

# IMPORTANCE OF TRAFFIC SAFETY AND ENVIRONMENTAL PROTECTION IN SERBIA

Associate prof. Dr Tomić-Petrović N.

Faculty of Transport and Traffic Engineering, University of Belgrade, Serbia

e-mail address: natasa@sf.bg.ac.rs

**Abstract:** *This paper is devoted to traffic safety and environmental protection in Serbia. Unfortunately the level of air pollution i.e. the level of emission of carbon dioxide in the world is still raising. Additional actions are needed in order to limit the effect of climate changes in the following years. People ask why electric vehicles aren't main-stream? It seems that price has a lot to do with it. The Road Traffic Safety Agency with its systematic and responsible activities set clear guidelines for the monitoring and improvement of road safety in Serbia. In the Republic of Serbia from 1981 till 2013 in the traffic accidents 41.718 persons were killed. In the same period 632.936 persons were seriously injured. Republic of Serbia on the 16th of November 2011 began to commemorate the World's Day of memory on victims in the traffic accidents. Law on road traffic safety came into effect in the Republic of Serbia in 2009. and brought many changes in our legal order. Majority of those changes meant harmonization with European Union regulation in the area of traffic safety. Changes made by the new Law on infractions ("Official Gazette of the Republic of Serbia", no. 65/13) in application from March the 1<sup>st</sup> 2014. show the increase of penalties for unscrupulous drivers, but drivers complain on to many regulations and difficulties to get documents for motor vehicle use. In this paper there are mentioned the most efficient hybrids we can buy today. In Serbia "FIAT automobiles of Serbia" is still the leading exporter on the list of 15 biggest Serbian exporters, according to the data of the Serbian Ministry of Finances. In April 2015 at New York Auto Show will be possible to see all new accomplishments in auto-moto industry all over the world.*

**Key words:** SAFETY, HYBRID CARS, PROTECTION, ENVIRONMENT, SERBIA.

## 1. Introduction

Yet in the mid-17<sup>th</sup> century appeared the first buses<sup>1</sup> that were drawn by horses. The first automobile in Belgrade, capital of Serbia, appeared in year 1901. Today in 21<sup>st</sup> century, in 2015 the record sales of the new automobiles in the world, almost 85 million of vehicles is expected. ("Observer"). While "Chevrolet Corvette", "America's Sports Car", build in Kentucky moved into its seventh generation in 2014<sup>2</sup>. A 2015 "Chevrolet Colorado" named the best and it is truck of the year. Nowadays director of Google's self-driving car project announced that Google plans to test the cars on Northern California roads, first with temporary controls, then without controls, after California law changes to allow it. Nowadays too, we are introducing all new 2015 Mustang. Also all new and updated SUVs coming in 2015, while "Mercedes GLB": the baby G-wagen is coming in 2019.

There are global expectations that there will be 100 million of vehicles by the year 2019.<sup>3</sup> However in the world Jet Taxi also solves the urban transport crush. The French solution for a small city car is "Renault Twingo TCE 90"<sup>4</sup>. This small city car does not have too much in common with its predecessors and the most recognizable is with the model "Renault 5". It is significant that the emission of carbon dioxide in this car is 99 gr/per

kilometer, so we can ask the question whether the "Renault EOLAB" is the super-mini for the future? This paper is devoted to traffic safety and environmental protection in Serbia.

## 2. Traffic Safety in the Republic of Serbia

In the Republic of Serbia from 1981 till 2013 in the traffic accidents 41.718 persons were killed. In the same period 632.936 persons were seriously injured.

Disastrous are the facts that from 2001 to 2012. in Serbia were killed 2.813 pedestrians (there were more than 13.000 seriously injured, while 28.000 pedestrians were slightly injured). Only during the year 2013, 165 pedestrians were killed, and in 2012 there were only 10 dead persons less. Unfortunately, today, pedestrians crossings are very fateful for pedestrians in Serbia.

The Road Traffic Safety Agency of the Republic of Serbia works intensively on the protection of citizens and the results of research conducted so far are the basis for further activities. A great number, 21.914 of examinees were included in the Road Traffic Safety Agency research that brought conclusions that the most risky locations for pedestrians were badly illuminated and marked pedestrian crossings and many streets.

The leading cause of death in children aged 1 to 14 years in Serbia are the injuries to the passengers as the most common, and 43% of children injured in traffic suffers a traumatic brain injury. Unfortunately, 80% of collisions with the victims on the roads happens in inhabited places.

Data show that 59% of people on the front, and only 3% of people in the back seat of the vehicle use safety belts.

In the last 10 years 290 children were killed in the traffic in Republic of Serbia, while as many as 18.000 were injured. The authorities quote that nine children died in traffic accidents the year 2013.

<sup>1</sup> Double-decker, today the symbol of the British capital, appeared for the first time on the streets of Paris two and a half centuries ago. It is interesting that the early sixties of the last century travelers in Belgrade, our capital city, were transported by London buses "lejlend".

<sup>2</sup> While the seven-speed manual gearbox is made in Mexico, the new eight-speed automatic is GM design made in Toledo, in Ohio.

<sup>3</sup> World car market will grow 3.5% per year, while the highest growth during 2014 is expected in China to 8.8%, while in Europe it will reach 6.4%. Otherwise, in China by 2020, average annual growth in car sales will amount to 5% and 6% in Brazil. (According to a Reuters report, reports Tanjug).

<sup>4</sup> French "Renault" with "Daymler" on the platform of "Smart" has made "Twingo" of third generation. The car is functional, nimble, real urban hit with the driving characteristics suitable for the city and will be a great rival to popular models of this class. Also announcements from the "Renault" on racing versions of the car, "Sport" and "Gordini" seems to have not just a publicity stunt.

With the aim that no child is killed in Serbia in year 2020, pupils in our schools will learn more on the traffic safety.<sup>5</sup> Unfortunately, the secondary school pupils receive no tuition on the topic of traffic. Therefore, the newly formed governmental body for coordination of road traffic safety gave the initiative for the introduction of new classes in schools and now the final decision on that will be made by the Ministry of Education, because there is a need for change in teaching program, as well as the preparation of the textbooks and polygons for education of pupils. We believe that the new contents will be available in the Serbian schools from September 2015.

The results of the research conducted by the Ministry of Sport and Youth show that most pupils in secondary schools have up to 5 hours of leisure time daily. All of them would like to go to driving-schools, but mastering driving skills is as expensive as learning a foreign language.

The Road Traffic Safety Agency with its systematic and responsible activities set clear guidelines for the monitoring and improvement of road safety in Serbia.

Republic of Serbia on the 16th of November 2011 began to commemorate the World's Day of memory on victims in the traffic accidents.<sup>6</sup>

**Law on road traffic safety** ("Official Gazette RS", no. 41/09, 53/10, 101/11) came into effect in the Republic of Serbia in 2009. and brought many changes in our legal order. Majority of those changes meant harmonization with European Union regulation in the area of traffic safety. Changes made by the new **Law on infractions** ("Official Gazette of the Republic of Serbia", no. 65/13) in application from March the 1<sup>st</sup> 2014. show the increase of penalties for unscrupulous drivers, but drivers complain on to many regulations and difficulties to get documents for motor vehicle use.

### 3. Actual eco-trends in Serbia and in the world

During 2014 "FIAT automobiles of Serbia"<sup>7</sup> was still the leading exporter on the list of 15 biggest Serbian exporters, according to the data of the Serbian Ministry of Finances. In the first eight months of this year it exported cars for 947, 2 million euros. "Big Fića"<sup>8</sup> is not giving up, and in 2013 in Kragujevac it was produced 117.000 of "Big Fića" and almost the entire that contingent went to Europe (80%) and United States (20%). However, the production of a more robust model "500-X" is not realized, as the responsible of the group "Fiat-Crysler" decided that this model will be produced in another country, and not in Serbia.

A toll payment per kilometer in Serbia could for about half a year be replaced by vignette, that is labels that allow unlimited use of roads in a given time period (usually seven days, month or year).

For the new, fourth generation "Toyota Yaris"<sup>9</sup> it was spent about 85 million euros to redesign more than 1,000 positions

<sup>5</sup> See: "Politika", Society, page 08, 9-th September 2014.

<sup>6</sup> Charitable Society "Road Peace" from Great Britain in 1993. started to commemorate the Day of memory on victims in traffic accidents.

<sup>7</sup> "Fiat" produces 160.000 to 170.000 automobiles per year.

<sup>8</sup> Price of car model "500-L" is now about 15,000 euros with the duty of 25%.

<sup>9</sup> The maximum speed of this car is 175 kilometers per hour, and carbon dioxide emissions of 123 g / per kilometer.

for this small city car, which is known since its appearance in 1998, as a reliable, high quality and agile and small consumer. We should also mention the car "Toyota Corolla", as well as several versions of small cars "Kia Rio", "Kia Soul" and "Kia Forte", then the car "Mazda 3" (it gets great fuel economy) that isn't a hybrid or a diesel, then "Hyundai Elantra" and despite these also auto "Subara Impreza", good car for us and for those who live where the snow often falls.

In April 2015. at New York Auto Show will be possible to see all new accomplishments in auto-moto industry all over the world. Great deals, going fast. So, we have to be in trend. For example, Dodge was iconic car of the last century. But "Dodge Grand Caravan" and "Ford SVT Raptor" won't be around for 2015, either, they're likely to come back for the 2016 model year. "Chevrolet" mild hybrids will be a thing of past after 2015 too. "Toyota FJ cruiser" was going to be a one generation vehicle and in Toyota wanting to focus on fuel cell technology.

It is already 21 years of the "Vauxhall Corsa"-e and of "Ford<sup>10</sup> Mondeo", a "Honda Civic type R Concept" is seen (and new "Honda" HR-V SUV) at the 2014 Paris Motor Show too, while "Mazda M-X 5" of the fourth generation <sup>11</sup> was real hit at Paris Motor Show. We have to write down about the remarkable history of the 91 year of "Volvo" too.

At the 2015 Detroit Auto Show there were different models, from eco cars of the future to bonkers pick-up trucks. In the meantime the 2015 New York Auto Show was held in April and 2015 Chicago Auto Show too.

People ask why electric vehicles aren't main-stream? I think that price has a lot to do with it.

Although at the Paris Motor Show in 2014 were presented 83 mpg "Porsche Cayenne S E Hybrid" set /especially prepared for Paris 2014/, and "Mercedes AMG GT" edition first leaked ahead of Paris, Lamborghini's new 200 mph hybrid, new Volkswagen Passat and roofless "Ferrari 458 Speciale A" unleashed too, always being sought "Alfa Romeo Giulietta" right now "dragon" in the Italian style "1,4 tb 170 ks -potenca", this is the type of Eu 5, with a six-speed manual transmission, reservoir with a maximum of 60 liters and developing maximum speed of 218 kilometers / per hour.

In Germany still in 2012, a conference was held with representatives of the "Platform for Electric Mobility" in charge to evaluate and coordinate the German strategy for electric vehicles. Will the planned target of one million electric cars on the roads of Germany until the 2020s be achieved? This is a complex task that requires the cooperation of the automobile constructors, battery manufacturers, subcontractors and other actors in the production chain. Previously, we could not imagine "BMW" with the three-cylinder engine, and with front-wheel drive, but now when the future began, now, "BMW and 8", with three-cylinder engine under the hood, if necessary, will have the help of an electric motor.

The most efficient hybrids you can buy today are:

- "BMW i 3" city car is an all electric vehicle;
- "Volkswagen Jetta Hybrid" – 45 MPGE. The Jetta Diesel has made significant fuel economy improvements for the 2015. model year;

<sup>10</sup> In "Ford" says "working very hard" on F-150 Hybrid.

<sup>11</sup> Officially, according to the Guinness Book of Records it is the best-selling sports two-seater of all times. It is scheduled for market only for 2015, and it has been announced, so far unthinkable, installation of diesel generators.

- "Toyota Prius" plug in - 95 MPGE, "Toyota Prius C" – 50 MPGE, Toyota's baby hybrid. The Prius has come a long way since its US introduction in 2000;
- "Ford Fusion Energi / C" – Max Energi – 88 MPGE;
- "Chevrolet Volt" – 98 MPGE;
- "Honda Accord Hybrid"- 47 MPG, "Honda Accord plug in -115 MPGE achieves the highest fuel economy, drivers are able to travel a total of 570 miles before filling or charging up. "Honda Civic Hybrid"- 45 MPG, still remains one of the more efficient hybrids on the market, besting the "Ford Fusion Hybrid", "Toyota Camry Hybrid", "Kia Optima Hybrid", and even „Lincoln MKZ Hybrid“. Also we can mention "Toyota Avalon" the hybrid's 2.5-liter four cylinder with an electric motor. And at least the "Tesla Model S" that is a great four-door luxury sporty car that happens to be electric, with its optional 85 kWh battery, that can travel between 180 and 225 miles per charge.

Among green cars we can mention too Bradley GT II Electric, Nissan leaf, Toyota RAV4 EV and a Fisker Karma too.

At the 2015 Detroit Motor Show i.e. North American International Auto Show are shown in eco cars of the future. For example, "Acura NSX" uses a new twin-turbocharged hybrid powertrain and also "Volkswagen Cross Coupe GTE Concept" with the four-wheel drive plug-in hybrid. Really they were eco-warriors, because Detroit has everything. Although, "Chevrolet's mild hybrids" will be a thing of past after 2015. So, .....putting an end to all "Chevrolet mild hybrids."

#### 4. Conclusion

We should remind on duties and constant care for the environment we live in. Unfortunately the level of air pollution i.e. the level of emission of carbon dioxide in the world is still raising. Additional actions are needed in order to limit the effect of climate changes in the following years. Earth Day is an annual global event that occurs every April 22-nd, and this year 2015 it passed in the sign of the struggle against pollution and climate changes. In this paper there are mentioned the most efficient hybrids we can buy today, eco-conscious cars and in that way show support for the environment.

"Volkswagen Golf" is 2015 North American Car of the year and in April 2015, at New York Auto Show it was possible to see all new trends in auto-motor industry all over the world.

In the Constitution of the Republic of Serbia from year 2006 it is predicted that Republic of Serbia regulates and provides for sustainable development<sup>12</sup> and Council for sustainable development was established by Decision on establishing of Council for sustainable development as expert and advisory body of the Government of Republic of Serbia.

The fifth part of the National Strategy of sustainable development<sup>13</sup> is dedicated to the issues of environmental protection and preservation of natural resources in the Republic of Serbia, as well as to the impacts of economic development on the environment. In that part the aims, measures and priorities connected with protection of natural resources (air, water, land,

biodiversity, forests, mineral resources and renewable energy sources), protection from different factors of risk effects for the environment (climate changes and damage of ozone layer, waste, chemicals, accidents, ionizing and non- ionizing radiation, noise and natural disasters), protection from factors of risk for the environment effect in different economic sectors (industry, mining, energetic, agriculture, forestry, hunting and fishing, transportation and tourism), are given as well as introduction of cleaner production.

It is necessary to stress in media and inform wider public on the importance of environmental aspects of traffic taking into consideration the well known fact how much cars reduce air quality by emission of harmful gases.

During 2011. the Ministry of Environment, Mining and Space Planning allowed the subvention for purchasing hybrid cars in our country. As the final result all cars with emission of carbon dioxide less than 100 g per kilometer ran will have certain privileges i.e. there will be additional benefits for all those who drive "green" cars. Owners of the ecologically "suitable" cars get ECO Friendly licence in the form of certificate on the occasion of vehicle purchasing. In Serbia all owners of cars with CO2 emission less than 100 g per kilometer ran will enjoy certain privileges, like more favorable insurance package, provision of free parking, more favorable conditions of financing. However, they are not exempted from customs duties, as it was announced.

Increase of vehicles using natural gas happened because of economic benefit for consumers, but they were certainly urged also by ecological interests. It is very important that the number of "green" vehicles constantly increases.

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<sup>12</sup> See: article 97. of the Constitution of the Republic of Serbia, "Official Gazette RS", no. 98/2006.

<sup>13</sup> Official Gazette of RS", no. 57/2008.