

## RTD Fact Sheet Template

<b>PREPARATORY STUDY FOR ROAD PRICING AND ACCESS SCHEME ANALYSIS. TRAFFIC FLOW SIMULATIONS AND PLANNING OF SUSTAINABILITY SCHEMES RTD FACT SHEET</b>	
<b>Reference Measure</b>	3.1 Road Pricing Policies
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### Context and Purpose

The growth of traffic flow in cities and the consequent congestion events, reduces the quality of life of urban citizens, making the life in some areas sometimes unsustainable. The objective of the measure is to reduce the private traffic flow in centre zones by limiting the access and improving largely centre areas.

The solution adopted are:

- Improve the Limited Traffic Zone (LTZ) access: policy based on economic incentives/disincentives and support the implementation of this policy with electronic enforcement instruments;
- Completion of a semi-pedestrian area within the LTZ (University area), in order to demonstrate the impact of road price policy in people behaviours and environmental awareness

In this context, the RTD activity consisted in a preparatory study for road pricing and access scheme analysis, traffic flow simulations and planning of sustainability schemes. The objective of the RTD study is the complete and detailed knowledge of the traffic behavior near the historical centre, its features and the modality of accesses into the studied area.

RTD activity wanted to investigate how citizens access to centre zones, who needs free and continuous permission of incoming (for example resident people and traders) and who can give up the access in the area instead (for example people going to shopping).

### Description of RTD Activity

The RTD activity evaluated the typology of traffic flows reaching the historical centre of Bologna, the effects that the introduction of the automatic control of accesses (SIRIO)<sup>1</sup> produced on the traffic itself, the authorized accesses dynamics (considering actual municipality rules), the problems related to parking, the rules introduced in order to protect people exigencies inside the LTZ, the flows orbiting around LTZ and potentially interested in entering into the LTZ itself. The analysis uses data from different technological sources for having complete information about flow actions during all day and users needs: data flows from SIRIO'S cameras, database of the entrance's permits for the restricted areas and O-D investigation allowed to know the kind of accesses (categories of vehicles, bands of incoming).<sup>2</sup>

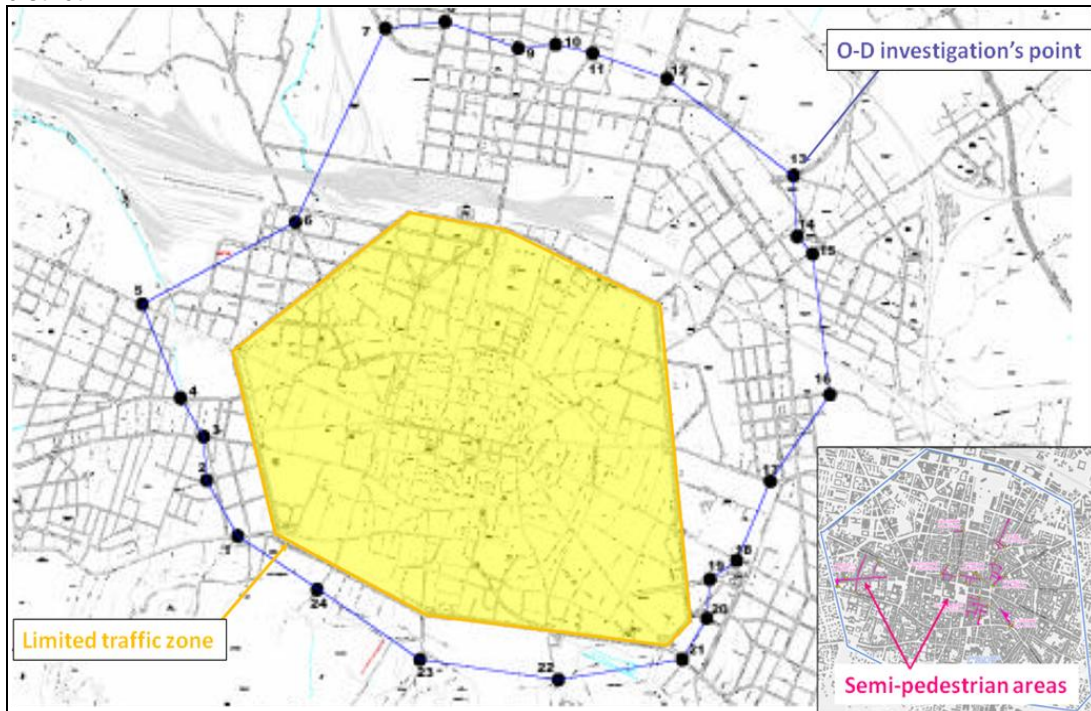
The study area is explained by the following pictures: O-D investigation was done on all perimetral confine of LTZ zone, SIRIO's cameras were checking traffic affluence in the limited zone during all

<sup>1</sup> Sirio has been implemented since September 2005

<sup>2</sup> o-d investigation gives important results about demand actually outside from the LTZ zone potentially interested in transit within the area.

day from every possible access road.

SIRIO's project comprehends 10 cameras and is helped in its purpose of continuous monitoring by 6 RITA's cameras, tree tools for control T Area (a further restrictions zone) and 2 for the University district.



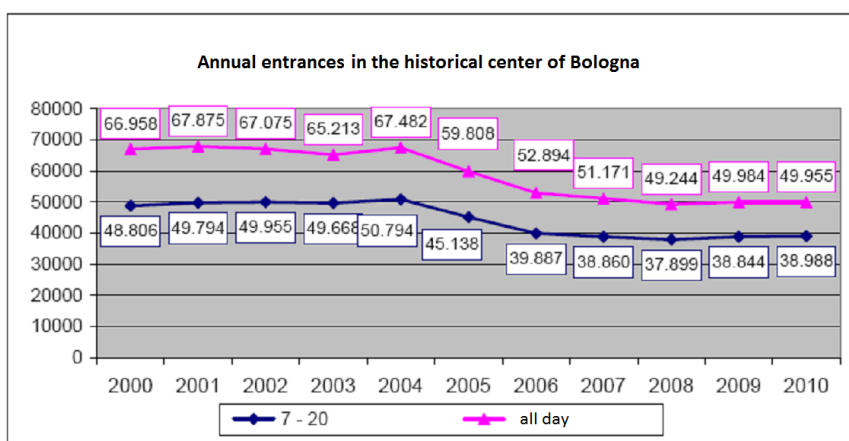
The RTD investigated the accesses during every hour of the day in all days of the week in a continuous way, in order to check the difference between periods when SIRIO and other systems are active and when they are not (people are informed about the presence of Sirio and about the activation time by road signs placed at the beginning of the LTZ; in addition the Sirio localization is communicated to citizens by all informative city maps distributed and available on the Municipality information points); the difference from an average working day and an average Sunday or Saturday; this data collection comprehends also the accesses peak evaluation, the percentage of affluence during the day and the daily critical bands evaluation. The analysis considered also the different kind of accesses trends during the day (residents, private parking, freight vehicles -with

headquarters located outside the LTZ area-, freight vehicles -with headquarters located inside the LTZ area- public administrations, disabled people, public services; others -garages, hotels, cinemas, daily tickets).

Part of the RTD Activity was a study about parking possibilities inside the LTZ, which allow to know the reason of the parking, the typology of parking utilized (free, resident, private, business, etc...) correlated with the type of access, and the number of users for every kind of parking.

## Outputs and Results

The use of an automatic system (SIRIO) for checking the accesses in the historical centre of the city gives good results, allowing to rise down the sum of vehicles inside the area during all time slot in the day. The number of accesses during an average weekday in February (trends 2000-2010) are reported (as an example) below.



(Δ%)	Time slot (7-20)	All day
2001 to 2000	2,0 %	1,4 %
2002 to 2001	0,3 %	-1,2 %
2003 to 2002	-0,6 %	-2,8 %
2004 to 2003	2,3 %	3,5 %
2005 to 2004 (start SIRIO)	-11,1 %	-11,4 %
2006 to 2005	-11,6 %	-11,6 %
2007 to 2006	-2,6 %	-3,3 %
2008 to 2007	-2,5 %	-3,8 %
2009 to 2008	7,9 %	6,7 %
2010 to 2009	-1,6 %	-2,1 %
<b>2010 to 2004</b>	<b>-20,8 %</b>	<b>-23,8 %</b>

The table about accesses trend evolution in the LTZ show how since 2006 the accesses have been stabilized to 50000 vehicles during all day and 39000 vehicles from 7 a.m. to 8 p.m. (against 67000 units/day and 50000 units from 7 a.m. to 8 p.m. before SIRIO).

This output shows that a more regularized entrance in the historical centre has been pursued with the adoption of a technological system which allow a continuous monitoring of the incoming flow.

The reduction of accesses is more significant during Sundays, where values are -40% to 2004 during SIRIO function and 37,5% during 24 hours, underlining how LTZ strategy limits mainly the not-work accesses.

The Intervention of SIRIO introduction is aimed at preserve the equilibrium between demand and supply of parking and at reduce the improper crossing traffic.

Actually the research evidenced a lack of parking supply for residents (about 2.000 places) and a significant part of the traffic that could be interested to use the city centre as a bypass of the too congested orbital paths. The interventions foreseen as results of the RTD activity, are aimed at preserve the delicate equilibrium between different interests involved and can be summarized as follows: enlarge pedestrian areas, enlarge interchange parks, definition of targeted rules for accesses, freight delivery time redefinition.

## Resulting Decision-making

The above results encouraged the development of the measure, showing how the regulatory of the accesses in the city centre should be indispensable where the mobility demand increases year by year and where the citizens quality of life of decreases constantly.

At the same time the results permitted to test and to calibrate the measure interventions, in order to introduce regulations and instruments specifically targeted so that the limitation represents only a deterrent for all who do not really need to access and not a lifestyle restriction for residents.

## Lessons Learnt

The studies demonstrate that conflict of interests and difficulty to conciliate different exigencies (shopkeepers, environmentalists) are barriers strongly connected with the measure.

Information campaigns toward citizens are essential to overcome this conflicts, to rise awareness (especially for shop keepers) and to understand the indispensability of the project.

Understand citizens behaviour and needs is the first step on which to define Municipality supply in terms of land use and access.

In this contest the importance of the development and therefore the adoption of a targeted technology is evidenced; the access system should be as flexible as possible and able to adapt itself to transport demand characteristics.

## Cost-effectiveness

The results from this analysis are in line with expectation: the introduction of a continuous monitoring system and a related limited traffic zone has reduced in a significant way the incoming flow in historical centre and the crossing flow. The growth of pedestrian and semi pedestrian areas improves the quality of life of the areas, reducing emissions levels. As reported above, the RTD activity, as an overall study of the context, of citizens habits and behaviours and of the state of the art of the rules and interventions already adopted, represented the first necessary step in order to make further informed decisions.

## Dissemination and Exploitation

The RTD analysis should be considered as a part of general investigation of people mobility's needs; consequently the results and the methodology adopted could be used and suggested again for different choices concerning mobility (e.g. parking policies, tariffs policies, public transport strategies). Within Mimosa project the RTD activity results were applied also for measure 7.1 implementation (city freight delivery plan).

With reference to the difficulties to conciliate different stakeholders' exigencies, the Municipality of Bologna encouraged the debate and the dialogue among different stakeholders on the city centre access' regulation and participated to this debate through the organization of some meetings with different stakeholders (e.g. the Administration participated to the debate precedent the Testing Phase of the summer 2010 advanced opening of the LTZ, through media coverage in the local newspapers; within the events that have been realized, the "4 Sundays without cars" took place in the city to animate some Sundays when the city centre was closed to traffic).