



# MILAN

## IMPLEMENTING AN ENVIRONMENTAL URBAN TOLL SCHEME



### Key words:

Environmental policy; City-centre regeneration

*Milan is the economic capital of northern Italy and one of the country's most densely populated cities. Car ownership is very high: 570 vehicles per 1,000 inhabitants.<sup>1</sup> Poor air quality and congestion problems have prompted the authorities to adopt a policy of sustainable mobility. In this context, the city introduced its environmental toll scheme, Ecopass, in January 2008.*

Italy	Milan
<b>Population:</b> 60,483,000 inhab.	<b>Population:</b> Municipality: 1,308,000 inhab. Metropolitan area: 3,900,000 inhab.
<b>Area:</b> 301,336 sq. km	<b>Area:</b> Municipality: 182 sq. km Metropolitan area: 2,000 sq. km
<b>Density:</b> 200.7 inhab. / sq. km	<b>Density:</b> Municipality: 7,190 inhab. / sq. km Metropolitan area: 1,950 inhab. / sq. km
<b>Urbanisation rate:</b> 68.40%	<b>Length of lines:</b> Metro: 75.5 km Tramway: 211.4 km
<b>Annual rate of urban-population growth (2005-2010):</b> 0.71%	<b>Modal mix:</b> Private cars: 41% Public transport: 27.5% Active modes: 31.5%
<b>GDP / inhabitant:</b> \$34,075.1	
<b>HDI:</b> 0.874 / 1	
<b>Car ownership:</b> 596 vehicles per 1,000 inhab.	
<b>Vehicles per km of road:</b> 80	
<b>Accident rate:</b> 0.96 fatal accidents per 10,000 inhab.	

**Sources:** World Bank – UNDP – Edoardo Croci – Paris Region Urban Planning & Development Agency (IAU-IdF) – Milan agency for mobility and environment (AMA)

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Based on the presentation by **Edoardo Croci** – Centre for Research on Energy and Environmental Politics and Policy (IEFE), Bocconi University (Damascus conference, 2010).<sup>2</sup>

<sup>1</sup> IAU-IdF.

<sup>2</sup> Edoardo Croci – IEFE: “Sustainable mobility in Milan: the pollution charge case”, 2010.

Lombardy is among the European regions with the poorest air quality. Life expectancy in this part of Italy is thought to be reduced by 9-36 months owing to a high concentration of PM2.5, according to the European Environment Agency. This particulate is thought to cause 10-30 premature deaths per year per 10,000 inhabitants. In the Milan conurbation, thresholds for carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>) and ozone (O<sub>3</sub>) are often exceeded. The city's location, in the Po valley surrounded by mountains, adversely affects particulate dispersion. Road traffic is responsible for 69% of PM10 emissions and 88% of CO emissions.

Every day, more than a million people enter the city and 250,000 leave it. The municipality of Milan contains two million inhabitants during working hours.

Every day, more than five million journeys are made in this area:

- 50.3% of them are between the city and periphery. In this case, 67% of journeys are made by car or motorcycle, and 33% by public transport.
- 49.7% of journeys are made within the city. In this case, the modal shares are 36% for cars and motorcycles, 35% for public transport, 24% for pedestrians, and 5% for bikes.

In 1992, Italian law introduced the Limited Traffic Zone (LTZ) principle to address heritage asset and environmental protection. The LTZs are regulatory constraints designed to limit pollution and noise; to better redistribute space between modes; to improve pedestrian and cyclist safety; and to ease flows of vehicles allowed to enter the zones.

The zone is not marked by built urban features. Access to the zone is selective, depending on the time of day and the emission levels of user categories. The cost of the access-control system is fully offset by revenue from fines.

Given the air-quality challenges facing Milan, the city wanted to go further in regulating car traffic and fighting air pollution, specifically the concentration of fine particulates.

## ECOPASS: IMPLEMENTING AN ENVIRONMENTAL URBAN TOLL SCHEME



**Figure 1: "Less traffic, more clean air".**

Since January 2008, an urban toll ring called Ecopass has restricted access by the most polluting vehicles to the historical heart of Milan. The 8.2 sq. km zone is about 5% of the city's total area. Restrictions apply from 7.30am to 7.30pm, Monday to Friday. The zone was defined according to the high level of congestion and the existence of alternatives to private car use. The zone has a high concentration of public transport services, with 28 overground and three underground lines.

Milan is the first Italian city to introduce such a toll scheme. Its objective is to encourage motorists to park their vehicles outside the city's historical heart, and travel there by public transport, bike or foot; and to reduce the number of vehicles in transit.

Where Ecopass differs from the toll schemes of London and Stockholm is its pricing policy. The cost of entering the zone varies according to the level of pollutant emissions. Low-polluting vehicles (Ecopass class I and II) can enter the zone free of charge; the others pay a daily rate ranging from €2-€10. City-centre residents – about 80,000 people – enjoy a 50% reduction. Passes and multi-day tickets are also available. Public transport vehicles, two-wheel vehicles, taxis, vehicles of people with reduced mobility, and low-emission vehicles (LPG, hybrid and electric) can also enter free of charge.

Each of the 43 zone entry points has a system for automatic recognition of registration plates. It

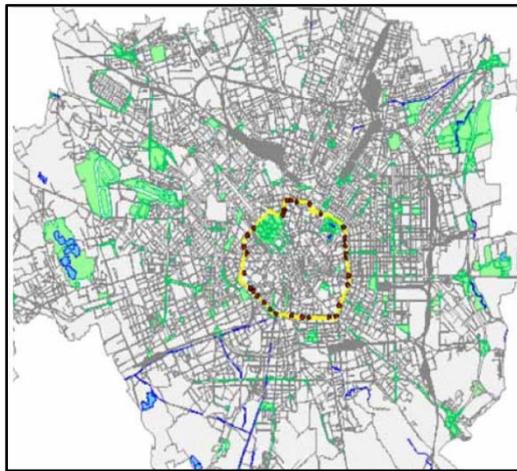


Figure 2: Ecopass zone in Milan.

identifies vehicles that must pay the toll charge and have activated their badge or are registered with the bank debit-payment system. Badges can be ordered by telephone, bought in newsagents' and tobacconists' shops, from cash machines or from ATM (Milan public transport company) sales outlets. Fines range from €70-€275.

This environmental toll scheme had three objectives: cut PM10 concentrations in the zone by 30%; ease traffic flows by reducing the number of vehicles entering the zone by 10%; and reinvest the profits to develop sustainable mobility.

## RESULTS

One year after the Ecopass was introduced, the review conducted by the Milan mobility and environment agency showed that the number of vehicle entries into the zone had fallen by 14.4% (i.e. 22,000 vehicles) while traffic outside the zone had dropped by 3.4%. Among drivers of polluting vehicles (Ecopass class III, IV and V) who did not want to pay the toll, nearly half had changed their travel mode; a third changed their route; and the others switched to a less-taxed vehicle.

In parallel, the concentration of fine dust in the zone fell by 19% (-15% for PM10 and -12% for NO<sub>2</sub>), and an improvement in air quality was also observed across the metropolitan area.<sup>3</sup>

In 2008, total toll revenue was €12 million, while fines were double that figure. Operating costs were €6.5 million. Profits, which were half the expected amount, were fully reinvested in creating new services and improving public transport.

In 2009 toll revenue began to fall, the main reason being changes in cars owned. Many people had bought less polluting cars. In early 2011, 80% of vehicles were entering the Ecopass zone free of charge because they met the required standards.<sup>4</sup>

<sup>3</sup> <http://www.iau-idf.fr/detail/etude/ecopass-le-peage-urbain-ecologique-de-milan.html>

## CONCLUSION

Although the benefits in terms of reduced social costs were below forecast, implementing Ecopass resulted in:

- Reduced congestion: the congestion index fell by 4.7%.<sup>5</sup>
- Improved road safety: a 10.5% drop in accidents and a 13.5% drop in accidents with injuries in the toll zone.
- Higher bus operation speed: +0.5 km/h on average.
- More people using public transport: since the toll was launched, public transport has carried 6% more passengers into the zone.
- Improved air quality: in 2008, there were 111 days when the PM10 concentration threshold was exceeded, whereas the annual average during the 2002-2007 period was 148. European standards accept a maximum of 35 days beyond threshold limits.

The main success of Ecopass has been to change the profile of vehicles entering the zone. Before Ecopass, nearly half were in the Ecopass categories III, IV and V (i.e. paying the highest daily fees); in 2009, they only represented 14% of traffic.

Ecopass was also cited as a best practice by the World Bank and OECD in 2009. Milan's urban toll won an honourable mention at the 2009 Sustainable Transport Awards held by the Institute for Transportation & Development Policy (ITDP), and was selected as a best practice by UN Habitat in 2008.

The application of Ecopass has prompted intense public and political debate. Initially, the project had a very negative reception from both citizens and retailers, and even from the party of the Mayor of Milan, Letizia Moratti. A big communications campaign was therefore launched (television, radio, press, leaflets, Mayor's letter to citizens, advertising posters and public meetings).

Pollution remains an important political issue in Milan. High pollution spikes even prompted car traffic to be banned from the city centre for several days in 2010 and in 2011.<sup>6</sup> The deputy mayor of Milan, Riccardo De Corato, felt that this type of restriction *"would send a strong signal to the government about the need to take action on a problematic situation that affects many provinces in northern Italy"*.

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<sup>4</sup> [http://www.eltis.org/index.php?id=13&study\\_id=2955](http://www.eltis.org/index.php?id=13&study_id=2955)

<sup>5</sup> Vehicle flow / road capacity ratio.

<sup>6</sup> *Circulation bloquée durant deux jours à Milan en raison de la pollution* ("Milan pollution halts traffic for two days"): [www.lemonde.fr/europe](http://www.lemonde.fr/europe)