

# Strategic Plan for the Road Safety of Motorcycles and Mopeds

Executive Summary



MINISTERIO  
DEL INTERIOR



*Observatorio Nacional  
de Seguridad Vial*



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# Presentation

Motorcycles are a topical question nowadays and as the Minister of the Interior, Alfredo Pérez Rubalcaba, says “they have come to stay” so now we have to manage their safety.

All studies and surveys show an increase in the number of motorcycles in the future since they have consolidated as an alternative to cars in urban travels. These reports point out that, no matter how much public transport is recommended, there will always be a vehicle to move individually in the city. We have to bear in mind that the car is a vehicle conceived, designed and manufactured to be used in roads whereas some motorcycles are vehicles conceived and adapted to be used in built-up areas; car features and characteristics will never compete with the advantages motorcycles provide in city travels.

In London, motorcycles proliferated, as an alternative to the car, since the city toll to gain access to the city centre was established and cars were excluded. In Paris, citizens discover motorcycle usefulness because of a public transport strike; French authorities explain that whenever there is a situation like this the sale of motorcycles rise. In Madrid, the increase in the number of motorcycles during the last few years has been spectacular. In cities such as Rome and Barcelona motorcycles have always been present for cultural and climatological reasons.

The number of motorcycles has increased in our country by more than three times as compared with cars. From 2003 and 2007 motorcycles have increased by 53% whereas cars have increased by 16% - figures speak for themselves.

We all knew that low capacity motorcycles were going to increase in cities, but what we did not expect was the increase of high capacity motorcycles. From 2003 to 2007, 316644 over 500cc motorcycles were registered and this means many and very big motorcycles.

Why? Because the accesses to cities in rush hours show flow difficulties for cars, so many citizens living far from the centre have found an alternative in high capacity motorcycles. Besides, motorcycles are attractive, well-made and they can also be used at weekends in short trips with a feeling of freedom, power and youthful in appearance.

So far everything would be normal if it weren't because motorcycles have a special risk and demand more attention and care when riding.

According to recent studies, the risk to die in a motorcycle road traffic accident is 17 times higher than in a car traffic accident.

In order to show how serious accident rate in this type of vehicle is, we are going to review the data from 2003 to 2007; although the total number of fatalities in road traffic accidents has decreased by 31% in Spain, the number of fatalities in motorcycle traffic accidents has increased by 77%. The summer of 2007 was of special concern because motorcycle fatalities increased by 53%. On 2 October, the Minister of the Interior, Alfredo Pérez Rubalcaba, called user representatives in order to boost the solution to a problem which means a tragedy, socially unacceptable.

The problem is not only ours, it also affects all Europe, to such an extent that the European Transport Commissioner,

Jacques Barrot, stated that, at present, one out of four fatalities in road traffic accidents were in motorcycles. If we do nothing or take measures the trend will continue and in 2010 a third of the fatalities in traffic accidents would be motorcycle users.

At the beginning of 2007, the debate was open after setting up, in January, the working group GT-52 "Motorcycles and road safety". The group was set up within the framework of the Higher Council for Road Safety; it had as the main aim to achieve a shared strategy to improve motorcycle safety.

In this debate we should avoid making the mistake of finding someone to blame – it is usually another one – and keep on counting accidents and casualties. It had to be avoided that motorcyclists blamed public administrations for the infrastructures and that public administrations blamed motorcyclists for their lack of attention and care.

Surprisingly enough, at the end common sense imposed and it was accepted that we faced a problem which required a shared view and to work together.

With the work carried out by this working group we realized that training had always been focused on cars as the name 'autoescuela' (driving school) reveals; motorcycle had been considered as a marginal vehicle and as regards the specific training to ride them motorcycles should be given the importance they have and deserve. This is a challenge for the administration and for driving schools.

We have admitted that road design was made according to the vehicle and, in an environment with more and more motorcycles we should rethink road design in order to tailor it to the new reality. Measures such as double white lines, a wider lane, bus lane for motorcycles, ... This is a challenge for engineers.

We value that automobile industry has evolved and it has gone from selling power to selling safety; motorcycle industry was still in the power, it had not taken a step forward as society was demanding. ABS, airbags, side protection, three wheels, ... This is a challenge for manufacturers.

We should distinguish between travelling in built-up areas and in roads because the users, the accidents and the problems are different.

We can confirm that in built-up areas accidents occur more frequently in junctions due to not obey traffic lights; we will have to use new technologies to monitor this matter and traffic lights control in built-up areas could be similar to radars in roads. This is a challenge for Town Halls.

We knew that authorized dealers and sellers are very keen on motorcycles and they know motorcycle buyers because they often have dealings with them; for this reason, they should assume their responsibility and spread rules of use, expert advice, instruction manual and even a course to familiarize with the vehicle.

All of us agreed that motorcyclist associations would have to lead and commit to the change towards safer behaviours, as motorist associations have already done.

We have discussed many other issues that have been reflected in a document made by us all and for us all: the Strategic Plan on Road Safety for Motorcycles and Mopeds.

Before, we did not have a Plan, now we have it. We only have to implement it and to work towards achieving a safer country, for motorcyclists too.

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# Strategic Plan for the Road Safety of Motorcycles and Mopeds

In 2007, the Directorate General for Traffic [Dirección General de Tráfico – DGT] has headed the preparation of a Road Safety Plan addressing the reduction of the accident rates of motorcycles and mopeds.

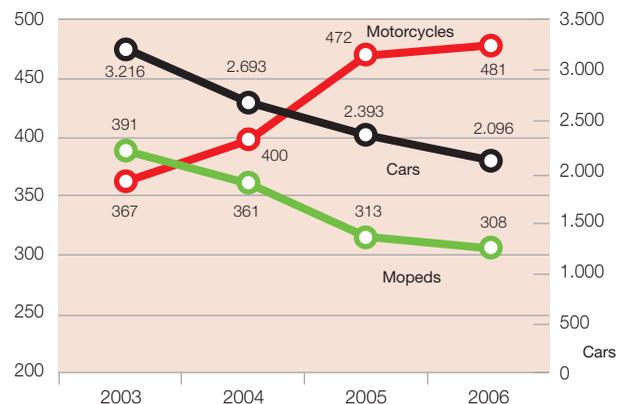
The basic target of this plan is to reverse the growing trend in the development of the number of fatalities and serious injuries in accidents that has been noted in the course of the last years, and which has become even worse on the grounds of the figures corresponding to 2007.

## Main data on the motorbike phenomenon and problems thereof

The global accident rate figure for all vehicles has significantly decreased by 24% in the period between 2003 and 2006. This has not been the case for motorcycles where an increase of 31% has taken place, although it has been the case of mopeds where there has been a drop of 21%.

According to the European Transport Safety Council in its PIN (Panel INdex) Report, the risk of dying in a traffic accident on a motorbike is 17 times larger than on a car.

**Figure 1:** Evolution of fatal casualties (2003-2006). Roads and urban areas.



The figures of deaths and seriously injured persons in motor accidents has increased both in urban areas and on the roads, but especially on roads. From 2003 to 2006 deaths on roads increased by 38% and deaths in urban areas by 12%.

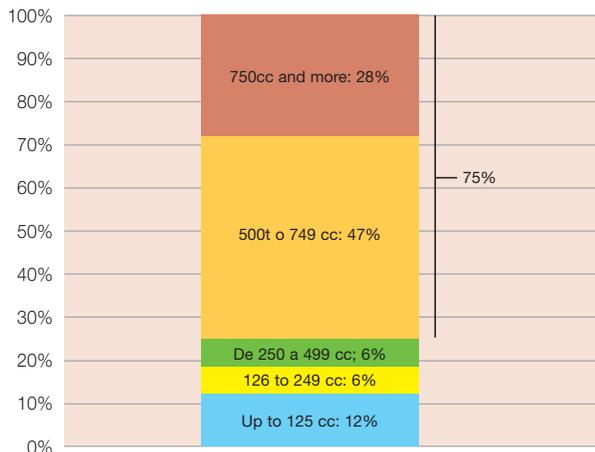
When considering the development of the vehicle fleet, from 2003 to 2006 the fleet of cars grew by 10%, the fleet of mopeds by 9% and the fleet of motorcycles by 35%. This large increase in the number of motorcycles was not homogeneously distributed according to the various segments. In fact, the segment that grew most, by 79%, was that of motorbikes of between 75 and 125 cc (250,000 additional motorbikes) followed by motorbikes of a cylinder capacity of 500 cc and more which grew by 45% (170,000 additional motorbikes) along these three years.

In 2006, motorcycles were representing 7% of the vehicle fleet, participated in 15% of all accidents, and accounted for 12% of all deaths by traffic accidents. In turn, Mopeds participated in 18% of all accidents and accounted for 7.5% of traffic accident deaths.

Regarding the absolute number of casualties, in 2006 there were recorded 481 deaths on motorcycles, and 308 deaths on mopeds. In that very same year, there were 3,152 seriously injured persons on motorcycles and 3,185 on mopeds.

75% of all fatal casualties were registered for motorcycles of 500 cc and more, in 2006. Motorcycles of up to 125 cc accounted for 12% of all fatal casualties.

**Figure 2:** Distribution of fatal casualties on motorcycles in accordance with their cylinder capacities.2006. Roads and urban areas.



Motorcycles of 750 to 1,000 cc stand for the largest death rate per 100,000 vehicles, accounting for 78 deaths per 100,000 motorbikes. The next zone corresponds to motorcycles of 500 to 749 cc with a rate of 48 deaths. Motorbikes up to 125 cc show a rate of 6.

**Table 1.** Deaths on motorbikes per 100,000 vehicles of the fleet according to their cylinder capacities. Roads and urban areas

Cylinder capacity	Deaths/100.000 Vehicles
More than 1000 cc	34
From 750 to 1000 cc	78
From 500 to 749 cc	48
From 250 to 499 cc	13
From 126 to 249 cc	5
Up to 125 cc	6

The alarm that went off on July 2007 when the daily follow-up of fatal road accidents at 24 hours (number of deaths computed within 24 hours after the accident, and not within 30 days thereafter, the latter being the criterion used in the final statistics) showed an increase by 58% in the number of deaths on motorcycles when compared with that of the same months in the preceding year, must be added to the foregoing. This trend that started in March 2007 has continued up to the present, such that from January to October 2007, the number of motorcyclists killed on roads is by 33% higher than in the previous year.

## A vision shared by the whole two-wheel sector

To be able to provide a response to this problem, in the first quarter of 2007, the DGT set up a Working Group formed by representatives of the main actors of the two-wheel sector: manufacturers, dealers, insurance companies, local administrations, user associations, etc. The target of this group has been to ensure a maximum level of consensus both in the diagnose of the reasons for the problem and the design of solutions therefor.

The members of the Working Group are as follows: Traffic Group of the Guardia Civil, ANESDOR, the Motor Bikers Mutual Association, City Council of Barcelona, City Council of Madrid, General Directorate for Traffic, FECAVEM, GANVAM, Ministry of Public Works, Ministry of Industry, Tourism and Commerce, RACC, RACE and UNESPA.

The “Shared Vision” reached by the Working Group has resulted in a consensus about the following milestones:

- A common understanding in respect of the magnitude and nature of the motorbike accident rate problem.
- The need and will, to join the efforts of the whole sector to solve it.
- The convenience of dispensing a differentiated treatment to roads and urban areas in view that the risk factors associated to each of these environments differ from each other.
- The conviction that there are no “miraculous prescriptions” and that the solution of the problem is to enforce a battery of measures in a coordinated and enduring manner.
- Considering the Road Safety Plan for Motorbikes as the framework for joint action and as the working tool that is to guide the implementation of all those measures into practice.



As the result this work, this Road Safety Plan for Motorbikes has been awarded two targets, both of which address the motorbike accident rate to become progressively similar to that of cars, and it contemplates carrying out 36 measures covering the various fields affecting road safety in respect of these vehicles.

### The Two Targets of the Plan

- 1 To reverse the rising trend of the number of deaths and serious injuries among motorbike users on our roads and in our villages and cities.
- 2 To achieve that the number of deaths per each hundred thousand motorcycles that has been stable at about 25 initiates a time-sustained decrease.



## The 36 measures and the 16 priority measures

The 36 measures contained in the plan especially stress on what constitute the four fields of the accident rate for motorcycles and mopeds:

- Improving the training of motor bikers for safe driving both at access tests and at the supplementary road safety training
- Reducing high-accident-rate scenarios that affect this kind of vehicles
- Fighting risk driving of motorcycle and moped drivers
- Ensuring mitigating measures that reduce the harmfulness of accidents

The 36 measures of the plan have been analyzed and prioritized taking into account four variables:

- **Impact** on the targets of the plan
- **Feasibility**
- **Recourses** that are necessary to carry them out
- **Consensus** raised within the working group

Among these 36 measures, 16 have been considered to have priority. These priority measures keep an equilibrium from three perspectives:

- **Environment** al they are addressing: 50% roads and the other 50% urban areas
- **Main Addressees:** 79% specifically addressed to motor bikers whilst the other 21% affects the remaining road users
- **Actors involved** in the deployment: 69% requires the participation of various agents

Each of the 36 measures includes one or more specific actions the implementation of which will be carried out under a time horizon of four years.

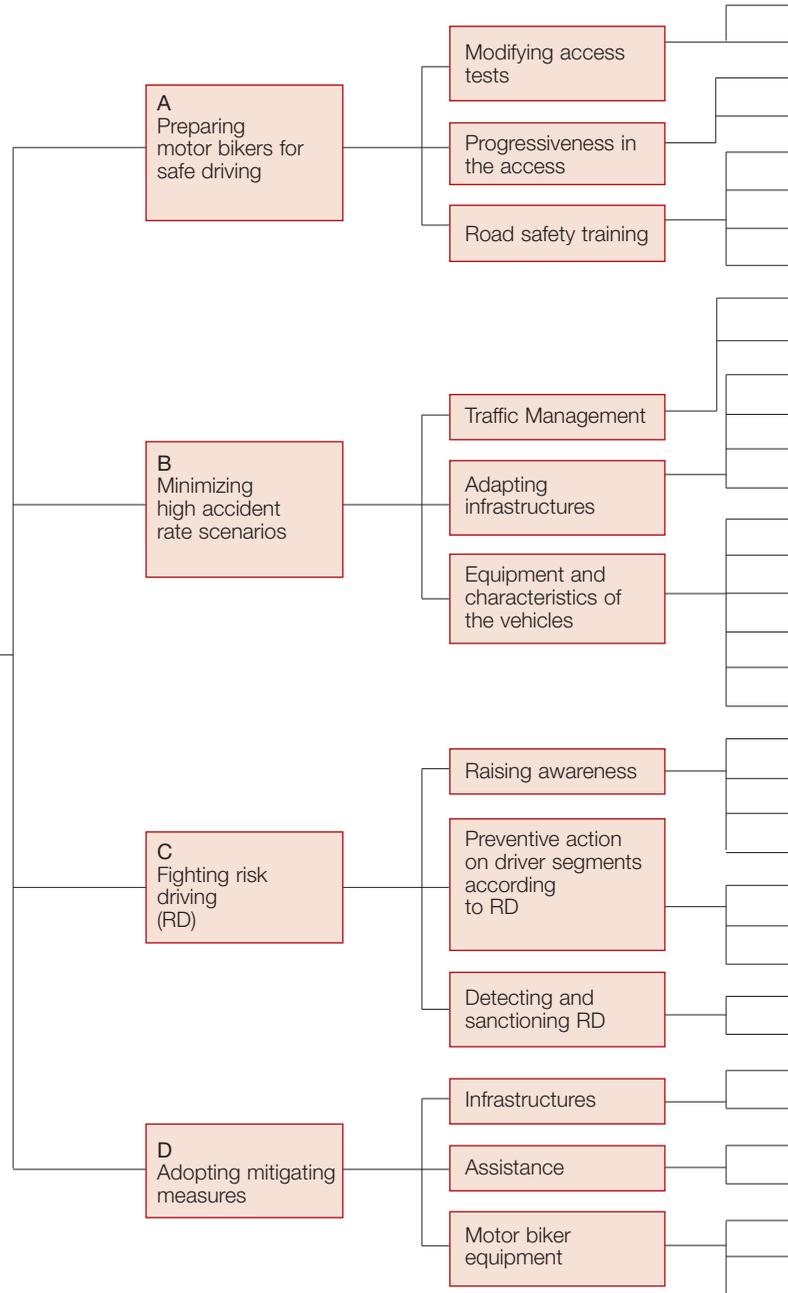
# Tree of solutions

The Plan is structured into 4 fields of action, 12 programs and 36 measures, 16 of which are considered to be priority.

An additional cross concept scope that deals with “information and Knowledge” needs to be added to the 4 scopes of direct intervention. This will, on one hand, allow more and better related information to be provided with regards to road safety for 2 wheeled vehicles and on the other hand, systematically transform the knowledge base to which it contributes, whether directly or indirectly, in order to achieve the objectives of the plan.

The 16 priority measures are highlighted.

Reducing the number of accident casualties



<b>1</b>	Strengthening road safety training in motorbike access tests
<b>2</b>	Introducing the topic "motorbikes" into the 4W license tests
<b>3</b>	Delaying the minimum age for access to certain vehicles
<b>4</b>	Progressiveness according to age and experience
<b>5</b>	Road safety education
<b>6</b>	Incentives for participating in road safety courses/obtaining certificate
<b>7</b>	Road safety course for professional communities
<b>8</b>	Incorporating motorbike road safety into training plans of companies
<b>9</b>	Evaluating traffic coexistence and segregating measures
<b>10</b>	Evaluating measures to change conditions at intersections
<b>11</b>	Improving adherence to the road
<b>12</b>	Improving preservation and condition of the road network
<b>13</b>	Road safety audits
<b>14</b>	Specific actions on SACs [Sections with accident concentration]
<b>15</b>	Control systems for the equipment and performance
<b>16</b>	Improving safety systems on vehicles
<b>17</b>	Fostering research
<b>18</b>	Promoting an assessment and scoring system of the EURO NCAP type
<b>19</b>	Improving the vehicle's visibility
<b>20</b>	Financial/fiscal incentives for renewing the fleet
<b>21</b>	Campaigns specifically addressing RD
<b>22</b>	Specific campaigns for 4W vehicles
<b>23</b>	Agreement against RD with the media
<b>24</b>	Strengthening the distinction between the use of motor bikes as a mobility means vs. sportive use thereof
<b>25</b>	Special measures against recidivist drivers
<b>26</b>	Fostering companies to carry out follow-ups on road safety courses of their professional employees
<b>27</b>	Fostering the effects of RD on insurance premiums
<b>28</b>	Modifying the sanctioning scheme for RD
<b>29</b>	Increasing control over RD
<b>30</b>	Replacing/protecting safety fences
<b>31</b>	Vertical signposting
<b>32</b>	Reducing the span of time for accident assistance
<b>33</b>	Introducing the E-Call
<b>34</b>	Correct use of helmets
<b>35</b>	Establishing a minimum standard for additional equipment
<b>36</b>	Strengthening research on equipment

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# Description of the measures (2008-2011)

Hereafter the 36 measures contained in the plan will be briefly described.

## **Measure 1. Strengthening road safety training in motor bike access tests**

Training in road safety is envisaged from a double perspective, a theoretical one and a practical one. Theoretical training will focus especially on defensive driving, emphasizing those maneuvers of 4-wheeled vehicles that are a serious risk for motor bikers. These new theoretical contents shall have their due counterpart in the knowledge control tests for all administrative authorizations for driving motorized two-wheeled vehicles.

The practical training for obtaining the present A1 and A2 licenses that will be described in connection with a later measure of the plan, will be reinforced with a requirement for behavioral tests on a closed circuit and passing driving tests on roads that are open to the general traffic under the direction of a road training teacher. With regard to the future driving license for mopeds, the obligatory nature of passing theoretical as well as practical behavioral tests on a closed circuit will be introduced.

Finally, attendance to a voluntary course of a duration of three to six hours will be promoted with regard to those holders of a more than three years old B license who wish to drive motorcycles up to 125 cc. This voluntary course shall be made up of three components: knowledge on the vehicle, motorbike driving risks and driving practices.

## **Measure 2. Introducing the topic “motor bikes” into the 4-wheeler license test**

Collisions among two-wheeled vehicles and other vehicles represent 70% of all motorcycle and moped accidents. In urban areas, in 3 of each 4 motorbike accidents there is a collision with another kind of vehicle.

Access tests for the driving license for 4-wheeled vehicles (B, B+E, C1, C1+E, C, C+E, D1, D1+E, D y D+E) will have to contribute to that the drivers of these vehicles become acquainted with and sensitive to the behavior and practices of other road users, moreover when these are vulnerable users such as motor bikers.

This measure contemplates preparing a specific road-safety training program for making 4W drivers to become acquainted with, aware of and sensitive to vulnerable users in general and, particularly, to motor bikes.

### Measure 3. Delaying the minimum age for access to certain vehicles

It is believed that driving certain kinds of vehicles requires a minimum personal maturity that is independent from experience. An individual's age is usually taken for the evaluation of this maturity. The field of action contemplates raising the minimum age for access to mopeds from presently 14 years, to 15 years.

### Measure 4. Progression according to age and experience

The progression regarding the access pursues that the performance of a vehicle develops in parallel with the experience of its driver. It is intended to introduce a new kind of “intermediate” license between the present A1 and A licenses that will be named A2. The new A2 license will allow persons being older than 18 year to drive motorcycles up to 400 cc. So as to be able to access the A license, it will be indispensable to have held the A2 for at least tow years.

Other actions for fostering progressive access, such as a limitation of the maximum speed, limitation of areas and time slots within which driving is allowed at certain spans of age or levels of experience, a prohibition for novice drivers to ingest alcohol, and the obligation of driving with a companion on the vehicle during the initial period of holding the license will be assessed within the framework of this field of action.



### Measure 5. Road safety education

Within the framework of this measure, the introduction of road safety into the educational system will be promoted and provided by carrying out tasks of raising awareness of and technical advising to Autonomous Communities, publishing houses and education professionals, so as make road safety to be considered a transversal subject that can be “subsumed” within the lessons that are being given on other subjects.

Regarding non-regulated education as there are mainly the optional road safety courses for primary and secondary school teachers (e.g. UNED [=National Distance Education University]), the special courses for persons with psychosocial problems, and road safety training through the Internet, the didactic materials must include a number of good and bad practices in driving mopeds and motorcycles, and emphasize the special vulnerability of the drivers of two-wheeled vehicles.

Road safety education will be present at the points of sale by means of the distribution of a book with practical advice and basic techniques for driving safely, at all dealers and at shops specializing on the supply and equipment of motorcycles and mopeds.

### **Measure 6. Incentives for participating in courses and obtaining certificates**

Setting up a scheme of voluntary and incentivized road safety courses for motor bikers having an impact on a significant proportion of the universe of drivers and which strengthen three aspects: avoiding risk driving, training the driver in respect of hazardous situations, and adopting good practices regarding driving and equipment. The course will have a short duration (one or two sessions) and the contents thereof will be predominantly practical, allowing, where appropriate, to obtain a certificate. The use of driving simulators when giving the courses will be assessed.

Incentives for fostering the attendance may be established by two ways:

- Redemption of sanctions with guidance for risk drivers (e.g. the city council of London cancels certain sanctions, 3 points and 60 pounds, in exchange for the driver assisting to a one-day training course for 72 pounds).
- Obtaining direct incentives such as discounts on insurance premiums or monetary or non-monetary contributions of insurance companies, fuel coupons, discounts on security equipment for motorbikes, etc.



### **Measure 7. Road safety courses for professional communities**

It is esteemed that about 110,000 professionals (including those contracted or subcontracted by private companies, the security forces and bodies of the three administrative levels and other public employees) are using motorcycles or mopeds as a working tool. This measure pursues the inclusion of road safety courses into the training plans of all these public and private bodies. The course will focus on the avoidance of risk driving, training the driver in respect of hazardous situations, and adopting good practices in respect of driving and equipment).

### **Measure 8. Incorporating motorbike road safety into training plans of companies**

The high number of “in-itinere” professional accidents (about 11% of all deaths in traffic accidents in Spain) makes it advisable to introduce road safety into the training plans of companies, organisms and public as well as private institutions of any kind.

Determining the most adequate ways and contents for introducing road safety into the training plans will be carried out within the framework of this measure, although it is possible to advance the following aspects:

- Use of the new technologies so as to make the training as individualized and close to reality as possible (e.g. customized itinerary for each pupil coinciding with his/her usual route for going to work, using driving simulators).
- Focusing on the use of protection equipment (use and preservation of safe helmets and adequate clothing as, for example, reflective vests, gloves, boots without laces, etc.).

- Training in defensive driving techniques (e.g. to avoid driving on the area of the right lane being closest to the sidewalk).

This measure also contemplates reports on accidents to include information in respect of the reason for travelling of the two-wheeled vehicle, so as to improve statistic information on “in-itinere” accidents.

### **Measure 9. Evaluation of traffic coexistence and segregating measures between 4-wheeled vehicles and motorcycles and mopeds**

At present, there is no consensus on a common scenario that would allow reaching coordinated solutions regarding segregation and coexistence in traffic among 4-wheeled vehicles and motorcycles and mopeds.

The target to reduce the accident rate by establishing rules, infrastructures and mobility mechanisms in urban areas as well as on roads that could contribute to differentiating traffic flows between 4-wheeled vehicles and motorcycles and mopeds. Among these measures, the following could be mentioned:

- Setting up specific lanes for motorcycles on roads with jammed traffic.
- Combined use of bus lanes together with adaptation thereof for use by motorcycles.
- Broader lanes on certain urban roads combined with stopping areas in advanced positions.
- Regulation of the incorporation maneuvers on broad lanes / side strips.
- Actions of positive discrimination by adapting the traffic regulations to the specific characteristics of the driving motorbikes.

### **Measure 10. Evaluating measures to change conditions at intersections**

Intersections in urban areas clearly are very points of risk to the extent that between 2001 and 2005, 61% of all collisions between two-wheeled vehicles and cars occurred on intersections.

The target of this measure is to adapt the conditions of infrastructures and traffic management mechanisms at certain intersections so as to reduce the number of accidents. In principle, the following specific measures are being envisaged:

- Adapting the traffic-light phases to the characteristics of motorbikes (extending the clearing phase, modifying the yellow phase, etc.).
- Improving signposting conditions.
- Improving the lighting and visibility conditions at intersections.
- Installing red-photos, i.e. cameras for automatically detecting failures in respecting traffic-light discipline.



### **Measure 11. Improving adherence to the road**

The strategic plan knows that a high percentage of motor bike accidents occur due to a loss of control over the vehicle when braking in an emergency situation or due to the presence of dirt or spills on the road. This risk increases on painted surfaces or when the pavement is wet.

This measure addresses urban areas and roads, and it contemplates actions addressing the improvement of the adherence on our roads on various complementary frontlines, focusing on certain intersections in urban areas which are clear scenarios of high accident rates:

- Minimizing the use and size of horizontal road markings in those areas where it is possible to do so and considered to be critical (e.g. completely painted crosswalks).
- Use of antiskid paint for marking horizontal road signs in those areas where a strong deceleration of the vehicle is probable or necessary.
- Adjusting, leveling and coating metal manholes with adherent material.
- Using high-adherence pavement at points of risk.

### **Measure 12. Improving preservation and condition of the road network**

Preservation and maintenance of the road network affects road safety in general and, very especially, that of motor bikers. Elements such as potholes in roads, bulging of the pavement, slippery spills, fine gravel, failures in fountains at roundabouts spilling onto the pavement and obstacles of any kind, much too often shape high-accident-rate scenarios involving deaths and serious injuries in urban areas but, above all, on roads.

The strategic plan proposes two fields of action related to the improvement of the preservation of the road network:

- Coordination with the already running initiative of the DGT which is in charge of a Civic Cooperation System on Road Safety, the target of which is to assess and to consider the great importance the preservation of the network has for the drivers of two-wheeled vehicles.
- Preparing and supporting, on the part of the competent administrations, the implementation of a proposal in respect of a minimum preservation standard for the networks and application thereof by means of a service level agreement (SLA).



### **Measure 13. Road safety audits**

Road safety audits are periodic inspections of the safety conditions of an infrastructure that may be carried out in infrastructures that are in operation, or within the design or construction period thereof. They are preventive road safety actions which will progressively be introduced into the permanent policies of the public administrations. Thus, in its road safety action plan 2002-2010, the European Union recognizes the need for systemizing the carrying out of road safety audits for new roads as well as for roads that are in operation.

This field of action has a double target: that road safety audits that are already a practice, as for example that which has been recently launched by the Ministry of Public Works for the whole of the roads it is competent for, take into account the special features of motor bikers, and that specific road safety audits for motor bikers are carried out in municipalities and on certain road sections where this kind of action is not being made at present.

The deployment of this measure will include an analysis of international best practices, preparing standard methodologies for carrying out the audits distinguishing between urban areas and roads and between the design, construction and operation phases, training a small team for making the pilot audits, and assessment in accordance with the methodology of the strategic plan, and, if appropriate, including the initiative into the plan's catalogue of good practices.

### **Measure 14. Specific actions on SACs [Sections with Accident Concentration] and on points of risk**

From a statistical viewpoint and the same as it is occurring in connection with cars, motor bike accidents with deaths and serious injuries tend to concentrate in certain geographical areas named SACs if located on roads, and points of risk when they are in urban areas.

This measure proposes to first identify and to thereafter analyze in detail these points and sections with a view on designing and putting into practice improvement actions. The final target being pursued is to reduce motorcycle and moped accidents on sections where high accident rate scenarios are often coincident with risk driving (e.g. inadequate generic speed for the road on a one-lane road section with at-grade intersections).

### **Measure 15. Control systems for equipment and performance of mopeds and motorcycles**

A widely extended risk driving practice consisting in the manipulation [soupingup] of mopeds and motorcycles, is fought against. As a matter of construction, mopeds are limited in respect of their maximum speed to 45 km/h and in respect of their cylinder capacity to 50 cc. Once altered, their maximum speed can reach more than 80 km/h. In the case of motorcycles, the manipulation cancels the vehicle's power limitation.

This measure will promote furnishing certain units of officers of the authority with portable devices being capable of measuring the maximum speed of mopeds and the power of motorcycles. By

virtue of Article 70 of the Traffic Law, a detection of these practices will involve the immobilization of the vehicles.

Campaigns that will be made will moreover emphasize the control of other elements affecting the vehicle's safety (mainly tires, braking systems, lighting and suspensions).

### **Measure 16. Improving safety systems on vehicles**

In accordance with the most recent study published in Spain on collisions between two-wheeled vehicles and cars between 2001 and 2005, 30% of the accidents could be avoided if the whole of the motorcycle's braking capacity were used.; 46% of the accidents would be eliminated or be less serious when assuming a more efficient braking behavior; and integral braking (distribution of braking among the front and rear wheel) and ABS would contribute very positively to optimizing the braking of two-wheeled vehicles.

In Europe, the market offers motorbikes with integral braking and ABS but only within the high end range and still at a rather high cost. Industry has signed an agreement by which it obliges itself to progressively introduce advanced braking systems into its models, such that in 2010 the majority thereof will have them incorporated. 27% of the models manufactured and marketed in Spain in 2006 included an advanced braking system as standard or optional equipment.

This measure intends to contribute by different means to that, in 2010, practically all vehicles being marketed, not only manufactured, in Europe will incorporate the advanced braking system. Moreover, the influence on the accident rate, of water curtains produced by

heavy vehicles will be analyzed within the framework of this measure and, if appropriate, mechanisms for fostering the installation of fairings or antispill mudguards on heavy vehicles.

It is proposed that this measure be headed by ANESDOR and that, at least initially, the launching thereof should focus on preparing a business plan for designing, building and distributing advanced braking systems for the European industry.

### **Measure 17. Fostering research in the field of motorbikes and road safety**

In Spain, manufacturers of mopeds and motorcycles directly employ more than 2,200 people. When adding thereto the employment generated by the remaining links of the value chain (components manufacturers, distributors, wholesalers, repair shops, etc.), it is probable that the two-wheeler industry is sustaining a volume of direct and indirect employment of more than 30,000 professionals. Spain has a concentration of bodies and institutions which are leading in research, development and innovation (R+D+i) in the two-wheeler field, such as there are APP+-IDIADA, CENTRO ZARAGOZA, the CIDAUT Foundation, the University of Alcalá de Henares, the Road Safety Group of the University of Zaragoza, INSIA, the UPC Foundation and INTRAS.

This measure pursues fostering these R+D+i activities to move towards the road safety of motorists to make this knowledge and technology benefit the competitiveness of the industries dedicated to manufacturing components and two-wheeled vehicles. For this purpose the public administrations' aids and incentives addressing the promotion of R+D+i will be fostered to consider road safety as an area to be developed as a matter of priority.

### **Measure 18. Promoting an assessment and scoring system of the EuroNCAP type**

An assessment of the EuroNCAP type provides an independent and realistic vision of the safety performance of those 4-wheeled vehicles which are the most-sold in Europe.

Introducing a similar system for all motorcycle and moped models would make the purchasing decision easier for many users who value safety as a priority issue when deciding what to buy, in addition to producing positive synergies in the field of safety among manufacturers.

The target of this measure is the analysis of the feasibility and, if appropriate, to provide aid and support to the subsequent launch of a EuroNCAP-type assessment system for motorcycles.

Deployment of this measure will be made through a working group that will analyze the methodology and operation mode of the EuroNCAP system for 4W vehicles, look for support and financing by the system's present participants and by new participants (Department for Transport, FIA, Sécurité Routière, Government of Catalonia, etc.), and it shall draft an action plan and coordinate the carrying out thereof.



### **Measure 19. Improving the vehicle's visibility**

It has been estimated that a third part of accidents in which motorbikes and four wheeled vehicles are involved, the motorbike is not being seen by the driver of the other vehicle. Cars turning at crossings, motorbikes overtaking cars and cars accessing other roads are the situations where accidents wherein visibility is a concurrent factor, take place most frequently.

The target of this measure is to improve the visibility of motorbikes and suggests the following specific action:

- Promoting the use of reflective vests or straps by motor bikers.
- Using panoramic rear-view mirrors in cars.
- Using reflective materials on motor bikes.
- Analyzing the effect that the obligation for cars to use lights at daytime would have on motor bikers' safety.
- Transposition of the European Directive on the retrofitting of mirrors to heavy goods vehicles registered in the Community.

### **Measure 20. Financial/fiscal incentives for renewing the fleet and for safety equipment**

The increase in road safety and the defense and protection of the environment are the pillars on which the Prever Plan on modernization of the fleet of automotive vehicles (cars and light industrial vehicles) has been based since 2000. The program articulates itself in certain fiscal benefits that are applied on the occasion of the acquisition of cars and light industrial vehicles both new and second-hand ones, provided that an equivalent vehicle of a certain age and characteristics is deregistered for scrapping. In the 7 years since it was approved, the program has complied with its targets, and the fleet of cars has been renewed in respect of safety and pollution. Nevertheless, vehicles must still become more ecological and safe. RDL [Royal Law Decree] 13/2006 closed the present Prever Plan and set 2007 as the term for redefining the criteria for the environmental restructuring of the Plan, whereby it does not set a date for the new Prever Program to start. This Plan should produce the same benefits within the motorized two-wheeler field, i.e. it should improve safety and acoustic as well as environmental pollution.

On the other hand, the reduced rate (7%) of the Value Added Tax could be applied to elements of passive safety for the motor biker, such as helmets, back protectors, elbow pads, etc., because the purchase of said articles would be incentivized and the safety of users would be improved. The prices of these products on the market are usually rather high thus acting as purchasing inhibitors for many users, especially those of a lower cylinder capacities who are already possessing a vehicle but not the basic elements of a safe equipment.

### **Measure 21. Campaigns specifically addressing risk driving**

By making specific campaigns aimed at fighting the most common risk-driving practices that are carried out by motor bikers, they will be informed and made aware on the dangers being inherent in this type of attitudes.

It is being envisaged to launch a number of periodic and thematic campaigns dedicated to the most common and dangerous practices: lack of respect for the traffic-light discipline, overtaking cars by the right side in urban areas, driving on lanes with double-parked vehicles and braking making use first of the rear brake.

Campaigns that have already been broadcasted by other European countries with which there has been a close flow of information, will be used as a support.

### **Measure 22. Specific campaigns for 4-wheeled vehicles**

This measure suggest launching communication campaigns addressing the drivers of 4-wheeled vehicles, and which tackle three key themes jointly and separately: vulnerability of motor bikers, benefits for and challenges to the coexistence of any kinds of vehicles on roads, and the most common accident scenarios regarding car-motor bike collisions.

This kind of communication campaigns has been successfully deployed in France, the United Kingdom and Australia. The experience regarding coexistence campaigns that have been made in Spain will also be taken into account.

### **Measure 23. Agreements against risk driving with the media**

The target is to avoid that the mass media include contents that promote or banalize risk driving (inadequate speed, skidding, driving on one wheel, acceleration, etc.). The need to avoid the use of graphic materials or contents which associate the use of motor bikes with the said risk driving, including both reports and contents of advertising, will be strengthened.

The agreement must involve the mass media in general (daily press, journals, radio, television), specialized media of the motor world, advertising agencies, manufacturers and dealers.

The measure will furthermore include awareness-raising and sensitizing actions addressed to communications' professional, among which launching a portal being similar to "thinkroadsafety" of the British government will be included.

### **Measure 24. Strengthening the distinction between the use of a motor bike as a mobility means versus sportive use thereof**

The accident rate figures for motorcycles since early 2007 referring exclusively to interurban roads are worrying. From January to October 379 motor bikers died, 33% more than within the same period of the previous year, and in August only, 105 motor bikers died on the road network. A high percentage of the drivers corresponds to the profile of a young driver with a vehicle with a high cylinder capacity (88% of motorcycles of more than 500 cc) driving on weekends in so-called pseudo-sportive driving areas.

The target of this measure is to avoid reckless sportive driving behaviors on roads by making users of high cylinder capacity motorcycles aware of the difference between using two-wheeled vehicles as transport means and the sportive use thereof.

Two kinds of actions must be set up for this purpose:

- Communication campaigns and messages that emphasize this distinction. The participation of professional riders would be important in this respect of this field.
- Favoring the use of sportive circuits in advantageous conditions so as to strengthen this distinction. In this respect, it is envisaged to offer motor bikers one or more circuits for learning and training sportive driving techniques on two-wheeled vehicles.

### **Measure 25. Special measures against recidivist drivers**

The DGT has recently started to focus on multi-recidivist offenders. The penalty point driving license and the reform of the Penal Code that is presently taking place are accompanied by other measures that intend to remove a group of drivers who systematically endanger road safety from traffic.

The target of this measure is to adopt direct action on recidivist two-wheeler drivers so as to reduce the accident rate in this segment and to amend their conducts. Among the actions composing this measure, there are the following:

- Designing and putting into operation specific compulsory courses for re-educating recidivist drivers.
- Increasing the scales of fines for recidivism.
- Direct awareness-raising communications.

- Expediting the procedures for sanctioning files.
- Maximum scaling of sanctions.
- Sending the files to the Public Prosecutor for penal treatment thereof.

The deployment of this measure shall start with an analysis of multi-recidivist conducts within this motorist population so as, starting from there and if appropriate, to carry out a segmentation by profiles of the drivers and to set up the scales for recidivism.

### **Measure 26. Fostering companies to carry out follow-ups on risk driving and road safety courses by their employees**

The target of this measure is to achieve that companies employing professional motorcycle and moped drivers carry out efficient follow-ups on measures that foster road safety as set forth by the strategic plan addressing these professionals, by:

- Introducing road-safety courses into their training plans.
- Effectively realizing these courses by employees and subcontractors.
- Assessing the courses in view of a steady improvement thereof.

The implementation of this measure will require a cooperation agreement between organizations employing motorists, the public administration and other institutions having an interest in road safety.

### **Measure 27. Fostering the effects of risk driving on insurance premiums**

The target is that there should be a direct relationship being clearly perceived by the users, between risk driving and an increase in the price of insurance policies, i.e. of the premiums. For this it is necessary to link risk driving to sanctions, and sanctions to the increase in the price of premiums. The RDSanction relationship is rather straightforward as, albeit not all, most of risk driving practices are open to sanctions. The relationship between sanctions and premiums is not so open thereto because only some sanctions are related to risk of such accidents to occur (speeding for example, is related to a driver's risk profile whilst sanctions for parking offenses are not).

This measure will intend to define and implement into practice, any mechanisms that convey a lack of respect to the rules to the prices for insurance, so as to thereby make the rise in prices a deterrent element against committing offenses.

### **Measure 28. Modifying the sanctioning scheme for risk driving**

The target is to toughen the sanctioning scheme associated to risk driving on motorcycles and mopeds. In principle, this includes the following::

- Transporting packages and luggage on two-wheeled vehicles.
- Classifying the sanctioning scheme with regard to infiltration maneuvers.
- Toughening sanctions for reckless practices.
- Practices on four-wheeled vehicles for those who put motorcycles and mopeds on risk.

### **Measure 29. Increasing monitoring risk driving**

The target is to make the control over and sanctioning of risk driving on motorcycles and mopeds more efficient by launching or strengthening the following actions:

- Positioning radars taking into account the accident rates of motor bikes.
- Implementing red-photos that enforce traffic-light discipline at points of risk within urban areas.
- Coordinated campaigns for tracing vehicles that are obviously intended to elude monitoring systems.
- Monitoring actions on areas with reckless or pseudo-sportive driving.
- Coordinated “zero tolerance” campaigns against risk driving.
- Revision of the present control and monitoring plans in respect of Grand Prix motorcycle events.

Applying this measure requires coordinating the DGT, Autonomous Communities and city councils so as to set up plans of coordinated action that are efficient on a nationwide level and which generate among users a large perception of severity in respect of sanctions for risk driving. The deployment of action related to monitoring and controlling the three large Grand Prix motorcycle events must further count on the participation of other institutions as involved, including the organizers of the events, sponsors and the media.



### **Measure 30. Replacing and protecting safety fences**

The Ministry of Public Works has put into operation a Plan for the Adaptation of Containment System in respect of CO [Circular Order] 18/2004, a plan to replace the present containment systems by protection systems for motor bikers (PSMs) on 1,500 km of the State Road Network before 2009, and to which 43 million Euros have been assigned.

The Strategic Plan is aware that a significant portion of motorcycle accidents on roads involving the vehicle going off the road occurs on roads with many curves. Therefore, the plan envisages the installation of protective systems for motor bikers on the single carriageways being owned by the Provincial Commissions and town councils. For this purpose, bilateral agreements will be signed between the DGT and the local administrations. The estimated threeyear budget is 30 million €.

This measure also includes establishing a coordinated action framework for installing PSMs on the national road network. This action framework will include the carrying out of a permanent work on observing new solutions and technologies that could be adopted.

### Measure 31. Vertical signposting

The target of this measure is to minimize the impact of vertical signposting and street furniture in general, on accidents of motor bikers. The measure contemplates three major areas of action:

- Analyzing the effects of street furniture and vertical signposting in motorbike accidents in urban areas as well as on conventional roads.
- Action addressing a new infrastructure (e.g. recommendations regarding instructions for vertical signposting on the state road network or installation of bits / bollards in urban areas that are made of little harmful materials such as fiber or PVC, after having carried out due analysis and assessments.
- Action addressing the existing infrastructure (e.g. protecting metal bollards by covering them with protective materials).

It is recommended that this measure be headed by a big city and start with an impact analysis the results of which will be submitted to a Working Group and will extrapolated to vertical signposting on conventional roads.

### Measure 32. Reducing the span of time for accident assistance

It is possible to reduce the number of those killed in accidents if the time for accident assistance were reduced in a significant manner. The key lies in an efficacious assistance during the first 15 minutes following the accident. An adequate equilibrium between medical efficiency and economy of the service is to be reached. Among the possible fields of action, there are the coordination of the acting protocols of the various emergency bodies, medical specialization on

emergency care or specific civic training in respect of care in cases of motorcycle accidents and the manner to treat injuries thereof before the arrival of the emergency services.

The first and main target of this measure is to reduce the span of time for providing assistance on road sections with high concentrations of motor biker accidents. Carrying out the following action is envisaged:

- Reinforcing the emergency services in areas with high motor biker accident rates.
- Assessment of the possibility to put into operation itinerant ad-hoc care services (e.g. on weekends in certain areas).
- Carrying out tests and specific training so as to improve the care provided to motorcycle drivers by the emergency services.

### Measure 33. Introducing the eCall

The target of the research on the installation of the eCall device in 2-wheeled vehicles is to achieve to reduce the response time of the emergency services in the case of traffic accidents.

The eCall is activated manually or automatically in case of serious accidents, and it transmits a direct call (112) to the nearest emergency services providing the exact position of the vehicle.

This measure proposes to carry out a test of the system with motorized two-wheeled vehicles showing its efficiency in those vehicles, followed by an estimation of the benefits the system would entail for motor bikers in the European Union. It is thereby intended to contribute to measures being taken to speed up the deployment of the eCall system in the Union.

### Measure 34. Correct use of helmets

According to the latest survey carried out by the General Directorate for Traffic, not using the helmet increases cranial injuries by 40% and reduces the probability of remaining unharmed by 20%. The use thereof in an accident at 50 km/h or higher speeds sets the difference between life and death.

The correct use of the helmet comprises three frontlines for action:

- Removing user groups who do not yet use the helmet.
- Correct fastening thereof, and
- Clearly defining the criteria for certification and official approval and the implications thereof (e.g. helmets commonly called “fine removers”).
- Informing users on the helmet (caducity, consequences of impacts, implications on official approvals and certifications, etc.).

The measure will back an effective immobilization of the vehicles of drivers reported for driving without helmets.

### Measure 35. Establishing a minimum standard for additional equipment

Establishing compulsory minimum equipment for motor bikers (jacket and trousers or overall with plastic protectors on elbows, shoulders and knees when driving on roads, and gloves and suitable footwear within the cities) is very important for minimizing the consequences of accidents both on roads and in the cities.

### Measure 36. Strengthening research on equipment

There is a field of research with good perspectives and related to the development of safer equipment for motor bikers. The size of the market for safety equipment and systems is growing at a similar rate to that of motorbike manufacturing industry in general, such that the traditional problem linked to a lack of a critical mass of a demand being sufficient to justify investments in research and development is fading away. Moreover, the new technologies reinforce this former trend allowing equipment to become cheaper (vests with airbags and the neck-break are two good examples).

Testing and making trials with this kind of equipment is expensive and requires a high degree of specialization, moreover when aspiring to that the said equipment be officially approved and introduced into the market. This measure intends to carry out actions aimed at strengthening the development and presence on the market of this kind of equipment at affordable prices for a large group of consumers.



# Management and follow-up system (2008-2011)

The Working Group “Motorcycles and Road Safety” will be maintained within the Council for Road Safety as a group for following up and carrying out the plan by means of holding 1 or 2 yearly meetings. The management models that will facilitate the deployment of the plan are named “Consensus”, “Coordination” and “Co-responsibility”.

- **Consensus**

This is the simplest management system because there is only one entity for enforcing and supervising the measure. Nevertheless, this entity must look for and find a broad consensus within the Working Group in respect of the measure in question. This consensus may affect time periods, material and human resources, participating entities, the scope and, in general, any aspect that is considered to be relevant. The enforcing entity will periodically inform the Working Group on the status of the progress made in the deployment of the measure.

- **Coordination**

The coordination model will be used for the deployment of those measures that, due to their nature, require several operators. The measure will be enforced by various entities in an autonomous manner, but mechanisms for joint coordination and follow-up of the developments in the individual plans will be established beforehand. Thus, each of the operators will manage its own resources and will independently schedule the deployment of the measure within its own field of competence, but it will do so coordinated together with the other operators

- **Co-responsibility**

Co-responsibility is the most complex management system. The entities undertake to enforce the measure jointly and independently, whereby each entity assumes certain roles, resources and actions within a share management scheme. The plan contemplates two kinds of indicators: result indicators and activity indicators.

## Follow-up indicators

Name of the indicator	Kind of indicator	Recurrence	Information sources
1. Total number of fatalities and seriously injured, with a distinction between roads and urban areas	Results	Yearly	National Observatory for Road Safety
2. Number of fatalities on motorcycles per million vehicles of the fleet	Results	Yearly	National Observatory for Road Safety
3. Total number of fatalities on motorcycles, with a distinction between roads and urban areas	Results	Yearly	National Observatory for Road Safety
4. Degree of achievement of the results of the measure as being enforced	Results	Half-yearly	Management Office of the Plan
5. Number of measures of the plan that are being enforced	Activity	Quarterly	Management Office of the Plan
6. Degree of the progres of the measures that are being enforced	Activity	Quarterly	Management Office of the Plan

## Preparation schedule

Step 1. Organization of the project	Step 2. Formulation of the shared vision	Step 3. Analysis of the solution	Step 4. Scheduling and preparing the Plan
Launching the project	Dissemination + raising sensitivity	Preparing tree of solutions	Multicriterion Analysis
Organizing the project	Analysing and assessing data	Discussing within the Working Group	Scheduling
Constituting a Working Group	Launching the Working Group	Estimating feasibility and efficiency	Drafting action sheets
	Researching, tuning and validating	Assessing running measures	Preparing and distributing the Plan
		Analyzing best practices	Presentation to the Working Group
		Adjusting targets	Tuning and validating
		Presentation of the results	
January 2007 → → → → Project management and follow-up → → → → December 2007			

## Execution schedule

Measure implementation years			
2008	2009	2010	2011
Measure 1,2,3,4,7,15,19 y 25			
Measure 14 y 34			
Measure 9, 21, 22, 24, 29 y 30			
	Measure 8 y 28		
	Measure 11 y 27		
	Measure 5, 6, 10, 12 y 13		
		Measure 17, 23 y 26	
		Measure 16 y 32	
			Measure 18, 20, 31, 33, 35 y 36

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**Management and coordination:**

National Road Safety Observatory of Traffic Directorate-General

The Plan has been prepared by members of the Working Group GT 52 “Motorcycles and Road Safety”.

Asociación de Empresas del Sector Dos Ruedas – ANESDOR (Professional Association of Two Wheel Sector)

Asociación Mutua Motera – AMM (Motorbike Association)

Asociación Nacional de Vendedores de Vehículos a Motor, Reparación y Recambios – GANVAM

(National Association of Sellers of Motor Vehicles, Repair and Spare parts)

Ayuntamiento de Madrid. Área de Gobierno de Seguridad y Servicios a la Comunidad. Coordinación

General de Servicios a la Comunidad. Dirección General de Movilidad (City Hall of Madrid. Area of Security

and Community Services. General Coordination of Community Services. Mobility Directorate-General)

Federación Catalana de vendedores de vehículos a motor – FECAVEM

(Catalonian Federation of Motor Vehicle Sellers)

Guardia Civil. Agrupación de Tráfico (Civil Guard. Traffic Department)

Ministerio de Industria, Turismo y Comercio (Ministry of Industry, Tourism and Trade)

Ministerio de Fomento. Dirección General de Carreteras (Ministry of Transport. Road Directorate-General)

Real Automóvil de Cataluña (RACC) (Catalonian Royal Automobile Club)

Real Automóvil Club de España (RACE) (Spanish Royal Automobile Club)

Unión Española de Entidades Aseguradoras y Reaseguradoras – UNESPA (Spanish Union of Insurance Companies and Assuming Companies)

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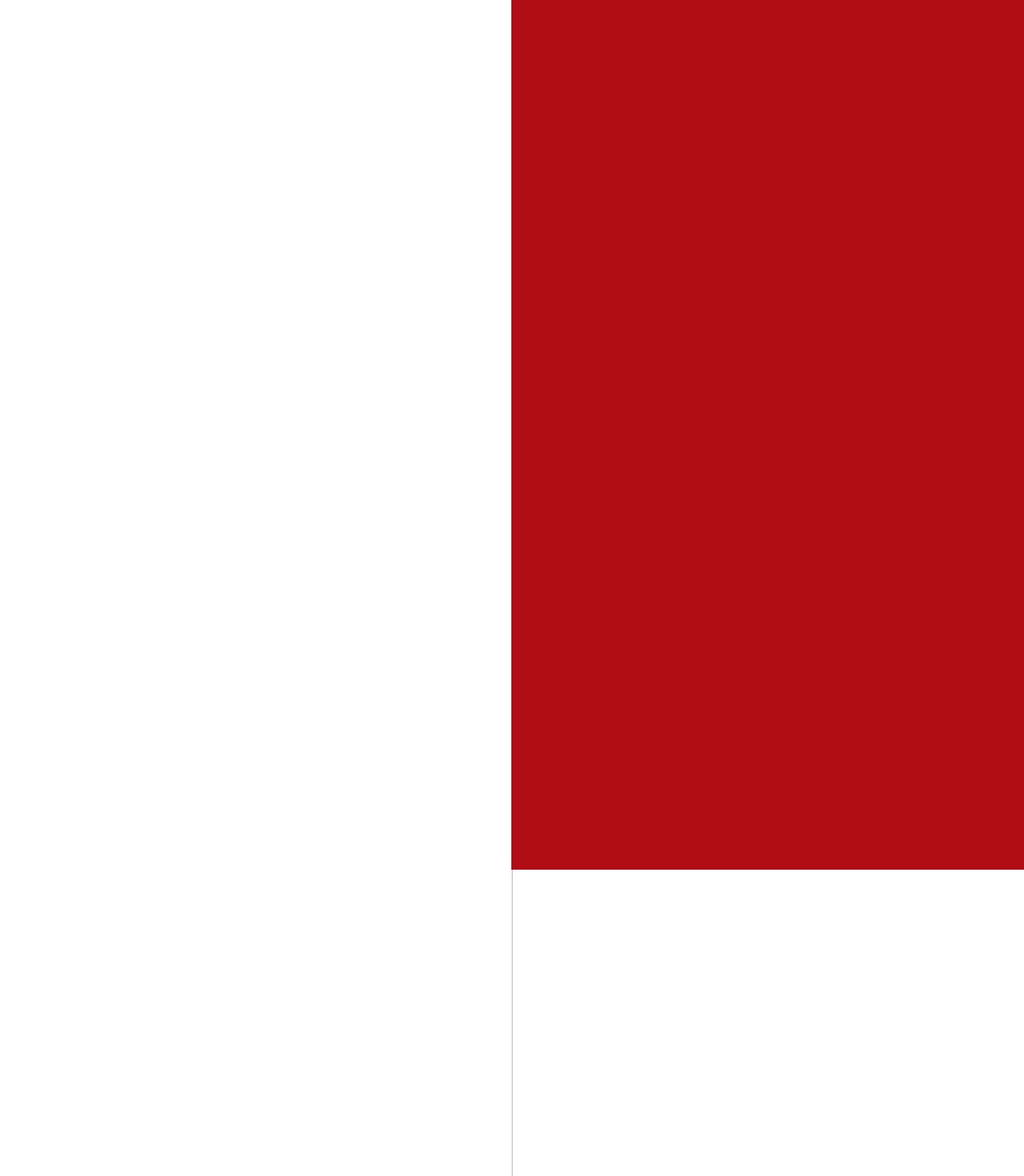
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**National Road Safety Observatory**

Traffic Directorate-General. Ministry of the Interior.

December 2007



# Strategic Plan for the Road Safety of Motorcycles and Mopeds

Executive Summary



*Observatorio Nacional  
de Seguridad Vial*

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