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Road Safety in Italy: an Assessment of the Current Situation and the Priorities of Intervention

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RESEARCH ARTICLE

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Abstract

The paper aims at providing an assessment of the Road Safety situation in Italy, by showing aggregated figures and statistics on road accidents and road user's behaviour; by illustrating legislation, policy and institutional capacity, and by highlighting the need for road safety audit and inspections procedures. Finally, the paper drafts possible priorities of intervention at National level.

Keywords

Road Safety · Data Analysis · Road Safety · Audit and Inspections

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1 Introduction

The improvement of Road Safety is attracting greater interest worldwide as road accidents are still the main cause of death in many countries and road safety is regarded as a matter of public health especially in this UN decade of Action.

Although progress has been made on Road Safety in the European Union during the 3rd European Road Safety Action Programme (2003-10), the European Commission highlights that the efforts to improve Road Safety need to be further strengthened. The European road safety policy orientations 2011-2020 aim to provide a general framework and challenging objectives to guide national and local strategies, in accordance with the principle of subsidiarity.

In 2011, in the European Union 30,169 road fatalities occurred, 2.8% less than the year before. Italy didn't reached the target of 50% reduction in road fatalities, established in the White Paper on Transportation submitted by the European Commission in 2001 (European Commission, 2001); nevertheless it reached in 2011 a 45.6% reduction, that is a slightly better result than the EU average (44.5%). In Italy, some 3,500 people are killed on the roads every year and 300,000 injured, with no distinctions between slight and serious injuries (nevertheless the Association of Insurance companies states that the number of injured is highly underestimated).

Within this framework, what is the current Road Safety situation in Italy? What can still be done to improve Road Safety and therefore reach the new European target?

This paper presents the major Road Safety related issues in Italy, mainly basing on the outcomes of the ROSEE (ROad Safety in South East European regions) European project. We will refer particularly to the results of WP3 "Policy and Data Analysis" and to the Italian National Report (Tira et al., 2013). Figures mainly refers to the year 2011, as they are the last available data.

2 Current Road Safety Situation in Italy

At National level, the Italian Institute for Statistics (ISTAT), has gathered and disseminated road accident data since the '30s.

In 1991 a consistent reorganisation and systematisation of the ISTAT methodology took place. Nowadays, ISTAT collects data on the basis of a road accidents survey filled in by a Police or military authority. The survey refers to all road accidents resulting in deaths (within 30 days from the accident) or injuries, involving at least a vehicle circulating on the national road network. Variables collected concern the main aspects of road accidents: date and location of the accident, data collector, localisation, road type and name, junction, traffic signs, weather, road accident type, circumstances and consequences on persons involved. According to ISTAT data, in 2011 in Italy 205,638 accidents occurred, that caused 3,860 deaths and 292,019 injured. Compared to 2010 the number of fatalities decreased by 3.5%. Fatalities have been always decreasing during the last decade (Fig. 1).

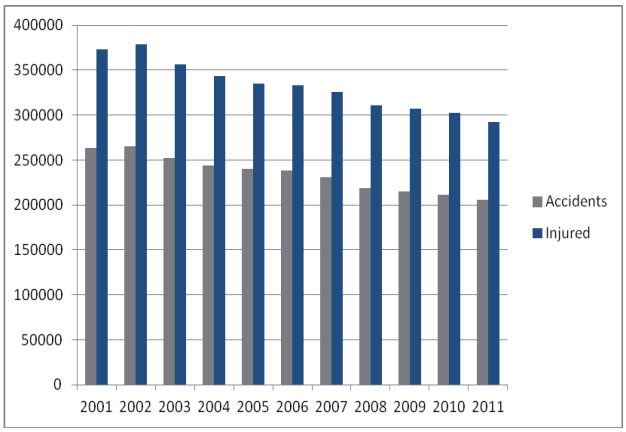

Fig. 1. Road accident and injury trends in Italy. Source: elaboration based on ISTAT data.

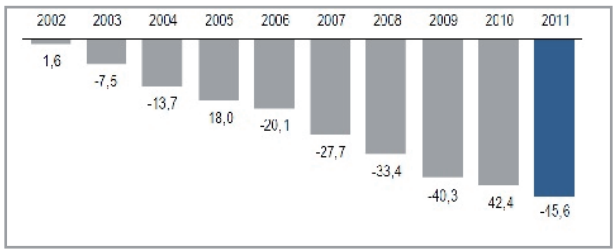

Fig. 2. Percentage variation of road fatalities compared with 2001 values. Source: elaboration based on ISTAT data.

Between 2001 and 2011 the number of road accidents decreased by 21.8%, the number of fatalities by 45.6%, and the number of injured by 21.8% (fig. 1 and fig. 2). The trend is confirmed also when related to the vehicle fleet: the number of accidents per thousands vehicles decreased from 6.3 to 4.2.

Regarding exposure data, in Italy the motorisation rate is one of the highest in the world, and it is increasing every year: in 2011 it reached the value of 610 vehicles per 1,000 inhabitants. The number of cars in 2011 was 37,113,300 (+30.52% compared to 1991) and it has always been raising for the past twenty years.

Over the last decades, road fatalities decreased for all the age groups, but less for adults over 65. Among the 3,860 fatalities recorded in 2011, 3,005 were male and only 855 female. The highest number of fatalities refers to the age group 20-24 years old.

Pedestrians, and especially elderly people, are among the most vulnerable road users: the highest number of pedestrian road victims are between 80 and 84 years old, and are mainly women.

Focusing on the road environment, in 2011 accidents, fatalities and injuries decreased for all the road categories, if compared to the year 2010, and overall on motorways. This positive trend of accidents reduction on motorways began in 2008, and reached a peak in 2009 with a 22.6% reduction if compared to the year before: this great value was probably due to the set up of an innovative average speed control system on the motorways, called “tutor”.

The majority of accidents usually happens in urban areas (where death rates are usually lower): in 2011, 157,023 accidents took place on urban roads (76.4% of the total number of accidents), causing 338 fatalities (45.2% of the total number of road fatalities).

The majority of accidents happens between two or more vehicles (74.7%), and among them, the most common type is the head-on and lateral collision, followed by the fender bender. Regarding single vehicle accidents, turnoffs and pedestrians knock down are the most common scenarios. The percentage values of pedestrians killed in road accidents is particularly high inside big cities.

The temporal distribution of accidents during the day shows that there is a first peak of accidents between 8:00 and 9:00 a.m., but the highest number of accidents takes place between 6:00 and 7:00 p.m., due to heavy traffic, tiredness of the drivers, and to bad light conditions (in some months of the year).

The road users category most involved in accidents are cars, that represent the 66.1% of vehicles involved in crashes, followed by motorcycles (14%), trucks (6.8%), mopeds (5.4%) and bicycles (4.5%). The majority of fatalities regard cars and motorcycles, followed by bicycles. The highest values of death rate are recorded for motorcycles and bicycles: data concerning accidents by transport mode show that in Italy, the number of fatalities among Powered Two Wheelers (mopeds and motorcycles) is twice the European value (DaCoTa, 2012).

3 Road users’ behaviour in Italy

Concerning road users’ behaviour related factors in road accidents, a lack of respect of rights of way, distract driving and over-speeding are the most common causes of accidents (45.2% of the cases).

Italy has reached a good rate of use of safety belts on front seats and helmets, but not yet enough for the rear seats.

In Italy, safety belt use is mandatory for drivers, front and rear passengers, for all types of vehicles and on every road. Safety belts are used by 63.8% of drivers and front passengers inside urban areas; however a higher percentage is recorded in the Northern regions of the country, and it is lower in the Southern ones. Outside urban areas, higher values of safety belt use are recorded than inside urban areas (+5-10%).

Helmet use in Italy is mandatory since 1986 for people under 18 and since 2000 for everyone. Inside urban areas helmet use is very high (89.8%), especially in the Northern regions (99.9%). Outside urban areas helmet is used by nearly the total of motorcyclists in the Northern and Central regions, but there are no available data for the southern ones except for the Province of Naples, where low values are recorded (63.3%).

In a national survey campaign run in 2009 and 2012, the 9.6% of interviewed declared to had driven under alcohol effects at least once during the month before the interview. In 2011 only the 1.1% of fines in road checks was caused by alcohol use.

An experimental national survey conducted between 2009 and 2011 by the Ministry of Health observed that some risky behaviour are widespread, and overall, there is a lack of safety belt use for rear passengers (90% of the sample) and lights off outsides urban areas (20%).

4 Road safety legislation, policy and institutional capacity in Italy

Road safety strategy and vision in Italy is based on the aim to improve the capacity of government at national, regional and local level, with the introduction of structural changes in the strategies of road safety and with a system of actions aimed at making a significant acceleration in the rate of reduction of victims.

Nevertheless, road safety in Italy has been historically faced mainly through the legislation rather than by means of active policies and/or national or local targets (Tira et al., 2001). At National level, several laws approach traffic management and safety, mainly the New Highway Code of 1992, the Guidelines for Urban Traffic Plans (PUT) of 1995, and the Geometric and Functional Rules for the Construction of Roads of 2001.

Furthermore, Italy adopted a National Road Safety Plan, which is called "*Piano Nazionale per la Sicurezza Stradale*" (PNSS) (Ministero delle Infrastrutture e dei Trasporti, 2002) and originated from the need to decrease the amount of road accidents. It contains the priority actions that must be developed at National level to increase safety of road infrastructures. The National Plan for Road Safety (PNSS) was established in Italy by Law no. 144/1999, "*in order to reduce the number and effects of road accidents*". On November 29th, 2002, a first version of the PNSS was approved; it was called *National Plan of Road Safety - Priority actions*, or more briefly *Plan of Priorities*. The aim of the Plan of Priorities for the rural road network is to remove the situations of highest risk. Therefore, the Plan reorganises the broad and general guidelines for the implementation of the national plan of road safety, on the basis of three criteria (extent of social damage determined by the different types of road accidents; immediate feasibility of interventions; ability to develop tools and resources to improve the road safety capacity of government by the relevant competent bodies) and two levels of activity (measures and specific interventions; strategic actions), divided into lines of action (five for first level and twelve for the second).

The PNSS has been carried out so far through five annual programs (2002, 2003, 2007 and 2008). These programs have attributed an active role to the Regions, assigning them the task of defining the procedures for the allocation of resources. Therefore, in addition to the National Plan, there are Regional plans for road safety.

The target of the PNSS was a 40% reduction in the number of deaths and injuries by 2010. The priorities of the Plan can be summarised in 4 points:

1) Infrastructures: it is necessary to build a cognitive framework and then to draw up the "Projects for Road Safety" and to concentrate a significant portion of the available resources on those projects. A specific plan of action for the safety of the tunnels is expected.
2) Urban areas: focus on safety Safety in the urban environment. The main problem in urban areas are the lack or insufficiency of protection for the most vulnerable road users, the poor separation of traffic flows, the recurrent interference between paths for pedestrians and cyclists and vehicles lanes.
3) Vulnerable road users: opportunity to take this component of mobility as a specific field of intervention of the Plan.
4) Road accidents at work: specific strategy to deal with this particular segment of road accidents, distinguishing between accidents at work and "commuting accidents", presumably caused by different risk factors.

The general criteria, from which the government intends to build a systematic set of lines of action to improve road safety, are 5:

Criterion 1. To Program, finance, coordinate

Criterion 2. To reinforce capacity of government

Criterion 3. To form a culture of road safety

Criterion 4. To encourage and disseminate best practices

Criterion 5. To inform and educate.

In Italy, legally the Government is the main authority responsible for Road Safety and since 2010 a high level inter-sectorial decision-making institution, called "*Comitato per l'indirizzo ed il coordinamento delle attività connesse alla sicurezza stradale*" has been established to prepare policy orientations or directions for Road Safety (Law L. 29/7/2010 n. 120). It operates under the Ministry of Infrastructure and Transport and

represents all the governmental sectors potentially involved in Road Safety within the country: Transport and traffic planning; Road infrastructures; Enforcement; Health; Vehicles and ITS (Intelligent transport Systems); Research and Education.

The consultation of stakeholders has been formally established with the institution of the National Council for Road Safety (*Consulta nazionale sulla sicurezza stradale*), established with the law L. 29/3/2000: it was set up on January 22nd, 2001 by CNEL (*Consiglio nazionale dell'economia e del lavoro*) and the Ministry for Transport and Infrastructures. The Council is supported by a technical secretariat, managed by a private company, that coordinate the works and elaborate researches.

In Italy there are also NGOs that actively promote road safety, for instance "*Federazione italiana vittime della strada*" (road victims association), "*Associazione Italiana Ingegneri del Traffico*" (traffic engineers association), and many others (ANIA Foundation, AISICO, FIAB, ...).

As regards how the responsibilities for road safety management are divided between the national, regional and local levels in Italy, legally the Government is the main authority responsible for Road Safety. Regions are appointed to implement programs within the National Plan for Road Safety. Local administrative bodies (responsible for traffic police and for the management of road infrastructures), act in the field of road safety as far as the Highway Code is concerned.

Key functions in road safety policy making (Formulation of national RS strategy, Setting targets, Development of the RS programme, Monitoring of the RS development in the country) belong to the Government, in particular to the Ministry of Infrastructures and Transports, in agreement with Ministers of the Interior, of Education, and of Health.

The Government is also entitled to deal with enforcement of road traffic laws.

Regions, Provinces and Municipalities are involved in the improvements in road infrastructure, in educational activities for road users and in public awareness campaigns.

As regards enforcement organisation, in Italy there are five police forces, two of them – State Police and Carabinieri – have overall competence, being "in permanent service of public safety".

There is therefore an Office for Coordination and Planning of Police Forces, whose function is to bring unity to the system. The Traffic Police is a specialized unit of the State Police that work along the motorway network and the major Italian roads.

The main issues of traffic enforcement concern:

- A penalty points system;
- Speed Limits;
- Limitation of circulation of heavy goods vehicles;
- Helmet use;
- Use of seat belts;
- Driving under the influence of alcohol or under the influence of drugs.

5 Road Safety Audits and Inspections in Italy

The World Health Organisation, within the framework of the United Nations Decade of Action for Road Safety, prepared a global plan that encourage countries to implement activities according to five pillars: Road safety management, Safer roads and mobility, Safer vehicles, Safer road users, and Post-crash response. Within the pillar "safer roads and mobility", a crucial role is played by safety assessments of existing road infrastructures (WHO, 2011).

At European level, already in 2001 the White Paper of the European Commission "European transport policy for 2010: time to decide" expressed the need to carry out safety impact assessments and road safety audits, in order to identify and manage high accident concentration sections within the Community (European Commission, 2001). Furthermore, the Communication of the European Commission "European Road Safety Action Programme - Halving the number of road accident victims in the European Union by 2010: A shared responsibility" identified road infrastructure as the third pillar of road safety policy (European Commission, 2003).

Therefore, the European Union adopted the directive 2008/96/EC on road infrastructure safety management (European Union, 2008). According to that directive, Member States shall ensure that road safety audits are carried out for infrastructure projects, and that safety inspections are undertaken in respect of the roads in operation. Furthermore, the European directive pays particular attention to accidents data management. The EC directive applies to the Trans-European road network, but each Member State may apply the provisions of the directive to other road transport infrastructures as well.

Considering the more recent White Paper "Roadmap to a Single European Transport Area", the European Union aims at halving road casualties by 2020, and at moving close to zero fatalities by 2050. Furthermore, the White Paper states the need to pay particular attention to vulnerable users, such us pedestrians, cyclists and motorcyclists, including through safer infrastructure and vehicle technologies (European Commission, 2011). Lastly, a Communication of the European Commission (European Commission, 2010) on road safety policy orientation for the period 2011-2020 states the aim to promote the application of the relevant principles on infrastructure safety management to secondary roads of Member States, particularly through the exchange of best practices.

For all these reasons, road safety audits, reviews and inspections must become a common practice in Europe: safety inspections are an essential tool for preventing possible dangers for all road users, including vulnerable road users. Road safety inspections are a preventive safety measure: they aim at highlighting possible safety threats before an accident takes place, and therefore at prioritising possible interventions.

But, how is the current road safety situation of the ex-urban road network in Italy?

Fig. 3. Roads fatalities density on the Italian EuroRAP Network (2004-2006). Source: EuroRAP and ACI, 2007

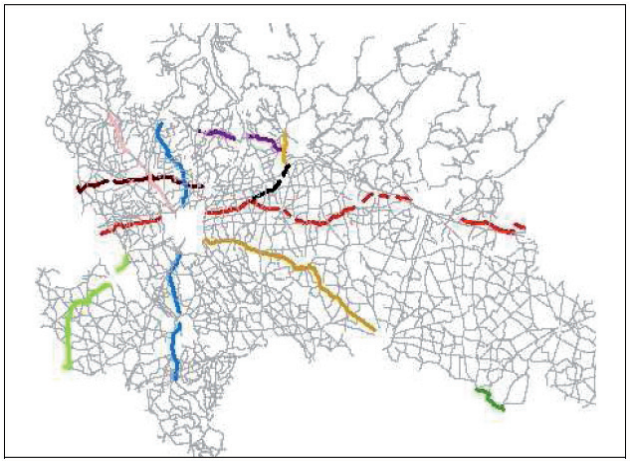

Fig. 4. Roads with the highest accidents rate in Lombardy. Source: IRER, 2009

The Italian Automobile Club (ACI), is an active member of the European Road Assessment Programme (EuroRAP) (www.eurorap.org). ANAS, the body that manages the National highways and motorways, and ISTAT, the National Institute for Statistics, are EuroRAP supporters as well. In Italy, the road network involved in the EuroRAP Programme is composed by the main primary roads: all the motorways (6,459.7 km), and National and Provincial roads (those that have a major National interest) for an amount of 10,947.8 km. The whole TERN (Trans European Road Network) is included in the considered EuroRAP network. Within the EuroRAP Programme, ACI provides maps of road accident risk.

Other assessment of the road network are provided at more local administrative levels, by Regions or by Provinces.

For example, the Lombardy Region adopted in 2009 its own Regional Plan for Road Safety, called "*Piano Regionale della Sicurezza Stradale*" (Regione Lombardia, 2009). And the Regional Research Institute for Lombardy (Istituto Regionale di Ricerca della Lombarrdia - IRER), publishes a periodical report on road circulation and safety on the Regional territory, as ruled by the Regional Law 4 May 2001, n. 9, on Programming and developing the road network of regional interest (Regione Lombardia, 2001).

Italy, with the Legislative Decree n.35/2011 of 15 March 2011 "*Attuazione della direttiva 2008/96/CE sulla gestione della sicurezza delle infrastrutture*" (Repubblica Italiana, 2011), adopted the EU directive 2008/96/EC on road infrastructure safety management. For the moment, the Italian decree applies only to the TEN road network, but it will progressively apply to the rest of the road network: starting from January, 1st 2016 it will apply to the whole national network, and before December 2020 Regions and Provinces have to discipline the road safety management of local roads.

The Legislative Decree was preceded, in 2001, by a first set of guidelines concerning both Safety Audits (to be conducted at the design stage of a road) and Safety Reviews (to be conducted on existing roads), published by the Italian Ministry for Transports and Infrastructures (2001), and disseminated through a guideline by the Ministry of Public Works. The guidelines of 2001 were not a regulatory and prescriptive act, but they represented a reference document, to be used for pilot applications and future legislative acts. The 2001 guidelines didn't propose inspection tables and sheets, but they were structured through proper check lists to be used while performing audits and inspections. The check lists for existing road inspections were several and covered a wide range of themes. They were divided into nine main sections: general features, layout, intersections, underpasses and overpasses, road signals and lighting, roadsides, road paving, vulnerable users, and parking lots.

The guidelines of 2001 also included, as annexes, some case studies to show examples of Road Safety Audits and Reviews applications (both on urban roads, interurban roads, and motorways).

Following the guidelines of 2001, some researches and pilot applications of preventive road safety measures started to be developed in Italy (see, i.a., Busi and Maternini, 2003).

In May 2012, the guidelines of 2001 were revised by a Ministerial Decree (2012). The Ministerial Decree is a wide document, that contains new and updated guidelines for the safety management of road infrastructures, and describes step by step how to undertake Road Safety Audits and Inspections.

The formal procedure that should be adopted to conduct Road Safety Reviews consists of making on-site inspections carried on by expert reviewers. Reviewers should pinpoint the potential risk factors, which could lead to crashes or to the increase of their seriousness, and propose possible solutions.

For the safety management of existing roads infrastructure, the Ministerial guidelines (Ministero delle Infrastrutture e dei Trasporti, 2012) mainly base on the use of inspection tables and sheets instead of the previous check lists (as proposed in the guidelines of 2001). Inspection tables have to be filled in by licensed auditors during steady and punctual safety inspections.

The guidelines of 2012 are presented as the reference frame not only for TEN and National roads, but for the secondary and local network as well.

But which are now the further steps that need to be taken in Italy regarding the implementation of the EU Directive 2008/96/EC?

At the moment, In Italy there is not a responsible independent agency for Road safety: only the Ministry of Transports and Infrastructures and local authorities are responsible for Road Safety. However, some NGOs, associations and technical councils (e.g. Road Victims associations, ANIA Foundation, AIPCR Italy…) provide some inputs to help institutions in improving road safety management, and the Ministry of Transports and Infrastructures has established an advisory group of external experts called "National Road Safety Council".

According to the National decree n.35/2011 (Repubblica Italiana, 2011), as transposed by the EU Directive, Road Safety Audits and Inspections must be undertaken by experts on Road Safety. Experts must have certain qualifications, and they must have successfully attended an initial training course approved by the Ministry of Transports and Infrastructures. The ministry is now deciding who will be responsible for organising and teaching those courses: the Ministry have not given any official approval yet, but some universities proposed themselves to the Minister.

Since no responsible agency has obtained approval by the Ministry to perform Road Safety Courses, no official auditors trainings have taken place, and no road safety auditors have been licensed yet. However, at the end of 2011 a Ministerial Decree fixed the rules and the contents of the training courses to license official road safety auditors. According to the decree, official courses must have a minimum duration of 180 hours and cover a specific programme divided into 5 modules (modules from 3 to 5 also contains practical sections and exercises):

1. Legislative framework and classification of road networks;
2. Road design principles and specific aspects of safety analysis;
3. Road Safety Audits;
4. Road Safety Inspections;
5. Road tunnels.

Furthermore, the Ministerial Decree of 2011 established the minimum requirements to participate in the courses: official auditors must be engineer, and they must have been enrolled in the Civil and Environmental Engineers register for 5 years. According to the Legislative Decree n.35/2011 (2011), certified auditors (who attended the initial training course and were licensed) must also attend periodic further training and updating courses of 30 hours every three years. The contents of updating courses are listed in the Ministerial Decree of 2011 as well (2011).

In spite of this situation, some local authorities and research institutes have started pilot activities in the field of Road safety Audit and Road safety Inspections, performed by expert technicians (not licensed auditors yet), and applying the ministerial guidelines. These pilot activities led sometimes to the application of innovative design solutions, and they included suggestions and proposals of small interventions to solve the main criticalities that came out during the inspections.

For example the Province of Brescia, in collaboration with the University of Brescia (DICATAM Department) and with a team of technicians, has conducted some experimental road safety reviews of secondary roads: the first inspection was conducted in 2003 on the road "SPBS 668 Lenese", and next inspections were conducted on the roads "SPBS 572 Salò-Desenzano", "SPBS11" and "SPBSIX Quinzanese".

Furthermore, road safety inspections can be applied also for peculiar features of the roads network, like bus stops, as proposed by Tiboni and Rossetti (2013).

6 Conclusive Remarks and Priorities of Intervention

The risk while using the roads in Italy is still very high. For each accidental death on the roads in Italy, about 2.6 happen elsewhere, but for each hour Italian people spend on the roads, they spend about 15 waking hours elsewhere. So the risk per hour while using the roads is about 6 times the risk per hour in the rest of everyday life (Tira et al., 2012).

But which are the main priorities of intervention at the moment? Which are the main crucial actions and strategies that should be implemented to reduce road accidents risk at national level?

Concerning road accidents data and analysis, in Italy there is an urgent need to develop a common definition of slight and serious injuries. At the moment, there is a proposal on the initiative of the European Union concerning the use of the existing scale of the trauma "*Maximum Abbreviated Injury Scale*" (or "*MAIS*") according to which a seriously injured person is detected with a MAIS level ≥ 3 (Tingvall et al., 2013; European Commission, 2013; Brenne, 2012).

The proposal of application of the MAIS index is seen as very positive, since it will lead to a common definition of serious injury across the whole European Union.

Then, among the emergencies, Safety of Powered Two Wheelers is probably the most urgent in Italy: the number of victims for this mode is still too high when compared to the other transport modes.

Finally, a National clear strategy and a National Road Safety Authority should be set up to address the main problems and to devote the resources needed.

Systematic and strategic thinking and actions are indeed vital for a long-term reduction in death and injury on the roads. Effective Road Safety policies requires a mobilisation of skills (both technical and organisational), an articulation of the problem, the construction and implementation of actions, their management and evaluation. And all along this process a strong political will and commitment are necessary (ETSC, 2006).

All the three main approaches to road safety, known as the three "E", must be adopted to curb road victims: Enforcement, Engineering and Education. These approaches should be applied in a fully integrated way, to obtain strong and enduring results. Educational and public awareness campaigns should be address especially to vulnerable Road users, and activities should be organised in schools. Engineering must be applied to increase safety of road infrastructures. However, due to a widespread scarcity of funding and financial resources among public bodies, low cost infrastructure improvements should be preferred. Within this framework, road safety inspections play a crucial role as preventive road safety measure to detect possible safety threats and dangerous elements along the roads before accidents take place and to prioritise interventions and countermeasures.

However, it has to be clear that road safety issues can be solved only through area-wide approaches to road accident prevention, that integrates different disciplines of town planning and management, like proposed by the Urban Safety Management (USM) concept (Tira, 2003).

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