performance in European cities;
- Implement the indicators to measure the urban mobility in pre-selected Italian cities;
- Compare the project cities and rank them;
- Highlight good practices and policies that encourage urban mobility.

2 Methodology

This study focusses on measuring and ranking the urban mobility performance of 4 Italian cities. The ranking of the sustainable urban mobility performance has been developed from a number of categories, namely the cities' overall modal shares, characteristics of the public transport system, active mobility, road safety, air quality and mobility management. Under each of the named categories, a set of indicators was selected and corresponding data was collected. Based on this, an ***overall rank*** and ***categorical ranks*** were allotted.

In measuring the performance of urban mobility, 21 indicators were selected and then divided further into in 5 categories. Each category has a maximum score of 20 points such that the total score is equal to 100 points.

The categories are mentioned below, the number of indicators in each category are mentioned in parenthesis:

1) Public Transportation (4 indicators)
2) Road Safety (4 indicators)
3) Air Quality (3 indicators)
4) Mobility Management (7 indicators)
5) Active Mobility (3 indicators)

The indicators in each category have an individual score. Table 2-1 gives an overview of the indicators under each category. The sum of the scores of all the indicators, in a category, gave the categorical score, and the sum of all categorical scores gave the overall score. The overall score was then used for the overall ranking and the categorical scores were used for categorical ranking.

It is important to note that this study compares the cities' sustainable mobility performance against each other. That is, a city ranking low in this sample **does not necessarily mean that its urban transport performs badly at a global scale and that decision makers are not ambitious enough**. For instance, all of the cities have well performing public transport systems.

However, the real objective should be to develop sustainable transport and mobility, which demands the replacement of the fossil-fuelled internal combustion engine. Cities ranking high deliver better on their sustainable mobility objectives and are making evident strides to move away from individual motorised mobility.

Note: This methodology is originally developed by Wuppertal Institute to score urban mobility performance in 13 European cities for Greenpeace. The same methodology is used to analyse the Italian cities.

Tab. 2-1 City ranking indicators. Source: own methodology

Ranking category	Indicators used	Unit
Public transport	% of public transport trips	Public transport modal share in %
	Cost of a single journey on Public Transport	Euros
	Annual trips per person	Trips per capita
	Station density	Stations per km^2
Road safety	Fatalities for bicycles	Fatalities/100,000 inhabitants
	Fatalities for pedestrians	Fatalities/100,000 inhabitants
	Crashes for bicycles	Crashes/ 1m bicycle trips
	Crashes for pedestrians	Crashes/ 1m walking trips
Air quality concentrations (annual average)	NO_2 / Nitrogen dioxide	$\mu g/m^3$
	PM_{10} / Particulate Matter 10 µm	$\mu g/m^3$
	$PM_{2.5}$ / Particulate Matter 2.5 µm	$\mu g/m^3$
Mobility management	Congestion charge	Yes/no
	Cost of 1hr of parking	Euros
	Low emission zones	Yes/No
	Public Transport apps	Ticketing / Scheduling / Both
	Congestion Index	% of travel time lost due to congestion
	Shared cars per km^2	Cars / km^2 of service area
	Shared bicycles per km^2	Bicycles / km^2 of service area
Active Mobility	% of walking in the city	Walking trips modal share in %
	% of cycling in the city	Cycling trips modal share in %
	Urban green cover	% of green spaces in the city

Data availability

The data, on which this analysis is based, was obtained from official sources available either in the public domain or through direct communication with city officials working in relevant departments. A ranking relying on different external sources comes with the caveat that there is a risk that the original sources have collected this data with differences in methodology or

scientific rigour. Even though sufficient care has been taken to ensure comparability and data consistency, it cannot absolutely be ruled out that this might have an effect on the ranking.

An important caveat with respect to the modal split must be pointed out: cities use different methods to identify their modal split and the respective method can influence the final result. Most importantly, the modal share can either be obtained from a household survey, which delivers the inhabitants' mode share; or it can be obtained from traffic counts, a method which considers all travellers and thus also includes mobile persons, other than the inhabitants, such as tourists.

In this study, no adjustment methods were applied for any of the given modal split data (unless explicitly stated), irrespective of the underlying data collection method. This due to the fact that any adjustment would need considering additional disaggregated data for analysis, which was not available. However, the modal split data was deemed comparable, as it is a common approach to rely on public authorities' studies in any comparison of urban mode shares. In all cases, the modal split includes any trip within the city´s boundaries and any regional (short distance) trip with the origin or destination within the respective city.

When data was not available for a certain variable the resulting score for that indicator for that city was the lowest on the scale. For example, Palermo did not have air quality data for $PM_{2.5}$ concentrations in 2016. Hence, Palermo received the lowest score for $PM_{2.5}$ concentrations.

3 Overall ranking for Italian cities

In the overall scoring Milan ranked 1st followed by Turin 2nd, Rome came 3rd and Palermo finished in the 4th place. The categorical scores can be seen in Table 3-1

The categories are discussed further in the next chapters with potential explanations for the outcome. The overall result denotes once again that providing sustainable mobility is not limited to just provision of public transport or increasing walking or cycling facilities but also introducing policies and practices that directly target reducing the dependence on personal automobiles and promote cleaner air and provide safer streets. Cities with higher integration of policies and practices to collectively promote sustainable mobility earned a higher score.

Table 3-1 European city ranking overview **Source: Wuppertal Institute Analysis**

City	Overall Rank	Public transport	Road safety	Air quality	Mobility management	Active Mobility
Milan	1	1	3	2	1	2
Turin	2	2	4	4	2	4
Rome	3	3	2	1	3	3
Palermo	4	4	1	2	3	1

Table 3-2 European city ranking scores **Source: Wuppertal Institute Analysis**

City	Overall Score	Public transport Score	Road safety Score	Air quality Score	Mobility management Score	Active Mobility Score
Milan	46.25	11.50	13.00	8.00	10.25	3.50
Turin	40.75	10.75	11.00	7.50	8.50	3.00
Rome	39.00	6.75	14.00	10.00	5.00	3.25
Palermo	38.75	5.00	17.00	8.00	5.00	3.75

4 Modal Share

Modal share (or modal split) depicts the usage of a particular transport mode for trips in a city represented as % share of trips. Cities with a high share of sustainable modes (walking, cycling and public transport) have a higher possibility to increase the share of these modes, if the right policies and practices are put in place.

The most often reported categories are public transport (includes bus, metro rail, trams, waterways), active mobility (walking and cycling), and personal automobiles (cars and motorised two wheelers). Some cities also document taxis and shared cars as a separate category. In this ranking, wherever taxi data is available it is included in the public transport share.

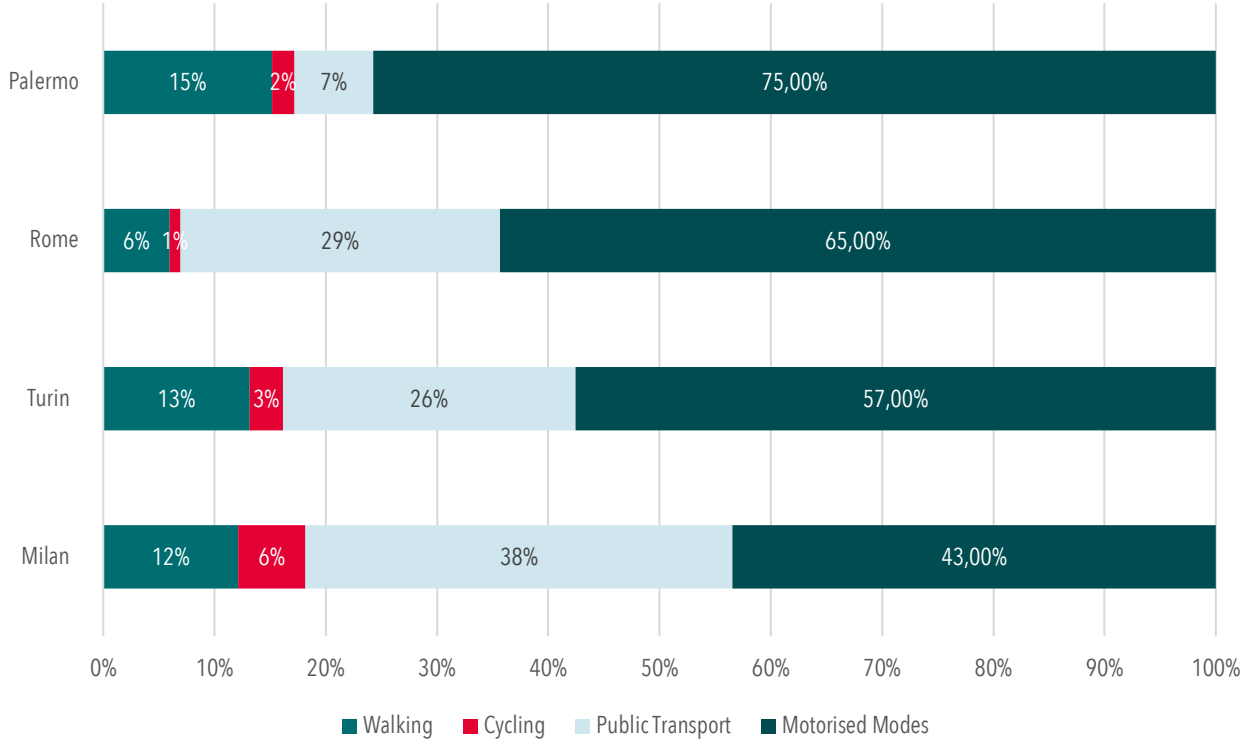

Fig. 4-1 Transport modal shares in the 4 Italian cities Source: See Bibliography

In terms of the share of sustainable mobility i.e. walking, cycling and public transport, Milan has the highest share (56%) of sustainable mobility, closely followed by Turin (42%), and Palermo has the highest share of motorised personal vehicle use (75%) and the least public transport use (7%).

In terms of urban density, Rome is the least dense city in our analysis with only 2,239 inhabitants/sq. km and Milan is the highest with over 7,500 inhabitants/sq. km. It has to be noted that Rome is 7 times larger than Milan in terms of size and more than twice the size in population.

5 Public Transport

Public transportation, irrespective of whether it is rail or road based, is the backbone for any successful urban transport system. Public transport has the ability to move large numbers of people when compared to personal automobiles and thus uses the available road space more effectively, in addition to per capita transport emissions reduction. A higher share of public transport in a city tips the scales towards sustainable mobility. When coupled with a higher share of active mobility i.e. walking and cycling and proper urban planning, the need for the usage of personal automobiles is reduced.

Literature and experience shows that attracting people to use public transport and maintaining the existing ridership of public transport depend on various factors such as the fare, coverage, frequency, comfort and reliability (Currie & Wallis 2008; Abrate et al. 2009; Loader & Stanley 2009; Dargay & Liu 2010; Mantero et al. 2013; Fearnley 2013; Walker 2012).

In the analysis we found that Milan, Turin and Rome are comparable in terms of public transport use and infrastructure. In Palermo, public transport does not seem to have an appeal. We infer this from the 7% public transport use in Palermo, the public transport share in each of the remaining 3 cities is more than 25%.

Table 5-1 Public transport ranking. **Source: Wuppertal Institute Analysis**

Rank	City	Public Transport modal share (%)	Public transport fare	Annual trips per capita (trips/person/year)	Station density (Stations per km^2)
1	Milan	38%	1.50 €	469	23.44[1]
2	Turin	26%	1.50 €	210	29.09
3	Rome	29%	1.50 €	328	5.53
4	Palermo	7%	1.40 €	42	10.48

To analyse further, we compared the cost of the public transport tickets among the cities. All the 4 cities have a similar pricing structure. Rome, Milan and Turin offering a single journey ticket for € 1.50 and Palermo offering the ticket for € 1.40. All the tickets offer a time window of 90 minutes to complete the trip and not counting the transfers.

We believe that the public transport in Palermo is heavily subsidised as the number of people using the public transport in Palermo is at least 5 times lower than the remaining 3 cities.

The public transport use in this study was measured by the annual trips per person in each city. Milan has the highest annual trips per person at 469 trips. This means, that every inhabitant of Milan uses the public transport 469 times in a year or at least once a day. Rome has the second highest annual trips per person at 328 trips, Turin scored 3rd with 210 annual trips per person.

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[1] The station density is calculated from the kilometres of operation for all public transport modes except for the metro (4 lines and 113 stations). The average distance between the stops is considered to be 1.5 kilometres. Data obtained from https://www.atm.it/en/IlGruppo/ChiSiamo/Pages/Numeri.aspx

Palermo scored 4th with 42 annual trips per person, it means each inhabitant of Palermo uses the public transport almost 4 times a month.

The high use of personal automobiles (both cars and motorcycles) denotes that the usage of personal automobile is much more attractive due to the underlying conditions and policies supporting personal automobiles. Effort is required to make personal automobile use difficult, many cities have implemented measure that make the motorist pay the real cost of travel, through congestion pricing and higher parking fees. The revenue is used to improve public transport.

In addition, we have also compared the station density of the public transport. Rome has the least amount of station density, the reason being that Rome is the largest of the 4 cities in terms of area. Rome is almost 7 times the size of Milan and 10 times the size of Palermo. In absolute numbers Rome has the highest number of public transport stations, yet in terms of station density, Rome has the fewest stations per square kilometre due to its size. It also shows that the public transport is not extensive.

As in many other cities, the public transport in the 4 Italian cities analysed heavily relies on a bus-based system. In all the 4 cities majority of the public transport network is formed by bus routes. Metro and tram systems do complement but the spread of the network is achieved by a bus network.

5.1 Recommendations on Public Transport

From the analysis we see that all the 4 cities have serious shortcomings in public transport. While Milan, Turin, Rome and Palermo have to increase public transport shares, Palermo needs to put in extra efforts to make public transport accessible, attractive and comfortable.

Based on examples from Zurich, Vienna and Paris, our suggestion is make public transport attractive by developing a network. All the cities we mentioned as examples have developed a dense public transport network with integration between buses, trams and metro lines. The integration is both in the form of physical infrastructure i.e. easy to transfer stations, and integration in fare structure i.e. one ticket for one trip (irrespective of transfers).

All the 4 Italian cities already provide a single fare with a 90-minute time window to complete a trip. The fares are also very competitive when compared to the other European public transport systems. A dire need is for an integrated and expansive public transport network.

Whilst writing these recommendations, we are aware that plans are underway in Rome and Milan to expand and improvise the public transport and we hope our recommendation here will support the efforts.

6 Road Safety

Though there has been a steep decline in most of the developed world in fatalities compared to a decade or two, there are still high number of people injured or killed in road accidents. In cities, these persons are mainly pedestrians or cyclists. Road safety is a key determinant for the use of active mobility.

People in a city perceive walking and cycling safe, if there are less crashes/fatalities among cyclists and pedestrians. High crashes and fatalities, coupled with lack of safe infrastructure, strengthens the negative perception of walking and cycling and leads to a vicious cycle, resulting in low walking and cycling volumes.

In our analysis, we found that Palermo ranked the highest for road safety. In terms of fatalities and crashes to cyclists and pedestrians Palermo has the least among the cities analysed. Palermo also has the least number of pedestrian crashes for every 1million walking trips. Palermo also has the highest share of walking among the 4 cities analysed.

Rome came second in the road safety ranking among the 4 cities analysed. Though Rome has 6% of walking share the absolute number of trips are almost equal to that of Milan, which ranked 3rd for road safety.

All the 4 cities need to increase effort to create safe infrastructure for cycling. Milan has the highest cycling crashes of the cities analysed (22.53 crashes for every 1m trips). Milan also has the highest share of walking and cycling among the cities analysed.

Table 6-1 Road safety ranking **Source: Wuppertal Institute Analysis**

Rank	City	Share of walking (%)	Pedestrian fatalities / 100,000 inhabitants	Pedestrian crashes / 1m walking trips	Share of Cycling (%)	Cycling fatalities / 100,000 inhabitants[2]	Cycling Crashes / 1m cycling trips
1	Palermo	15%	0.74	3.67	2%	0.65	10.44
2	Rome	6%	1.81	18.44	1%	0.54	15.32
3	Milan	12%	1.83	14.98	6%	0.45	22.53
4	Turin	13%	2.26	8.57	3%	1.48	17.26

[2] Calculated from the mortality rates for 2016 as mentioned in https://www.istat.it/it/files//2017/07/Road-accident-press-release.pdf

6.1 Recommendations for Road Safety

Promoting active mobility (i.e. walking and cycling) is crucial for the development of sustainable urban transport. Walking and cycling, together with public transport form the 3 essential pillars of sustainable transport. From our analysis of the best cases for walking and cycling across Europe, we found that cities that have successfully increased their walking and cycling shares have dedicated space allocated for walking and cycling.

In Copenhagen and Amsterdam, bicycles and pedestrians are physically segregated from fast moving motor vehicles. City streets are design with pedestrians and cyclists in mind. This can be seen in many Dutch cities where car users need to travel longer distances to reach their destinations than bicycle users.

Copenhagen is building over 10 kms of dedicated bicycle superhighways, in addition to the already existing 400 km of bicycle lanes. These superhighways allow regular bicyclists to travel into the city with minimum of no interference with motorised traffic.

Further, the traffic speed plays a crucial role in saving lives of pedestrians and cyclists. Researches have shown that when motor vehicle speed is over 30 kmph there is a high risk of death to a cyclist or a pedestrian upon collision with the motor vehicle. Several cities that encourage cycling and walking have reduced the motor vehicle speeds to 30 kmph in busy areas in the city and in residential areas the speed in even lower.

7 Air Quality

Air pollution is the evident and first-hand experience of the effects of the increased combustion of fossil-fuels which are predominantly used in motorised vehicles. As a result, people walking and cycling inhale high doses of pollutants, while motorists also have a high exposure (Cepeda et al., 2017).

To score cities on air quality, we compared the 2016 data on the annual mean concentrations of 3 major pollutants, namely Nitrogen dioxide (NO_2), Particulate Matter with 10 µm (PM_{10}) and Particulate Matter with 2.5 µm ($PM_{2.5}$).

These 3 pollutants cause the greatest harm to human health and to the environment. The EU standard for NO_2 and PM_{10} is 40 µg/m³ and for $PM_{2.5}$ it is 25 µg/m³. The WHO guideline for the pollutants is more stringent than the EU limits. The WHO guideline for NO_2 is 40 µg/m³, for PM_{10} it is 20 µg/m³ and for $PM_{2.5}$ it is 10 µg/m³.

The comparison of the 4 cities in general shows that all the 4 cities do not have an impressive result for air quality. All the cities have high NO_2 concentrations and the PM_{10} and $PM_{2.5}$ concentrations are also high when compared to the WHO guidelines. All the cities in our scoring have exceeded the EU limit for NO_2 concentrations (Table 7-1).

Table 7-1 Air Quality ranking based on 2016 data. Source: Wuppertal Institute Analysis

Rank	City	NO_2 Annual Mean	PM_{10} Annual Mean	$PM_{2.5}$ Annual Mean
1	Rome	49.00	28.00	17.00
2	Milan	49.00	36.00	27.00
2	Palermo	41.00	30.00	0.00*
4	Turin	49.00	36.00	30.00

** No data available*

The high concentration is of grave public health concern, and need to be controlled by reducing the number of motor-vehicles, as they are the primary source for NO_2 emission. Excessive dependence on diesel fuel is also a contributor of particulate matter.

Further, all the cities analysed exceed the WHO guideline for NO_2, PM_{10} and $PM_{2.5}$. The WHO guidelines are stricter than the EU limits. The WHO also emphasises the public health risks of increased particulate matter concentrations. We would like to underline the recommendation to reduce the particulate matter emissions through strong regulation on internal combustion engines and promoting more public transport and active mobility. Prolonged exposure to any or all the 3 pollutants we compared results in respiratory illnesses, prenatal complication and increases the risk of congenital heart diseases.

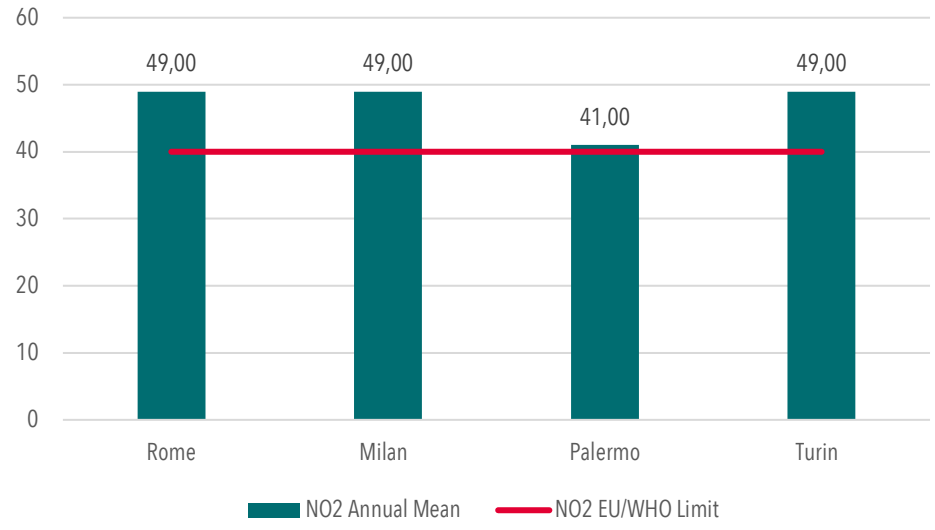

Fig 7-1 NO_2 levels in the cities (µg/m³). Source: Wuppertal Institute Analysis

Palermo has lower NO_2 concentrations compared to the other three cities, yet the value of Palermo exceeds the EU limit of 40 µg/m³

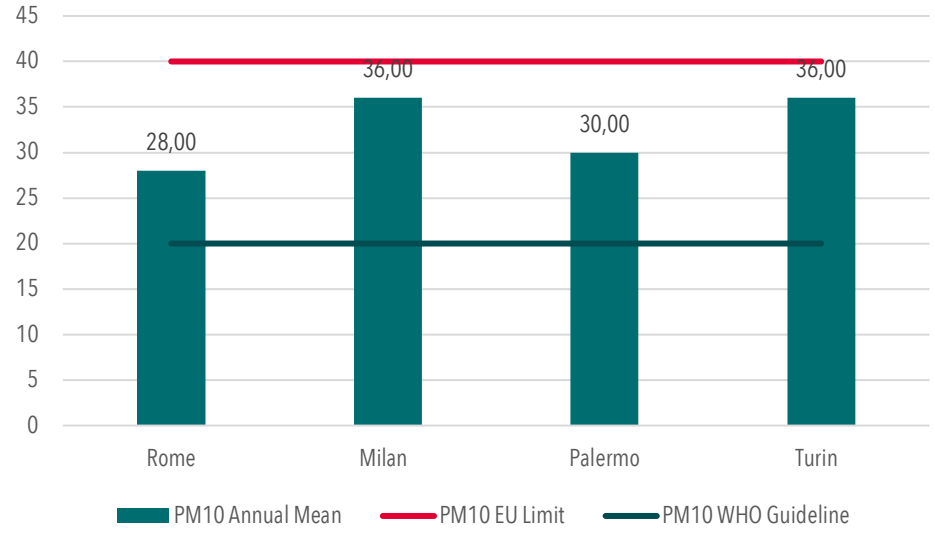

Figure 7-2 PM_{10} levels in the cities (µg/m³). Source: Wuppertal Institute Analysis

Though all the cities are within the EU limit for PM_{10} concentrations they all exceed the more stringent WHO guideline. The high particulate matter poses a serious public health risk for inhabitants in the city.

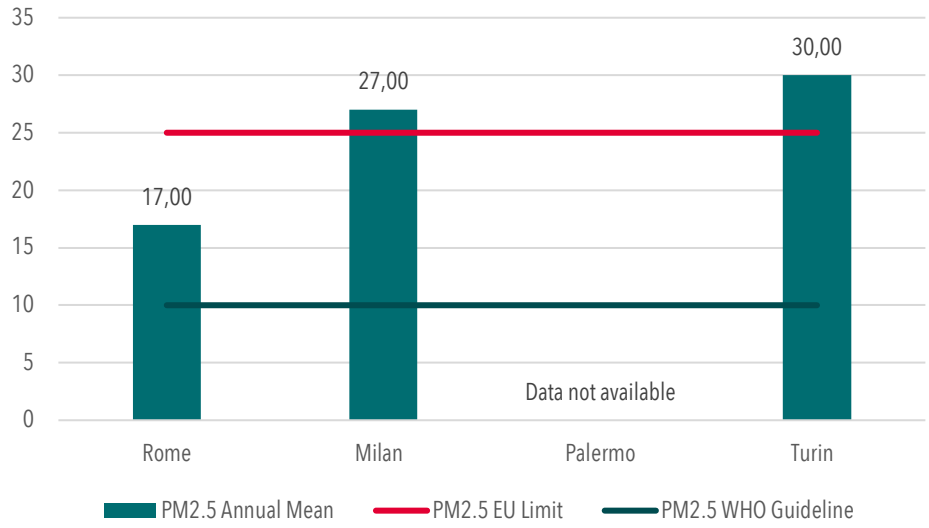

Figure 7-3 $PM_{2.5}$ levels in the cities (µg/m³). Source: Wuppertal Institute Analysis

With regards to $PM_{2.5}$ concentrations, Rome has the least $PM_{2.5}$ concentrations and Turin the highest. Palermo did not report any $PM_{2.5}$ concentration for 2016 and hence is shown as zero here.

7.1 Recommendations on Air Quality:

All the cities in the study have high concentrations of NO_2, PM_{10} and $PM_{2.5}$. In some cases the cities exceed both the EU limit and the WHO guideline or in some cases they exceed only the WHO guideline. A continued trend of increase in harmful concentrations will cause serious public health problems and lead to a great social and economic loss for the cities.

Cities need to take a bold stance against the polluting vehicles and implement stringent regulations that limit these polluting vehicles.

Bold city leaders, such as city mayors, need to introduce stringent regulations at the city level, with public health as a primary concern. Such an implementation could favour other automobile restraining policies.

All the cities in the analysis, have implemented a restricted zone in the city centre. The effort could be increased to make such a zone permanent (24 hours) and also have a higher charge for polluting motor vehicles entering the zone.

Encouraging walking and cycling and developing an integrated public transport system will enable a shift from motorised modes, if the newly implemented alternatives are attractive and comfortable.

8 Mobility Management

Mobility Management is also called Transport Demand Management or Travel Demand Management. It is a practice in which the demand for travel through personal automobiles is controlled through various physical restraints, policy measures and financial instruments.

Many of the Italian cities already have a *Zona a Traffico Limitato* (ZTL) in place, the ZTL ensures that vehicles that have high emissions do not enter the city centre. In some cities ZTLs do not operate over the weekends and in the nights. Furthermore, parking cost during the weekends around the ZTLs is also lower than on weekdays.

In our ranking and analysis, we have included both restrictions for car usage and incentives to use alternatives to the car:

- the cost for one hour of parking;
- innovative policy measures, namely whether a city has implemented a congestion charge and a low emission zone;
- incentives to facilitate the usage of public transport, namely whether smartphone apps for scheduling and ticketing are available;
- the TomTom congestion index, indicating an average increase in travel time for cars due to congestion; and
- shared cars and bicycles per km² of the service area.

From the analysis, Milan scored the 1st place for mobility management. Milan has implemented the Area-C project which restricts and charges highly polluting motor vehicles from entering the city centre. Further, Milan also has a high access to shared mobility. There are over 40 shared vehicles (both bicycles and cars) per sq. km in the city. The success of Milan's shared mobility can be attributed to the small size of the city. With only 181.7 sq. km implementing shared mobility is more feasible in Milan than in Rome that spans over 1,200 sq. km.

Turin, ranked 2nd, also has about 15 shared vehicles (both bicycles and cars) every sq. km. Turin also has the least amount of time lost due to congestion. The city has 57% motorised transport share, yet very less congestion compared to the other cities analysed.

Palermo and Rome share the 3rd place for mobility management. Palermo's additional point comes from the implementation of a project similar to the Area-C or the London's congestion charge. The scheme combines the Low Emission Zone idea with a congestion charge. The scheme is operation since October 2016 and we haven't analysed the results of the scheme to measure its effectiveness.

8.1 Recommendations for mobility management

All the 4 cities analysed have a great potential to increase the efforts to restrict the use of personal automobiles. With Italian cities already implementing a ZTL, regulation can be further strengthened to restrict higher emission vehicles. While it is, arguably, difficult to reach a high access to shared mobility in a large city such as Rome, it is more feasible to have a higher access to shared mobility in Turin and in Palermo.

We find that in all the 4 cities parking is very affordable in comparison to the other renowned cities for sustainable mobility in Europe. On-street parking is either unavailable or very expensive in Oslo, Amsterdam and Copenhagen.

The Italian cities analysed could revisit the parking requirements in the city and try to eliminate minimum parking requirements[3] and establish parking maximums. Minimum parking requirements use urban space inefficiently and increase automobile use.

Experience also shows that if on-street parking is much more expensive than off-street parking (i.e. parking garages) there will be fewer vehicles parked on-street. On-street parking has much more use than being a space occupied by a car. Copenhagen and Oslo have reclaimed the on-street parking spaces and have turned them in bicycle lanes and public spaces, increasing the overall utility of the parking space.

Furthermore, all the 4 cities have implemented a low emission zone (LEZ), yet the poor air quality and the high motorisation in the cities, could indicate that the LEZ area of implementation is insufficient and/or inefficient. In order to improve the efficiency of the existing road infrastructure it is recommended to make the car users pay the real cost of the travel i.e. charge for the pollution from the cars, remove free or cheap on-street parking, implement various zones in the city that restrict polluting vehicles e.g. all vehicles below EURO 5.

Table 8-1 Mobility management ranking. Source: Wuppertal Institute Analysis

Rank	City	Congestion charge	Cost of 1 h parking	Low emission zones	Scheduling and ticketing apps	Increase in travel time (%)	Shared cars/km^2	Shared bicycles /km^2	Cars / 1000 inhabitants*	Bikes / 1000 inhabitants*
1	Milan	Yes	1.00 €	Yes	Both	30.00	17	26	2.23	3.40
2	Turin	No	1.30 €	Yes	Both	25.00	7	8	1.04	1.18
3	Rome	No	1.50 €	Yes	Both	40.00	1	1	0.62	0.42
3	Palermo	Yes	1.00 €	Yes	Scheduling	43.00	1	1	0.15	0.25

** Column data for information not used for scoring*

[3] These are conditions by the city government to provide a fixed number of parking spaces based on the projected demand of the building use (so the number would be different for a residential building and a office building).

9 Active Mobility

Active mobility is a collective term for walking and cycling. People friendly cities tend to have a high share of active mobility. Walking and cycling can only increase in cities when there is infrastructure and policies that favour walking and cycling.

In our study we have scored the cities on their current share of walking and cycling trips, urban green cover i.e. the share of green spaces in the city. We also have collected data on the shared bicycle availability in the city, for information to the reader.

It has to be noted that cities with already high shares of bicycling will need less number of shared bicycles as there is already a high bicycle ownership and usage in the city.

Table 9-1 Active Mobility ranking of the Italian cities Source: Wuppertal Institute Analysis

Rank	City	% of Walking trips	% of Cycling Trips	Urban green cover	Number of Shared Bicycles*
1	Palermo	15%	2%	62.8	170
2	Milan	12%	6%	32.2	4,650
3	Rome	6%	1%	68.3	1,200
4	Turin	13%	3%	35.9	1,050

** Column data only for information not used for scoring*

Though Milan has the highest share of active mobility (18%) of the 4 cities, it ranks 2nd and Palermo with 17% active mobility share ranks 1st. The reason for that is Palermo has a higher urban green cover than Milan. That is there are more green areas in Palermo compared to Milan. The higher number of green spaces encourage leisure activity either on foot or by a bicycle. In Palermo's case we see that it could be leisure activity on foot due to the high walking share.

Rome, ranking 3rd, has the highest urban green cover at 68%. Due to a large presence of historic sites, Rome has a high share of urban green cover. Rome also ranks second for the city with many shared bicycles. The advent of free floating bikes such as O-Bike[4] the numbers of shared bike has dramatically increased. Rome has about 1,200 shared bicycles and about 1,784 shared cars. The city is putting efforts in promoting shared mobility.

9.1 Recommendations on Active Mobility

All the 4 cities we analysed in this category are not very different in their shares of active mobility. The active mobility shares in all the cities in below 20%, the average bicycle share among the cities is 3%, which is very low.

It is imperative for the cities, if they wish to promote sustainable transport, to allocate resources towards making walking and cycling safer, attractive and convenient. In the road safety section, we have seen that all the 4 cities do not score very high for road safety and all the cities need rigorous efforts to make walking and cycling safe.

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[4] Obike: https://www.o.bike/it/

To promote cycling and walking, the cities need not look very far for inspiration. Fortunately, the successful cities like Amsterdam and Copenhagen publicly share the recipe for their success. The Danish and the Dutch design standards for cycling and walking are applicable to any city that intends to promote walking and cycling. A crucial ingredient for promoting active mobility is a very strong and unwavering political will.

With a strong support of the city leader and a design that favours people over cars, all the 4 cities in this study can increase their active mobility shares to double digits.

10 Conclusions

Promoting sustainable urban mobility in a city might sound easy when experts mention prioritising active mobility and public transport over personal motorised modes. Putting the idea into practice and getting results that encourage further implementation needs a great amount of political will and courage, a complete buy-in from the policy-makers, a clear understanding of people's needs, making the project attractive for people.

Based on our experience working with cities on promoting sustainable urban mobility and reviewing the data from the cities, we draw the following general conclusions:

1. ***Political will is the crux for change.*** There are examples from European cities like Oslo, Amsterdam or Paris, where city leaders announce the removal of cars from the city centre or banning scooters from bicycle lanes. Such steps show the public that the mobility decision taken by the city leaders is to favour the large majority of the people rather than a few who use the car. Experience also shows that political statements need to follow with bold actions, mere statements will not yield long term credibility.
2. ***Public transport is the backbone for sustainable mobility.*** The idea of sustainable urban mobility is to move more people on clean, safe and comfortable modes of transport. Public transport has the potential to move more people than any other mode of transport. Promoting affordable, safe, attractive, integrated and accessible public transport system is the only way to increase the use of public transport and widely improve sustainable transport.
3. ***Traffic speed in cities needs to be 30 kmph or lower***. Researches show that 90% of the pedestrians are fatally injured when the speed limit is above 64 kmph (40 mph), the number drops to 3% when speed is 32 kmph. Cities need to be inspired by initiatives like the "Vision Zero" from the Scandinavian countries, where the target for fatalities is "0".
4. ***Clean air can be achieved through stringent regulation*** and resolute stance against vehicles powered by fossil-fuels. In parallel, the standards that the European countries adhere to for air quality need to be more ambitious. The EU could follow the WHO guidelines for air quality, which is more ambitious than the EU's.
5. Fiscal measures, innovative mobility options and technological options can deter the use of personal motorised vehicles and encourage the shift to sustainable mobility. ***Removing cheap and free parking, can act as a deterrent for excessive automobile use.*** Yet, fiscal measures only go half way if there are no measures that make active mobility and public transport attractive.
6. Many cities start with ambitious plans to increase cycling and usually the targets are not met. This is due to a concentrated focus only on cycling. Cycling, like walking and public transport, cannot be improved by silo projects. ***Walking, cycling and public transport need to be integrated at a planning level, implementation and operation level.*** Ability to take bicycles on public transport increases ridership of both public transport and bicycle use. Copenhagen and Amsterdam are clear examples for this. Longer trips can be done with a bicycle when public transport supports carrying bicycles.

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