Session
Integration of modes & measures, and partnerships for clean mobility

Kyoto Protocol and urban mobility in Rome

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ROMA

Comune di Roma
Assessorato alle Politiche
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ROMA PER KYOTO

Realization of Rome's Action Plan to achieve the Kyoto's Protocol objective of Green House Gas Reduction

Objectives

- The Project is drawing up an Action Plan for of the City of Rome as part of the implementation of the Kyoto Protocol.
- The Action Plan is defining the actions to be implemented in order to reach the goal of a 6.5% reduction in GHG emissions (as set for Italy) by the year 2012, as compared to the quantity of emissions in the year 1990.

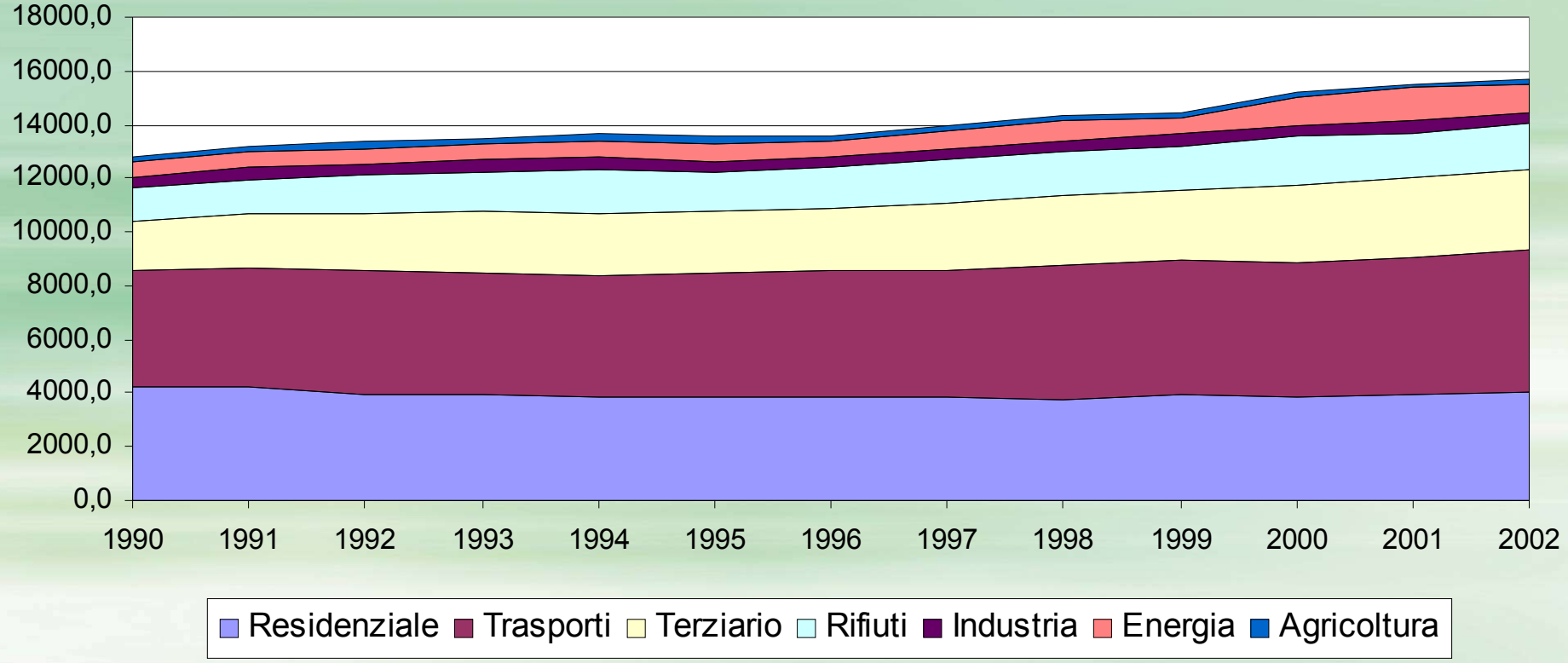
Actions and tools involved

- Creating the **City Action Plan on GHG emission cuts**;
- Realisation of "**Pilot Actions" within a City District** and/or on the Departments of the City Administration, with check of the measures compared to estimates & forecasting of the Plan;
- **Public information** distribution through meetings, events and Internet networks

Start and End of Project

1st of October 2004 - 30th of September 2008

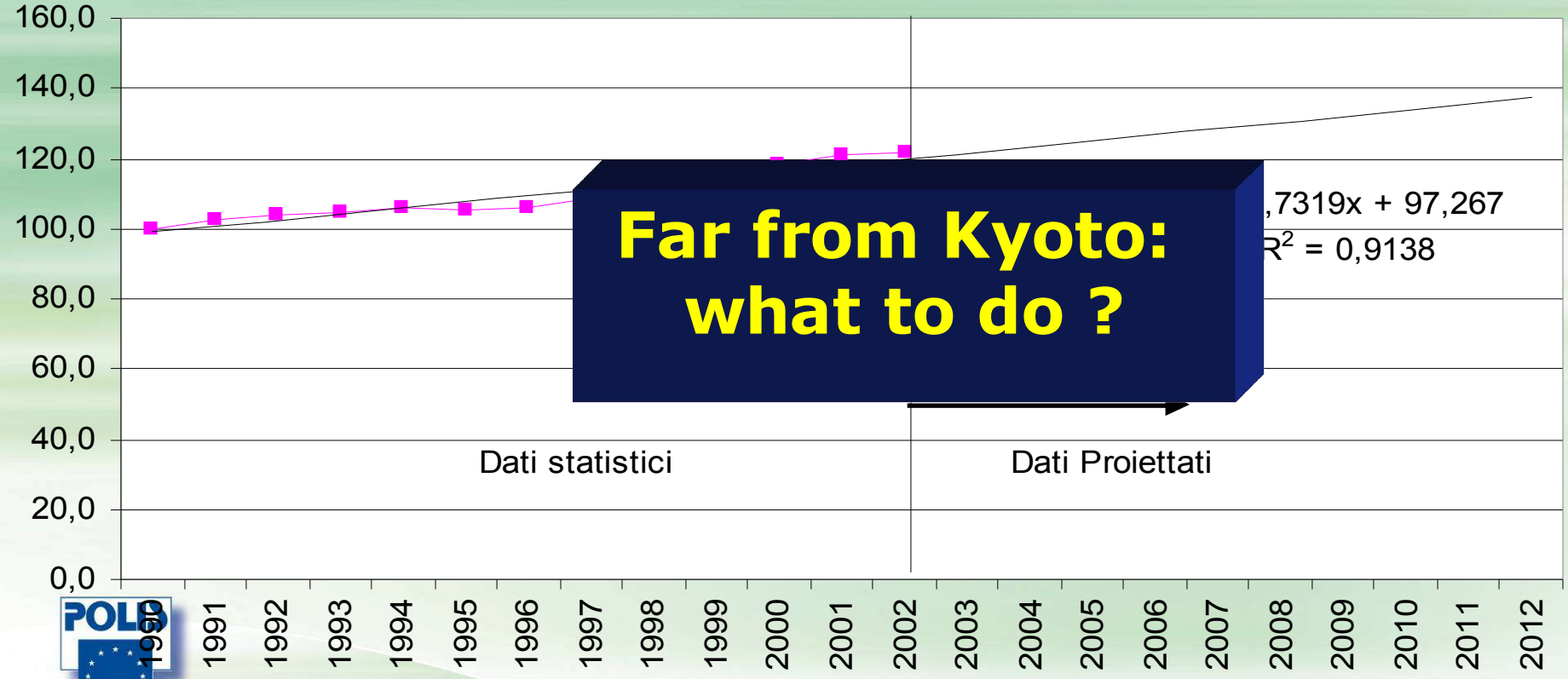
CO2 emission trend in Rome 1990-2002



In 2002: CO_2 88,6% CH_4 11,2% N_2O 0,2%

CO2 emission trend for the period 1990-2012

1990-2002 values are calculated; 2003-2012 forecasting with "business as usual" (BAU)

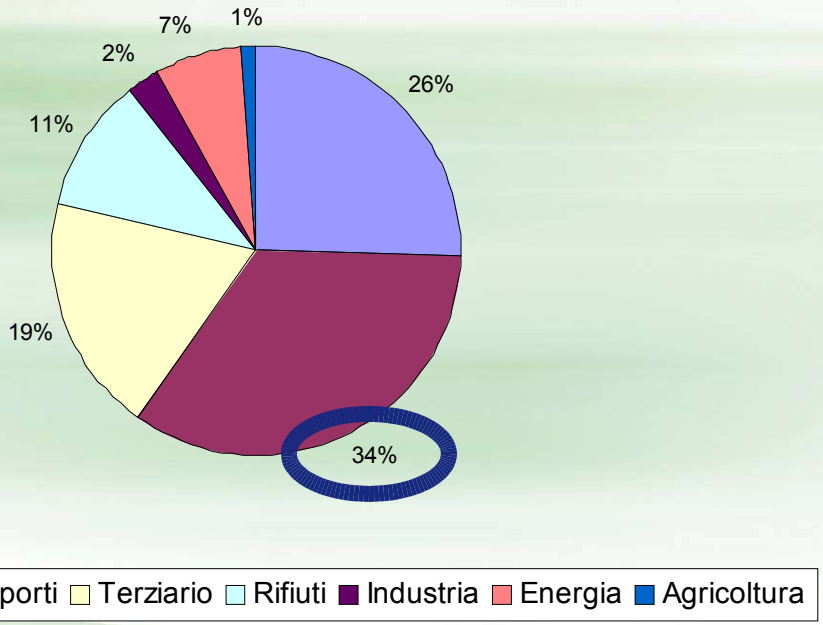


The Rome Action Plan into reality

- Analysis of the necessary decrease (evaluation of 1990 and extimation of 2012 CO2 emissions) in each sector;
- Definition of a common strategy fo the overall reduction;

2012 Objective:
reduction up to **12.388 kT CO2 eq**
(-6,5% of 13.249,2 kT, 1990 emission value)

EMISSIONI DI GHG IN SETTORI RILEVANTI (ROMA 2002)



Rome: The impacts of the mobility problems

From the problem to the solution: the Management of Mobility issues.

- **Traffic Demand Management** (Urban traffic Masterplan, PT priority, access limitations, area pricing)
- **New "Hard" Mobility Infrastructures** (Underground and Urban Rails)
- **New "Mobility Corridors" and Reserved Lanes** (Surface Transport)
- **Fleet Renewal & Monitoring** (bus and cars, towards lower emissions)
- **Technologies and ITS** for management, monitoring and enforcement
- **Sustainable Mobility (EC CIVITAS Initiative) package** (car sharing, car pooling, mobility soft measures, awareness)

The model: 5 concentric zones

zone

constraints

Municipality Area
1285 skm

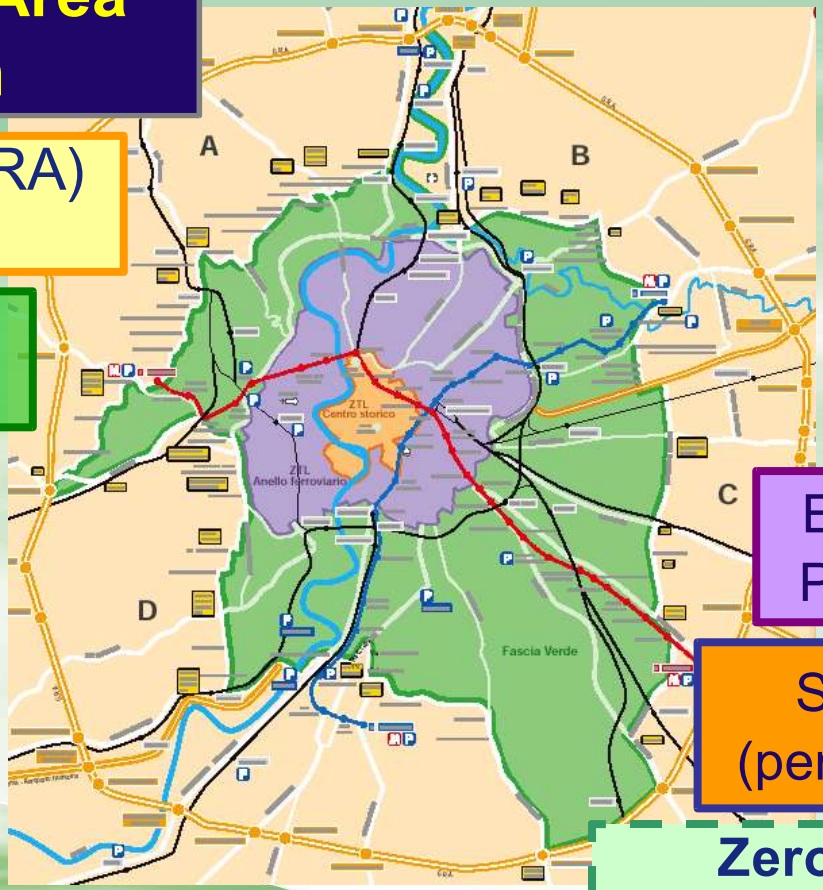
External Ring (GRA)
344 skm

Green Belt
154 skm

Rail Ring
48.4 skm

LTZ
5.5 skm

Pedestrian
0,5 skm



No Constraints

Tourist Coaches Regulation

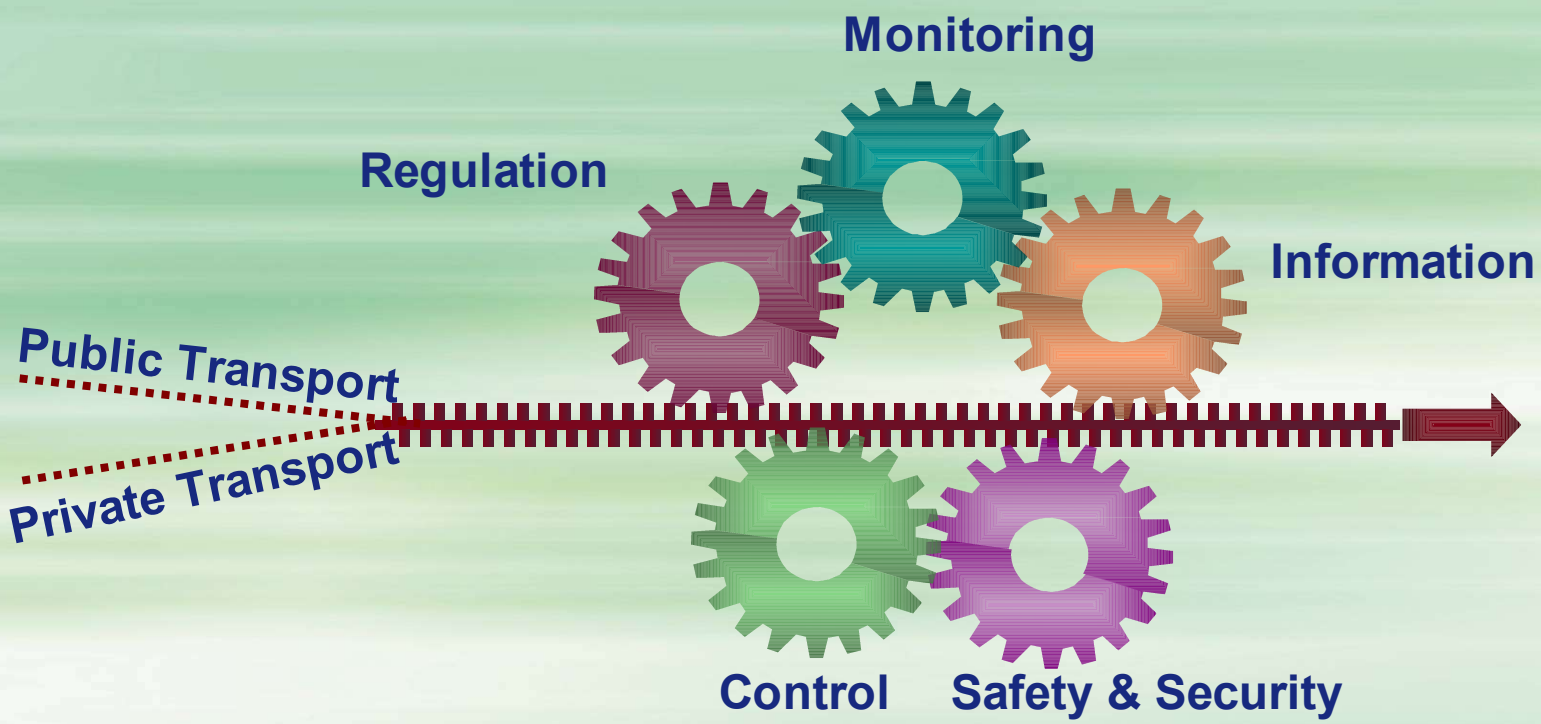
Pollution emergencies
Multi-modal nodes
Park&ride

Emission Constraints
Pay parking schemes

Stop to All Vehicles
(permission concession)

Zero Emission Area
(walking & electric)

ITS technologies: Rome Mobility Centre

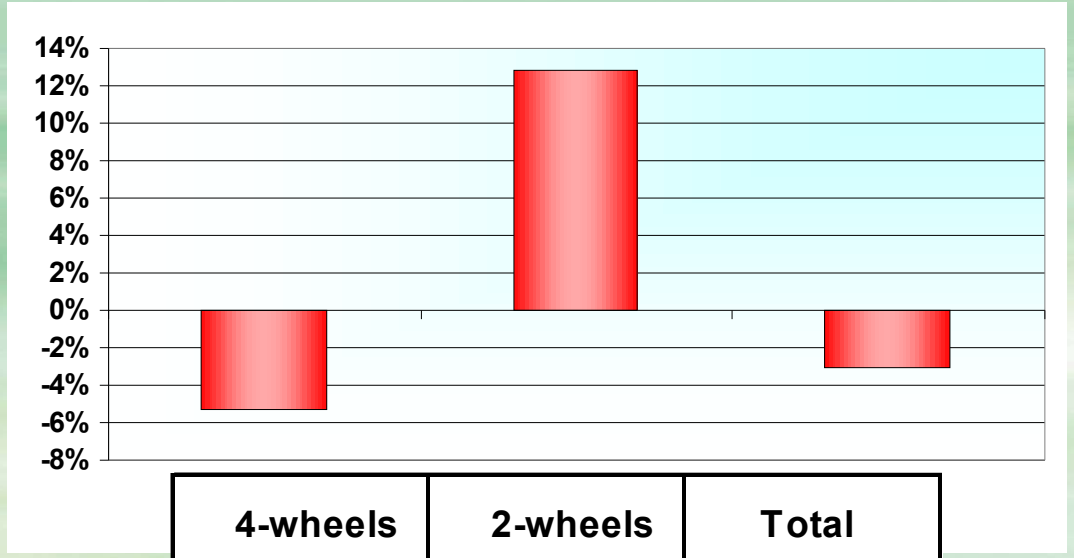


STATIC SYSTEM

ITS and Rome mobility system

FLEXIBLE, INTEGRATED AND PREDICTIVE SYSTEM

Private mobility evolution
(% variation 1996-2004)



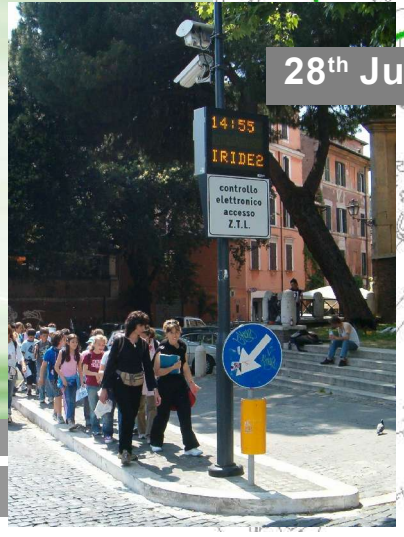
4-wheels	2-wheels	Total
-5%	13%	-3%

ITS in Rome: the electronic gates

Historic City Centre: 23 access gates

1th October 2001

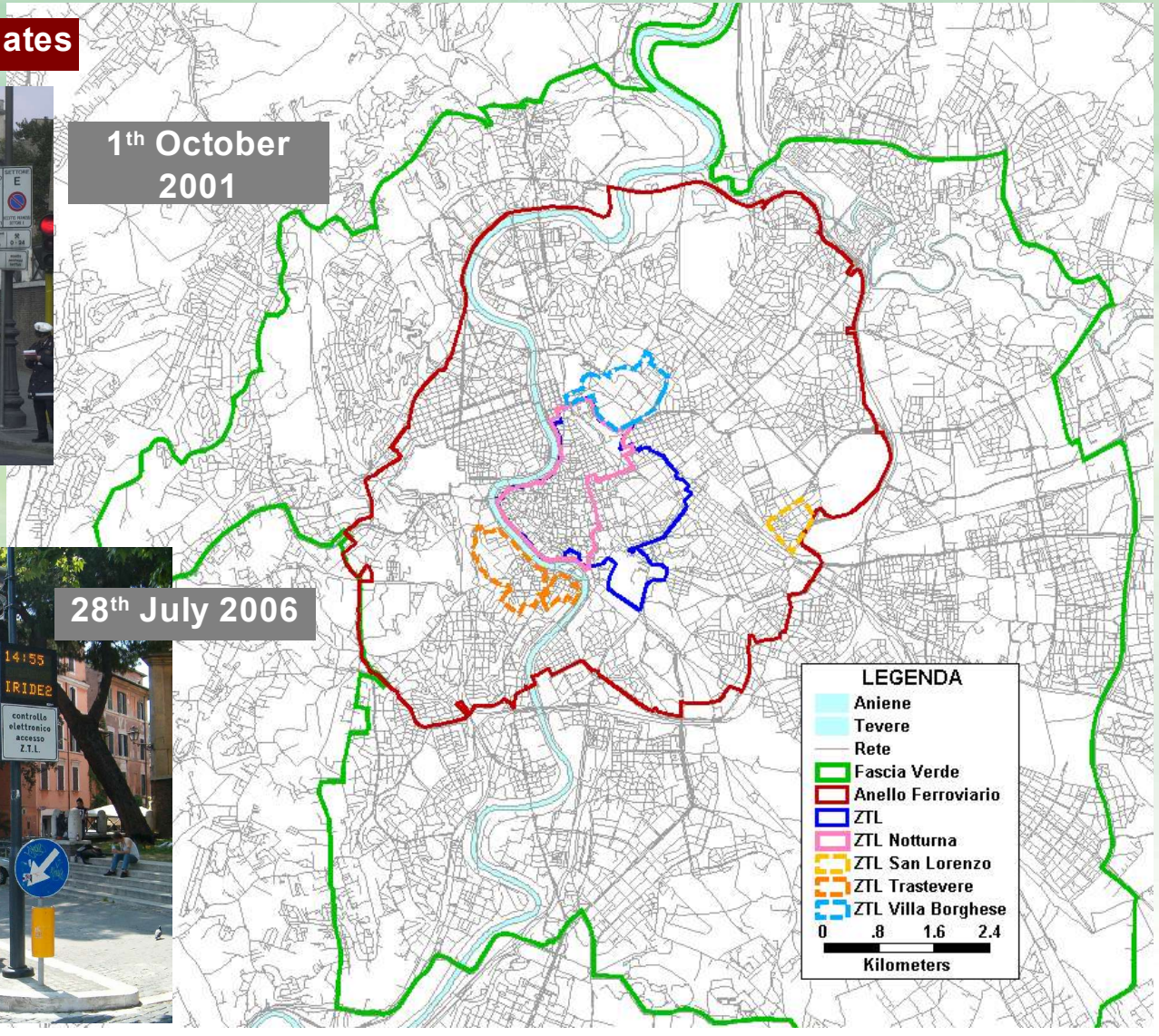
Trastevere: 12 access gates



28th July 2006

The LTZ Extension:

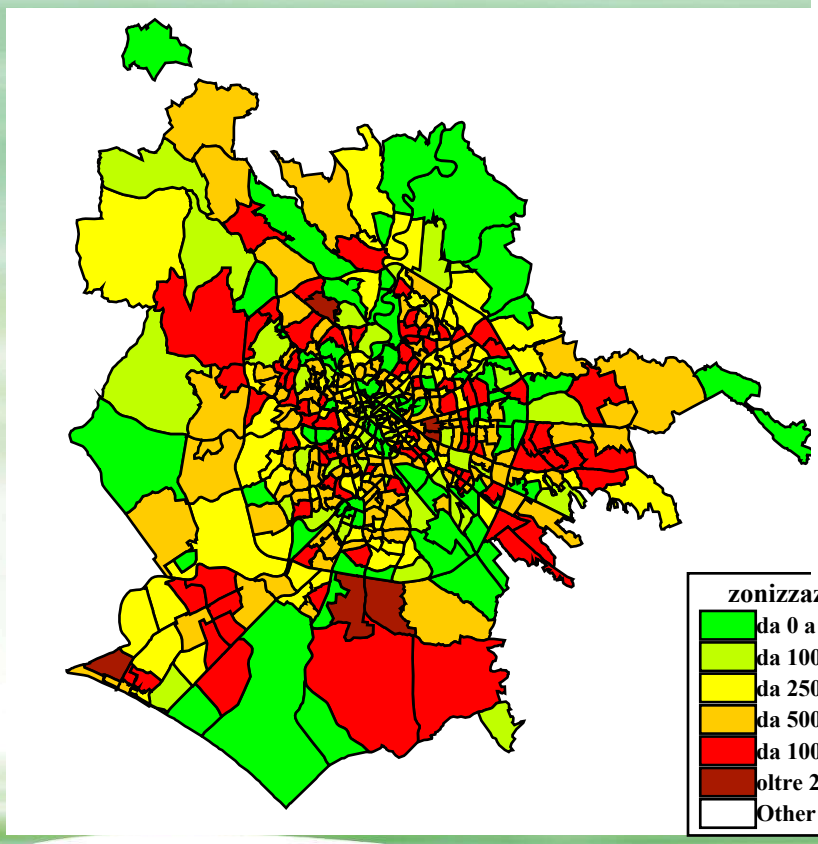
- LTZ San Lorenzo
- LTZ Villa Borghese

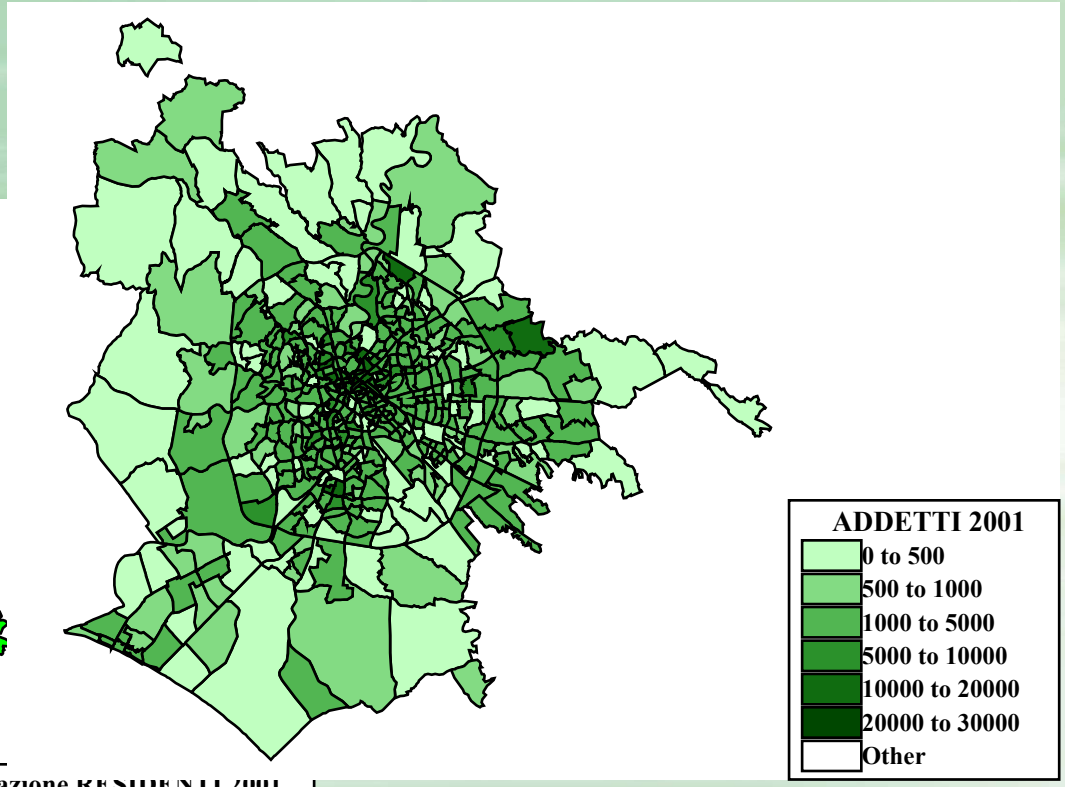


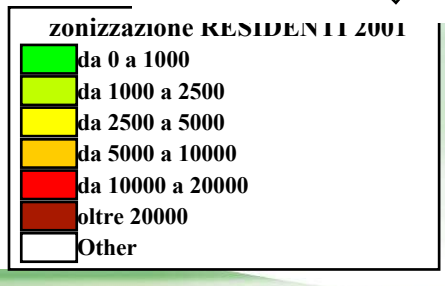
Methodology for estimating CO2 emissions

- **City development plans**: actual situation and 2012 scenario
- **The supply for PT and private transport**: actual situation and 2012 scenario;
- **Vehicular fleet** to be divided into classes based on COPERT III cathegories (ACI data)
- Traffic flows on the network estimated through simulation models (TransCAD)
- **CO2 emissions** estimated with COPERT III methodology
- The territory of the Council of Rome divided into **traffic zones** depending on territorial homogenity and mobility criteria
- For each traffic zones estimated the CO2 end of pipe emissions

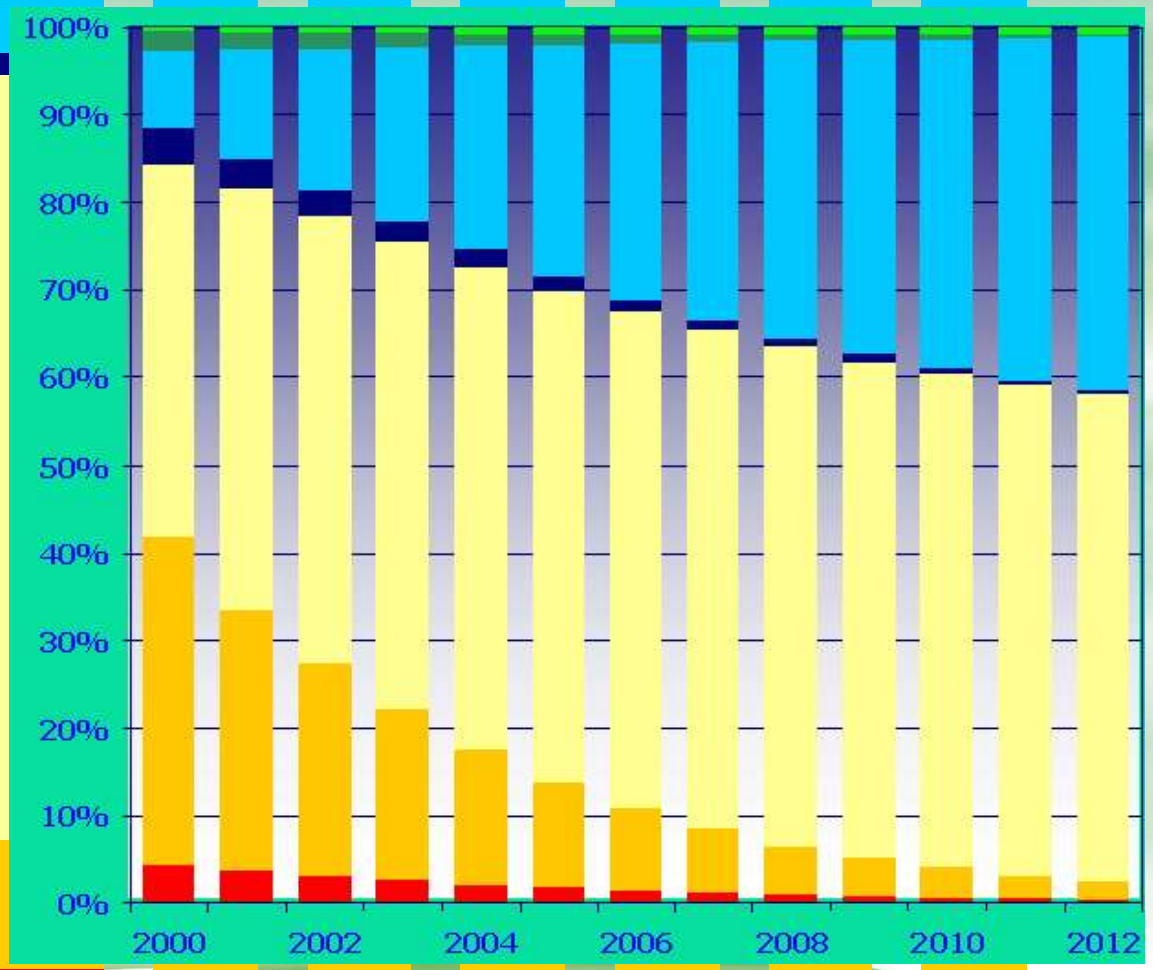
Residents & employees in the Municipality of Rome





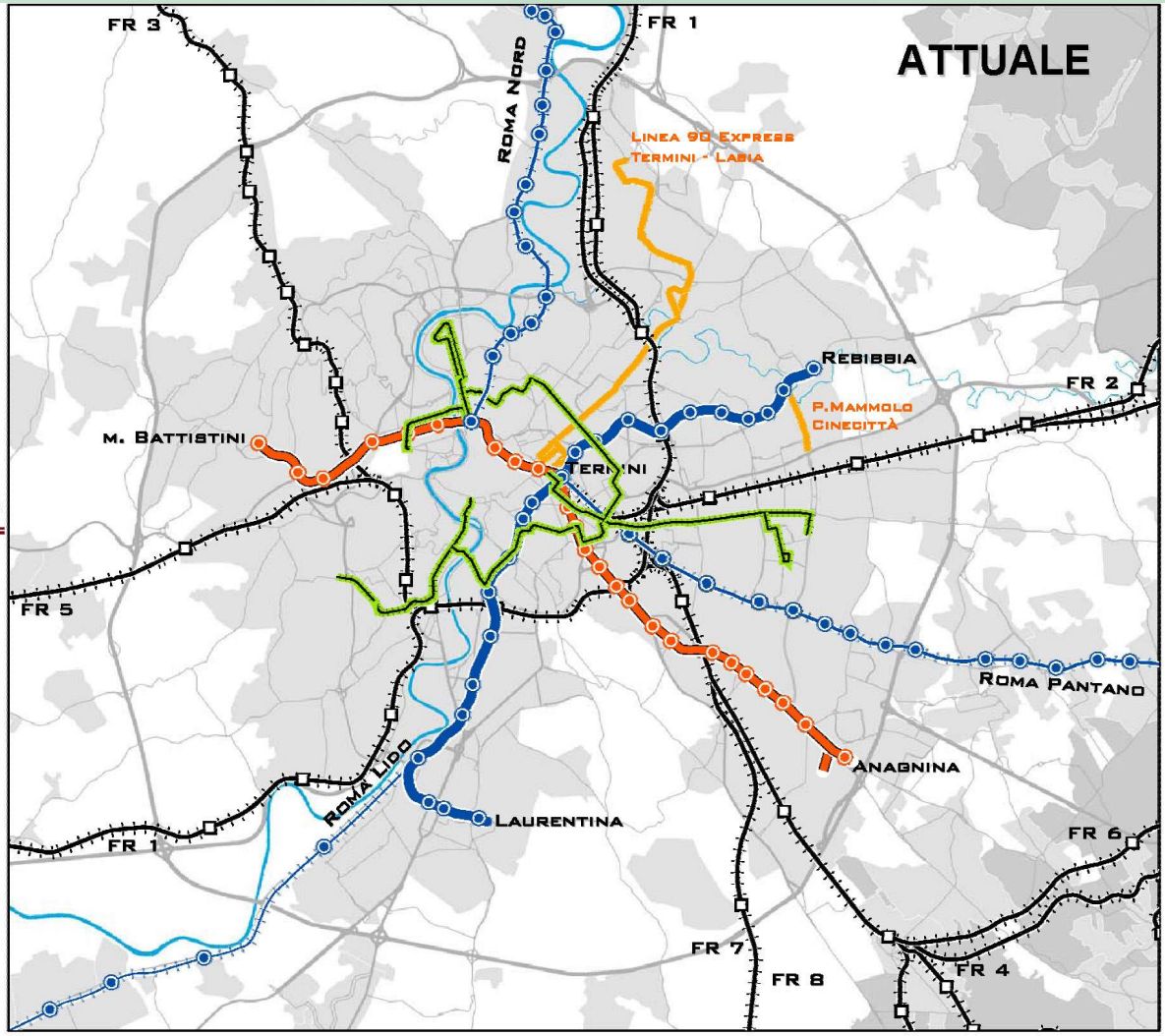


om sit & im d lu of the vehicular fleet



ACI data > years 2000-2005
Extimations > years 2006-2012

2006 – Actual network

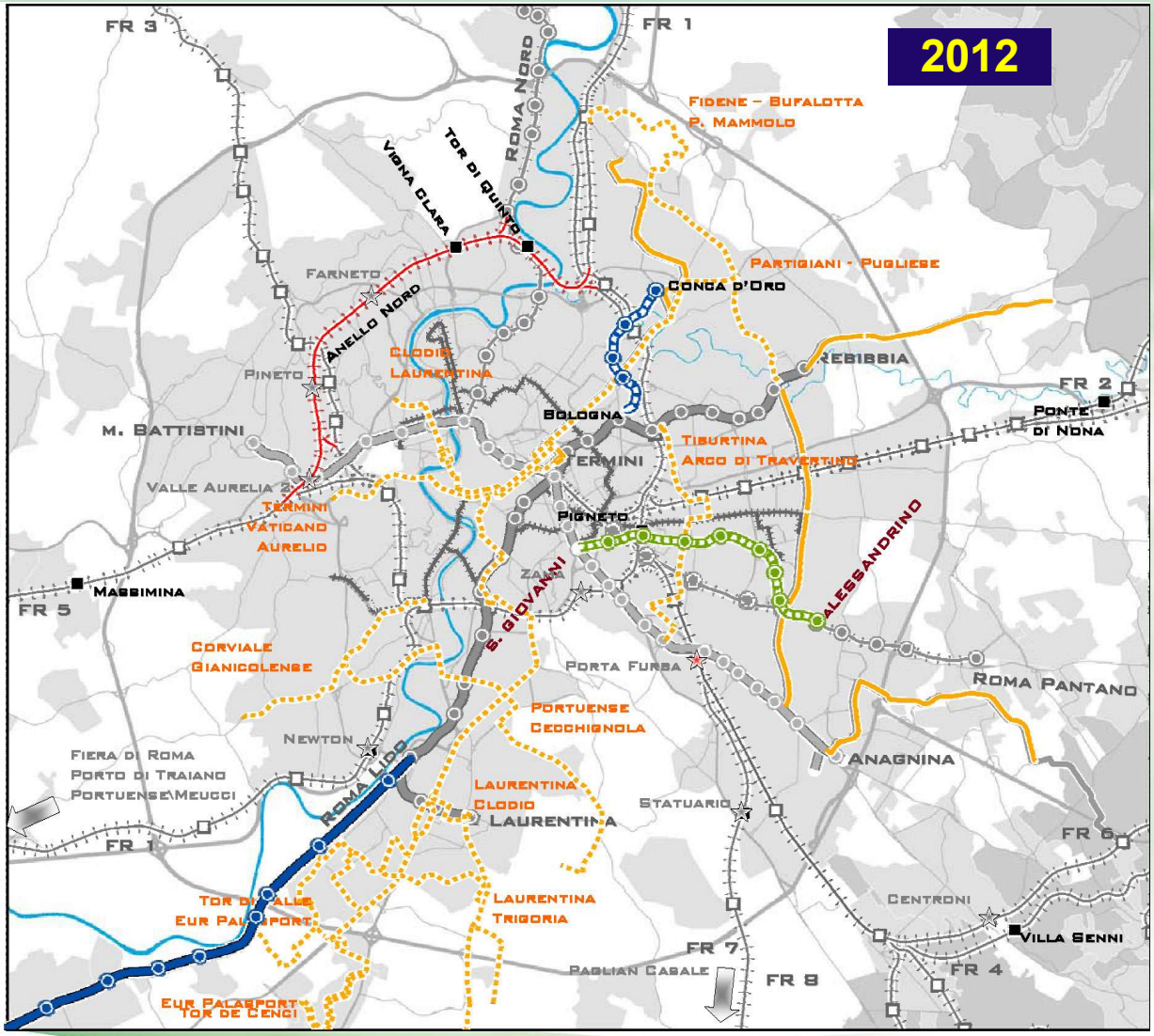


Servizio	Estesa Km	n° fermate
Linea A	18,4	27
Linea B	18,2	22
Tram	38,0	188
Roma Lido	28,8	13
Roma Nord(1)	13,3	16
Roma Pantano	17,8	30
FR(2)	112,7	53
Corridoi	12,8	16
TOTALE	260.0	365

(1) tratta urbana Montebello-Flaminio

(2) Tratte urbane

2012 Scenario: the evolution of the PT network



TRASPORTO PUBBLICO

Rete del Ferro Esistente
- Linea A
- Linea B
- Ferrovie concesse
- Linee tranviarie
- Ferrovie metropolitane

Rete del Ferro di Previsione
- Linea B1
- Linea C
- Nuove linee ferroviarie
- Nuove stazioni ferroviarie

Corridoi della mobilità
- Corridoi della mobilità
- Nuovi corridoi della mobilità

Studi di fattibilità

Servizio	Estesa Km	n° fermate
Linea A	18,4	27
Linea B	18,2	22
Tram	38,0	188
Roma Nord(1)	13,3	16
Roma Pantano	10,8	22
Linea C	7,0	9
Linea B1	3,9	5
Roma Lido(2)	28,8	16
FR(3)	123,5	74 +11(4)
Corridoi	133,4	207
TOTALE	395.3	586

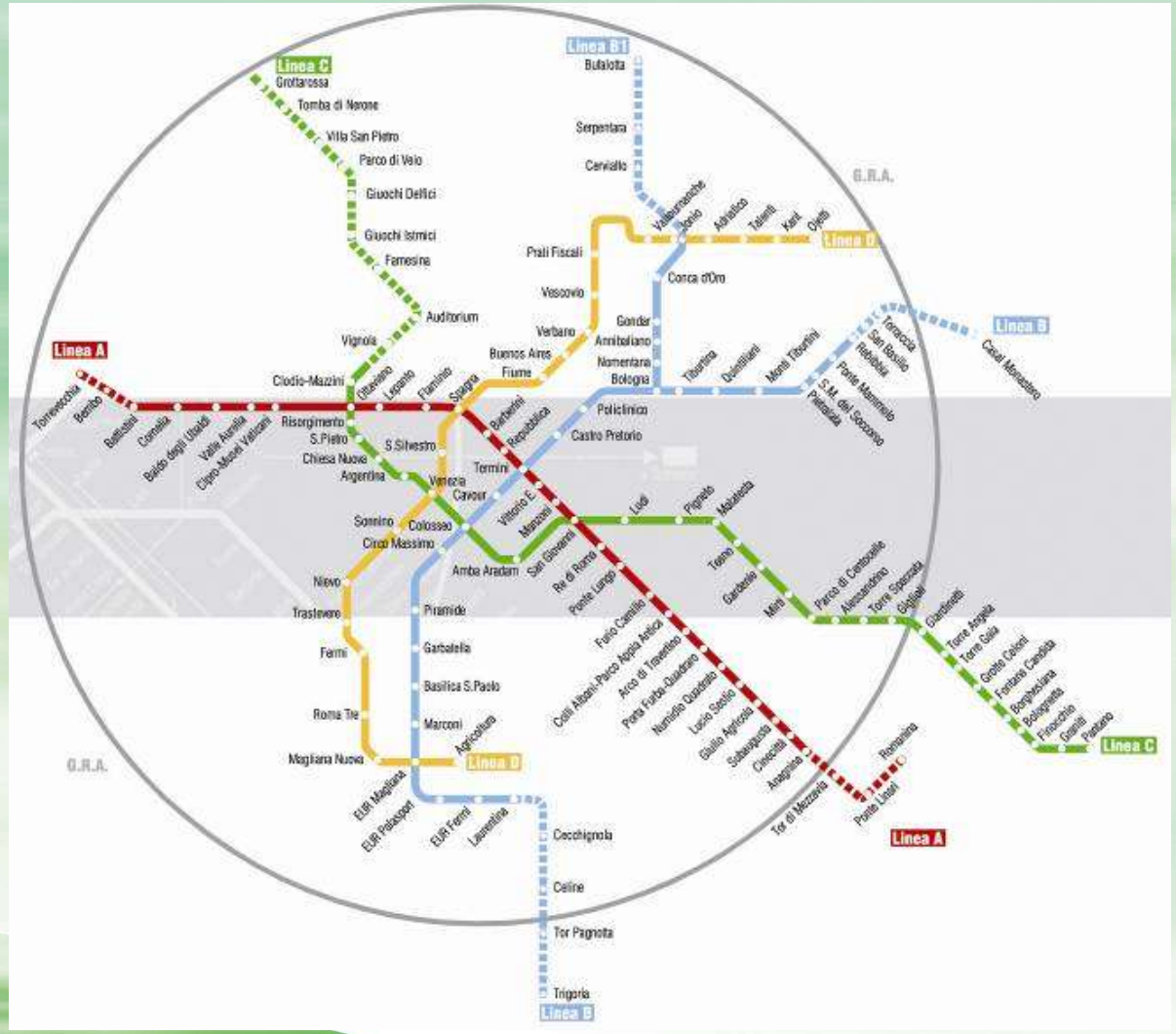
(1) tratta urbana Montebello-Flaminio
(2) trasformata in metropolitana
(3) tratte urbane
(4) Studi di fattibilità

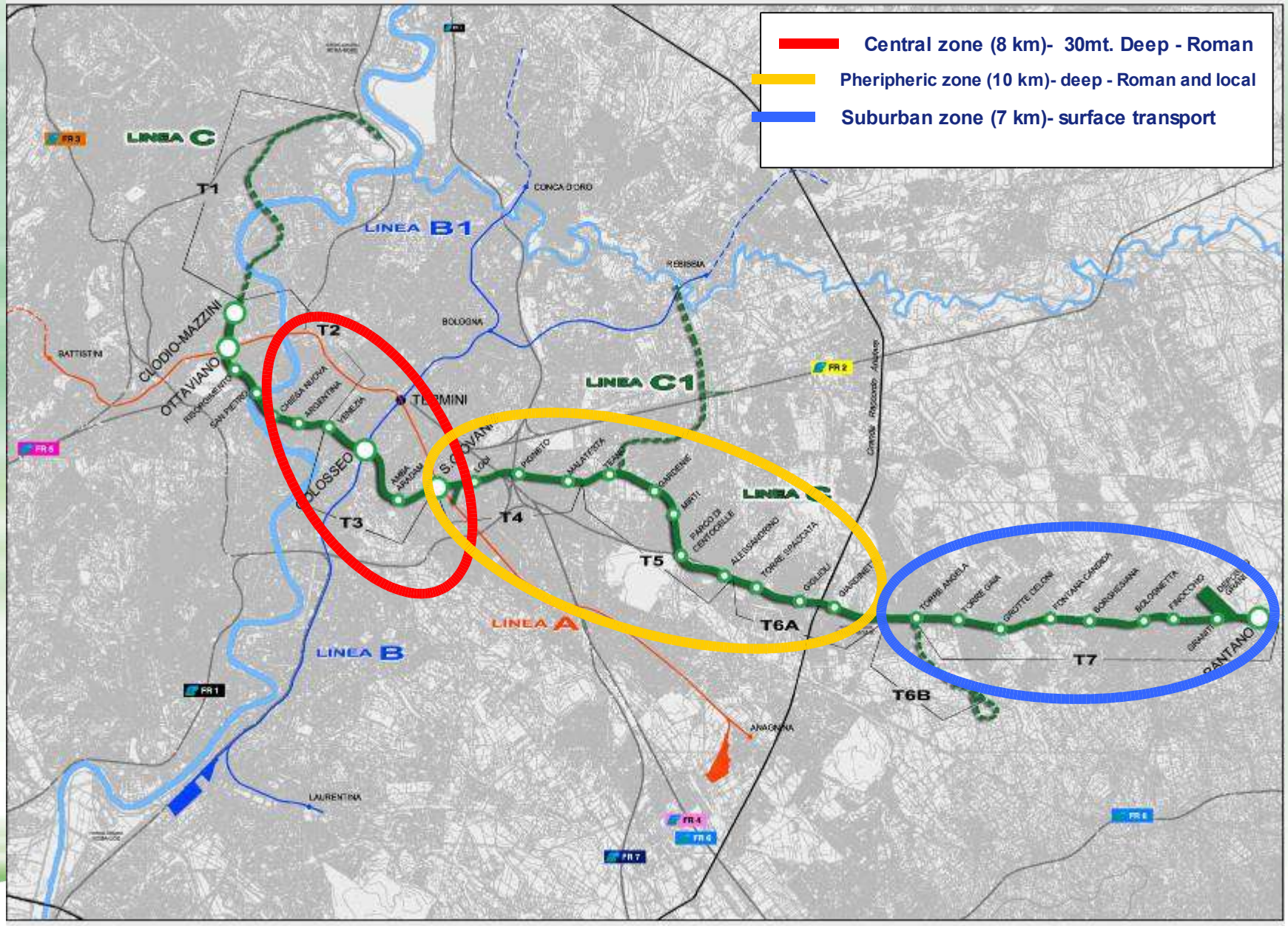
Evolution of PT infrastructural offer

Investment Plan of 3.000 Millions Euro

	2006	2012	
■ Urban railways (km)	112	123	(+10%)
■ Underground (km)	36	47	(+30%)
■ Bus Corridors (km)	13	130	(+900%)
■ Rail Network (km)	206	395	(+190%)
■ Stops (n.)	365	586	(+160%)
■ Seats/km (ml)	5,8	8,2	(+140%)

The future underground system




Central zone (8 km)- 30mt. Deep - Roman
Pheripheric zone (10 km)- deep - Roman and local
Suburban zone (7 km)- surface transport
LINEA C
LINEA B1
LINEA C1
LINEA A
LINEA B
T1
T2
T3
T4
T5
T6A
T6B
T7
CLODIO-MAZZINI
OTTAVIANO
COLOSSEO
TERMINI
CONCA D'ORO
BOLOGNA
REBIBBIA
BATTISTINI
LAURENTINA
ANAGNINA
PANTANO

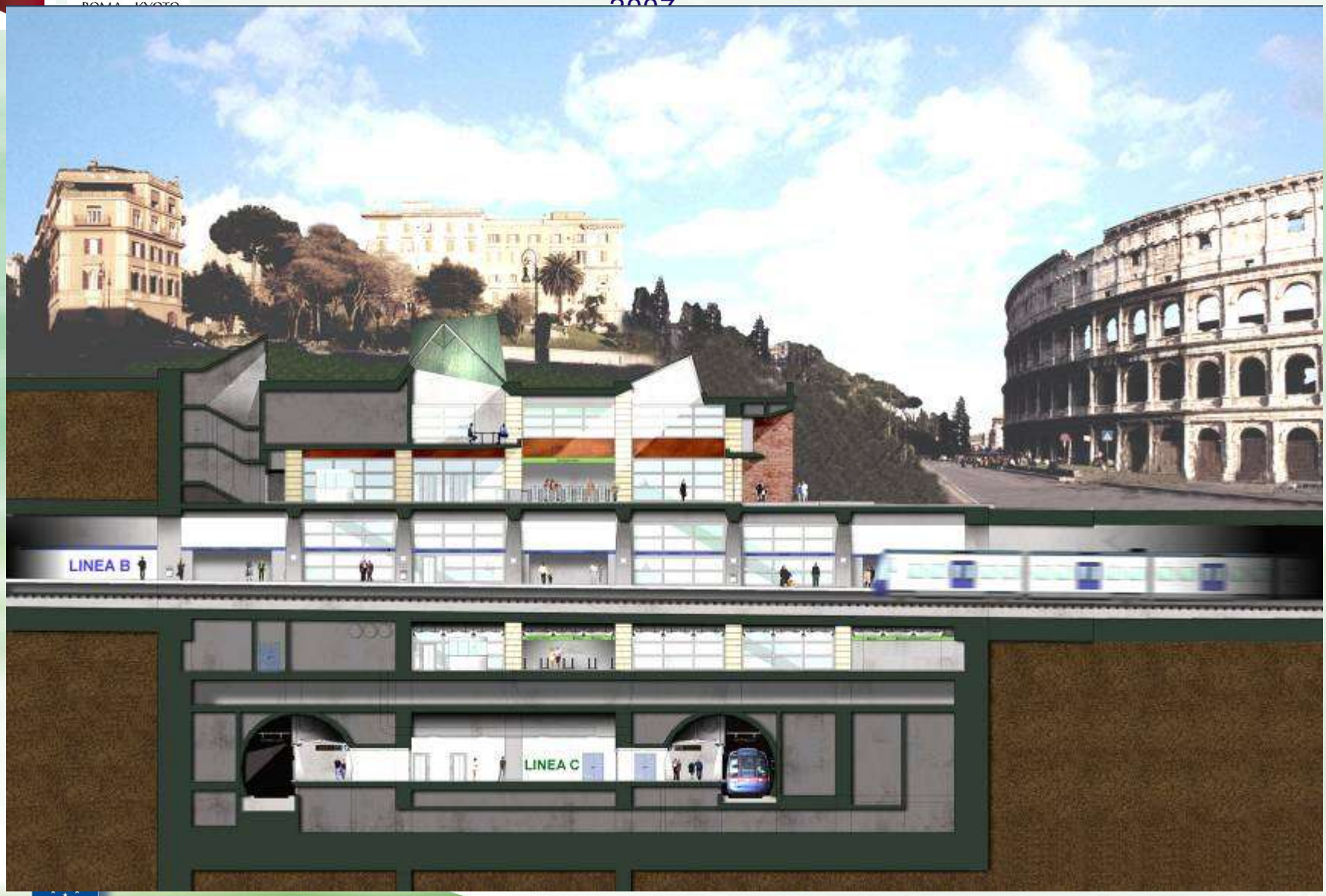

VENEZIA
CAVOUR
LINEA "B"
COLOSSEO
CAMBIO CON LA LINEA "B"
LINEA "A"
S. GIOVANNI
AMBA ARADAM


SALA DEL
'400

CHIESA NUOVA
Historycal buildings and monuments
Zone involved in the metro constuction works

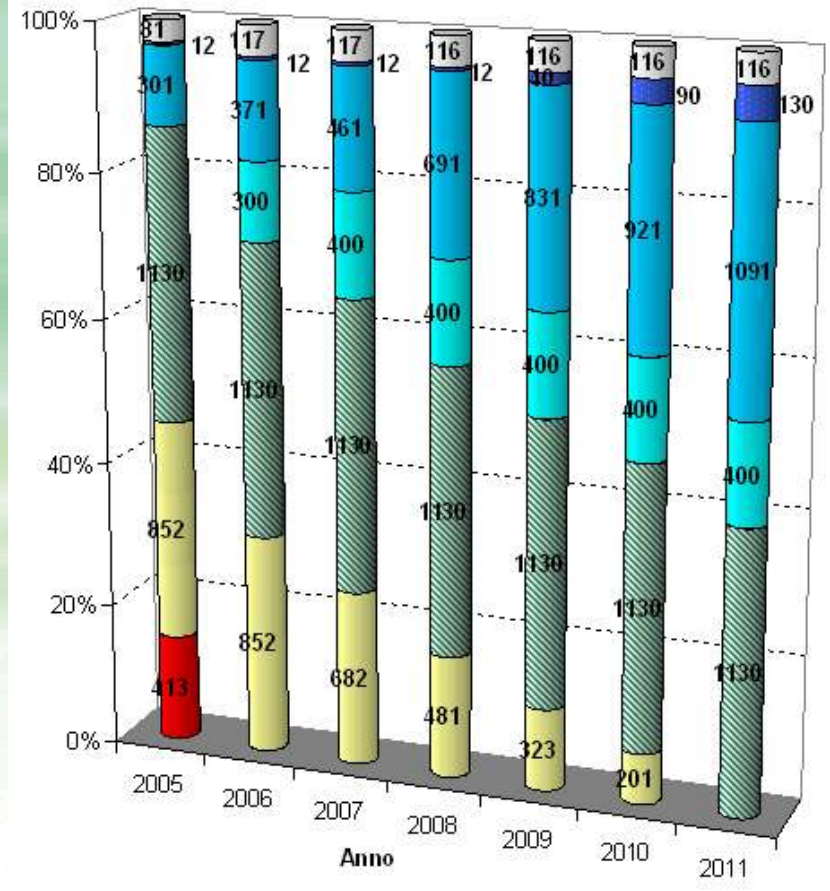

TERMINI
CAVOUR
VENEZIA
ARGENTINA
COLOSSEO
CIRCO MASSIMO
300 d.c.
linea C
linea B

Polis Annual Conference – Toulouse – 15-16 March 2007


LINEA B
LINEA C

Bus Fleet Management & Renewal Plan

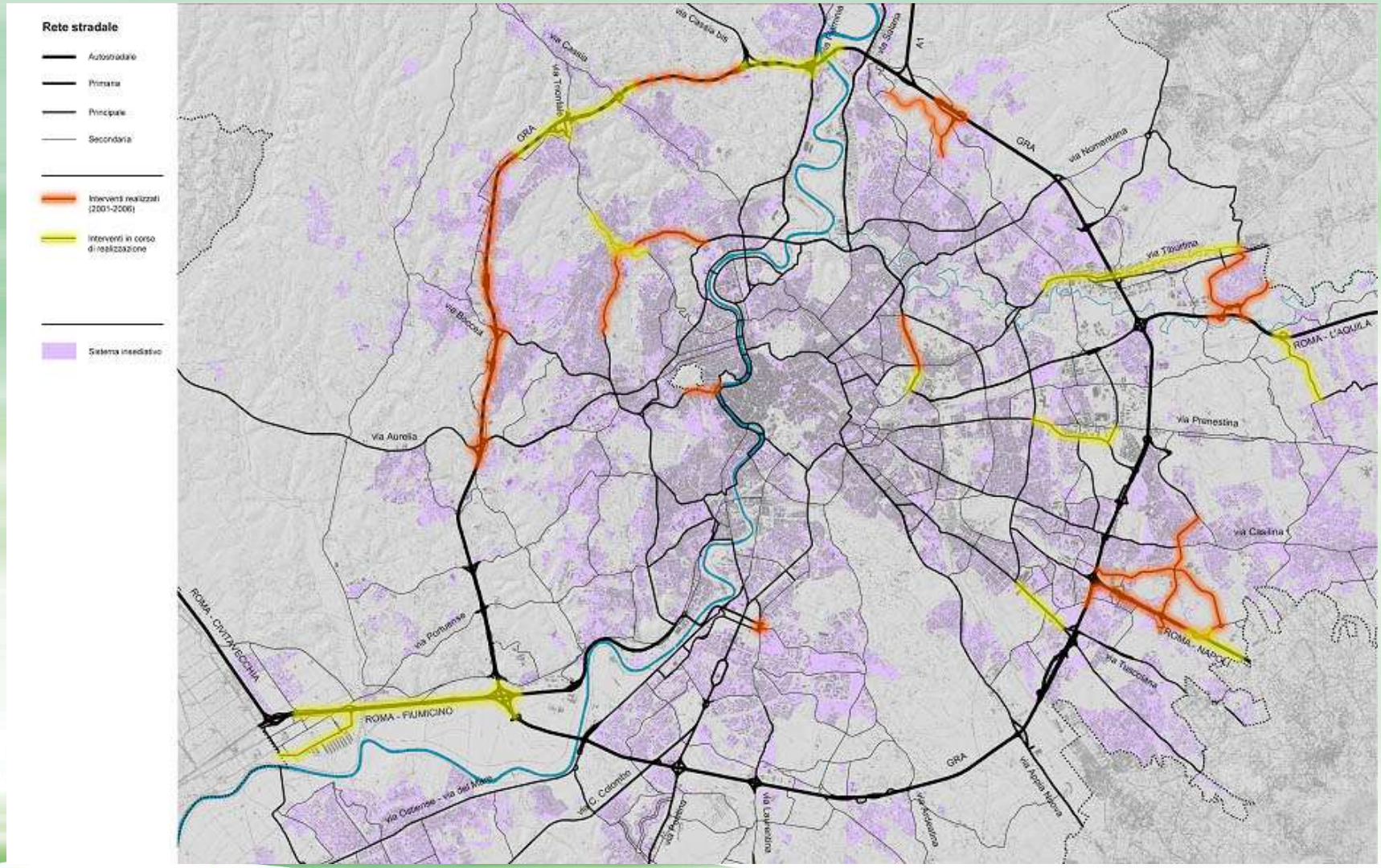
Vehicle Distribution according to emission class



- 12 Hybrids Bus
- The Largest Electric Fleet in Europe:
  - 52 minibus
  - 1.500 000 km/year
  - 3 mln passengers/year
  - 5 lines
- 7 bus powered with biogas
- 371 bus EURO III CRT (= EURO IV)
- 30 New Bi-modal Trolley Bus
  - 1 new Trolley Bus line
- 200 (+200) CNG bus

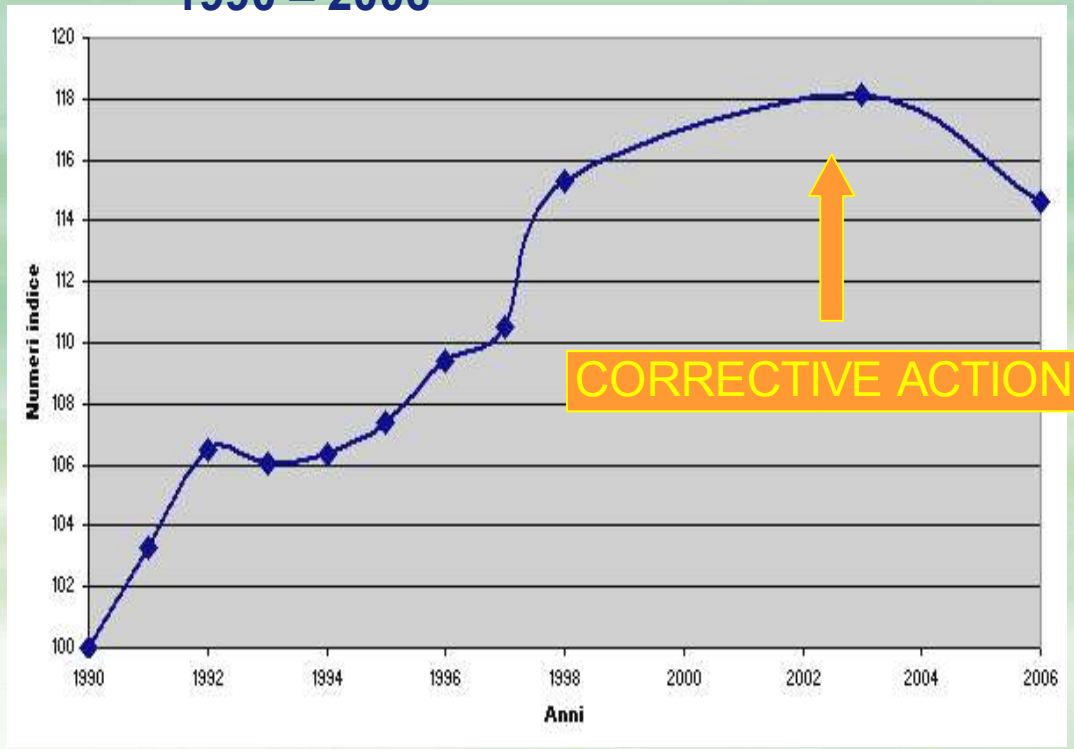
Fleet Average Age: 6 years (12y in 1998)

Interventions on road network

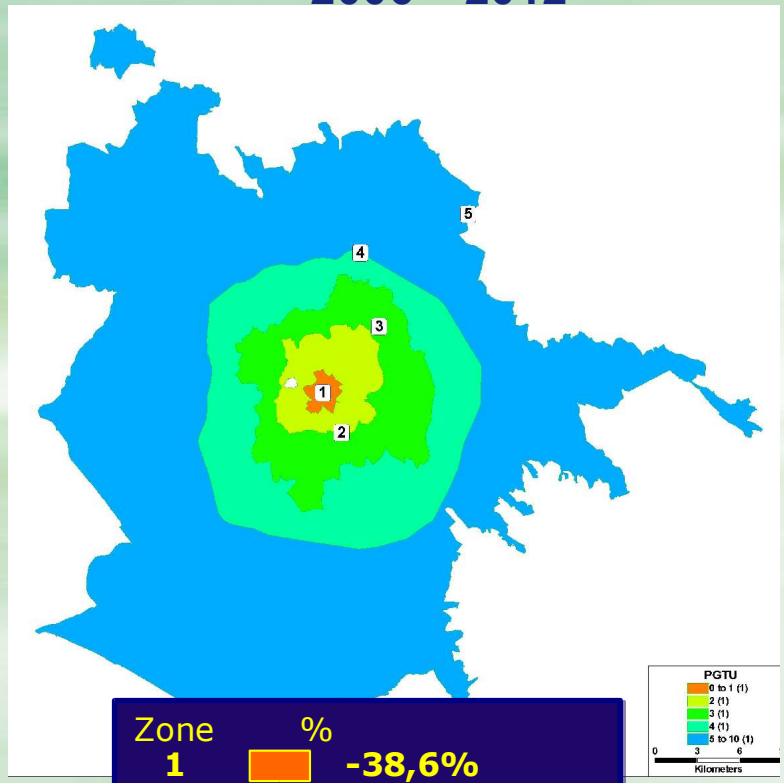


Trends on CO2 emissions in the city (1990 – 2012)

1990 – 2006

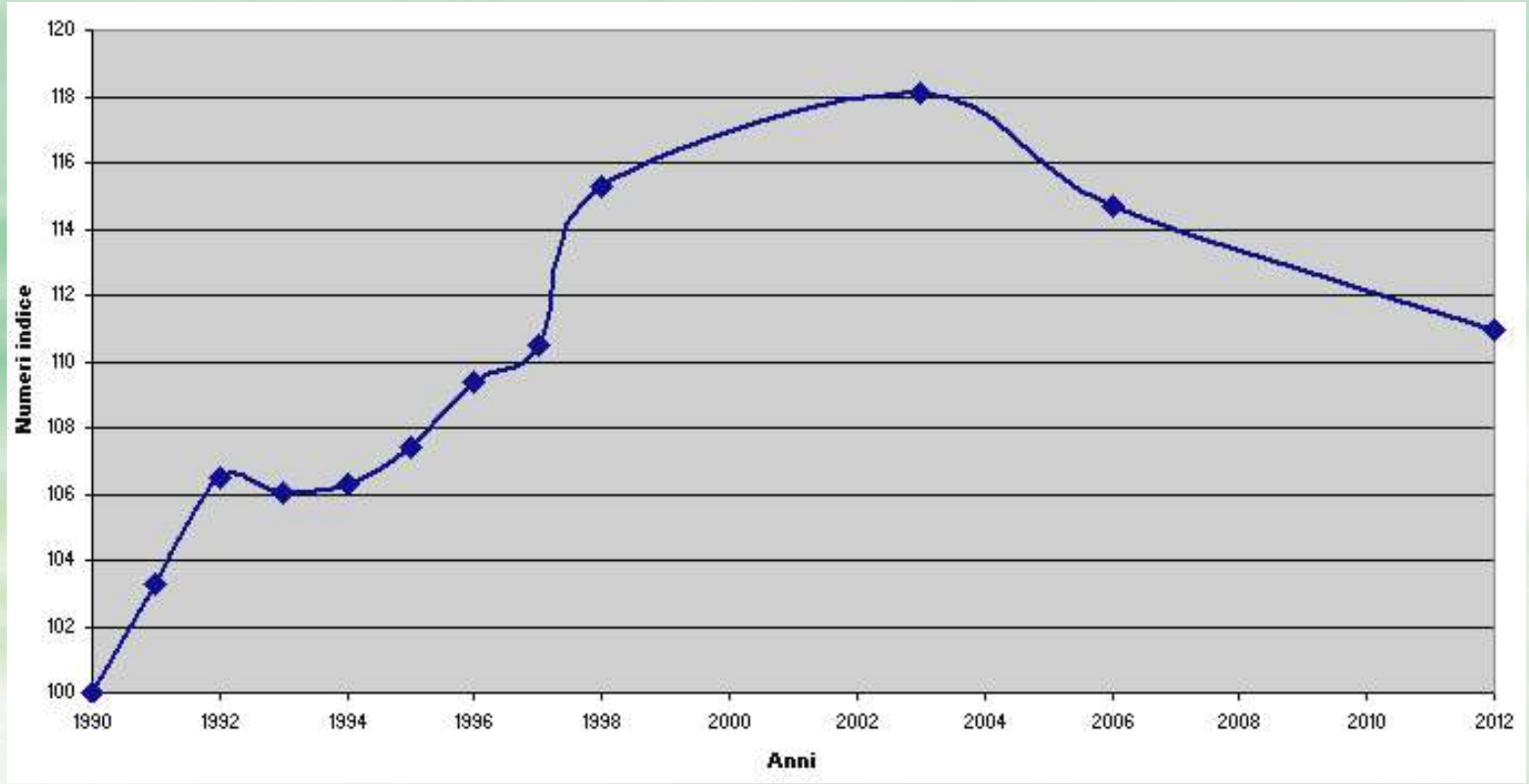


2006 – 2012



Zone	%
1	-38,6%
2	-16,8%
3	-14,2%
4	-17,3%
5	+25,4%
Total	-5,6%

The evaluation of CO2 variations 1990-2012



...Notwithstanding the huge expected efforts, emissions from mobility in Rome are far from the Kyoto objective!

CUMULATIVE TABLE (CO2 Kton)

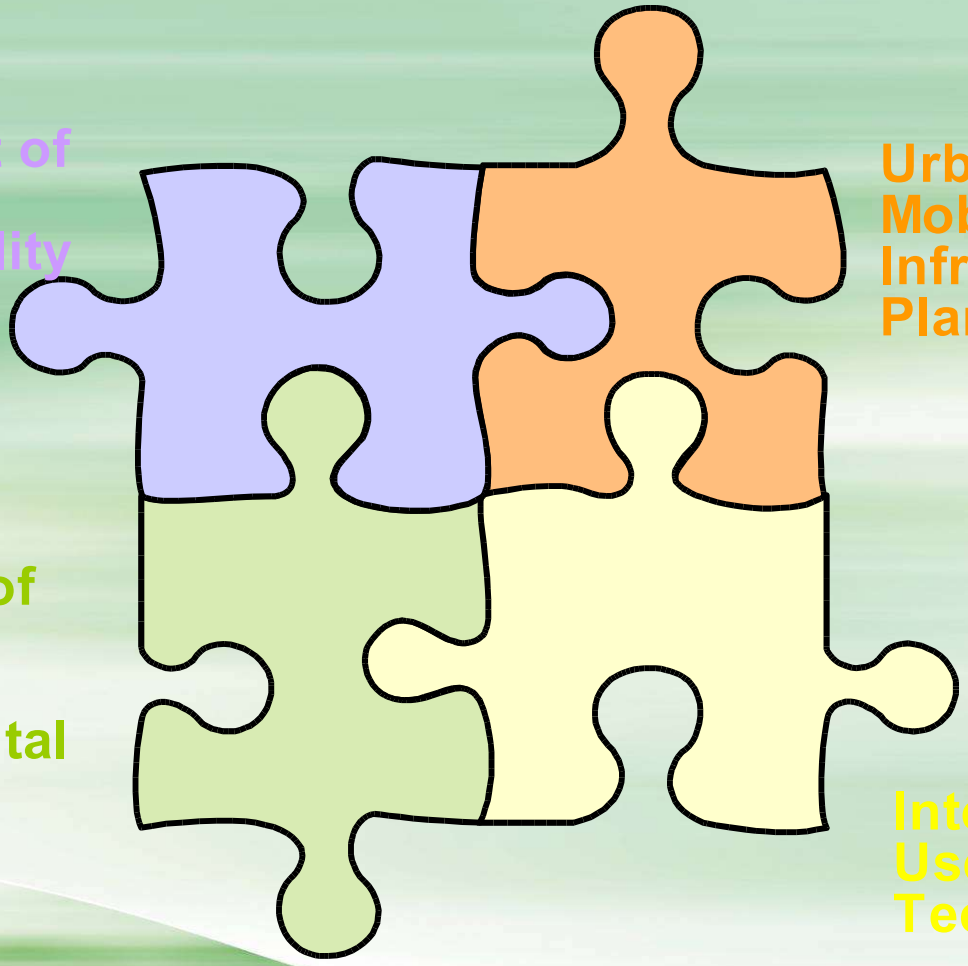
Sectors	1990	2012 (Kyoto objective)	2012 (Present Status)	Distance from the objective
Residential	4.258,2	3.981,4	3.987,1	5,7
Transport	3.752,5	3.508,6	4.165,3	**656,7**
Tertiary	1.863,7	1.742,6	3.105,4	**1.362,8**
Waste	1.200,0	1.122,0	253,0	-869,0
Energy	958,6	896,3	943,2	46,9
Industry	411,8	385,0	387,6	2,6
Agricolture	260,7	243,8	154,2	-89,6
Gross Emissions	12.705,5	11.879,7	12.995,8	**1.116,1**

Further steps

- Analysis of further policies towards the reduction of emissions from private traffic, according to city development (PRG);
- Implementation of local policies - the case of XV° Borough;
- Integration with other sectorial studies ;
- Finalisation of the Municipal Plan for emission reduction for the respect of Kyoto protocol;
- Adoption by Municipal Council within 2008.

Rome approach: Integration into a unique picture...

Management of Public and Private Mobility



Urban and Mobility Infrastructure Planning

Monitoring of Congestion and Environmental Threats

Integration and Use of New Technologies

Thank you!

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