gap ● POLICY BRIEF

The economy of cars in Kosovo

An analysis of governmental policies for importation, registration and control of cars

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GAP INSTITUTE

Executive Summary

A total of 286.505 vehicles were registered in Kosovo in 2014. The oldest one was produced in 1942. Overall, the average age of cars in Kosovo is above 18 years old, which is 10 years more than the average age of vehicles in the European Union. The 2011 decision of the Government to allow the import of used vehicles up to 13 years, from 8 that had been earlier, greatly contributed to this high average. Following this decision, the import of used vehicles increased to 44%, which means the customs revenues from vehicles also increased.

In March this year, the Government has gone a step further, by removing all age restrictions on the import of used vehicles. On the one hand the Government has removed restrictions on the import of old vehicles, but on the other hand nothing has been done to demand from control centers a stricter technical control of cars. As a result, improper technical control has increased the number of fatal accidents and the air pollution levels. Last year, fatal accidents have increased by 6.7%. Out of 16,300 accidents that occurred in 2014, 111 had a fatal end, killing 127 people.

In this study, the GAP Institute has analyzed government's policies on import of used vehicles, highlighting the negative effects of these decisions. In this study we have also analyzed the quality of technical control of vehicles, arguing that omissions in technical controls are affecting the road traffic safety and the pollution of the environment. Finally, the study provides certain recommendations on how to improve import policies and other regulations for registration of vehicles in Kosovo.

1. Background of the regulation on importation of vehicles

Regulating the importation of vehicles in Kosovo can be divided into three phases:

a) The first phase or the phase of the establishment of customs where importation of vehicles was almost not at all regulated;
b) The second phase, or the imposition of the excise duty on vehicles and then ban on import of vehicles older than 8 years; and
c) The third phase, from 2011 and onwards, when the Government of Kosovo begins to escalate the excise duty on vehicles and to intervene in restriction of the age of vehicles, initially increasing to 13 years and then removing completely the restriction of age.

The excise taxes on vehicles started to be applied for the first time in June 2000, when UNMIK for the third time had expanded the list of products on which the excise tax is imposed. According to Regulation 2000/35, the excise tax was imposed from 20% of the value plus 1,000 DM (Deutsche Mark) fixed cost "Motor cars and other motor vehicles principally designed for the transport of persons, including station wagons and racing cars."[1] With formalization of the Euro as the official currency in Kosovo, the excise of 1,000 DM was converted into 500 Euros.[2]

While the issue of vehicle excise taxes was regulated in 2000, the restriction regarding the age of the vehicles is set in February 2005, when according to a regulation was prohibited "of importation and release for free circulation in Kosovo of certain motor vehicles which were first registered inside or outside of Kosovo eight (8) or more years ago principally designed for the transport of persons, including station wagons and racing cars."[3]

Within four years (2011-2015), the Government also adopted two other decisions on import of vehicles. Initially, on 22 June 2011, the Government rendered a decision[4] that allowed the registration for the first time in Kosovo of the imported vehicles not older

[1] ~~UNMIK, Regulation no.~~ 2000/35, 16 June 2000, http://bit.ly/1EmHky8
[2] UNMIK. Regulation no.. 2001/38, 30 December 2001, http://bit.ly/1P540Gg
[3] UNMIK, Regulation no.. 2005/11, 28 February, 2005, http://bit.ly/1P546O1
[4] Government of the Republic of Kosovo, Decision No. 05/20, http://bit.ly/1J83llt

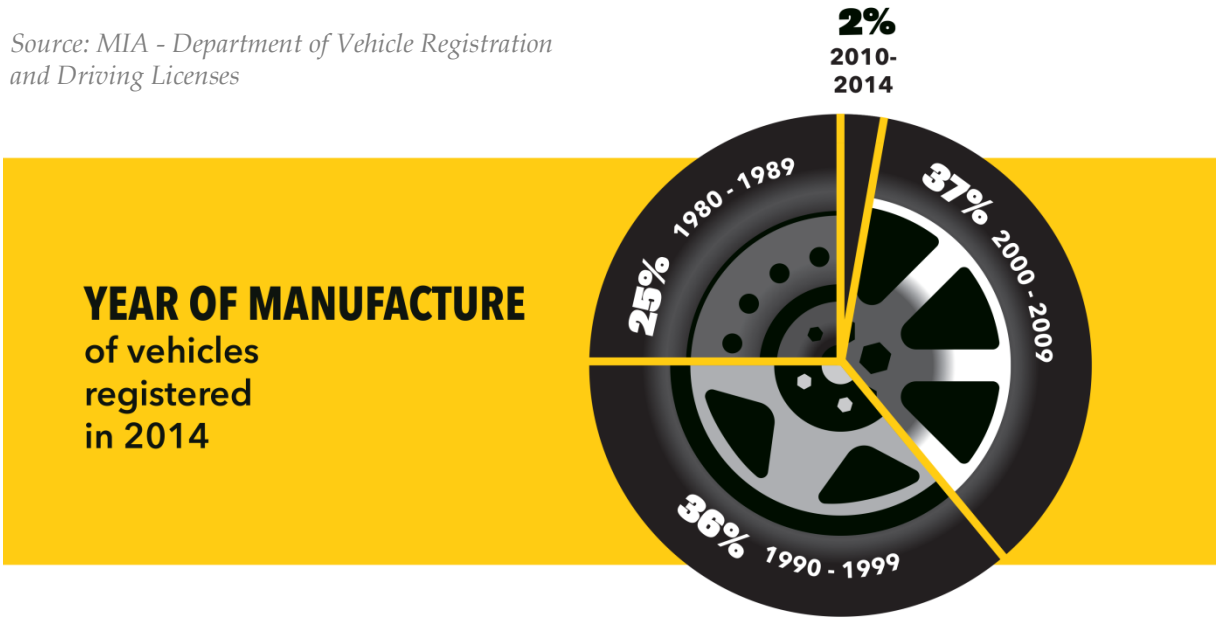
than 13 years, thus removing the earlier restriction of 8 years but by adopting an escalation of vehicle excise tax depending on the age of vehicle. This decision of the Government made that the number of imported vehicles older than eight years old is greatly increased. As a result, the average age of registered vehicles in Kosovo continued to grow.

On 24 March 2015, the Government of Kosovo went one step further, by removing in entirety the restrictions on the age of imported vehicles that can be registered in Kosovo. With this decision,[5] the Government not only removed the restriction on the import of old cars, but also changed the excise tax rates for the used vehicles, and which vary according to years of depreciation of vehicles and motor power.

From the data provided by the Ministry of Internal Affairs, in 2014, in Kosovo were a total of 286.505 vehicles registered. Of them, only 111.855 are produced from 2000 and onwards, the others, or 61% of vehicles are produced between 1942-1999. In general, it appears that the average age of the registered vehicles in 2014 was 18.1 years. Meanwhile, the average age of vehicles in the EU countries is 8.6 years.[6]

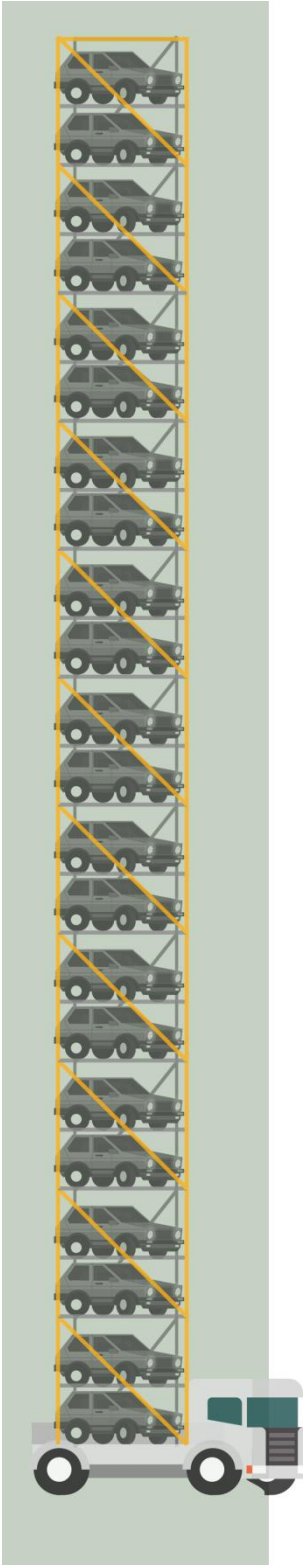
Figure 1. Year of manufacture of vehicles registered in 2014

Source: MIA - Department of Vehicle Registration and Driving Licenses



[5] ~~Government of the Re~~public of Kosovo, Decision No. 16/20, http://bit.ly/1bdrmMy
[6] European Automobile Manufacturers Association, http://bit.ly/1GUi97h, accessible on 4 May 2015.

2. Effects of the government's decision in budget and vehicle market



Law on Excise Tax Rate in Kosovo entered into force on 1 January 2009. This law did not change the rate of excise duty on vehicles imposed by UNMIK, which was 500 Euros per vehicle.[7] Six years after the UNMIK decision to ban import of vehicles older than eight years, in June 2011, the Government of Kosovo through a decision extended the restriction to ban the import of vehicles from 8 to 13 years. This decision escalated the rate of excise duty depending on age and engine power (cmm).[8] Besides escalating the excise, the Government of Kosovo exempted new cars up to 2,000 cmm from excise.

From the data of the Customs of Kosovo, we see clearly that the decision has created incentives for the import of old vehicles in Kosovo. This is because immediately after the adoption of the decision in June 2011, the import of the used vehicles during the next month (July) increased by 92%, while in the same period of the previous year the increase was 20%.[9]

In addition, during 2011, the import of used vehicles increased for 5,800 vehicles (44%), while the growth continued also in 2012, but at a slower rhythm (8%). Compared with 2010, in 2011 and 2012, 13,200 more used vehicles entered the country. The import of the used vehicles begun to decline only in 2013, but again in 2014 were imported about 3,500 used vehicles more than in 2010 (the year before the entry into force of the decision).

The import of new vehicles has also increased from 2010 to 2013, but in a much lower trend compared to the used cars. For

[7] Law No. 03/L-112 on Excise Tax Rate in Kosovo, 31 December 2008, http://bit.ly/1ImfrcG

[8] Government of the Republic of Kosovo, Decision No. 05/20, 22 June 2011, http://bit.ly/1J83llt

[9] Customs of Kosovo, reply via electronic mail, 7 April 2015

example, in 2012 were imported only 1,211 new vehicles compared with 20.570 used vehicles.

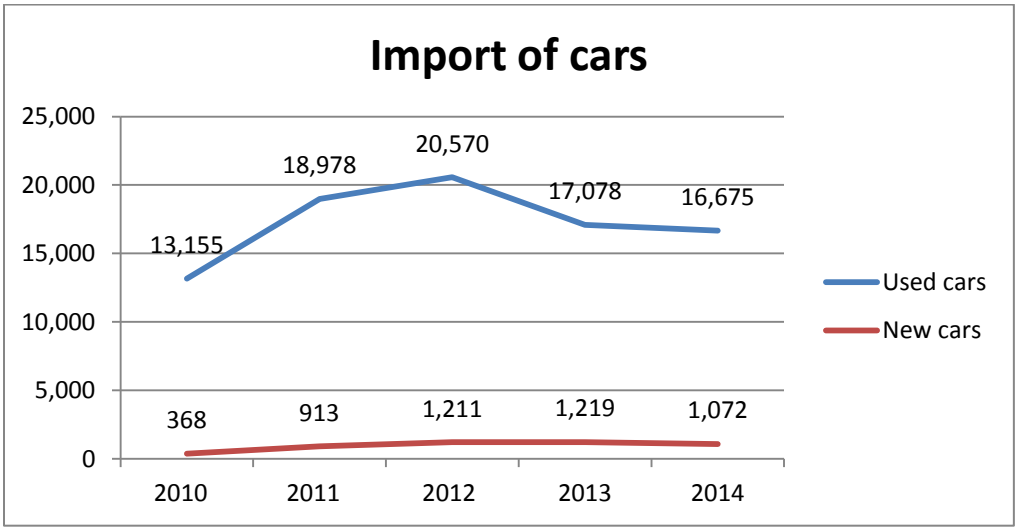


Figure 2. Number of vehicles imported by age 2011-2014

Source: Customs of Kosovo

If we analyze the percentage of import of vehicles by age, we note that since the entry into force of the decision of 2011, the percentage of import of vehicles old from 1 to 8 years has continuously declined.[10] In the group of old vehicles from 9 to 13 years, the vehicles 13 years old have higher percentage.

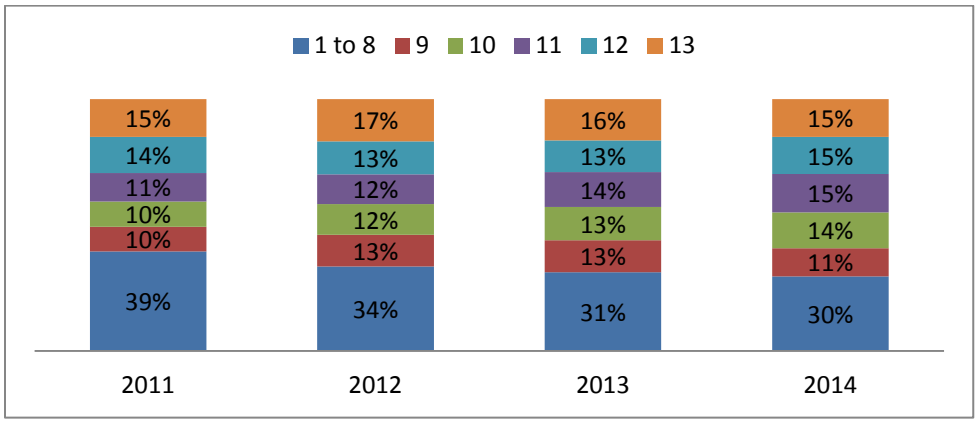


Figure 3. Import of vehicles by age

Source: Customs of Kosovo

[10] The data for vehicles from 1 to 8 years were classified only from July 2011 by the Customs of Kosovo. The decline is much stressed (around 24 points of percentage) if we include the import of vehicles from 1 to 8 years before July 2011).

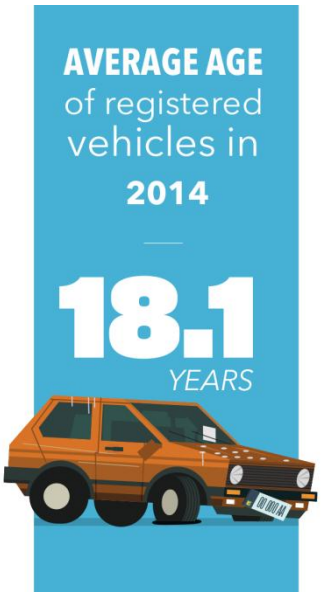
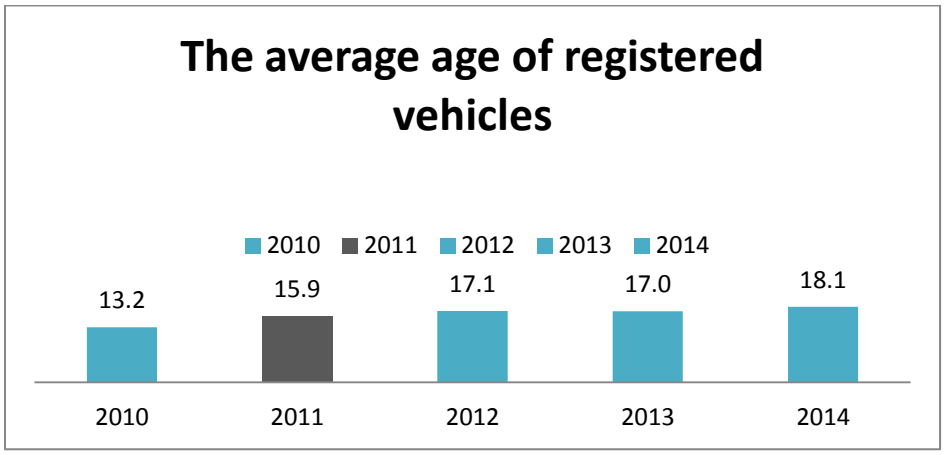


Figure 4. The average age of registered vehicles

Source: MIA - Department of Vehicle Registration and Driving-licenses

Taking into account the developments in the import of vehicles, consequently the increase of the import of the used cars had influenced the structure of the age of vehicles in circulation in Kosovo. According to vehicle registration data provided by the Ministry of Internal Affairs it can be seen that in 2011, the average age of registered vehicles in circulation increased from 13.2 to 15.9 years, or 2.7 years older compared to 2010 (the year when the import of vehicles older than 8 years was banned). In 2012, when we can see the full effect of the decision of the Government, the average age of vehicles further increased to 17.1 years or 3.9 years older than in 2010. The average age of vehicles in circulation continued to increase in 2014, which amounted to 18.1 years.

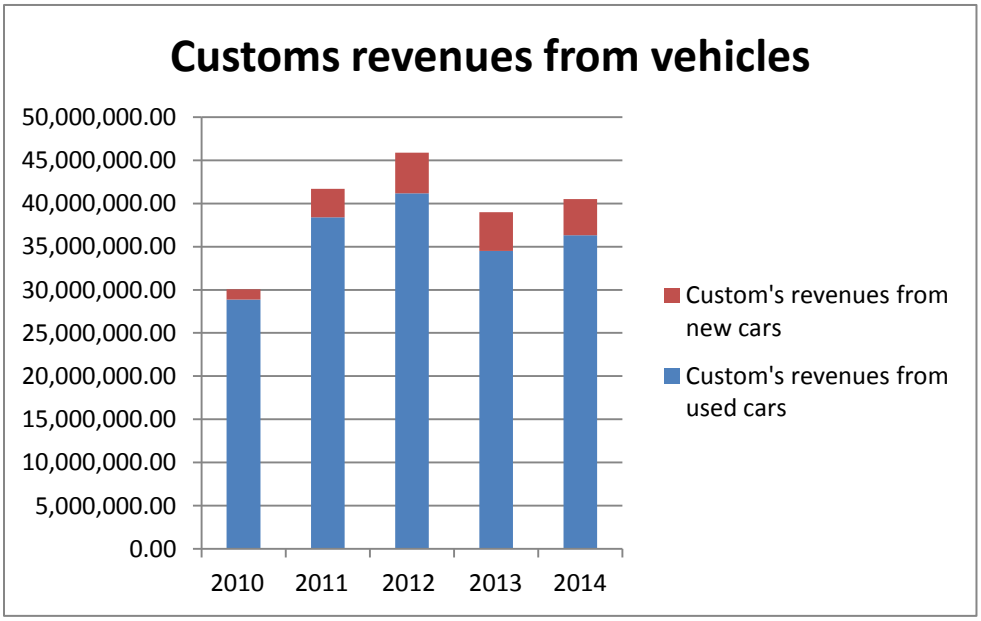


While this decision had an impact on increasing the import of used vehicles and the average age of vehicles in circulation, the budget revenues from the importation of vehicles have also increased significantly. Immediately in 2011, the customs revenues from used vehicles increased by 9.5 million (33%), whereas when we compare 2012 to 2010, it can be seen that the customs revenues from the used vehicles increased by 12.3 million Euros (43%). Within two years of entrance of the decision into force, the Government of Kosovo has collected about 21.8 million Euros more customs revenues from the used vehicles. On the other hand, the last two years (2013 and 2014), apparently due to the maturity of the demand for the used vehicles, the customs revenues within the year were 6.5 million Euros higher on average than before the decision entered into force.

With regards to the customs revenues from new vehicles, in 2011 they increased by 2.1 million Euros (3.3 million in total), while in the following year 2012 when the full effect of the decision can be seen, the revenues increased by 3.5 million Euros compared to 2010. It can be considered that, on average, as a result of the entry into force of the decision of 2011, the Customs collected about 3.2 million more per year from new vehicles. In total, in the first two years after implementation of the decision, the customs revenues from vehicles increased by about 27.5 million Euros.

Figure 5. Customs revenues from vehicles 2010-2014

Source: Customs of Kosovo



Despite the increase in age of the vehicles in circulation as a result of the decision to allow the importation of vehicles from 8 to 13 years, the Government of Kosovo on 24 March 2015 took another decision that completely removed the restriction on the import of vehicles based on their age. In addition to the removal of the prohibition on the vehicles, the Government of Kosovo has reduced to 100 Euros the excise tax on vehicles up to 13 years used and to 2000 cmm. It has used the same logic of scaling with vehicles 2001 cmm up to 3000 cmm, but for vehicles 13 to 17 years, the excise increased for 200 Euros each year. Excise on vehicles over 3,000 cmm is reduced for only 200 Euros to new vehicles, for vehicles from 1 to 13 years has not changed at all, while for the 13-17 year the escalation is 300 euro for each additional year.

Table 1. Difference in the excise on imported vehicles according to decisions of the Government

Age	Up to 2000 cmm		2001 cmm - 3000 cmm		over 3000 cmm	
	Decision 2011	Decision 2015	Decision 2011	Decision 2015	Decision 2011	Decision 2015
0	-	-	€ 500	€ 300	€ 1,000	€ 800
1-8	€ 500	€ 400	€ 500	€ 400	€ 1,000	€ 1,000
9	€ 700	€ 600	€ 700	€ 600	€ 1,500	€ 1,500
10	€ 800	€ 700	€ 900	€ 800	€ 1,800	€ 1,800
11	€ 900	€ 800	€ 1,100	€ 1,000	€ 2,100	€ 2,100
12	€ 1,000	€ 900	€ 1,300	€ 1,200	€ 2,400	€ 2,400
13	€ 1,100	€ 1,000	€ 1,500	€ 1,400	€ 2,700	€ 2,700
14		€ 1,100		€ 1,600		€ 3,000
15		€ 1,200		€ 1,800		€ 3,300
16		€ 1,300		€ 2,000		€ 3,600
<17		€ 1,500		€ 2,200		€ 3,900

In the absence of data related to the demand for vehicles, it is difficult to calculate the precise effect of this decision, but the excise tax reduction for 100 Euros for vehicles up to 2000 cmm is expected to create again incentives for the import of old vehicles.[11] This is because the new excise taxes, the import of an old vehicle 14 years is 1,100 Euros and it is equal to excise of 2011 on the importation of old vehicles up to 13 years. The import for vehicles up to 13 years with this excise rate has been on average about 2,641 vehicles per year. Another factor that can affect the growth of the age of imported vehicles is the lack of a more significant escalation of excise duty on vehicles up to 2,000 cmm and older than 13 years. In other words, the reduction of excise creates incentives to increase the import of the used cars, while the lack of a more significant escalation of excise on vehicles older than 13 years creates incentives for import of older vehicles.

On the other hand, the average age of the vehicles that are on sale at the market in Kosovo is quite high. According to the data provided by gjirafa.com, in the Kosovo market are over 37,000 vehicles for sale.[12] As regards the kilometers travelled, it appears that the average mileage of vehicles on sale in Kosovo is 126.669-162.481 kilometers. This shows that the vehicles that are on sale at the market in Kosovo are mostly quite old and consumed. When to this fact is added that the average age of registered vehicles is already very high (18.1 years), it follows that in addition to the effects on the environment and on the road traffic, Kosovo may face a large amount of scrap in the next years.

[11] According to data of the Customs of Kosovo, 80%-90% of vehicles in Kosovo are up to 2,000 cmm.
[12] The raw data (raw data) were given to the Institute GAP from gjirafa.com exclusively for this analysis.

3. Traffic accidents due to omissions during the technical control

While, on one hand, the Government has removed restrictions on the import of old vehicles, on the other hand, the technical control centers have not increased measures for a stricter technical control. On the contrary, improper technical control is affecting the number of traffic accidents and environmental pollution.

According to the applicable regulations, each imported vehicle must first pass the homologation[13] test before registered for the first time in Kosovo, and in subsequent years should conduct only technical control. According to the Administrative Instruction on vehicle technical control[14] "the vehicle technical control is performed to verify that the vehicle meets or does not meet the technical requirements for participation in the road traffic."[15] Performance of technical control of vehicles is made by Vehicle Technical Control Centers licensed by the Ministry of Infrastructure (MI).

Currently, in Kosovo operate a total of 105 centers for technical control; all licensed by the MI and all in private ownership. In addition to regular technical control, which is done after the expiration of the registration period of the vehicle, there are two other types of technical control; periodic technical control, which should be done every six months for buses, taxis, trucks and similar vehicles for public use; and extraordinary technical control which aims at verifying the technical condition of the vehicle, which is performed by an order of the police.[16]

In 2014, the number of fatal traffic accidents has increased by 6.7% compared with the previous year. According to Kosovo Police, out of 16,300 accidents, 111 were fatal, where 127 people were killed.[17] Report of the Office of Auditor General on the work of traffic police finds that the number of traffic accidents can be reduced, but that "the traffic police should pay more attention to dangerous driving and also to control

[13] Government of the Republic of Kosovo, Administrative Instruction No. 2008/08 on Vehicle Homologation, http://bit.ly/1ccJrvF

[14] Government of the Republic of Kosovo, Administrative Instruction No. 2008/13 on Vehicles Technical Control, http://bit.ly/1F1jNqa

[15] This Administrative Instruction was later supplemented and amended by Administrative Instruction No. 01/2012 on Amendment and Supplement of Administrative Instruction No. 2008/13 on Vehicle Technical Control.

[16] Government of the Republic of Kosovo, Administrative Instruction No. 2008/13 on Technical Control of Vehicles, http://bit.ly/1F1jNqa

[17] Kosovo Police, Annual Report 2014, http://bit.ly/1I84F9u

technical standards of the commercial vehicles."[18] The human factor (driver) is considered as the main cause of traffic accidents. The Police records show that the technical condition of the vehicle is one of the causes of accidents but in a much smaller number than human factor. The reason why we have so small number of accidents as a result of the technical condition of the vehicle may be because the traffic police do not require that the vehicle is sent to extraordinary technical control. According to Kosovo Police, such a thing may be required only by the court[19]. However, this happens very rarely.

Table 2. Number of accidents for years 2011-2014

Source: Kosovo Police

Year	Fatal accidents	Dead persons	Accidents with injuries	Injured persons	Accidents with material damage	Accidents 'hit and run'	Total accidents
2011	130	157	4,490	8,321	13,338	930	**18,888**
2012	116	121	4,555	8,561	14,044	1,039	**19,754**
2013	104	119	4,963	9,811	13,868	1,039	**19,944**
2014	111	127	4,876	9,713	10,333	980	**16,300**

On the other hand, the regular technical control of the vehicle, which takes place once a year before the registration, is not so strict and detailed.

Table 3. The causes of road traffic accidents for 2011-2014

Source: Kosovo Police

Year	Human factor (Driver)	Human factor (Pedestrian)	Technical Condition of Vehicle	Road Infrastructure	Climate factors	Other factors	TOTAL
2011	18,788	8	18	8	59	7	**18,888**
2012	19,549	7	7	6	179	6	**19,754**
2013	19,929	3	3	0	3	6	**19,944**
2014	16,252	7	9	3	5	24	**16,300**

[18] Office of General Auditor, Audit Report 2015 – Activities of the Road Traffic and Safety in Road Traffic, http://bit.ly/1BXNn9h

[19] Reply given via telephone by the information office of Kosovo Police on 8 April 2015.

According to the Administrative Instruction No.2008/13 on Vehicle Technical Control, the licensed centers are obliged to perform control of the regularity of the total 14 following mechanisms:

a) checking the data of the vehicle;
b) visual control of the general condition of the vehicle;
c) engine control and transmission equipment;
d) chassis control and carrying capacity;
e) control of driving devices; braking mechanism control;
f) control of lights and light signaling equipment;
g) mechanisms controlling normal visibility / sight;
h) control of mechanism for delivering voice and noise signals of the vehicle;
i) control mechanism for controlling and delivering signals (control tables);
j) control gas release system;
k) connecting mechanism control the motor vehicles with trailer;
l) other vehicle control equipment important for traffic safety; and,
m) control of vehicle spare equipment.

During this research, we found that some of these mechanisms are not controlled at all by controllers at technical centers. Even the Infrastructure Minister admits that these centers do not properly check vehicles, where the vast majority of vehicles pass the technical control.[20] Despite these concessions, the Inspection Department at the MI, which has an obligation to monitor the work of the centers, in 2014, out of 518 controls, sent only three cases to court for minor offenses and issued 36 decisions on the elimination of irregularities.[21] Another omission by the technical control centers is their obligation to place the adhesive label on the front of the vehicle, by which is testified the validity period of the technical control.[22]

[20] Prishtina Insight, No. 155
[21] Response to the questions of GAP Institute given by the Inspection Department on 10.04.2015
[22] Article 2 Administrative Instruction No. 01/2012

4. Environmental effects of old vehicles

Of all control mechanisms, the system control of emissions of gases almost does not take place at all in technical control centers, although the administrative instruction sets the parameters to what extent is permitted the emission of gases in the atmosphere.[23] Currently, the vehicle produced in 1942 and that in 2015 are treated the same way and pay the same fee for the environment.

Such a practice not only contradicts the EU standards, but is also contrary to the applicable laws and strategies in Kosovo, as Kosovo Environmental Strategy and National Environmental Action Plan 2011-2021[24], the Law on Environmental Protection[25] and recently the Strategy and Action Plan for Air Quality[26], which takes into account the international conventions and the legal obligations of the countries in integration and the EU country members. Two of the specific objectives established by the Strategy and Action Plan for Air Quality are:

a) Rapid replacement of old vehicles with new ones, through investments;
b) Replacement of different transport modalities by cleaner means of transport, less motor traffic, more public transport and cycling.[27]

None of these objectives have been reached. The road transport remains one of the biggest contributors to air pollution in the country, along with the power plants, industrial facilities (metallurgy, mining, cement plants), agricultural activities and waste disposal sites.[28]

[23] For more see Article 21 of the Administrative Instruction 2008/13.
[24] Kosovo Environmental Strategy dhe National Action Environmental Plan 2011-2021, http://bit.ly/1cwOFBU
[25] Law No.03/L-025 on Environmental Protection, adopted on 26.02.1999, http://bit.ly/1PkWgp4
[26] Ministry of Environment and Spatial Planning. Strategy and Action Plan on Air Quality 2011, http://bit.ly/1IbYwsJ
[27] ibid. page 57
[28] Ibid.

Even the World Bank report on the analysis of the environment in Kosovo finds that transport is one of the major contributors to air pollution, especially in urban areas.[29] The road transport (vehicles) affects the air pollution through the release of particles emitted into the air from combustion sources PM.[30] The instrument for measurement of PM_{10} has been operational since 2009 and by the measurements that were made in Prishtina and in suburban site, it has been concluded that the limit values of PM_{10} have been exceeded.[31]

The Strategy and Action Plan for Air Quality provides among the measures for reducing air pollution from transport the establishment of new environmental criteria, based on standards of "Euro" emission. The strategy provided that the criteria for the circulation of buses and taxis by 2013, Euro 2 for vehicles with fuel and Euro 3 plus for diesel ones. Moreover, the Strategy provides that vehicles that do not meet the Euro 1 standard (later Euro 2), from 2013 should pay more than those with Euro 3 and Euro 4.[32] However, the last decision of the Government on vehicle imports does not take as basis these objectives of the Strategy, resulting that the Government violates itself the strategies it has adopted by itself.

The European Union has started with the introduction of "Euro" standards in 1991 when it entered into force standard Euro 0, to continue up to the last standard of 2014, the Euro 6. [33] The higher the "Euro" standard the lower is the amount of gas emissions. Some countries in the region, have not limited the import of used cars in terms of years of age but according the Euro standard. For example, in Macedonia, until 30 June 2015 was allowed the import of vehicles Euro 3, whereas as of 1 July 2015 is allowed only the import of vehicles Euro 4. Similarly, Albania added the technical control measures, where as of 2016 no vehicle will pass the technical control if it has the level of pollutants above the allowed values and defined by European Directive 2009/40/EU.[34]

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[29]The World Bank, Kosovo – Country Environmental Analysis, page 30, http://bit.ly/1CY2d52

[30]PM are created by a series of various particles, that derive from different types of sources. The concentrations of PM mainly include the particles emitted directly in the atmosphere from combustion sources and secondary particles created from the chemical reactions in the air.
PM particles are categorized by the size of particle3s (particles PM10, PM2,5 and PM1 with set diameter, e.g.. 10µm, 2,5m dhe 1µm).

[31]Ministry of Environment and Spatial Planning, Strategy and Action Plan on Air Quality 2011, page 21, http://bit.ly/1IbYësJ

[32]Ibid. page 70.

[33]Regulation of the European Parliament and of the Council No 715/2007, http://bit.ly/1JNZygP

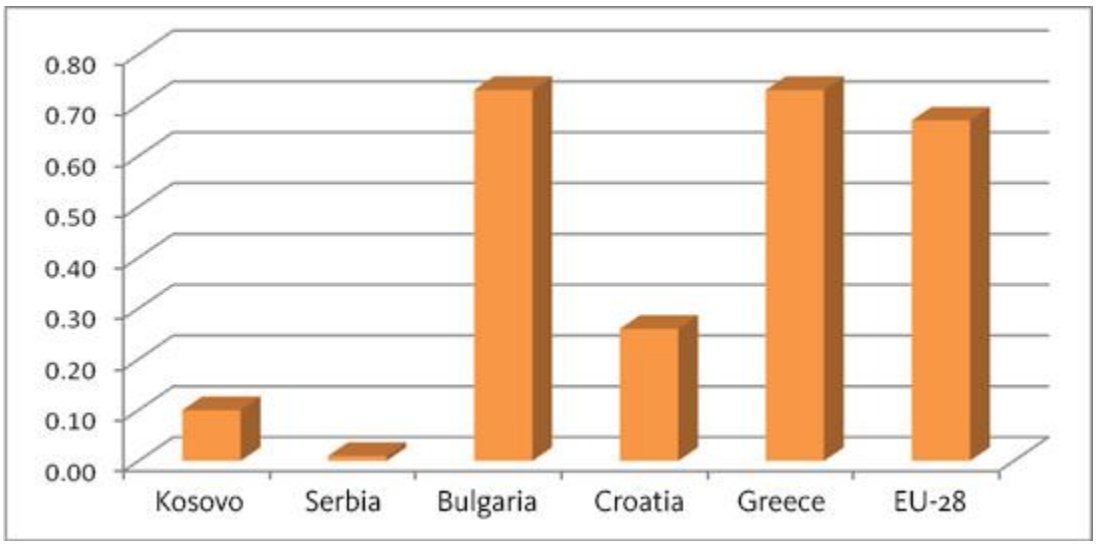
[34]Shqiptarja.com Gazrat, Korpa: In 2016 no vehicle out of standards!, http://bit.ly/1elDLQ7 , last time accessible on 24.08.2015.

In our case, the import of used vehicles is not conditioned by Euro standards. Even during technical control of vehicles, the level of emissions is not a condition for passing technical control test. This represents a violation of applicable regulations. According to the Administrative Instruction on Allowed Rates of Air Emission "all vehicles equipped with internal combustion engine using gasoline as fuel, oil or gas, are subject to state control of air emissions level" (Article 5).[35] Furthermore, this Administrative Instruction explains that the level of pollution is determined by measurement values of specific apparatus during vehicle technical control. When the vehicle meets the set criteria, it is equipped with an environmental stamp which should be exposed in a visible place. In case that the level of pollutant elements values is higher than the allowed value[36], the vehicle does not pass technical control (Article 14). However, the Technical Control Centers do not measure the level of polluting values and neither emits the environmental stamps.

In general, Kosovo spends the least budget funds for environmental policies compared to other regional countries and the EU countries. While Bulgaria or Greece spend 0.70% of GDP on environmental protection, Kosovo does not spend even 0,10% of GDP for this purpose.

Figure 5: Public expenditures on the environment as a percentage of GDP - 2013

Source: Eurostat



[35] The Government of the Republic of Kosovo, Administrative Instruction No. 03/2011 on Allowed Norms of Discharges on the Air from Mobile Sources, http://bit.ly/1clbIQF

[36] See Annex of Administrative Instruction No. 03/2011 on allowed values of elements pollutants from the emission of gases.

5. How does age of vehicles affect the environmental pollution?

The Decision of the Government to allow the import of old vehicles has two negative effects on the quality of the environment.

First, the old vehicles pollute the environment more than the new ones, mainly through greater release of polluting gases, but also through other effects, like the noise with higher intensity, greater creation of waste (e.g. batteries), and similar.

Secondly, the lowest price of old vehicles can increase the intensity of private transport, which will result in the emission in greater amounts of pollutants per capita.

The gas emissions from vehicles are the result of combustion fuel, gasoline and oil, in the vehicles with internal combustion. The burning occurs when oxygen from the air reacts with the fuel in a system with high temperatures and pressure, giving as products the carbon dioxide and water, as well as releasing energy, which is used to move the vehicle. Since the combustion is not conducted under ideal conditions, as products are obtained also some gases and particle matter, which have negative impact on the environment, consequently on health and well-being. These emissions are the main contributors to pollution from transport and the effect of pollution is more evident in declining quality of air. The main pollutants emitted from vehicles and their effects on health or the environment are shown in Table 4 presented in the annex.

The type and amount of pollutants emitted from vehicles depend on many factors, such as the fuel type, the way of driving, the type of vehicle and others. One of the primary factors is the age of the vehicle, which can be characterized either by year of production, or by the distance traveled by the vehicle.

Two major factors affect that the age of the vehicle cause the increase of the amount of pollution: firstly, old vehicles have passed on average the greater distance, thus the engine and devices for control emissions

(catalytic converters) have been consumed; and, secondly, the development of the vehicle production technology has brought more efficient vehicles for the consumption of fuel, as well as for the emission of pollutants.

The second point is illustrated in Figure 6, which gives the average fuel consumption for new vehicles as a function of the production year. The graph shows an increase in the efficiency of engines in uses of fuel of about 10% per year for new vehicle models. The fuel consumption has been tested in laboratory conditions at the time of issuance of the vehicle in circulation. Similar data are presented by the Environmental Protection Agency of the United States.[37]

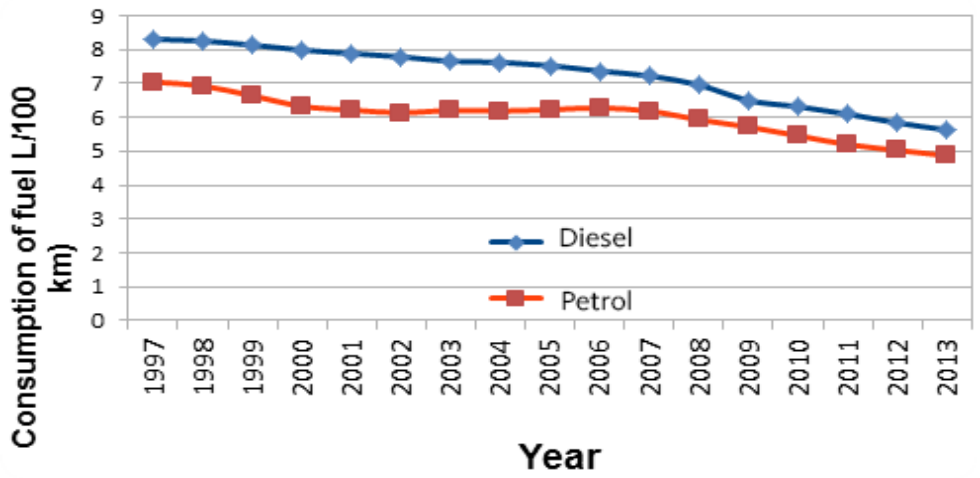


Figure 6. The consumption of diesel fuel and gasoline (liters per 100 kilometers)

Source: Department of Transport Statistics of Great Britain

Many studies show higher pollution of the environment from old vehicles.[38] These studies have taken into consideration the vehicles ranked by the Euro 1 system up to Euro 4, and noted that NOx and CO emissions are increased exponentially with passed vehicle mileage.[39] For all categories, an increase of emissions of gases is noted with the increased use of the vehicle, as shown in Figure 7. However, after

[37] See report Trends *1975-2014*, EPA, 2014, http://1.usa.gov/1gNPMzx

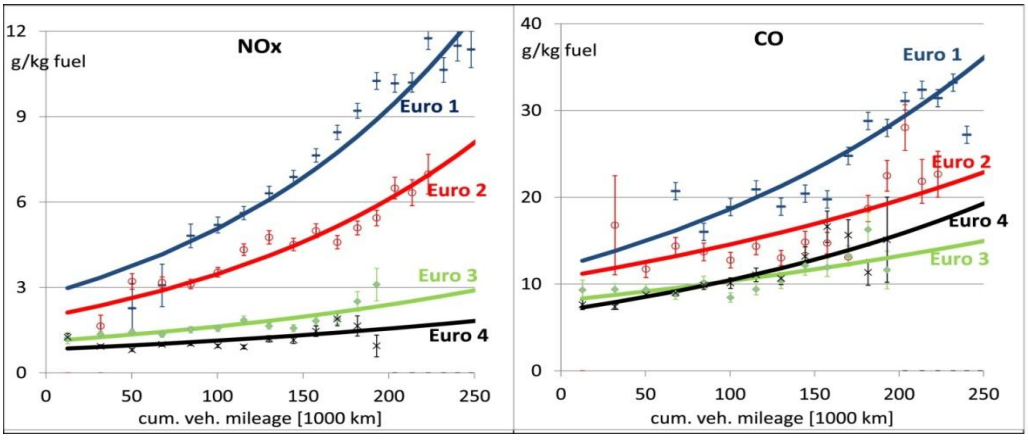
[38] See for instance study of C.A.Alves, et al., *Elements and polycyclic aromatic hydrocarbons in exhaust particles emitted by light-duty vehicles*, Environmental Science and Pollution Research, April 2015, http://bit.ly/1TPBywm

[39] See study of J. Borken-Kleefeld dhe Y. Chen, *New emission deterioration rates for gasoline cars*, Atmospheric Environment, 2015, http://bit.ly/1Mo0Kc6

passing 250,000 km, the increase in emission of vehicles of Euro 1 and 2 categories (older vehicles) is for nearly four times higher than when the vehicle was new, while the vehicles of category Euro 3 and Euro 4 have an increase of emissions for less than three times, compared to emissions when these vehicles are introduced into circulation.

Figure 7.

Increased pollutant emissions (NOx and CO) as a function of vehicle traveled kilometers. On the horizontal axis are provided the kilometers traveled in thousands of kilometers, whereas the vertical axes provide gas emissions in grams per kilogram of fuel burned.



Graphs in Figure 8 show a direct relationship between the age of the car and the amount of pollutants emitted in general. Significant increase is observed mainly for vehicle emissions that have passed over 15 years of service.

Source: J. Borken-Kleefeld and Y. Chen, New emission deterioration rates for gasoline cars

(a)

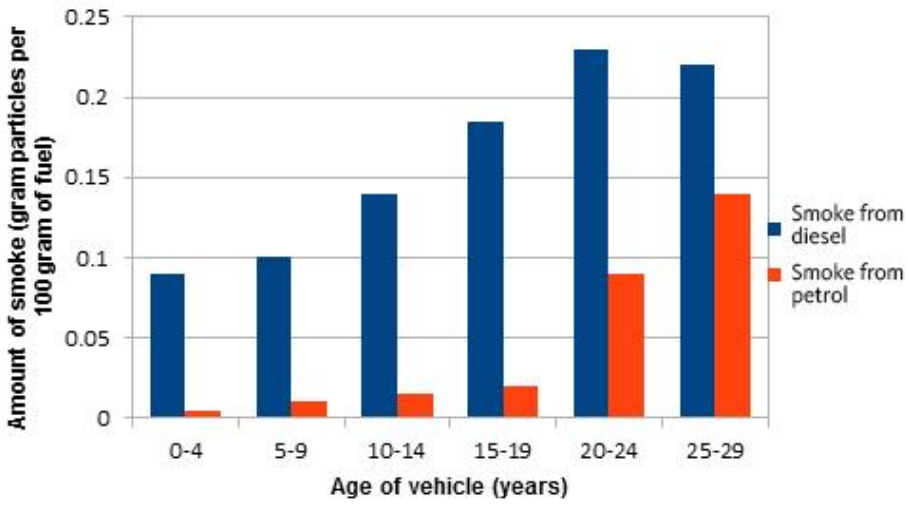
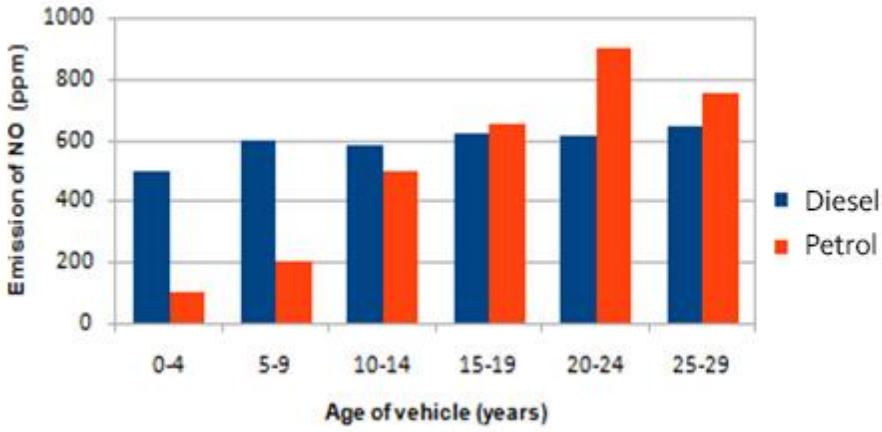


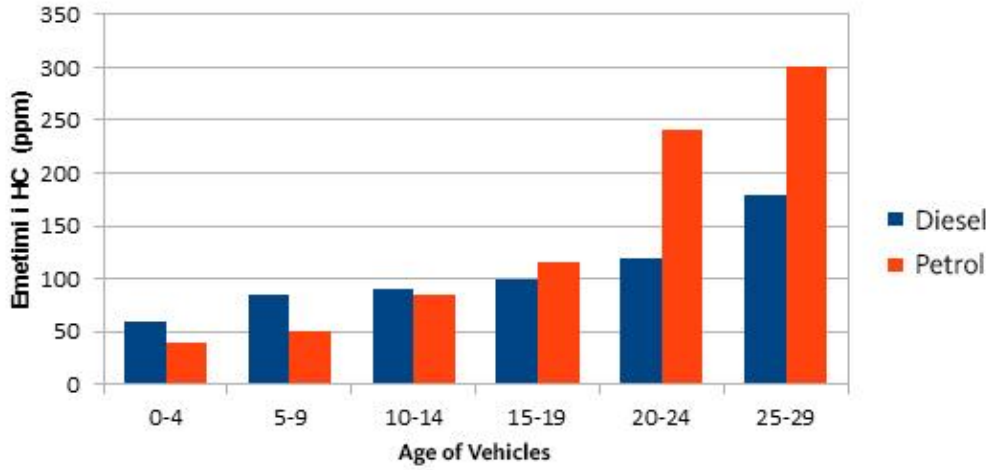
Figure 8. The emission of environmental pollutants (a-particles, b-nitrogen oxides, expressed as parts per million, c-hydrocarbons, and d-carbon monoxide) as a function of the age of the vehicle.

Source: J. Bluett, et al. Assessing Air Pollution Emissions Vehicle, NIWA Report, 2008.

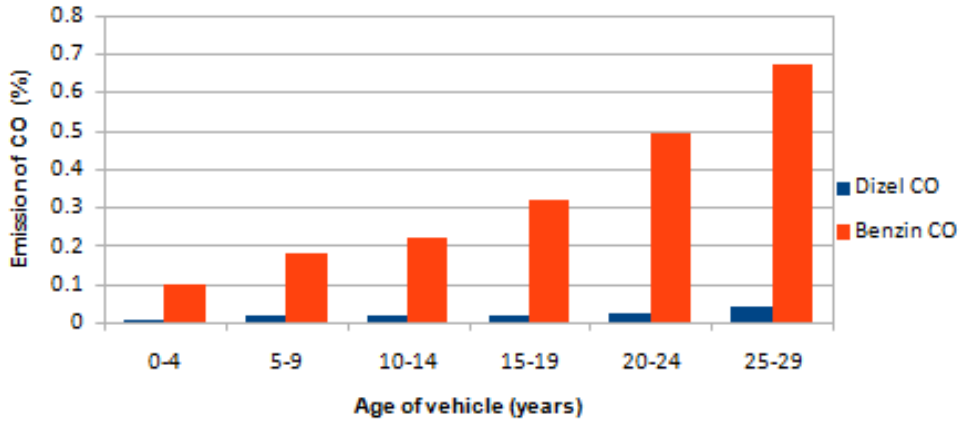
(b)



(c)



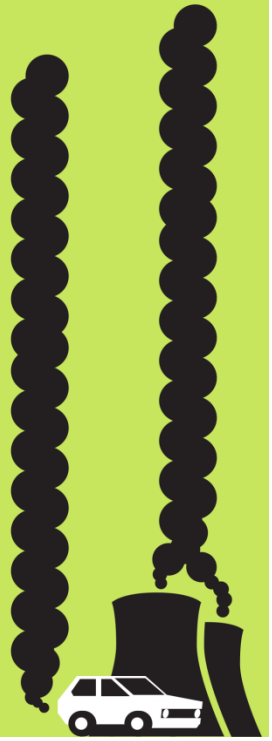
(d)



The integral effect of pollution can be calculated by finding the average of the fractional increase of the gas emitted (in percentage), depending on the age of the vehicle. So, considering that each pollutant has the same influence on environmental pollution, is collected the contribution of all pollutants, and then is found the overall average, which gives a projection of the pollution effect correlated with the age of the vehicle. Based on the values given in Figure 8, we find that after a period of 5 years, the overall emissions of the pollutants increase by around 50%.

Two power plants of Kosovo emit **~6.4M. TONS/YEAR** CARBON DIOXIDE

This number is **of the same order** of size to that emitted by vehicles



In Kosovo, although transport is considered as one of the major contributors to the air pollution, the monitoring of air pollution from cars is not developed, but the monitoring is focused on energy and industrial pollutants (KEK, Ferronikeli, SharrCem, and Trepca).

Based on the Report of the State of Environment 2011-2012[40], the emission of carbon dioxide from two power plants of Kosovo reaches on average the annual value of around 6.4 million tons. By a simple calculation, this number is of the same order of size to that emitted by vehicles. Specifically, the burning of a kilogram of gasoline gives 2.9 kg of CO2, whereas the same amount of diesel gives 3.1 kg of CO2. Kosovo imports about 500 million liters of fuel a year[41], thus burning fuel produces about 1.5 million tons of CO2 per year. With the introduction of old vehicles without any doubt will increase even more that the contribution of pollution.

The data on other gases cannot be obtained, even if it is tried to make a near estimate, because there are no measurements or basic information about it, although the measurement and monitoring of emissions of gases from vehicles is mandatory by law. If the projection of increase of emission of pollutants by 50% is applied to increase the average age of vehicles for 5 years, then the removal of the age limit for import of vehicles, by extending the average for vehicles in circulation in Kosovo, will have direct effect on the reduction of air quality.

[40] Ministry of Environment and Spatial Planning, Report on state of environment 2011-2012, http://bit.ly/1IebiDu
[41] Agency of Statistics in Kosovo, Annual balance of energy in the Republic of Kosovo 2014, http://bit.ly/1Iim8wH

6. Summary and recommendations

- In March 2015, the Government of Kosovo has decided to remove the age restriction for registering an imported car in Kosovo. The 2011 regulation stated that imported cars eligible for registration should not be older than 13 years. Before 2011, the age limit was 8 years.

- As a result of extending the limit from 8 to 13 years, the import of used vehicles increased to 44% in 2011. The difference between the import of used cars and new cars deepened even more in 2012, when 20.570 used vehicles were imported and only 1,211 new vehicles.

- The positive effect of the 2011 decision was the significant increase of the customs revenues. For example, in 2012 the customs revenues from vehicles were 45 million Euros, or 15 million Euros more than in 2010.

- The negative effect of this decision was the increasing average age of vehicles registered in Kosovo. Comparatively speaking, the average age of cars in Kosovo went from 13.2 years old in 2010 to 18.1 years old in 2014. The old vehicles, on the other hand, had a direct impact on the increase of traffic accidents and the pollution of the environment. Overall, the negative effects of the 2011 decision exceed many times the positive effects.

- The old vehicles pollute the environment more than the new ones; the emission of environmental pollutants is higher, generate more noise, and create more waste, such as batteries and scrap.

Therefore, through this analysis GAP Institute recommends that:

- The Government of Kosovo should replaces the current policy on import of vehicles with the policy of importing vehicles based on the "Euro Standards".

- Technical Control Centers should measure gas emissions according to Euro standards, ensuring that buses and taxis meet the Euro 2 standard, i.e. Euro 3 plus those for diesel, as provided by the Strategy on Air Quality. Moreover, the strategy stipulates that vehicles that do not meet the Euro 1 standard (later Euro 2) should pay more than those with Euro 3 and Euro 4. This rule should be implemented.

- Technical Control Centers to increase technical control measures, by strictly following the requirements of the Administrative Instruction for the Technical Control.

- The Inspection Department should increase the inspection visits and make sure that technical control centers are measuring the level of gas emission, according to the levels stipulated in the Administrative Instruction.

- The Government of Kosovo should consider the possibility of completely removing the excise on cars that meet high standards of safety and emission. Such vehicles could be new vehicles and those that meet Euro 5 standard and above.

- Kosovo Police should increase their technical capacities in order to determine whether vehicle technical failures are causing traffic accidents.

Annex

Table 4: Air pollutants produced by vehicles

Ozone precursors (CO, NOx, NMHC or VOC)	These chemicals are a result of incomplete combustion of fuel. The main producer of anthropogenic carbon monoxide (CO) is transport (vehicles) and air exposure composed of over 150 ppm (parts per million) causes death for several hours. In lower values (70-150 ppm or up to 0.001% to the composition of the air), this gas causes dizziness, headache and poisoning. Nitrogen oxides (NOx) react with other substances in the air and cause negative effects on health, as well as on the environment. Their main action is secondary, because under the influence of ultraviolet light and in presence of other chemicals, NOx produces ozone (smog), which is very oxidizing and acts in a destructive way against the chlorophyll in plants and lung tissue. The main ingredients of NOx, NO2 is a poisonous gas. Mandatory introduction of catalytic converters in cars produced after the seventies, has caused the reduction of emissions of those gases from cars.
Greenhouse gases (CO2, CH4, N2O)	The vehicles are one of the main producers of greenhouse gases, mainly of carbon dioxide. The impact of these gases on the environment is direct, whereas on health is indirect.
Acidifying substances (SO2, NH3)	These substances, in interaction with water, oxygen, and other materials, to produce acids. SO2 reacts also directly has impact on respiratory organs.
Aerosols or particulate matter (PM=particulate matter)	These particles have size of about 10 micrometers appear as dust and smoke. They are also effective only in conjunction with other substances in the air. There are numerous studies that link directly the negative effect of these particles on human health, mainly on respiratory organs, bronchitis and asthma. On the other hand, these particles act in the environment, where reflect sunlight and cause the opposite effect to that of the heat from greenhouse gases.
Carcinogenic species PAH=polycyclic aromatic hydrocarbons and POP=persistant organic pollutants	These chemicals present organic macromolecule that are not completely burned and are in stage of gaseous and solid (as particles). More than 15 compounds have been identified as carcinogenic or cause genetic change of newborns. Although there is a conviction that diesel engines are the largest producers of these chemicals, there are also studies that show that gasoline cars contribute significantly to the pollution of these substances.
Toxic substances (dioxins and furans)	Toxic substances (dioxins and furans) These substances suspected of causing cancer, whereas is proven to cause changes in hormonal levels, skin disease, and weaken the immune system.
Heavy metals and halogens	Metals mainly include lead, cadmium, mercury and arsenic. In Europe, more than 50% of lead air pollution originates from vehicles. Children are much more sensitive to its effects, and thus have damaged nervous system.

GAP INSTITUTE

GAP Institute is a think-tank established in 2007 in Kosovo. The main goal of GAP is to attract professionals by creating an environment of professional research and development, which is found in similar institutions in Western countries. It also provides an opportunity for Kosovars to research, develop and implement projects that would advance Kosovo society. A priority of the Institute is to mobilize professionals to address economic, political and social challenges of the country. The main objectives of GAP are to fill the gaps between government and people, and to fill the gap between problems and solutions.

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