ROAD SAFETY PROGRAM OF THE SECRETARÍA DE COMUNICACIONES Y TRANSPORTES

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ABSTRACT

As of year 2009 the estimated population of Mexico was of about 110 million inhabitants with a life expectancy of 75 years, living in an area of approximately 2 million square kilometers and having a vehicular fleet of over 30 million vehicles and a highway network of 360 thousand kilometers.

As a result of traffic accidents, in Mexico 20 thousand persons were killed, 150 thousand were hospitalized and 40 thousand became disabled during 2009. Road accidents currently rank third as the cause of decease in the country, followed by diabetes (with 70 thousand deaths a year) and heart diseases (with 55 thousand deaths a year). Road accidents have the highest growth rate with a mean annual rate of 5%.

This document describes strategic plans and approaches contained in the Program on Road Safety issued by the *Secretaría de Comunicaciones y Transportes* for the improvement of traffic safety in highways and streets of Mexico, including the mission, vision, general objective, strategic objectives, strategies, lines of action, actions and performance indicators proposed for each action. Conclusions are derived at the end.

1. INTRODUCTION

For more than a decade in Mexico injuries and non transmissible diseases prevail in Mexico, associated to an increasingly older population and to an increasing occurrence of risks and rather unhealthy standards of living. In addition, there is the imminent transition from a rural to an urban population with an increase of the vehicular fleet and an increasing demand for transportation of freight and passengers. These factors are inducing high rates of victims (injuries and deaths) resulting from mishaps in streets and roads; therefore, the *Secretaría de Salud* (SS) and the *Secretaría de Comunicaciones y Transportes* (SCT) have a joint leading role aimed at reducing the high indexes derived from these causes from the point of view of public health. Based on this situation, it was proposed to foster the development of a long-term multi-sectorial policy in matters of road safety, encompassing the three branches of government and the civil society with the purpose of reversing this pandemic caused by traffic accidents.

In Mexico, if all accidents are taken into account, traffic accidents and running over posses the highest mortality rates (10.9 and 5.2, respectively), a statistics representing a total death count of 20 thousand in year 2009 or the fourth cause of death of persons in productive age and the first cause of mortality among youngsters.

In 2009 some 500 thousand traffic accidents (440 thousand in urban zones, 30 thousand in suburban areas and 30 thousand in federal highways) occurred in Mexico, causing 190 thousand injuries (155 thousand in urban and suburban zones and 35 thousand in federal highways), as well as 20 thousand mortal victims (14 thousand in urban and suburban zones and 6 thousand in federal highways). Of the 32 states into which the country is divided, those registering the highest mortality indices due to traffic accidents are Nuevo

León, Jalisco, Guanajuato and Distrito Federal. Mention should be made that the ten states with the largest frequency of accidents concentrate 67% of the total number of traffic accidents in the country [1]. At municipal level, ten of the municipalities in the country concentrate one third of all traffic accidents in the country.

In the last six years, the number of automotive vehicles registered in Mexico showed a strong increase by growing from 15.6 million in 2000 to 30 million in 2009, i.e. more than 90% increase, whereas the number of accidents also showed an important increase when passing from 312 thousand in 2000 to 500 thousand in year 2009.

It has been estimated that the total costs generated by traffic accidents in Mexico exceed 110 thousand million pesos annually (1.3% of the Gross Domestic Product). From these costs, 50% corresponds to expenses of hospitalization and medical services to assist injured people, 40% to the estimated cost that the society fails to receive due to the loss of lives that were in productive age, and the 10% balance related to direct costs from both accidents and pedestrians involved.

Of the 20 thousand deaths registered in 2009, 78.9% corresponded to the male population. In what refers to age groups, from 5 to 24 years is the first cause of death and from 25 to 44 years the second cause. If the total number of deaths is considered, the range of ages from 5 to 14 years accumulates 5.6% of the total; from 15 to 24 years, 22.8%; from 25 to 34 years, 20.2%; and, from 35 to 44 years, 15.3%, with cumulative values from 5 to 44 years equal to 63.9% of the deaths related to traffic accidents. Notorious differences are also observed at regional level in what refers to frequency, because ten of the 32 entities in the country concentrate 55% of the total number of accidents. As far as mortality rates of pedestrians injured by motor vehicles is concerned, statistics show for 2009 a national rate of about five deceases for each 100 thousand inhabitants. The strategic plans and approaches implemented by SCT are described in what follows. They are contained in the so-called Program on Road Safety of the SCT [2].

2. PROGRAM ON ROAD SAFETY OF THE SCT

2.1. Institutional Framework

The Sectorial Program of Communications and Transport 2007-2012 [3] constitutes for the SCT the governing instrument of its medium-term actions. This is why, taking as starting point the document Vision Mexico 2030 [4], the National Development Plan 2007-2012 [5] and the results of a wide-ranging census among relevant players of the sector that have contributed with elements of diagnosis and action, the Sectorial Program of Communications and Transport 2007-2012 is structured around four sectorial objectives: 1) Expand the geographic and social coverage of the infrastructure; 2) Improve its quality and efficiency; 3) Enhance the safety levels associated to the infrastructure and services of the sector, by means of actions aimed at upgrading the ranking of the human factor, the infrastructure, the systems and equipping, as well as the supervision and culture on safety, for the purpose of preventing the occurrence of illegal actions, accidents, and losses of human lives and materials as part of the system of communications and transport; and 4) Transform the country in one of the main competitive logistic platforms of the world.

Additionally, the National Infrastructure Program (PNI) 2007-2012 [6] sets as Strategy IV: “Improve the physical condition of the highway infrastructure and reduce the accident rate”. It establishes for such purpose two actions in particular: first of all, decrease the accident rate from 0.47 to 0.25 for each million vehicles-kilometer, and secondly, to expand from

72% to 90% the federal highway network that operates in satisfactory conditions in compliance with international standards. These actions should be satisfied by year 2012 because this is the term considered in the PNI.

2.2. The Program

It has been estimated that the population with possibilities of driving (15 to 64 years) will increase on the average about 29% from 2000 to 2015, until concentrating approximately 68% of the total population by the end of the period. The fleet of motor vehicles registered in circulation as of 2009 exceeded 30 million, practically duplicating the amount recorded in 1998. The vehicular distribution is as follows: 66.1% of automobiles, 29.5% of freight trucks, 3.3% of motorcycles and 1.1% of passenger buses. In the last 10 years the automobiles and freight trucks have increased by 93%, with an annual rate of 7.5%, whereas the motorcycles have boomed by almost 300% with an annual rate of 17%. The mean age of the vehicular fleet is of 14.3 years.

The National Highway Network is divided into the Rural Network (that includes improved earth roads and rural roads) with a length of 237,726 km, the Feeder Network (constituted by 31 state systems) with 73,874 km, and the Federal Network (basic and regional) measuring 48,475 km. The annual growth rate of the highway infrastructure in Mexico was equal to 1%, the Rural Network showing the largest annual increase (2.3%), moving from 236 thousand to 238 thousand kilometers. In the period 2002-2007 the Federal Toll Road Network increased by 2% (from 7 thousand to 7.8 thousand kilometers); on the other hand, the Free Federal Network evidenced a reduction due to the change of jurisdiction created by the growth of urban zones in the country.

The *Instituto Mexicano del Transporte* (IMT) reported in its Statistics Yearbook of Accidents the occurrence during 2008 along the network overseen by the *Policía Federal* (PF) with an approximate length of 55,687 km and that basically comprises the Federal Network, the following data: 30,551 accidents, 33,580 injuries, and 5398 deaths; the cost of material damages amounted to 1,495.7 million pesos, whereas the total cost of those accidents climbed to 27 thousand million pesos (considering an exchange rate of 11 pesos per US dollar and average unit costs per injured or death of 12 thousand and 400 thousand US dollars, respectively). Additionally, 45,502 vehicles (1.53 participants per accident) and 849 pedestrians were involved. The mean annual growth rate of deaths due to road accidents in this network is of about 4%.

The largest percentages of accidents occurred at the network overseen by the PF is blamed on the drivers due to speeding (39%); encroachment of lanes (9.4%); imprudence or intention (5.9%) and drunk drivers (1.4%). Mention should be made that the percentage attribute to drunk driving fails to represent an actual figure because it is common practice that in most of the cases such cause is not reported in the accident. The most common cause blamed on the roadway is wet and slippery pavement, with percentages of 8.6 and 6.5%, respectively, whereas atmospheric conditions refer to rain with 7.1% and to the vehicle, tire blowouts (2.1%). In general, the most common types of accidents correspond to “running off the road” with 34.8%, followed by “lateral collision”, “rear-end collision”, “head-on collision” and “collision against fixed object” with values of 16.4%, 13.9%, 7.6% and 7.4%, respectively.

The Program of Road Safety of SCT is structured according to the following five aspects: 1) The user of the roadway; 2) The vehicular fleet; 3) The road infrastructure; 4) The legal and institutional framework and compliance with the rules and regulations; and 5) Institutional cooperation. It is worth mentioning that the strategies and lines of action

related to “Users of roadways”, “Vehicular fleet” and “Legal and institutional framework and compliance with the rules and regulations” have been conceived to be implemented in the whole country, whereas those related to “Road infrastructure” only correspond to the Federal branch, with the hope that actions taken at federal level are being reflected in both state and municipal levels. The fundamental elements contained in this program are detailed in what follows.

2.2.1 *Mission*

Develop actions to prevent and diminish the number of road-related accidents as well as their consequences in the national roadways and particularly in federal highways, with the participation of the public and private sectors and of the civil society.

2.2.2 *Vision*

For year 2020, have available the legal framework, the institutional structure and the mechanisms of coordination and management to guarantee the safety of users of the highway and urban networks.

2.2.3 *General objective*

The general objective of the Program on Road Safety of SCT is “For year 2020 achieve that the number of deaths in traffic accidents is no greater than 20 thousand a year and that the number of injured people does not exceed 400 thousand a year, through the implementation of actions in accordance to the best international practices and standards, using an approach to results that allows the permanent evaluation of the specific actions implemented”.

2.2.4 *Strategic objectives*

Objective 1. To improve the suitable use of the highway and urban networks on the part of users
Objective 2. To foster a road infrastructure that maintains a service level required for safe traveling and mobility
Objective 3. To improve safety of the vehicular fleet
Objective 4. To promote a legal and institutional framework that propitiates a safer highway operation and to achieve its effective enforcement
Objective 5. To foster the institutional cooperation among the various sectors of the government and of society as a whole

2.2.5 *Strategies, lines of action, actions and indicators*

Related to Strategic Objective 1: Users of the roadways

In what refers to users of the roadways, as participant element of Road Safety, it is necessary to improve the road education of them, directing additional efforts to education on Road Safety of the school population (pre-school, primary, secondary, etc.), to achieve safer behavior to decrease the risks associated to the occurrence of road accidents.
Special mention should be given to the behavior that parents carry out in matters of Road Safety at the time of driving a vehicle, taking into account the regulations and conducts about the position of the child in the vehicle, such as the correct way to fasten the safety belt, the adequate use of child retaining systems, etc.

Actions oriented to the prevention of traffic accidents should be promoted by means of advertising campaigns in massive media such as radio, television and Internet, so as to foster Road User Education.

In addition, a better system of training and updating of private and professional drivers (motorcyclists included) will help diminish traffic accidents and further promoting the updating of the procedures to apply for driving permits and licenses for the various types of vehicles. On the other hand, it is important to implement a point ranking system for drivers with national coverage.

Participation and dialog with the professional sector (represented by chambers and associations) will be sought for to incorporate new actions that contribute to the increase of safety in transportation. Therefore, it is considered that the companies should train their drivers so as to prevent and diminish traffic accidents and as a result to obtain savings for both the companies and the society. Inspection and control in the use of safety belts will be promoted as well as the analysis and control of health conditions of drivers.

It will be promoted and fostered that the victims of traffic accidents and their relatives enjoy adequate emergency services such as ambulances, towing trucks, firefighting, etc.

Because one of main causes of accidents in alcohol consumption, it is important to extend the programs of prevention and treatment of alcohol and drug consumption of the Health Sector to the highways.

Finally, include the participation and behavior of the rest of the users such as pedestrians, bicyclists and motorcyclists, because in Mexico circulation of such users are limited therefore originating a high risk of accidents mostly at junctions (crossings) of streets and boulevards. One way to mitigate this problem is to provide a suitable signaling to regulate passing preference at intersections.

Based on the above considerations the following strategies, lines of action and specific actions are proposed:

Strategy 1: Develop integral programs of communication and information in Road Safety, as well as actions focused on road-related education and on the promotion of safe driving habits, improve attention to emergencies for victims of road accidents and promote preventive actions from a health point of view not only for users in general but also for drivers and companies of the professional transport sector.

Lines of action:

1.1 Educate, create awareness and promote habits among teachers and the school population (pre-school, primary, secondary, etc.) in topics related to prevention of accidents, through the official text books published by the *Secretaría de Educación Pública* (SEP) and with the results of studies already completed by the *Secretaría de Salud* in the area of Road Safety.

Action 1.1.1: Include the topic of Road Safety on a permanent basis in official text books. Action 1.1.2: Train teaching staff in matters of Road Safety. Action 1.1.3: Include activities of road-related education for the different educational levels.

1.2 Incorporate the civil society, private initiative and state institutions in the execution of integral actions oriented to the prevention of traffic accidents.

Action 1.2.1: Promote advertising campaigns in massive media such as radio and television for the purpose of fostering Road-Related Education and to create awareness among users of the roadways in what refers to respecting the levels of alcohol consumption, signaling, pedestrians and bicyclists, as well as the compliance with speed limits, particularly during weekends and holiday periods. Action 1.2.2: Promote advertising campaigns in massive media such as radio and television, for the purpose of fostering the wearing of safety devices among users (such as safety belts, systems for child containment and safety helmets).

1.3 Improve the training and updating system of private and professional drivers (motorcyclists included) according to the type of driving license.

Action 1.3.1: Incorporation of the requirement to approve a theoretical and practical course prior to the training exercise according to the type of driving license in a certified school, to obtain (in the case of private and professional drivers) and to renew (particular drivers) and authenticate (professional drivers) the driver's license. Action 1.3.2: Revise and update the contents of courses required to issue and renewal or authentication of licenses. Action 1.3.3: Implementation of a system for certification of schools teaching the previous training course to obtain and renew or authenticate the driver's license.

1.4 Improve the requirements for getting the driving permit and license.

Action 1.4.1: Implementation with national coverage of the theoretical test via computer to obtain driving permits and licenses. Action 1.4.2: Implementation with national coverage of a set of rules and regulations for the performance of psychological and physical examinations to issue driving permits and licenses. Action 1.4.3: Establish and implement criteria for untrained driver permits (e.g. minimum age of 18 years, restriction on nighttime driving during the first year, driving accompanied by an adult driver during the first year, requirements for untrained motorcyclists). Action 1.4.4: Establish and implement criteria to keep enforced the license of drivers older than 70 by means of examinations of physical conditions and abilities every two years.

1.5 Implement the ranking system by points for drivers with national coverage.

Action 1.5.1: Develop a ranking system by points for granting driving permits and licenses. Action 1.5.2: Launching of a campaign for the implementation at national level of the ranking system by points.

1.6 Establish criteria for creating awareness and control of the professional transport in matters of Road Safety.

Action 1.6.1: Promotion of the compulsory use of safety belts among professional drivers. Action 1.6.2: Promoting the psychological and physical ability of professional drivers. Action 1.6.3: Control of driving and resting times of professional drivers. Action 1.6.4: Implementation of a program for preventing road accidents among companies.

Action 1.6.5: Motivations for retirement from the activity of professional drivers older than 70 by means of a petition by SCT to freight companies.
Action 1.6.6: Increase by 20% the inspection and supervision to trucking companies in matters of Road Safety, through the *Dirección General de Autotransporte Federal* (DGAF).

1.7 Improving the attention and assistance to victims of road accidents and to their families.

Action 1.7.1: Establish and Integral System with national coverage for effective Attention of Emergencies to reduce the time of response in arriving to the site of the accident and attending the victims of traffic accidents.
Action 1.7.2: Fostering and promotion of the use of an emergency dial number standardized at national level (066).
Action 1.7.3: Implementation of the program of legal and psychological assistance to victims and relatives of the victims of traffic accidents.

1.8 Extend the coverage of the programs for preventing and treating alcoholism and drug consumption of the Health Sector to highways, as well as the programs to supervise fatigue and the psychological and physical medical programs of the SCT to municipalities and states.

Action 1.8.1: Carry out operatives of alcohol and drug consumption on a random manner at highways benefiting from the experience gained by the *Secretaría de Salud*.
Action 1.8.2: Carry out operatives to detect fatigue and to perform random psychological and physical medical examinations at urban and suburban zones benefiting from the experience gained by *Dirección General de Protección y Medicina Preventiva en el Transporte* (DGPMPT) of the SCT.

Related to Strategic Objective 2: Road Infrastructure

As for the Road Infrastructure, is necessary to incorporate elements of Road Security in the activities of design, operation, conservation and modernization of the infrastructure with special emphasis on the places of high occurrence of accidents, as well as in those that present some type of affectation caused by factors as the rain, haze, fallen, coefficient of friction, etc.; as well as to incorporate Road Safety Audits on existing and future infrastructure. It is important to give maintenance to pavements of the Network Federal Highway with a deficient state, in order to give a better uniformity and superficial friction, according to the criteria used by the system of administration of pavements HDM-4 [7].

With regard to speeding as a major cause in the occurrence of accidents, we propose a renewal of speed limits on highways, roads and urban / suburban, similarly to the international boundaries as established by the United Nations Together, and used primarily in Europe, establishing speed limits on highways, roads and urban / suburban areas, 110 km / h, 90 km / h to 50 km / h, respectively. It is noteworthy that this experience of setting speed limits widespread, caused a significant decrease in the occurrence of accidents in Europe. In the case of commercial vehicles and passenger proposed speed limit is 90 km / h on motorways, on the other channels the same approach proposed light-duty vehicles, except goods vehicles that transport materials and dangerous residues.

Associated with this, it is necessary to have adequate horizontal and vertical signaling that should specify to the user speed limits above for highways, roads and urban areas, reducing the risk of an accident and allows the road user timely react to an incident, change in road infrastructure, access to populations, speed restrictions, etc.

It is noteworthy that in those places where there are geometric conditions that cause accidents, such as curves and steep slopes or in areas with high traffic, it is important to include a specific signaling.

In addition, improved mobility management will help the road users have more and better information about the traffic situation and road conditions before and during the trip, by Incident Management System that includes implementation of ITS technologies in the Federal Highway Network.

The following strategies and action have the main scope of the highway network, however it is expected that these actions are extended to state and municipal level through institutional cooperation.

Strategy 2: Improve the rules for the design, construction and modernization of road infrastructure.

Lines of action:

2.1 Elaboration and updating of legislation to improve road safety.

Action 2.1.1: Review and update the Project Manual Geometric Road. Action 2.1.2: Review and update the manual pointing devices and traffic control. Action 2.1.3: Develop the Road Safety Manual of the SCT. Action 2.1.4: Include among the rules and regulations of SCT for transport the process of Road Safety Audits.

Strategy 3: To coordinate and to implement the Road Safety Audit in the Federal Highway Network.

Lines of action:

3.1 Train the personnel of the Transport Sector (SCT, *Caminos y Puentes Federales* (CAPUFE), concessionaires of toll roads, etc.) in the area of Road Safety Audits.

Action 3.1.1: Review and update the academic content of the auditor training courses for Road Safety. Action 3.1.2: Offer courses for training of auditors on Road Safety.

3.2 Perform Audits of Road Safety at the stages of design and pre-opening of roadway works, to reduce the risk to users of the roadway and therefore prevent or mitigate potential accidents.

Action 3.2.1: Perform Road Safety Audits on the construction project of major highways intended to be built. Action 3.2.2: Perform Road Safety Audits on already built projects, prior to their opening to traffic.

3.3 Implement procedures of Road Safety Audits on highways in operation following the traditional method for auditing and/or the IRAP methodology (International Road Assessment (International Road Assessment Programme).

Action 3.3.1: Implement during 2010 the IRAP methodology to the Mexican part of the Pacific Corridor of the Central American Project (Puebla – Coatzacoalcos – Ocozocoautla – Arriaga – Cd. Hidalgo).

Action 3.3.2: Implement between 2010 and 2012 the IRAP methodology to the Federal Basic Network.

Strategy 4: Establish general speed limits on highways, roads and urban / suburban areas.

Lines of action:

4.1 Upgrade the maximum speed limits in the road network.

Action 4.1.1: Upgrade the speed limits in freeways, highways and urban/suburban zones to 110 km/h, 90 km/h and 50 km/h, respectively.
Action 4.1.2: Upgrade the maximum speed limit for freight and passenger vehicles to 90 km/h in freeways, leaving the same limit applied to light vehicles in highways and urban/suburban zones, with the exception of freight vehicles transporting hazardous materials and residues.
Action 4.1.3: Upgrade the maximum speed limits in freeways, highways and urban/suburban zones for long-run freight vehicles transporting hazardous materials and residues to 65 km/h, 50 km/h and 40 km/h, respectively.

Strategy 5: make available best methods of traffic management and provide information to users of the road.

Lines of action:

5.1 Continue with the initiatives of the SCT for the implementation of ITS technologies in the Federal Road Network.

Action 5.1.1: Execute the National Plan for Implementing ITS technologies [8], that contemplates technologies such as systems of variable messages, kiosks, emergency telephones, monitoring cameras, local management centers, etc.
Action 5.1.2: Implementing the Management System of Incidences occurring at the Federal Road Network.

5.2 Provide information to users of the road about incidents occurring along the Federal Road Network.

Action 5.2.1: Increase coverage of updated information on the operating conditions (traffic accidents, speeds, weather conditions, zones of vehicular congestion, work zones, poor driving conditions, etc.) of the Federal Road Network via Internet.
Action 5.2.2: Implement radio stations to broadcast incidents occurring before and during the trip at the Federal Road Network.

5.3 Promote compliance with the rules and regulations in the area of signing and information on road works.

Action 5.3.1: Carry out actions to guarantee compliance with the rules and regulations applicable to warning signs in work zones.
Action 5.3.2: Include in the work contracts the obligation of the contractors to pay an insurance covering sufficiently the accident potential at the work zone.

5.4 Strengthen the system of stations for controlling weight and dimensions of heavy vehicles moving along the Federal Road Network.

Action 5.4.1: Increase the number of verifications of weight and dimensions at highways.
Action 5.4.2: Implement the verification of excess weight by means of mobile stations

along the Federal Road Network.

Strategy 6: To strengthen the road maintenance program of the Federal Road Network and gradually correct the potential conflict areas and sites of conflict (points or high accident sections).

Lines of action:

6.1 Preserve pavements and structures of the Federal Road Network.

Action 6.1.1: Provide maintenance to pavements of the Federal Road Network having a deficient wearing course caused by traffic, natural agents and ground conditions, for the purpose of achieving improved uniform conditions and surface friction, according to the pavement management system HDM-4 [7]. Action 6.1.2: Provide maintenance to bridges and structures of the Federal Road Network according to the Integral Safety Program for Bridges.

6.2 Reduce, at the Federal Road Network, potential conflicting zones and obstacles or elements of the infrastructure prone to generate accidents.

Action 6.2.1: Eliminate potentially dangerous elements of the infrastructure, mainly located at intersections, links and lateral zones. Action 6.2.2: Level lateral slopes at highways and protect culverts.

6.3 Guarantee proper maintenance of horizontal and vertical signing, retaining systems, etc.

Action 6.3.1: Continue with the Sub-Program of Signs Maintenance assigned to the *Dirección General de Conservación de Carreteras* (DGCC).

6.4 Implement measures to improve sites of conflict (points or stretches with high accident rate) by means of methodologies of Road Safety applied in Mexico and abroad.

Action 6.4.1: Continue with the execution of the program for attention of sites of conflict.

Strategy 7: Upgrading the Federal Road Network to ensure the existence of road infrastructure conducive to road safety.

Action Line:

7.1 Modernization of the Federal Road Network.

Action 7.1.1: Carry out the Program of Implementation of Arterial Roads and Bypass Roads. Action 7.1.2: Develop and implement a program for integral car stops for resting and services.

Strategy 8: Adapting the Federal Road Network for vulnerable road users.

Action Line:

8.1 Adapting the Federal Road Network for the use of pedestrians, bicyclists and motorcyclists.

Action 8.1.1: Develop and implement a program for improving the Federal Road Network for the safe passage of pedestrians (e.g. pedestrian crossings, sidewalks, islands and

medians to protect pedestrians, bus stops for passengers of the public service, etc.). Action 8.1.2: Develop and implement a program for improving the Federal Road Network for the safe passage of bicyclists in urban and suburban zones (e.g. separate lanes for bicyclists with respect to the rest of the traffic flow, etc.).

Related to Strategic Objective 3: Vehicle Park

In regard to vehicle fleet, as a participant in Road Safety, aims to develop operational schemes governing the movement of vehicles according to their physical and mechanical conditions, which include an annual inspection of all components and a proposal to renew vehicle for federal public service vehicles and passenger load with more than 10 years old. Moreover, to improve the safety of the driver and passengers are required to renew and modernize the vehicle fleet for which will require collaboration among all actors and agencies, encouraging renewal and modernization through the Vehicle Renewal Program (scrapping) and / or expedited procedures for registration of vehicles and technical reviews and inspections.

It will promote and collaborate with industry vehicle assembly plant so they have more and better security features to protect drivers, passengers, pedestrians and cyclists. In order to improve the control and discipline of professional drivers will need to implement more efficient automatic controls such as speed limiters (speed governors) and digital and analog tachometers. It is also required special education for professional drivers as stated in paragraph relating to the user.

On the other hand, there must be vigilance to ensure that the design is not altered vehicles through the incorporation of additional defenses, since they cause serious consequences in road accidents.

Finally, in the case of bikes need to have signaling device with catadioptric properties to be visible. In the case of motorcycle lights, mirrors and signaling devices.

It also requires the implementation of signaling contour cargo vehicles with reflective material to enhance visibility and safety of others.

Strategy 9: Promote the safety of the vehicle fleet.

Lines of action:

9.1 Implement programs of physical/mechanical inspections of the vehicular fleet.

Action 9.1.1: Enforce the standard for inspecting the physical/mechanical conditions of vehicles (NOM 031). Action 9.1.2: Development of the network of certified centers for the verification of the physical/mechanical vehicle conditions in the country. Action 9.1.3: Implement the annual physical/mechanical inspection for all sorts of vehicles.

9.2 Improve the operating schemes for the renewal of the vehicular fleet of the freight and passenger federal public transportation system (equipment with a service life exceeding 10 years).

Action 9.2.1: Strengthen the Program of Vehicular Renovation (junk disposal) by means of improved mechanisms of financing and tax incentives.

Action 9.2.2: Promote the Program of Vehicular Renovation (junk disposal) among transportation chambers and associations.

9.3 Implementation of safety devices in vehicles.

Action 9.3.1: Promote the installation of speed governing devices and of digital and analog tachometers for freight and passenger public service transportation vehicles.
Action 9.3.2: Implementation of signing on the freight vehicles' contour with a reflecting material to improve visibility and safety of third parties.
Action 9.3.3: Implementation of signing devices with catadioptric properties for bicycles as well as lights, mirror and signing devices for motorcycles.

Related to Strategic Objective 4: Legal and Institutional Framework and Regulatory Compliance

Regarding the Legal and Institutional Framework and Regulatory Compliance on the theme of Road Safety, the SCT will continue to lead the efforts in conjunction with other actors in society to promote the updating and enforcement of the laws, rules and regulations with regard to speed control, use of safety devices, fatigue, driving under the influence of alcohol and drugs, among others.

Enact a new Law of Mobility and Road Safety, which in passing to the creation of a General Council Road Safety and a new decentralized public body zoned in the SCT to coordinate actions and programs on road safety (both instances mentioned in the following strategic objective), as well as coordination protocols to promote and implement national policies for Road Safety.

It will seek to establish more effective sanctions and procedures, formulation and implementation of the infringements on Road Safety to reduce levels of recidivism. Also promote legislative reforms that would optimize the sanctioning procedure between the different actors involved (Federal Police, State, Municipal, administrative offices, etc.). It is also important to include in the regulations penalties for criminal activities in the roads, such as vandalism and crime. In this regard, the participation of police forces in the verification of compliance with laws and regulations will help improve road safety aspects.

Within the national legal framework is essential that the relevant authorities to legislate to give certainty to the society to blame for an accident has to bear legal liability and damage to third parties.

Strategy 10: Review and update existing laws and regulations concerning the transport and road safety as well as on the speed control, use of safety devices, fatigue, driving under the influence of alcohol and drugs, control of weights and maximum dimensions of heavy vehicles.

Lines of action:

10.1 Amendments to strengthen the institutional structure for road safety improvement as well as promotion of additional legal reforms required.

Action 10.1.1: Promulgate the Act of Mobility and Road Safety for purposes of creating a General Council of Road Safety and to a new decentralized sectorial government agency of SCT to coordinate actions and programs on Road Safety, as well as the coordination protocols to foster and instrument the national policies on Road Safety.

10.2 Impulse additional legal reforms required.

Action 10.2.1: Promote the necessary regulatory reforms (e.g. driving permits and licenses on a point basis, new speed limits, rules and regulations for infrastructure improvement, NOM 031 standard, fatigue while driving, computer-aided theoretical test for obtaining driving permits and licenses, short-range dedicated communication for ITS technologies, introduction of tax incentives, sanctions to companies with low performance records on road safety). Action 10.2.2: Promotion of reforms to the Criminal Code (e.g. tougher sanctions for specific levels of alcohol, speeding, detection of drug consumption, violations of permits). Action 10.2.3: Count on a Regulatory Framework to record speeding situations and excess on weight and dimensions through the use of ITS technologies. Action 10.2.4: Promote among state and federal traffic legislatures the compulsory nature of liability car insurance.

10.2 Strengthen supervision and control for the effective implementation of the rules and regulations.

Action 10.2.1: Attention to emergency calls by the *Policía Federal*. Action 10.2.2: Increasing the effective surveillance time periods. Action 10.2.3: Strengthen actions of the Federal Police ("*Caballero del Camino*", "*Antialcohólico*", "*Lince*", "*Carrusel*", "*Cinturón*", "*Radar*", "*Semana Santa, Navidad, Año Nuevo and Verano*"). Action 10.2.4: Strengthen specific actions of the Professional Transport Sector ("*Cumplimiento del requisito de portar la licencia de conducción en orden*", "*30 Delta*", "*Control de Pesos y Dimensiones*", etc.). Action 10.2.5: Implementation of a radar network for automated speed surveillance and control at the Federal Road Network. Action 10.2.6: Promote the scrutiny of vehicles illegally introduced into the country.

Related to Strategic Objective 5: Institutional Cooperation

Because traffic accidents take place across the road and urban road network, it is necessary to consider road safety as a national problem. The implementation of the above strategies requires close coordination between public and private institutions. In addition, there is a desire to provide all Mexicans a Road Safety and Accident Prevention, which is easy to understand and apply generally throughout the country.

Currently, legislation and regulations related to roads are under the jurisdiction of the federal government for federal highways, state government in the case of state highways and suburban areas, and municipal governments for roads urban. Although this can be easily understood by the various authorities, it is not for road users. In practice, the road users do not know if you are going through a federal highway, state or municipal and probably unaware of the regulations applied to different roads, and the penalties (fines) and its causes. This situation is not conducive to road safety, nor the compliance with laws and regulations.

As a result of the enactment of the Law of Mobility and Road Safety within this area it is proposed that the General Council Road Safety and a new decentralized public body zoned in the SCT to coordinate actions and programs on road safety and coordination protocols to promote and implement national policies for Road Safety. Also create a Road

Safety Observatory in Freight and Passenger Transportation to establish collaborative actions with the agencies and organizations Public and private sector.

The SCT has an important role because together with the SS and PF should be responsible for the drafting of laws, regulations and technical standards for road and urban road network. States and municipalities should remain responsible for the application of general laws, regulations and standards in their respective jurisdictions. States and municipalities can implement specific local regulations, such as the local speed limits, parking restrictions and other regulatory issues. The implementation and enforcement of laws and regulations to the extent possible, should be delegated to local police. This will promote a better understanding of the rules and regulations by road users.

As for the cooperation and exchange of information between government agencies is fair to say that vertical cooperation between federal, state and local is not always possible due to the autonomy and areas of jurisdiction of each. There is a horizontal coordination within the federal government, but unfortunately not quite satisfactory.

An example of the lack of good vertical and horizontal coordination is to obtain statistics on accidents. Clearly, the statistics are not providing satisfactory information to implement accident prevention programs, nor are tracked for 30 days the injured in road accidents on toll free roads and urban areas. Close cooperation between federal, state and municipal as well as the *Instituto Nacional de Estadística y Geografía* (INEGI) and other institutions generating accident statistics should be more efficient in technical terms to gather information in the field and at the administrative level in the management and treatment of information.

Finally, to improve the collection, processing, analysis and dissemination of information of road accidents will require research programs that include in-depth studies and descriptive reports on road safety as well as participation in international forums and research groups.

Strategy 11: Create coordination mechanisms that are responsible for carrying out the activities related to the Road Safety Program and the future actions of security in their respective areas.

Lines of action:

11.1 Creation of the General Council on Road Safety and of the public organization responsible for Road Safety in the country.

Action 11.1.1: Create the General Council on Road Safety counting on the participation of the three government branches, the police and users of the roadways. Action 11.1.2: Creation of a new Public Organization accountable for Road Safety in the country.

11.2 Incorporation of the interests of Road Safety in the development of traffic legislation, technical standards, regulations and bylaws for application for SCT, SS and PF, through the management of the new Public Organization.

Action 11.2.1: Negotiate the incorporation of the interests of the Road Safety in the development of traffic laws, technical standards, etc. Action 11.2.2: Promote among states and municipalities the homologation of traffic laws, technical standards and so forth.

11.3 Establish a Road Safety Monitoring Station for freight and passenger transportation.

Action 11.3.1: Creation of the Road Safety Monitoring Station for freight and passenger transportation.
Action 11.3.2: Establish joint actions among the Road Safety Monitoring Station and the agencies and organizations of the public and private Transport Sector.

Strategy 12: Improve the systems to compile, treat, analyze and disseminate information on road accidents occurred at the highway and street network.

Action Line:

12.1 Improve the systems for collecting, processing, analysis and dissemination of information of road accidents in highway and urban road network.

Action 12.1.1: Implementation of a computer-assisted program for in-line retrieval of accident reports issued by the highway patrol and delivery of the corresponding data bases to authorized users within a time period not exceeding two months.
Action 12.1.2: Follow up with duration of 30 days of injured people in road-induced accident reports.
Action 12.1.3: Development of the coordination/inter-relationship among different data bases (related to hospitals, police, forensic, insurance companies, highways, etc.) for the purpose of securing better quality information on issues of Road Safety.
Action 12.1.4: Participation in international working groups database of traffic accidents.
Action 12.1.5: Developing a research program that includes in-depth studies and descriptive reports.
Action 12.1.6: Develop an evaluation system of measures / actions and monitoring indicators.
Action 12.1.7: Participation in international forums and research groups on Road Safety.
Action 12.1.8: Publish bimonthly accident data.
Action 12.1.9: Publication of annual reports, studies and research on road safety.
Action 12.1.10: Starting of a system of consultation for Internet of statistics of accidents and traffic counts of vehicles.
Action 12.1.11: Increase the digital information available over the entire road network: map (for hierarchy of roads), *Tránsito Diario Promedio Anual* (TDPA), vehicle composition, speed, emissions, etc.

CONCLUSIONS

The follow-up actions and indicators will measure the progress of strategies in order to adjust their operations and improve performance.

These actions aim to reduce the problem of accidents and the effect of the major causes such as excessive speed, the influence of alcohol and other drugs, the operational conditions of road infrastructure, lack of adequate signaling, physical and mechanical conditions of vehicles among others.

The set of actions included in this program must be costed and prioritized, in order to program implementation, first, the greatest impact and effectiveness as well as to manage the resources required to execute and generate annual investment programs.

There are primary actions, whose implementation would trigger a decisive change of attitude towards reducing road accidents and their consequences at national level. These relate to the promulgation of the Law of Mobility and Road Safety, which would lead to institutional strengthening resulting from the creation of the General Council of Road

Safety, the new public body responsible for road safety in the country, inter-agency coordination protocols As well as negotiate in form permanent specific actions.

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