

Charging scheme in city centre (AREA C) and other strategies in Milan

Mexico City – January 19, 2017



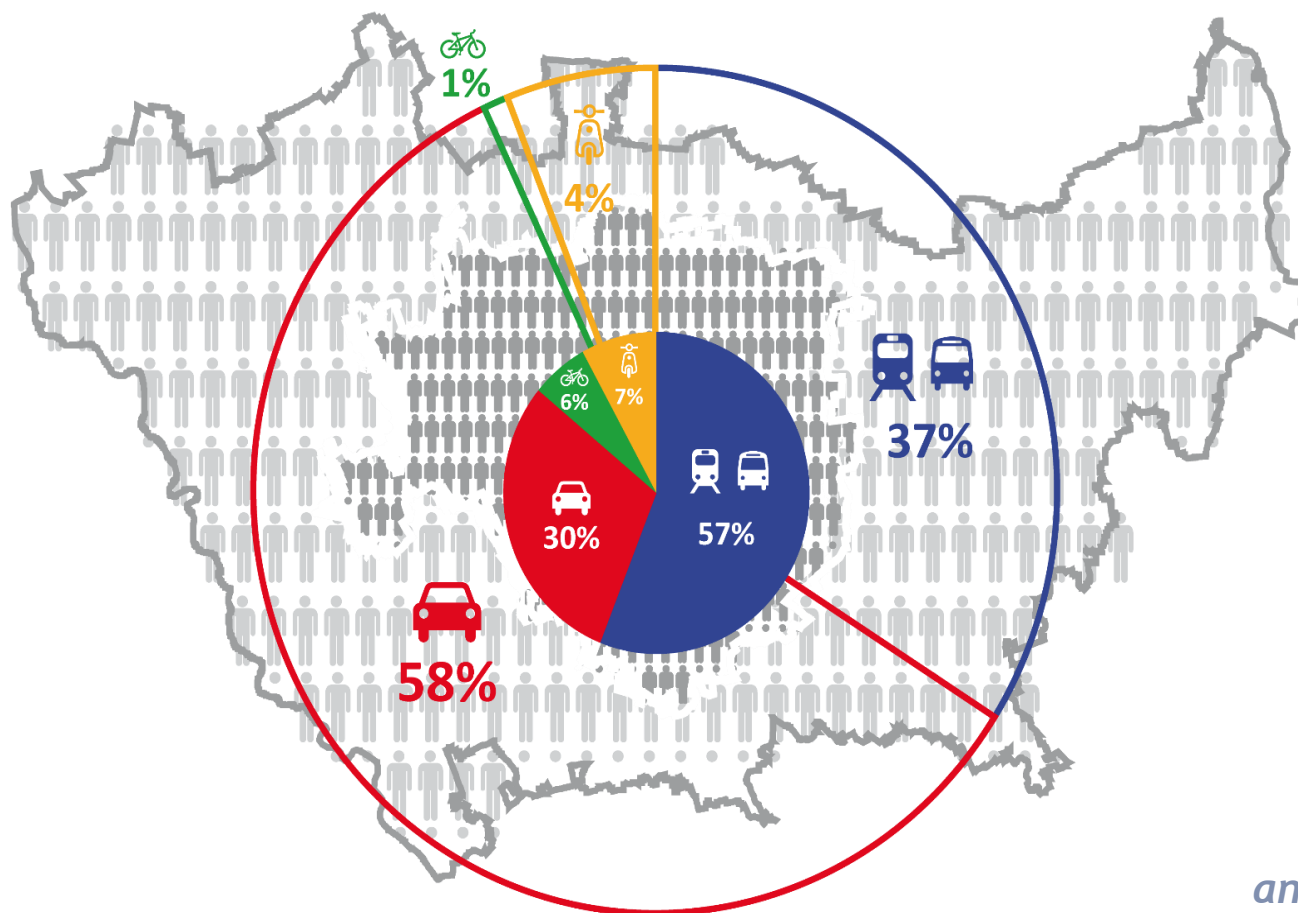
elaborato: Presentazione	codifica: 170360003_00 revisione: 00	data: 19/01/2017	elaborato: Paolo Campus Valentino Sevino	verificato: Paolo Campus Valentino Sevino	approvato: Valentino Sevino
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Mexico City – January 19, 2017



1 Milan's Mobility Figures



Motorization Rate: 51 cars per 100 inhabitants

Inhabitants Milan city:

~ 1.3 M

180 km², ~ 7300 inh/km²

Inhabitants Metro area:

~ 3.2 M

1570 km², ~ 2000 inh/km²

Daily city users:

~ 1 M

Overall Mobility

(trips/day, 2013):

5.255.000

Trips in Milan:

2.978.000 (56%)

Trips between Milan

and the metropolitan area:

2.277.000 (44%)

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2 Milan Pollution Charge – ECOPASS

The **Ecopass** program was a **traffic pollution charge** implemented in Milan, as part of the overall sustainable mobility strategy of the Municipality of Milan and has been designed to **discourage the use of polluting private vehicles** inside the central Milan “Cerchia dei Bastioni” area (the internal ring), by applying an entrance charge related to the polluting emission levels (PM10).

Some motorists had to **pay an urban toll** when traveling within a Limited Traffic Zone corresponding to the central Cerchia dei Bastioni area and encircling around **8.2 km²**.



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3 Milan Pollution Charge – ECOPASS Area



ECOPASS AREA

- 8.2 km² (4.5%)
- Residents: 77,000 (6%)
- Toll entrance gates: 43

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4 Milan Pollution Charge – ECOPASS Vehicles

POLLUTION CLASS	VEHICLE EURO CATEGORY	DAILY ECOPASS
CLASS I	gpl – lng,cng - electric – hybrid	FREE ACCESS
CLASS II	Petrol car E III- E IV Diesel car diesel E IV with APF Petrol light freight E II – E III- E IV Diesel light freight E IV with APF	FREE ACCESS
CLASS III	Euro I, II petrol cars and goods vehicles	€2
CLASS IV	Petrol car pre E Diesel car E III – E IV* no APF	€5
CLASS V	Diesel car pre E –E I- E II Diesel light freight pre E – E I – E II Diesel Freight 3.5 t pre E I – E II- E III	€10

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5 Milan Pollution Charge – ECOPASS Rules



Ecopass is in force from 7.30am to 7.30pm Monday to Friday.



If you do not have time to pay the Ecopass charge the day you enter the Cerchia dei Bastioni Ecopass area, you have time until midnight on the following day to pay.



Exemptions

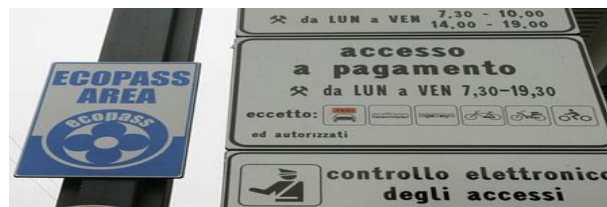
There is no Ecopass charge for:

- mopeds, scooters and motorbikes
- emergency vehicles
- vehicles carrying disabled passengers and/or bearing a disabled passenger badge;

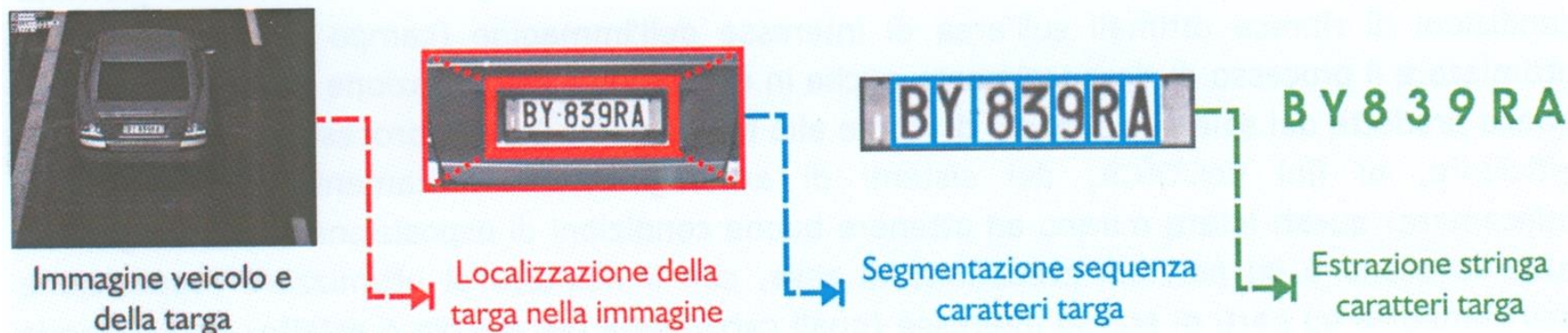
Residents within the ECOPASS Area

Residents of the Cerchia dei Bastioni LTZ – Ecopass Area can apply for a yearly Ecopass at reduced rates.

Also the yearly Ecopass price is variable and given by the Pollution Class (50 €, 125 €, 250 €)



6 Milan Pollution Charge – ECOPASS System



Integrated IR illuminator with OCR

“Context” CCTV Camera

Visualizza Transiti

Operatore: Marco Didoni (zz)

Varco	Data	Ora	ORU	Targa	Verificata	Alt	Categoria
PORTA VENEZIA	07/03/2008	09:00:00	N/A	DC367PT	<input checked="" type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:03	N/A	CZ337RC	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:06	N/A	DK619DE	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:08	N/A	CX407VD	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:09	N/A	DJ728JT	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:12	N/A	AE895GR	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:14	N/A	CV023LJ	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:17	N/A	DG124JB	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:17	N/A	B8856DC	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:18	N/A	CZ380CH	<input type="checkbox"/>	0	-

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 ...

Chiudi Esporta

Transits List

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7 Milan Pollution Charge – ECOPASS Results

- Traffic reduction, both private and commercial, within the ECOPASS Area during the ECOPASS enforcement time (**- 21%**)
- Public transport commercial speed increase (**+13% tram and + 20% bus and trolleybus**)
- Passengers increase on Underground line moving towards ECOPASS Area (**+23.000 pax daily average**)
- Reduction, within the ECOPASS Area, of the main pollutants emissions:
 - PM: **- 20%**
 - CO2: **- 15%**
 - Nox: **- 16%**
 - Ammonia: **- 45%**



8 Milan Pollution Charge – ECOPASS Revenues

Revenues at 31 July 2008

REVENUES by WAY of Payment	
CARD (Ticket, Carnet, Residents)	
Total	5.765.533
Internet and ATMs	
Total	1.596.734
Bank Remittance	
Totale	792.654
TOTAL	8.154.921

The incomes from ECOPASS have been invested in projects aimed at improving urban mobility:

- Public transport
- Cycle mobility
- Car sharing
- Mobility Management
- Low impact vehicles

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9 From Pollution Charge to Congestion Charge

Ecopass resulted a drastic traffic drop in 2008 **(-21%)**, however, over time, the **increase in the share of exempted vehicles** (while in 2007 50% of vehicles entering the area would have been exempted from Ecopass, in the first year of the scheme this percentage went up to 75% and in 2010, the share of exempted vehicles was as high as 90%!) gradually **reduced the dissuasive power** of Ecopass.



Moreover, following the results of a bottom-up **referendum** in which a large majority of voters **(79%)** demanded an upgrade of the Ecopass measure, the scheme was upgraded to a congestion charge in 2012.

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10 Milan Congestion Charge – AREA C

“Area C” is a road pricing measure launched by the Municipality of Milan in 2012 in order to improve life conditions of those who live, work, study and visit the city. “Area C” is the restricted traffic zone in the center of Milan (C as Cerchia Bastioni).



The access points, monitored by cameras, are 43, including 7 for exclusive use of public transport. The charge is active on Monday, Tuesday, Wednesday and Friday from 7.30 to 19.30, and Thursday from 7.30 to 18.

11 AREA C – The context

- The area = **8.2 km²**, **4.5% of the whole territory** of the Municipality of Milan

- **Residents = 77,950** (42,300 families)

- The area has an **outstanding attractiveness** because of the activities and services settled in, that determine during the central daylight hours an average of 39.000 persons/km², with a **peak of almost 140.000 person/km²** within the **historic center** between **Duomo** and **San Babila**

- There are **295.704 employees**, amounting to **almost 37% of the total employees** of the Municipality of Milan.

Every day about **500.000 people**, coming from outside, get there



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12 AREA C – The aims

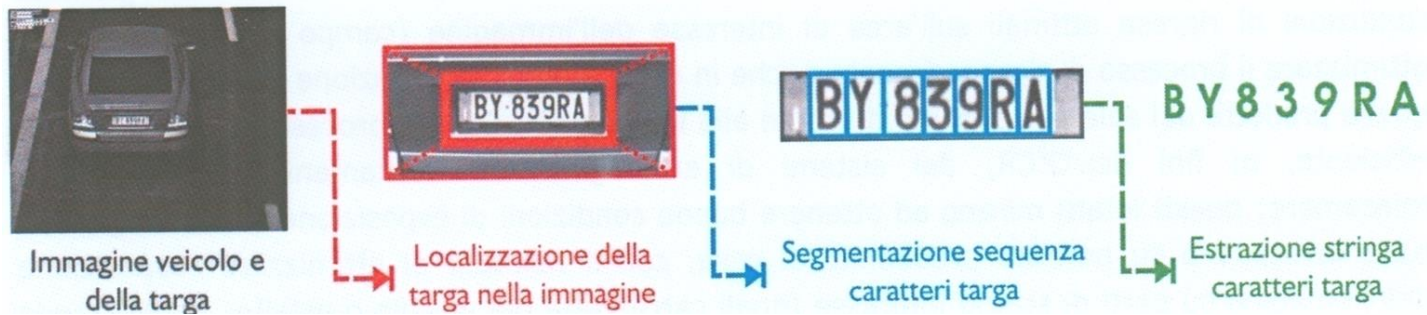
Decreasing vehicular access to the Area C therefore:

- ✓ Decreasing traffic congestion;
- ✓ Improving public transport speed;
- ✓ Decreasing the occupation of on-street parking;
- ✓ Reducing road accidents;
- ✓ Reducing pollutant emissions caused by traffic;
- ✓ Reducing health risks related to air pollution;
- ✓ Increasing the share of sustainable modes of travel;
- ✓ Improving urban center quality and attractiveness;
- ✓ Raising funds for sustainable mobility services and infrastructures.



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14 AREA C – The system



IR camera with OCR

Context (CTX) camera

LAZMS WEB SYSTEM - Windows Internet Explorer

http://172.25.1.14/LAZMS_WEB/modules/CTL/frmTransitVisualizzaFrame.aspx

LAZMS WEB SYSTEM

Project Automation

(MI) PZONE

Visualizza Transiti

È stato selezionato il Varco con nome: "Varco - PORTA VENEZIA" Periodo dal: 07/03/2008 ora: 09:00:00, al: 08/03/2008 ora: 00:00:00

Operatore: Marco Didoni (zz)

Varco	Data	Ora	OSU	Targa	Verificata	AD8	Categoria
PORTA VENEZIA	07/03/2008	09:00:00	N/A	DC567PT	<input checked="" type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:03	N/A	CZ337RC	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:05	N/A	DK919DE	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:08	N/A	CX407VD	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:09	N/A	DJ728JT	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:12	N/A	AE895GR	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:14	N/A	CH023LJ	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:17	N/A	DO124JB	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:17	N/A	BS856DC	<input type="checkbox"/>	0	-
PORTA VENEZIA	07/03/2008	09:00:18	N/A	CZ380DH	<input type="checkbox"/>	0	-

Chiudi Esporta

List of transits

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15 AREA C – The rules

The access is limited on Monday, Tuesday, Wednesday and Friday from 7.30 to 19.30, and Thursday from 7.30 to 18.



- Access is free for:
 - Public transport
 - Motorcycles and scooters,
 - Electric vehicles and hybrid vehicles, as well as natural gas, LPG and bi-fuel vehicles (until 31.12.2016)
 - Vehicles owned by public bodies, emergency vehicles
 - Taxi and NCC up to 9 seats
 - Vehicles carrying a disabled
 - Vehicles transporting people must go the first aid.



- Access is forbidden for:
 - “Euro 0” petrol vehicles
 - “Euro 0, 1, 2, 3” diesel vehicles
 - vehicles with a length of more than 7.5 meters.



- The access is to payment for all the other categories of vehicles
The entrance ticket cost 5 €.
Two facilitated rates exist reserved to:
 - residents - the first 40 accesses (every year) are free. From 41st access onward they pay 2 €
 - service vehicles - 3€The ticket allows accesses, exits and transits with no limitations throughout the day.

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16 AREA C – Payment processing system

Annual vehicles access 21.990.825, 57 % of vehicle must purchase and activate an entrance ticket

1. HOW TO BUY?

- By cash: ticket are available at tobacconist, newsagents, ATM Points (Milan transport company)
- By credit card: on the website or calling the call center
- By PagoBancomat: at the parking meters, at Intesa San Paolo counters

2. HOW TO ACTIVATE THE TICKETS?

To activate the ticket you must associate the pin identifier of admission ticket to a plate using one of **these** methods:

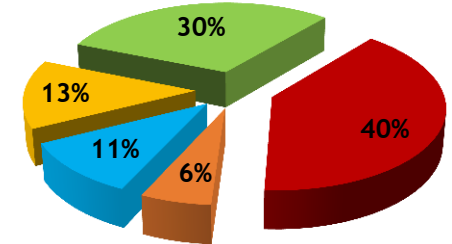
- SMS message to 339.994.0437 with the text "PIN.plate"
- Call center: + 39.02.48684001
- On this website under the "Servizi online" section

Alternatively there are 2 direct debit arrangements:

- By Tele pass: through debit account or debit credit card
- By RID: through direct banking debit

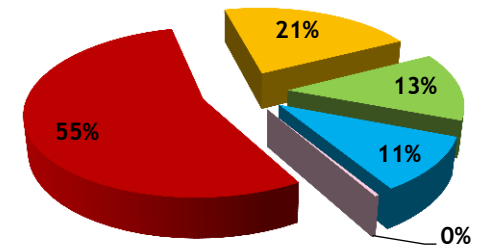
From September 2016:

- By Sisal and Lottomatica: at Sisal and Lottomatica points
- By SMS: using telephone credit
- By APP Mobile: using telephone credit



■ Resident vehicles
■ Service vehicles
■ Other paying vehicles
■ Green vehicles
■ Vehicles exempted by the payment

VEHICLE CATEGORIES



■ Telepass
■ By cash
■ Through direct banking debit
■ By credit card
■ By PagoBancomat

PAYMENT METHOD USED

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17 AREA C – Fares

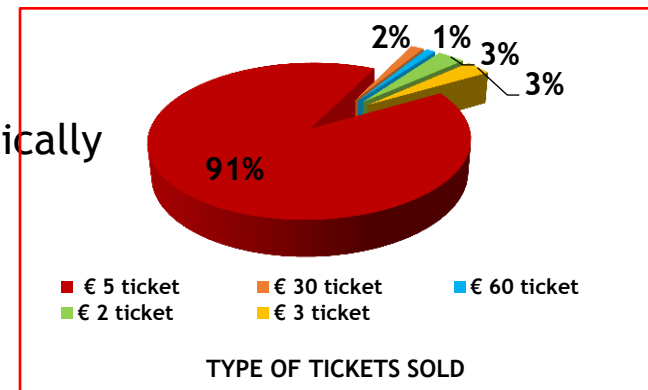
Each ticket to enter “Area C” must be activated the same day or no later than midnight of the next day access. The payment of an entrance covers all accesses made by the same vehicle during that day. Most vehicles does occasional transits, 42.9% of vehicles entered a single day and 90.4% of vehicles checked for less than 25 days in the year = 10% of days with active measure

There are 5 types of entrance tickets:

- Daily: 5 €
- Multiple daily: 30 € and 60 € credit decreasing automatically

After web registration

- Daily "resident vehicle": 2 € Daily
- Daily "service vehicle": 3 € Daily



All the incomes from Area C have been reinvested in projects for sustainable mobility

INCOMES in 2016 - more than € 28.000.000

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18 AREA C – Maintenance costs

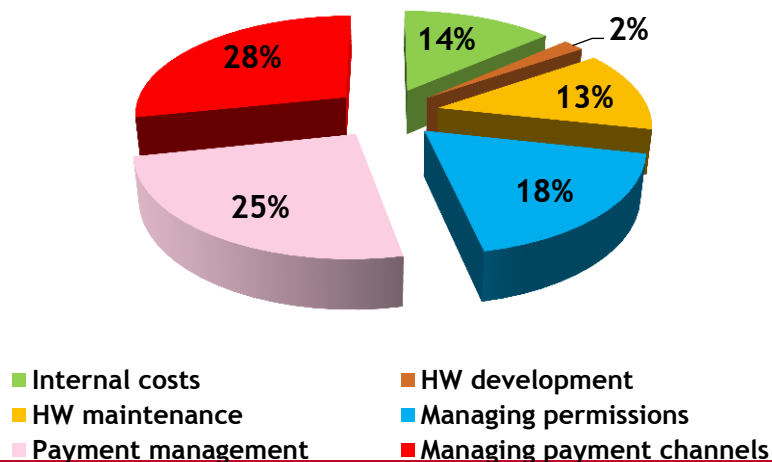
The management of Area C is played by 46 units, including the head.
In Staff there are 6 units: 4 technical units and 2 administrative units
In Line there are 39 units distributed as follows:

- Front office - 6 units
- Back office - 14 units
- Call Center - 19 units

The organization of the offices has been sized based on workload:

- Front office: 9.000 users/year
- Back office: 45.000 practices/year
- Call Center: 620,000 call minutes/year

Maintenance costs 2015 - € 3.801.958 (72% direct costs and 28 % coordinating staff costs)



DIRECT COSTS

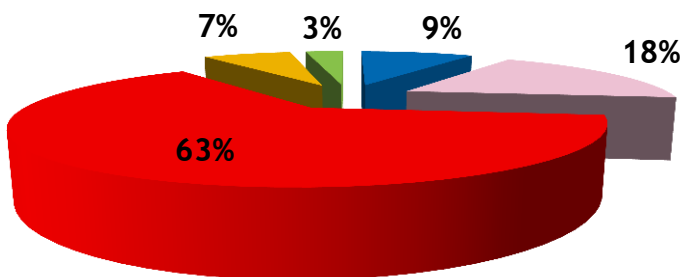
- Managing permissions
- Payment management
- Managing payment channels

COORDINATING STAFF COSTS

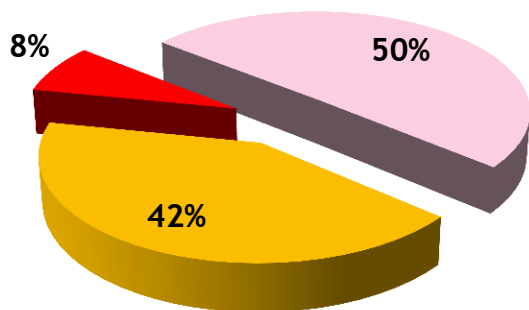
- HW development
- HW maintenance
- Internal costs

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19 AREA C – Type of managed practices

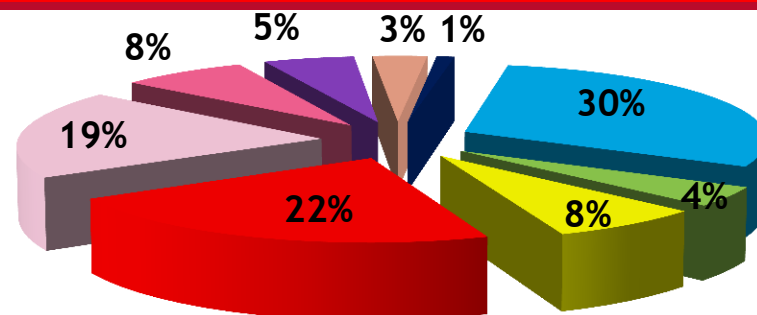


- Information on the remaining credit
 - Generic Info
 - Ticket activation
 - Ticket purchase
 - Myareac registration Guide
- CALL CENTER MANAGED PRACTICES



- Facilities management for residents
- Facilities management for service vehicle
- General users

FRONT OFFICE MANAGED PRACTICES



- Management practices direct banking debit
- Activation support ticket
- Ticket refunds
- Facilities management for residents
- Facilities management for service vehicle
- Technical dates vehicle refresh
- Sick instance management
- Management cancellation instances violation
- Managing payment exemptions

BACK OFFICE MANAGED PRACTICES

2015

- Front office: 9.000 users/year
- Back office: 45.000 practices/year
- Call Center: 620,000 call minutes/year

The Workload trend has stabilized over the past 2 years

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20 AREA C – Mobility results

Improving the life conditions of those who live, work, study and visit the city is the goal of the Congestion Charge - Area C.

In 2015:

- **Decreasing road traffic** in “Cerchia dei Bastioni” = - **29.2 %** compared with 2012
- **Decreasing Road accidents** = - **26%** compared with 2012
- **Increase public transport speed** = **+2 %** for buses between 9:00-10:00 and **+ 5,9** between 18:00-19:00 and **+ 2,2%** for tram between 09:00-10:00 and **+ 4,4** between 18:00-19:00;
- **Increase Public Transport users** : **+12%** on surface PT; **+ 17%** on Underground
- **Raising funds for soft mobility infrastructures** = **+10%**

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21 AREA C – Environmental results

Pollutant vehicles: - 49% (-2.400 pollutant vehicles entering every day the Area C)

Cleaner vehicles + 6,1 % (from 9,6% to 16,6% of the total vehicles)

Less emissions of pollutants:

Total PM10 -18% ; Exhaust PM10 -10%;

Ammonia -42%; Nitrogen Oxides -18%;

Carbon Dioxide -35%

Less Black Carbon (BC):

28% to 52% reduction of BC concentration



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22 AREA C – Economic and social results

Area C achieved important results in terms of environmental, financial and social sustainability. As to the economical aspects, as a counterweight to the charge, several are the benefits enjoyable by users.

The reduction of the cars circulating in the city center enables the reuse of the public spaced once reserved to the parking. For instance, **an area of approximately 15.000 sqm near Castello Sforzesco was turned into a pedestrian area**, and new bike sharing stations and car sharing services were set up in the city.

Moreover, thanks to Area C, the **traffic reduction generated benefits to the whole transport systems**. In fact, according to a recent statement of AICAI (Courier Aircraft Association), the Area C has resulted in an **increase in productivity of 10% on freight deliveries in the city**.



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23 AREA C – Incomes reinvested

Incomes reinvested in Sustainable mobility

2016 incomes = **more than 28 million €**

2015 incomes = **26.2 million €**

2014 incomes = **23 million €**

2013 incomes = **29.4 million €**

2012 incomes = **20.3 million €**

All the incomes from Area C have been reinvested in projects for sustainable mobility:

- **62 %** for the strengthening of public transport in order to improve its frequency
- **22 %** for the development of sustainable mobility projects
- **16 %** is the cost of IT management access control the software management and authorizations of payment channels

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24 AREA C – New rules

Starting from February 2017

- access is forbidden to Euro 4 diesel vehicles;
- subjection to pay the entrance ticket of 5 euro for vehicles powered by LPG and Natural Gas;
- exemption for hybrid vehicles until 14 October 2019;
- access is forbidden to freight vehicles from 8 am to 10 am;
- entrance payment for vehicles with more than 9 seats according to the length of the vehicles:
 - € 15 for vehicles (generally up to 30 seats) up to mt. 8,00;
 - € 25 for vehicles (generally up to 50 seats) between mt. 8,01 and mt. 10,50;
 - € 40 for vehicles (generally more than 50 seats) longer than mt. 10.50.

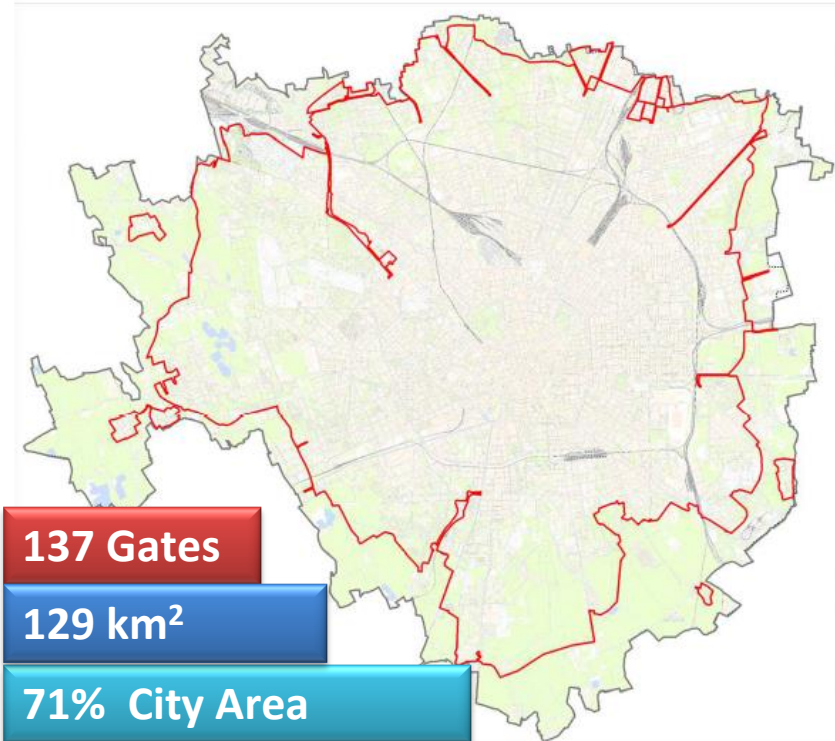


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25 Toward a LEZ

Control of the most pollutant vehicle and control and tracking of access for heavy vehicles and for the transport of dangerous goods

As stated in the Sustainable Urban mobility Plan, the City of Milan is developing an **infrastructure of electronic gates** around and next to the municipal boundary. The systems will be set up for the **control of the most pollutant vehicles** and for the **control and management** of the most **heavy vehicles** and the ones used for the **transport of dangerous goods**, inspired by experiences such as Greater London LEZ.



ZONA A TRAFFICO LIMITATO

CONFINE ZTL

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26 Toward a LEZ – Class of vehicles

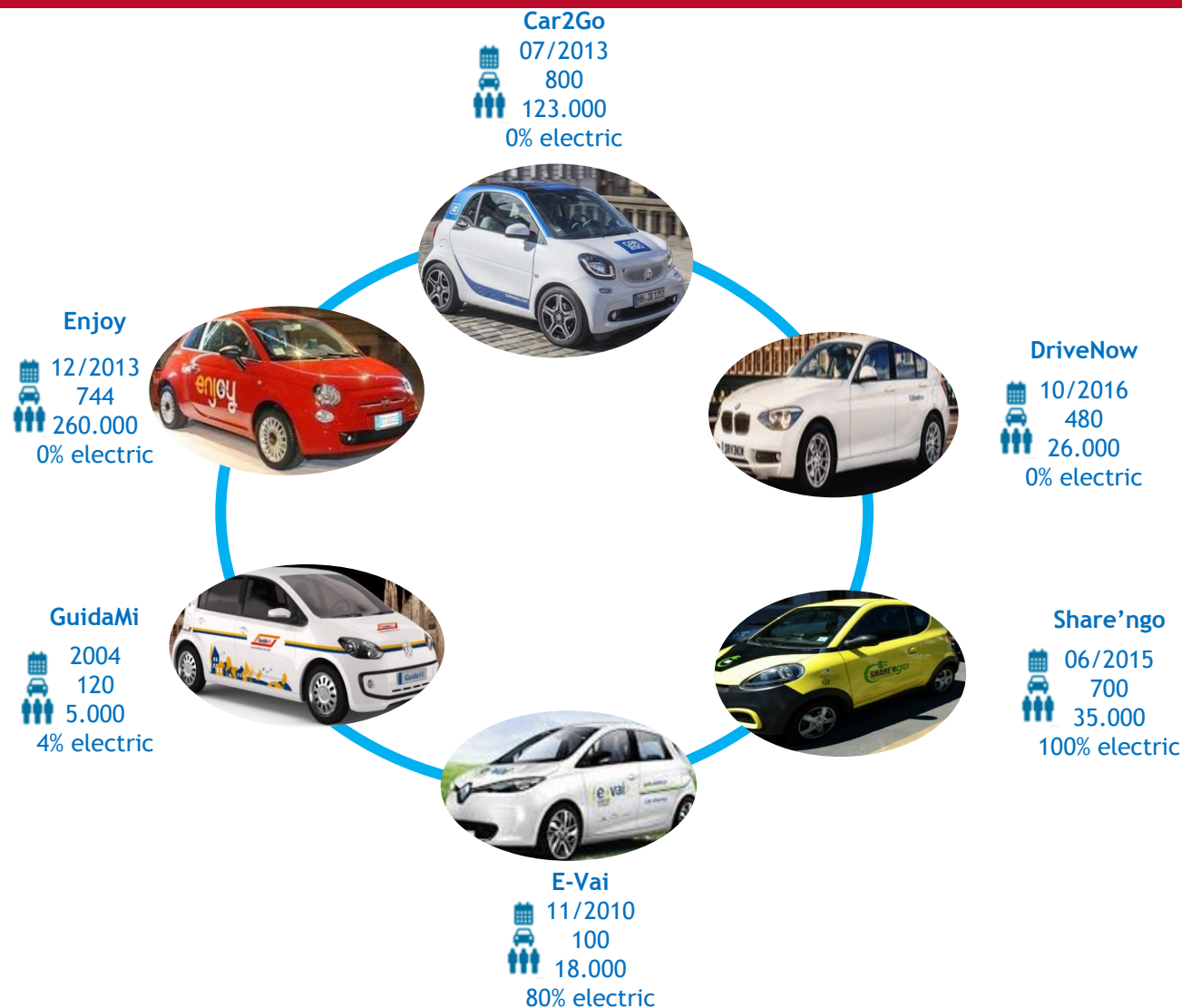
Tipologia veicolo	Periodo di immatricolazione	Divieti di circolazione						
		2017	2018	2019	2020	2021	2022	2023
Motoveicoli a due tempi di classe Euro 0 Ciclomotori a due tempi di classe Euro 0	ante 7/1999 ante 7/1999							
Motoveicoli a due tempi di classe Euro 1 Ciclomotori a due tempi di classe Euro 1	07/1999 - 06/2004 07/1999 - 06/2003							
Motoveicoli a gasolio di classe Euro 0 Ciclomotori a gasolio di classe Euro 0	ante 7/1999 ante 7/1999							
Motoveicoli a gasolio di classe Euro 1 Ciclomotori a gasolio di classe Euro 1	07/1999 - 06/2004 07/1999 - 06/2003							
Motoveicoli a due tempi di classe Euro 2 Ciclomotori a due tempi di classe Euro 2	07/2004 - 12/2006 07/2003 - 06/2015							
Motoveicoli a gasolio di classe Euro 2 Ciclomotori a gasolio di classe Euro 2	07/2004 - 12/2006 07/2003 - 06/2015							
Autoveicoli Euro 0 benzina (trasporto persone e trasporto cose)	ante 10/1995							
Autoveicoli Euro 0 diesel (trasporto persone e trasporto cose)	ante 10/1995							
Autoveicoli Euro 1 diesel (trasporto persone e trasporto cose)	01/1993 - 09/1998							
Autoveicoli Euro 2 diesel (trasporto persone e trasporto cose)	01/1997 - 12/2001							
Autoveicoli Euro 3 diesel trasporto persone M1	01/2001 - 12/2006							
Autoveicoli Euro 3 diesel trasporto cose	01/2001 - 12/2006							
Autoveicoli Euro 4 diesel trasporto persone M1	01/2006 - 12/2012							
Autoveicoli Euro 4 diesel leggeri e Euro IV/V pesanti trasporto cose	01/2006 - 12/2014							

Tipologia veicolo	Periodo di immatricolazione	Divieti di circolazione						
		2017	2018	2019	2020	2021	2022	2023
Autobus M3 diesel di classe Euro 0	ante 10/1993							
Autobus M3 diesel di classe Euro 1	10/1993 - 09/1996							
Autobus M3 diesel di classe Euro 2	10/1996 - 09/2001							
Autobus M2, M3 diesel di classe Euro 3	10/2001 - 09/2006							
Autobus M2, M3 diesel di classe Euro 4	10/2006 - 09/2009							
Autobus M2, M3 diesel di classe Euro 5	10/2009 - 12/2014							

- Nessun divieto
- Divieto di accesso e circolazione dal 15 ottobre al 14 aprile da lunedì a venerdì feriali, dalle 7.30 alle 19.30
- Divieto di accesso e circolazione dal 15 ottobre al 14 aprile da lunedì a domenica, dalle 7.30 alle 19.30
- Divieto di accesso e circolazione dal 15 ottobre al 14 aprile da lunedì a domenica, dalle 0.00 alle 24.00
- Divieto di accesso e circolazione permanente da lunedì a domenica, dalle 0.00 alle 24.00
- Veicoli soggetti a limitazioni alla circolazione già previste dalla normativa Regionale

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27 Car sharing in Milan

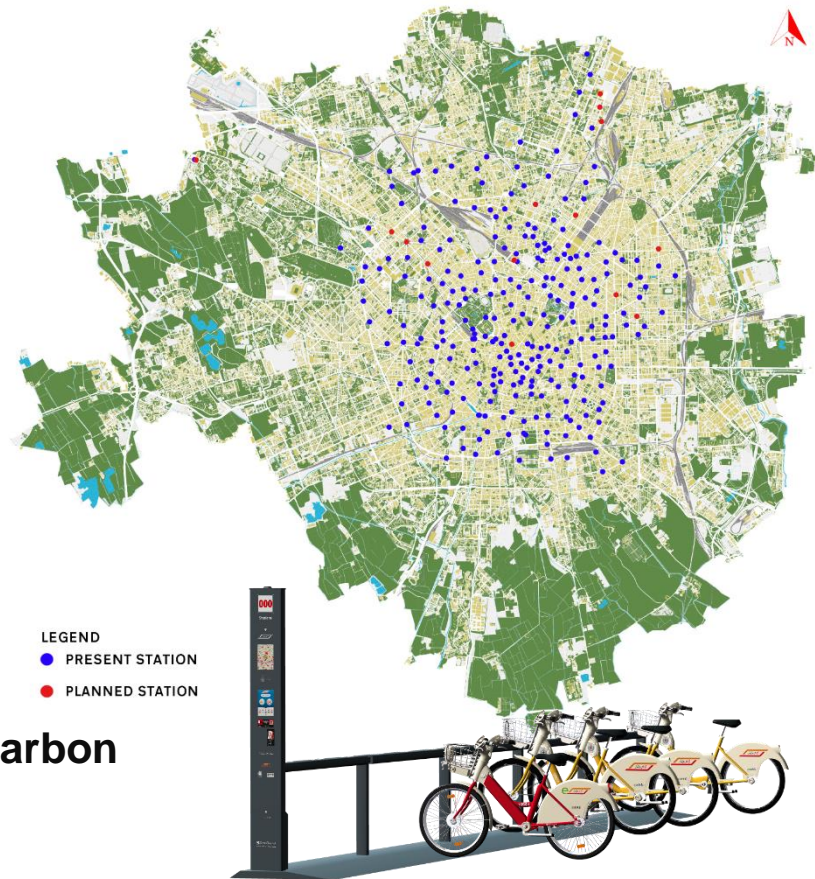


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28 Bike sharing

BikeMi is the service of Bike-Sharing, developed by ATM and operated by Clear Channel. Born in December 2008, it provides a user-friendly, practical and ecological service.

- **280 stations (October 2016);**
- **3.650 traditional bikes;**
- **1000 electric bikes;**
- **54.000 yearly subscriptions;**
- **More than 20.000 rents per day on average**
- **3.600.000 million rents in 2016**
- **2.700.000 Kg of CO2 saved in 2016 (Defra's carbon convertor factor)**



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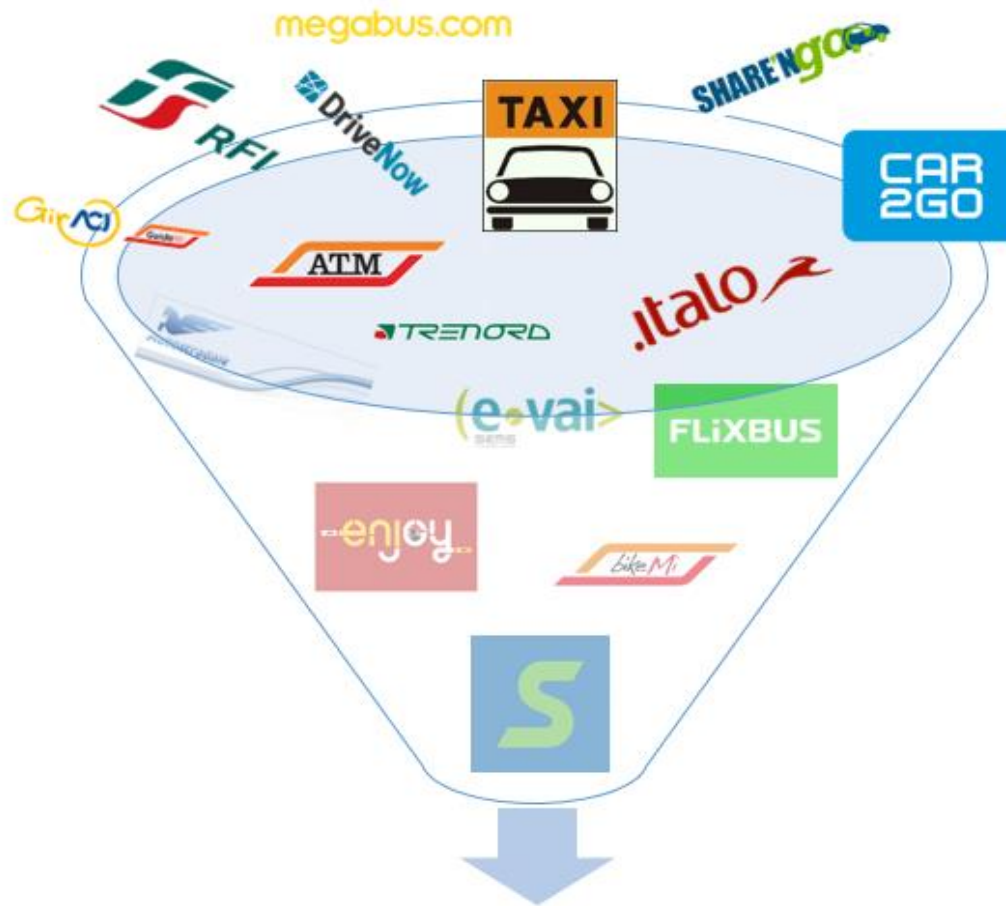
29 Scooter sharing

- **Milan is the first Italian city to launch a Public call for identifying companies to perform the Scooter Sharing Service (December 2014).**
- **The first scooter sharing in free-floating mode in Italy was launched in Milan on 15 July 2015 with 150 Piaggio Mp3 three-wheel vehicles, two wheels in front and one behind.**
- **Two helmets** come with the scooter, which is also fitted with front and **rear cameras** for accident and **damage surveillance**.
- The service can be used by anyone **21 years old and over** with a **Italian driving license** (types A and B) or a **foreign one** that is recognised by Enjoy.



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30 Towards an integrated mobility - MAAS



Mobility As A Service 4 Milan

As a platform for the integration of several transport systems used in the whole territory

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THANK YOU FOR THE ATTENTION

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