Report on the State of Environment 2011-2012

MINISTRY OF ENVIRONMENT
AND SPATIAL PLANNING

KOSOVO ENVIRONMENTAL
PROTECTION AGENCY

Prishtinë, 2013

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Dear Reader

The Ministry of Environment and Spatial Planning, respectively Kosovo Environmental Protection Agency has prepared the report on the state of the environment, which aims to inform you on the actual state of the environment in Kosovo. Furthermore, through this report is presented the commitment of governmental institutions to implement appropriate environmental policies for improving the environment state.

Kosovo has already made significant progress in building a modern state, integrated into European Union. In this approach, in addition to other challenges, we are facing even with fulfilment of environmental requirements and needs, where undoubtedly the assessment of the state of the environment will be one of the highest priority fields.

The fulfilment of these obligations necessarily will require a bigger commitment, not only of the Ministry of Environment and Spatial Planning, but also by our society entirely. Therefore, we remain committed that together with other relevant institutions and organizations for environment protection to develop appropriate environmental policies and implement these policies, to build effective mechanisms and instruments for environmental protection and improvement of its quality.

We are aware that economical development will be the priority of the Republic of Kosovo, which will be accompanied with increase of exploitation of natural resources, and increasing the new energetic capacities, which necessarily will increase the impact in the environment. Undoubtedly, the impact in the environment will be increased by development of other sectors as well, as transport, industry, urbanization, agriculture,

etc. Having in regard these conditions, MESP will try maximally to respect the main principle of environment protection in relation to economical development, the principle of sustainable development, to "meet the needs of current generations without compromising the ability of future generations to meet their own needs".

Also, we will remain committed in preventing uncontrolled exploitation of natural resources, expansion of nature protected areas network, more efficient management of water resources, sustainable urban planning, advanced waste management and strengthening environmental inspection.

Dardan Gashi
Minister of the Ministry of Environment
and Spatial Planning

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Preface

Drafting of the state of environment report in Kosovo, is based on Law of Environment Protection [1]. According to Article 25 of this law, the Government of Kosovo with the proposal of the Ministry of Environment and Spatial Planning presents the state of environment report to the Assembly of Kosovo. The report should contain data on: environmental state, and changes in environment compared to the previous report; environmental impacts on the population health; implementation of environmental strategy and action plan; measures for environment protection; use of natural resources; development of environmental institutions, and financing the environmental protection system.

In accordance with duties and responsibilities of governmental institutions, the Kosovo Environmental Protection Agency is the responsible institution for drafting of the report. This report presents the state of environment for the period 2008/2010, but previous information is available as well with the aim of comparison. This is the third official report of the state of environment, which will be proceeded officially by the Minister of MESP.

Based on common environmental reporting models, and in the existing environmental circumstances in Kosovo, KEPA has collected environmental data from monitoring institutions, companies, operators and different organizations, publications, reports and other sources. To fulfil the reporting requirements, the collected data are processed onto qualitative environmental information, and presented in this report. These data are presented in form of text, tables, maps and graphic presentations.

The report describes the state of environmental mediums, and main factors that have impacted the state of the environment in Kosovo. To some extent, the report considers the environmental protection policies and environmental actions undertaken from governmental institutions as well as from nongovernmental organizations and civic associations in general. The report summarises the environmental concerns in the country and it is a suitable method for assessment of the state of environment.

Drafting of this report is largely oriented by the selection of indicators which have been more suitable for assessment of the state of environment. We tried that selected indicators, have scientific base and be available to all those who will use this report.

Contrary to the maximal efforts and dedication, this report has its deficiencies, which in the first view are as a result of the lack data for many important issues, lack of environmental integrated monitoring, legal base and other institutional and organizational weaknesses.

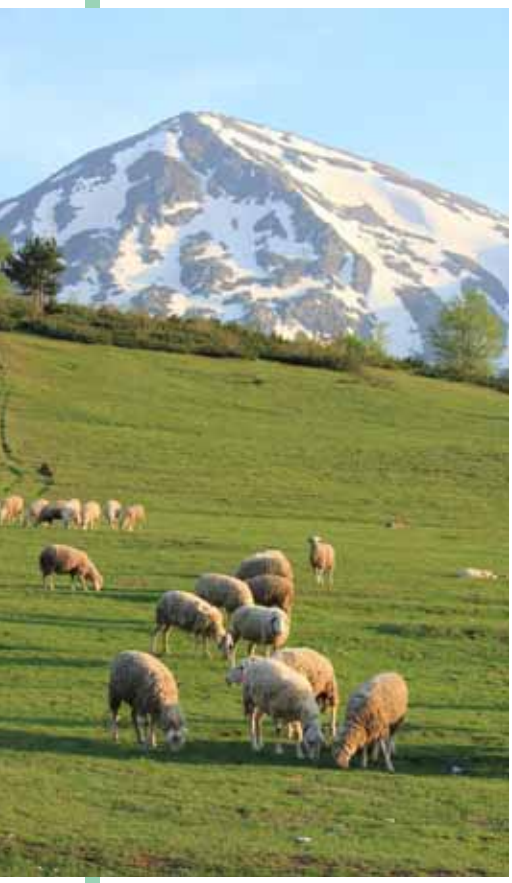
We should accept that the quality of reporting depends on the quality of monitoring, implemented in national level, and the level of organization of environmental information system. Knowing that these two environmental systems are not appropriately organized, we can make a conclusion that the lack of completed data and their credibility is an important indicator of the environmental state in Kosovo. In the first instance, the purpose of this report is informing on the state of the environment in Kosovo, however the data provided herein are as a good base for drafting of adequate environmental policies, and orientation of developments, planning and strategic investments in sectors which have impact in the environment, such as: economy, energy, transport, agriculture etc.

KEPA is grateful to all those who have given their contribution in finalizing of this document, even through offering appropriate information or by giving their suggestions or remarks.

We do appreciate, and welcome all commitments, remarks and suggestions of the institutions, experts and others, which will help us to increasing the quality and credibility of future publications.

Dr.sc. Ilir Morina,
Chief Executive Officer of
Kosovo Environmental Protection Agency

1 Law No. 03/L-025



Executive Summary of the report

AIR

The air emission monitoring in Kosovo, using their own monitoring systems, is made by: KEC, Ferronickel Complex in Gllogoc, and Cement factory Sharrcem, in Hani i Elezit.

In KEC (PPA and PPB) are monitored emissions of : Dust, SO_2, NOx and CO_2. Measurements of dust emissions show that exceedances were recorded in both plants. During the period 2007-2012, are recorded exceedances of maximum allowed value of dust (50mg/Nm^3), in particular at PPA. During the period 2010-2012, exceedances of NOx in both KEC power plants are recorded as well.

"Sharrcem", conducts periodical monitoring, using an external contractor. The monitored parameters are: dust, SO_2, NOx dhe CO. Based on the results of the measurements it is noticed that during the period 2006-2012 there were exceedances of maximum allowed values of dust. Whereas monitoring results show that SO_2 and NOx rates were most of the time under the maximum allowed values.

In "Feronikel" sir emission is measured at six monitoring points. These measurements are performed only once a month by a certified contractor. Even "Feronikel" exceedances of maximum allowed values dust and SO_2 are recorded in some cases.

Air quality monitoring in Kosovo is conducted by the Kosovo Environmental Protection Agency, through the Hydrometeorological Institute. Several operators such as KEK and "Feronikeli" have their own air quality monitoring systems.

According to the results of air quality monitoring by HMIK for 2012, for SO_2 parameter no exceedances are recorded in any of the monitoring stations, there are no annual exceedances for NO_2 as well. However, in Hani i Elezit and Gjilan stations are recorded exceedances of both high and lower assessment thresholds for human health protection (1-hour). No exceedances are recorded at the assessment of ambient air CO concentration, whereas the O_3 concentration exceedances in ambient air are recorded at Peja and Hani i Elezit monitoring stations.

As for the evaluation of $PM_{2.5}$ and PM_{10} concentration in ambient air, as required by Directive 2008/50 and AI Nr.02/2011, exceedances are recorded at stations in Prizren, Gjilan and Hani i Elezit.

WATER

In the water sector are presented data on water resources of Kosovo, the quality of surface water, and surface water monitoring in river basins. On the territory of Kosovo, in average rainfall the water flow is 3.6 x 109 m^3 (121.2 m^3/sec). Most of the rivers belong to the Black Sea basin 50.7%, Adriatic Sea 43.5%, and the Aegean Sea 5.8 %. Topographic catchment area of Kosovo is 11.645 km^2. The Hydrography of water streams of Kosovo is divided into four river basins: Drini i Bardhe, Ibri, Morava e Binçës and Lepenci. The Drini i Bardhe river has greatest length in kilometres in Kosovo, with 122 km, and the shortest is the Lumëbardhi i Prizrenit with 31 km. Watershed lines (river basins), flow in different directions. Flow ratio ranges from 3.93 l/sec/km^2 (Morava e Binçës) to 42.46 l/sec/km^2 (Lumëbardhi i Decanit).

Monitoring of river water in the territory of the Republic of Kosovo is conducted by the Hydrometeorological Institute. The quality of these rivers is determined by physical, chemical and heavy metal analysis. The monitoring network has a total of 54 monitoring stations.

Within the monitoring of physic-chemical parameters, in this report are presented data on the following parameters : the amount of dissolved oxygen (O_2 dissolved), Biochemical Oxygen Demand (BOD5), electrical conductivity, hydrogen ion concentration (pH), nitrate's nitrogen (N - NO_3-), nitrites nitrogen (N - NO_2-) , nitrogen in ammonium (N - NH4 +), phosphorus in orthophosphates (P - PO_4^3 -), total phosphorus (poly and ortho), for river basins of Drini i Bardhe, Ibri, Morava e Binqes and Lepenci.

Monitoring results show that in some cases, is recorded an increased value of ammonium ion parameter (NH4+ /mg/l) with an exceedance of the maximum allowed value in monitoring sites in: Bresje/ Prishtevka in August (55.82 mg/l), and in Gërlicë/ Nerodimja in September (50.47 mg/l). It is assumed that the increase in the value is due to shortage of water/runoff in the summer months. Also higher values may also result HMIK lacks the mobile laboratory, or refrigerator for storing samples, since it is known that during the summer season when the temperatures are too high, this parameter (ammonium ion) has affinity to increase the concentration.

Also, data for the presence of heavy metals in surface waters are presented. Metals monitored are: Lead, Chromium, Cadmium, Copper, Zinc, Iron, Manganese and Nickel. Monitoring of presence of these metals was done in 23 monitoring sites.

Cases of exceedances of allowed values for these metals, in 2011 are identified as follows: An exceedance of metal Cooper is recorded in Klina river, exceedance of Zinc is recorded in Sitnica river in Mitrovicë, and in Graqanka river in Vragoli is recorded exceedance of iron. In river basins of Lepenci and Morava e Binqes, exceedances of allowed values (according to the directive EU 152/1999) are recorded for chromium (Cr3+), iron and zinc. No exceedances of other metals are found in these river basins.
In Morava e Binqes (three monitoring sites) in the Kriva Reka river – Domorovc, in Lepenc river –Hani i Elezit, as well as in Neerodimja river (in two monitoring sites) exceedances of allowed values of iron are recorded.

LAND / SOIL

In this chapter, the report presents data on land use categories, forms of agricultural land loss, land pollution, and threatened environments.

The main factors affecting the land loss of in Kosovo are: unplanned extensions of settlements, industrial and sanitary landfills, and erosion. One of the most common forms of agricultural land loss is the changing of land destination from agricultural land into construction land. According to MAFRD, during the period 1999-2008, approximately 2,580.50 hectares of agricultural land has been changed without permission of the relevant authorities. Whereas, designation of 1.690.00 hectares of agricultural land, has been changed with the permission of municipal authorities. According to estimates of MAFRD, about 400 hectares a year, from agriculture land are converted to construction land.

Kosovo lacks a soil monitoring system, therefore the KEPA lacks data on soil quality. However, the KEPA has identified 110 polluted and contaminated sites. Of these, 28 sites are considered of high pollution potential and proposed as environmental Hotspots. As environmental hotspots were identified mining dumps with concentration of heavy metals, agricultural waste landfills, sanitary landfills, municipal rehabilitated landfills, hazardous industrial chemicals and radioactivity remaining from the past.

It is estimated that approximately 0.091 km^2 of Kosovo territory is covered with endangered environments. Hotspots pose high risks to the environment and health of the population in Kosovo. These problems require analysis, impact assessment, implementation of remedial measures and constant monitoring in order to avoid further risks to human health and nature.

Due to the lack of a national network for soil quality monitoring, lack of plans and programs for rehabilitation of contaminated land, lack of programs to monitor the use of pesticides and fertilizers, lack of plans and programs for protection of soil from erosion and floods, as well as lack of strategy for soil protection from pollution is recommended to work on: the establishment of an integrated soil monitoring network and continuous monitoring of its quality; design programs, plans and measures for protection of agricultural lands, rehabilitation of contaminated land, to protect the soil from erosion and erosion monitoring; and establishment of control and monitoring systems on the use of pesticides and fertilizers.

NATURE AND BIODIVERSITY CONSERVATION

The state of nature is introduced through data on the number of nature protected areas, protected areas management, the condition of these areas, as well as the state of flora and fauna species.
Kosovo has 99 nature protected areas which cover 118505.5 ha (11.4% of the territory of Kosovo). In the list of protected areas are included: 11 Nature Reserves, 2 National Parks, 84 Natural Monuments, 1 Regional Park of Nature and 1 Protected Landscape.
During the period 2004-2012, 60 new nature areas were taken under legal protection, among which the expansion of the National Park "Sharri" with about 20 thousand hectares in the municipality of Dragash, and second National Park, "Bjeshkët e Nemuna" with about 60 thousand hectares. 159 other nature areas are proposed to be included in the network of protected areas. Among the protected areas, most of them belong to the category of natural monuments, with botanical, hydrological, geomorphologic and speleological characteristics.

Currently, only 4 protected areas have their management bodies. Management of the National Park "Sharri" is performed by the Park Directorate based in Prizren, which operates within the MESP/KEPA. During 2013 is established the Directorate of National Park "Bjeshkët e Nemuna", which also operates under the MESP/KEPA. The Regional Park "Gërmia" is managed by public enterprise "Hortikultura", while the nature monument of special importance "Gadime Cave" is managed by a body that is not under the supervision of local and central institutions. Other nature monuments are managed by the relevant municipal authorities.

During the year 2011-2012 the following protected areas are monitored: the National Park "Sharri", the Bifurcation in Nerodime river, Arneni nature rexerve, Rusenica, Oshlak, Mirusha waterfalls, Gërmia Regional Park, Spring of Drini i Bardhe river, the Radavc cave, cave in Gadime, Rugova Gorge, Canyon of Drini i Bardhe, Fshajtë's Bridge, and many other nature monuments.

During this period are developed other important activities in the sector of nature and biodiversity protection. Two important laws are approved: the law on National Park "Sharri" and the law on National Park "Bjeshket e Nemuna". The Strategy and Action Plan for Biodiversity 2011-2020 is approved. A spatial Plan has been prepared for "Mirusha Waterfalls" and in collaboration with UNDP has started preparation of the Management Plan for the National Park "Sharri".

WASTE

Waste management system in Kosovo is not in good condition, and represents one of the major environmental challenges. In average, in Kosovo, the service of municipal waste collection covers 49% of population. Pristina region covers the highest percentage of population with this service by 55%, while the Mitrovica region with the lowest, with only 30%.
In urban areas (cities), waste collection service was provided to 90% of the population, while rural areas are covered by this service only about 10%.

Biodegradable wastes represent 42%, of total waste generated in Kosovo. The largest amount of disposed waste is recorded in 2011. In that year, in Pristina landfill are disposed off 81,816.63 tonnes, while smaller amount this year is deposited in sanitary landfill in Podujeve (7,115.11 tonnes).

The amount of municipal waste generated per person in Kosovo in 2011 was 335 kg, which shows a significant increase in amount of waste per capita, compared with other years. Compared with other regions, the largest annual quantity of waste generated per person is recorded in Pristina region.
Average daily waste generated per person in Kosovo for 2011 is 0.9 kg.

The highest amount of waste is collected by "door to door" service, while the collective housing a smaller amount of waste is collected. In Kosovo, waste collection by door to door service was 57 %, and in collective housing was 43 %.

In other Kosovo regions the collective waste collection service represented 45% and door to door service 55 %. While in Pristina region, 41 % collective service, compared to 59 % door to door.
In 2010 the amount of industrial waste is 580.154 tons, where 36.241 of them are hazardous waste, and the rest non-hazardous waste. The highest amount of waste generated is in the sector of food products and beverages.

Most of sanitary landfills are found to be operating under inappropriate conditions. Most of them face the lack of space for waste disposal, waste covering problems, dysfunctional water pumps, and continuous burning of waste.

ENVIRONMENT AND PUBLIC HEALTH

In Kosovo, there is still large number of cases of infectious diseases and of cases of illnesses associated with the state of the environment, especially the diseases that come from air and water pollution.

The larger number of cases of water diarrhoea may be related to poor economic and hygienic conditions, quality of drinking water, lack of sanitation, poor waste management. The large number of cases of Hepatitis A is an indicator that shows the low level of hygiene and the use of drinking water from contaminated wells.

National Public Health Institute is the responsible institution for monitoring of drinking water quality. It monitors the water quality of drinking water supply companies, and based on regulations reports on the suitability of drinking water.

According to these reports, the majority of bacterial residues are found in the water supply systems of small towns / rural areas, although there are reported cases of non-suitability of drinking water quality (mainly bacteriological residues) in public water supply systems.

According to data from the monitoring of drinking water sources from the National Institute of Public Health, it is found that pollution of drinking water from bacteriological contamination is greater than from chemical contamination. According to the NIPH, 74% -90% of water wells by are contaminated.

The large number of illnesses from respiratory system is an indicator of air pollution. Of the total number of patients enrolled in primary health care, within the group of diseases related to the environment and environmental factors, the largest number belongs to those of respiratory systesm, with 663353 cases a year, or 31.5% of total number of patients.

In a survey conducted by the World Bank, it is resulted that based on the coefficients exposure/response, annual concentrations of PM in ambient air, and the data for the exposed population, is estimated that urban air pollution in Kosovo causes 835 premature deaths, 310 new cases of chronic bronchitis, 600 hospital admissions, and 11,600 emergency visits.

ENVIRONMENTAL PROTECTION MEASURES

This is another chapter of the report, whereby the aim is to present the extent to which the Kosovo Environmental Strategy and Environmental Action Plan are implemented, the progress in the development of sectoral strategies and action plans, and actions of local authorities to address the environmental concerns.

Also, this chapter summarizes the key measures and actions taken by various institutions to improve the environment. It includes measures undertaken on drafting the environmental legislation and its harmonization with European legislation, developments and obstacles on strengthening of environmental institutions, and investments for environmental protection.

During 2010-2012, the Ministry of Environment and Spatial Planning has revised Strategy for Environmental Protection and Sustainable Development 2005-2015 and the Action Plan for the Environment. As a result of this process, the Strategy for Environmental Protection and Sustainable Development 2013-2022 is drafted.

During 2011, the Kosovo Assembly adopted the Strategy and Action Plan for Biodiversity 2010-2020, and in process of approval are the Waste Strategy and Action Plan; and Air Quality Strategy and Action Plan.
In this period Kosovo Institutions have started development of other strategic documents such as: Kosovo Water Strategic Plan, Climate Change Strategy, and several other strategies as stipulated by the environmental legislation and that are necessary for more effective environmental management.

In 2011, with the support of the Swedish International Development Agency, the Regional Environmental Centre (REC) office in Pristina has started the project of developing local Environmental Action Plans - LEAPS in 10 municipalities of Kosovo.

During 2012, several important laws are adopted such as: the Law on National Park "Bjeshket e Nemuna", the Law on National Park "Sharri", Waste Law, and the Law on the Kosovo Agency for Protection from Radiation and Nuclear Safety, 04/L-067 approved on 24.05.2012, by Decree No. DL - 028 -2012, Dated 08.06.2012

Besides drafting of environmental legislation a special attention is given to harmonizing the national legislation with the European one.

During the period 2010-2012, parts of environmental investments are oriented in rehabilitation of several landfills, and the closure of old municipal and industrial waste landfills.

Other MESP investments are carried in the implementation of projects for the construction of seven centres for sterilization of infectious hospital waste, as well as the implementation of the project for hazardous waste, by constructing the facility for temporary storage of hazardous waste.

In water sector, is invested in regulation of riverbeds, and the development of feasibility studies for wastewater treatment.
Donor investments have been dedicated towards capacity building and improving the environment in general, but also in establishing the environment monitoring networks.

Two important developments should be mentioned as regards to the institutional developments. It is established the Agency for Protection from Radiation and Nuclear Safety; and the establishment of air quality monitoring network.

Whereas, under the obstacles and delays in strengthening environmental institutions during this period are emphasized: lack of management body for "Mirusha" Regional Park, not functioning of the National Water Council, and the lack of soil quality monitoring network.

1. Kosovo Profile

1.1 Geographical Position

Kosovo is located in the central part of Balkan Peninsula. It lies between 41°50'58" and 43 ° 51'42" of northern geographic latitude and 20°01'3 " and 21°48'02" of east geographic length. Kosovo has an area of 10,908 km^2. According to preliminary results from the preliminary census conducted by SOK in 2011, Kosovo has 1.73 million inhabitants and the average density of 159 inhabitants per km^2 (this census does not include the municipalities of Leposavic, Zubin Potok and Zvecan) [2]. It is surrounded by Albania (southwest), Macedonia (southeast), with Serbia (east, north and northeast) and Montenegro (west). The total length of Kosovo border with neighbouring countries is about 700.7 km [2].

1.2. Relief

Kosovo is a mountain and lowlands country, composed by Kosovo Field (Fusha e Kosoves) (with 510-570 m above sea level) and Dukagjin Plain (350-450 m above sea level). The average above sea level of Kosovo is 810m. The lowest point is 270m, while the highest 2656 m (Gjeravica). In terms of hypsometry the area below 300m above sea level includes only 16.4 km [2] (0.2%) to 1000 m are expanded 8754 km [2] (80.7%), from 1000 to 2000 m 1872.3 km [2] (17%) and over 2000 m to 250.6 km [2] (2.3%). The main forms in Kosovo landscape are: mountains with 63% and hollows 37%.

1.3. Climate

The climate is continental-sized, with a dominant influence of Adriatic-Mediterranean climate in Dukagjini Plane. The average annual rainfall is 596 mm. The average annual temperatures in Kosovo are 10OC, with the minimum temperature reached to -27.2 and maximum 39.2. The main local factors that affect the climate of Kosovo are: landscape, water, land and vegetation.

1.4. Hydrography

It is estimated that Kosovo has only 1600 m^3/water/year per capita. Kosovo waters are divided into 4 River Basins: Drini i Bardhe, Iber, Morava e Binçës, and Lepenci. In an average wet year, from the territory of Kosovo flows approximately 3.8 x 109 water, respectively 121.2 m^3/sec. The potential for water energy in Kosovo is very small and so far its use is quite modest. The topographic conditions for construction of artificial reservoirs for water collection are not suitable.

Groundwater reserves are limited and are founded mainly in western part of Kosovo, where surface water reserves are larger compared to the eastern part, with small reserves and the south-east part, where water needs are very high. Kosovo has few natural lakes. Artificial lakes are Batllava, Gazivoda, Radoniqi, Perlepnica and Badovc, as well as a small number of lakes for irrigation.

1.5. Socio-economical characteristics

The overall population growth and prognosis – the overall population growth in Kosovo - even against the pressures and displacements - continuously has been increased, in different rhythms, in the period after the Second World War. During 63 years period of time (1948-2011) Kosovo population had an increase of 138.2%.

2 Census of population, households and housing in Kosovo, KAS 2011

Table 1: The Migration of Overall Number of Population in Kosovo 1948-2011[3]

Year	Nr of population	Comments
1948	727820	Regjistrimi
1961	963988	Regjistrimi
1971	1243693	Regjistrimi
1981	1584440	Regjistrimi
1991	1956196	Vlerësimi
2002	1985000	Vlerësimi
2011	1733872	Regjistrimi
2012	1815606	Vlerësimi

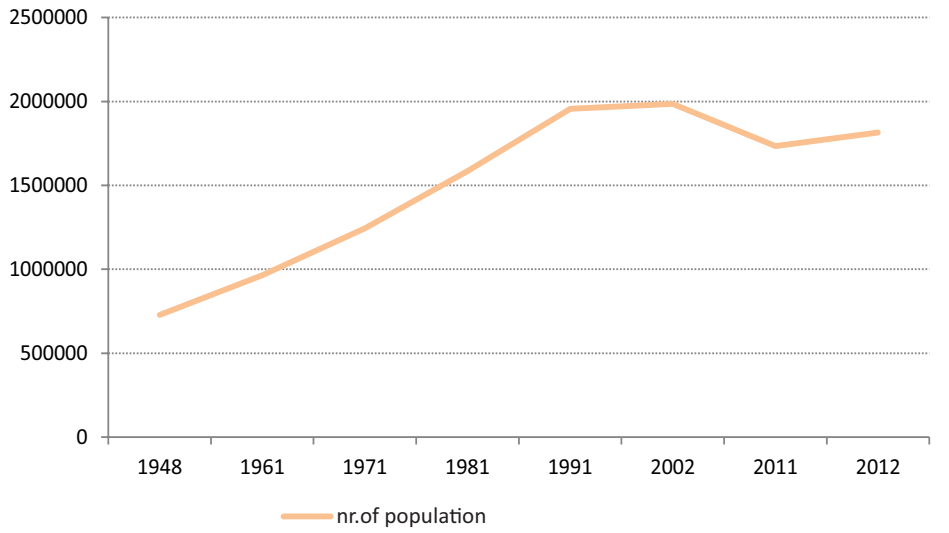


Figure 1: Overall population growth in Kosovo 1948-2011

On the base of the projections of Kosovo population, the overall number will continue to be increased in the next 50 years of this century, even with the slower rhythms, comparing to 60, 70, and 80 -ties of the last century. The population growth associates with environmental impacts in many aspects, from which the most important are: impact in the production rate, use of resources, land use, as well as waste generation and environmental pollution.

The relation between population and impact in the environment in the first view is: increased number of population means increased consumption, and increased use of natural resources, which lead to increased rate of environmental degradation.

Natural Growth of Population - The Kosovo population has been rapidly grown during '60-ties, when the rate of births was the highest in the period after the Second World War ,with 29.9‰ (births 44.1‰, whereas the mortality 14.2‰).

1 Statistics of births in Kosovo 2008, KAS 2009

Table 2: Natality, mortality, and natural population growth in Kosovo 1948-2011[4]

Year	Natality	Mortality	Natural growth
1948	27792	10324	17468
1961	40561	11759	28802
1971	47060	10312	36748
1981	48111	9677	38434
1991	52263	8526	43737
1996	46041	8392	37649
2002	36136	5654	30482
2003	31994	6417	25577
2004	35063	6399	28664
2005	37491	7207	30284
2006	34187	7479	26708
2007	33122	6681	26431
2008	34399	6852	27547
2009	34240	7030	27210
2010	33751	7234	26517
2011	34262	7556	26706

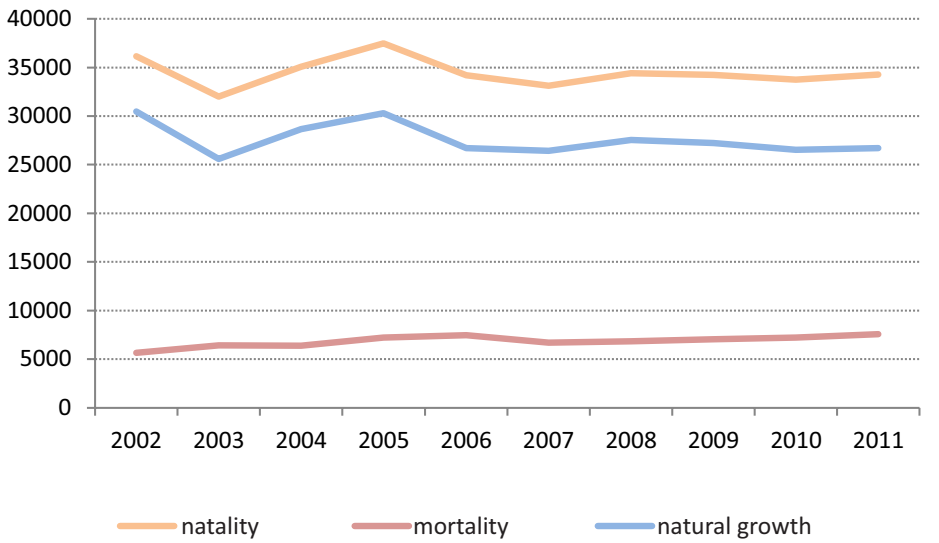


Figure 2: Natality, mortality, and natural population growth in Kosovo 2002-2011

Taking in to account the data offered by Kosovo Agency of Statistics, in 2003 in Kosovo has been registered the lowest level of natality in 1000 resident, since the end of the second world war until nowadays.

Density of population –with the growth of Kosovo population, it has been grown the level of average population per unit of area, from 62.7 (1948) in 159 (2011) people per km^2. This growth presents also the increase of the impact of population into the environment. The highest density of population is registered in lowland areas (over 600 b/km^2-Fusha e Kosovës), in the highland regions the density corresponds to the average of Kosovo, whereas in the mountains there is a lower density comparing to Kosovo average.

In lowlands, there is concentrated the highest number of population, industrial buildings and urbanization, factors which have a great environmental pollution impacts.

4 Mortality statistics in Kosovo 2011, KAS, Prishtinë 2012

Table 3: Kosovo population density 1948-2011[5]

	1948	1953	1961	1971	1981	1991	2002	2011
Nr. inhab. / km²	62.7	74.8	88.4	114.1	145.3	179.7	182	159

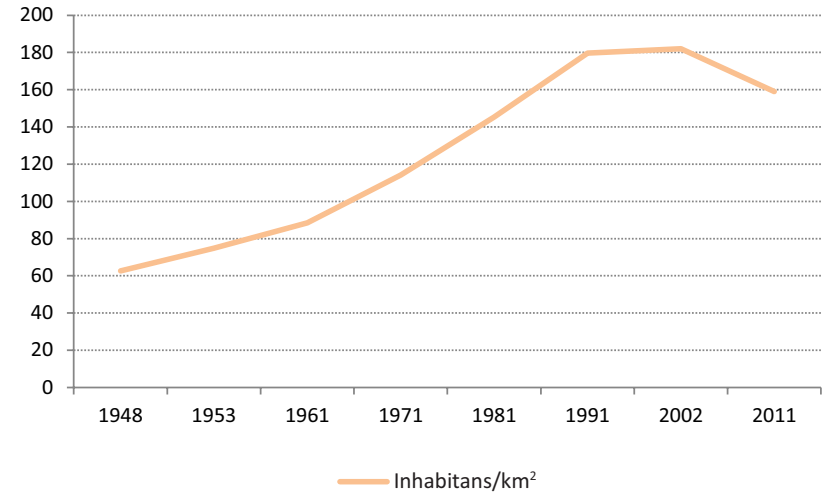


Figure 3: Kosovo population density 1948-2011

Changes in the population density in a geographic environment are related to some environmental problems, such as: abandonment of rural areas (migrations toward towns), increased pressure in the environment in some regions (especially urban) and inability to satisfy the needs for accommodation, employment, infrastructure etc; as well as other interventions through constructions in the agriculture lands, interventions without any criteria in water supply systems, increase of the waste quantity, untreated sewage thrown into environment etc.

Table 4: Structure of population in Kosovo according to the age 1981-2011[6]

	1981	1991	2001	2006	2011
0-19 years	52	48	41	38	38
20-64 years	43	47	54.1	56	65
Above 65 years	5	5	5.9	6	7

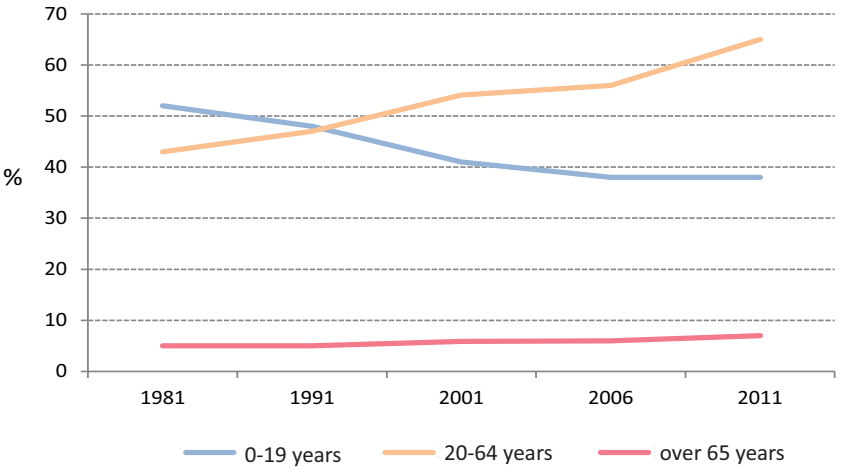


Figure 4: Structure of population in Kosovo according to the age 1981-2006

5 Gjeografia e Kosovës, ETMM,Pr,1994 and Kosovo Vital Statistics 2002, Census 2011, KAS.

6 For the year 1881, Buletini 17, KAS, 1991-2001, Ecuria dhe shtrirja e pop. Shqiptare në Ish Jugosllavi, Instituti Ekonomik 1997, 2006, Kosovo in figures 2006 and 2011, SSK, Prishtinë 2007 and 2012.

Incomes per person - After '80-ties, degradation of Kosovo economical situation is expressed by reduction of incomes per person. From 2000 the, incomes per person started to be increased, as a reason of assistance and different donations, rather than economic development of the country.

Table 5: Incomes per capita in Kosovo 1985-2009[7]

	1985	1990	1995	2000	2001	2004	2006	2008	2009
Incomes per capita / €	1125	689	340	730	823	1457	1487	1784	1710

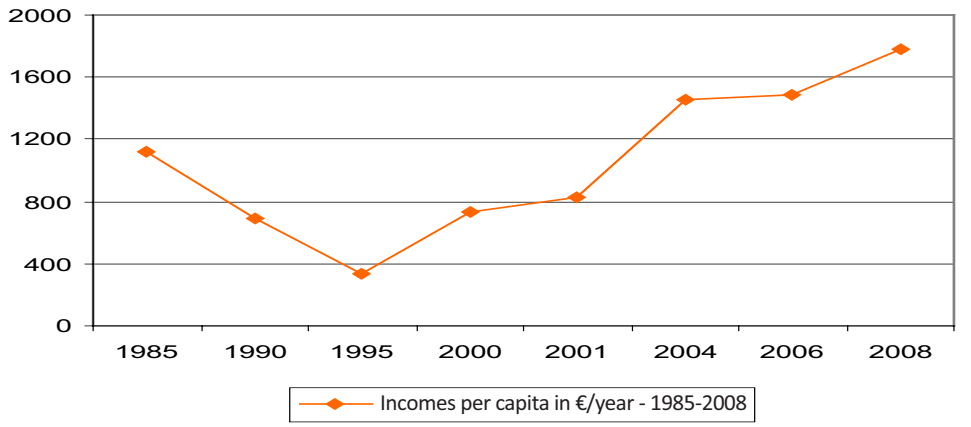


Figure 5: Incomes per capita in Kosovo 1985-2008

Kosovo has the lowest rate of the incomes per person in Balkan and Europe. Also it is among the countries with lowest incomes in world wide.

Poverty - In 2011, revenues in Kosovo (adult inhabitant/day) have been EUR 1.72 for the category of poverty and 1:20 Euro category of extreme poverty .

According to data from the Kosovo Agency of Statistics, 29.7% of Kosovo population lived in poverty in 2011, of which 31.5% in rural areas and 26.7% in urban areas. Whereas in extreme poverty have lived 10.2%, of which 10.7% in rural areas and 9.4% in urban areas[8].

If we analyze the trend of poverty, and extreme poverty for the period 2009-2011, we will see a significant reduction in poverty, and extreme poverty from 2009 to 2010. While in period 2010 to 2011, an increased extreme poverty category is recorded. Table 6.

Table 6: Poverty and extreme poverty according to settlements (%) 2009-2011 [9]

Spread of population per settlement	Spread of poverty			Spread of extreme poverty		
		2010	2011	2009	2010	2011
Urbane	33.1	26.7	26.7	13.2	7.8	9.4
Rurale	35.3	30.7	31.5	12.1	8.5	10.7
Totale	34.5	29.7	29.7	12.5	8.2	10.2

The poverty rate, viewed by gender report, shows that in 2011, 33.3% of women were living in poverty, compared with 29.2% of men. Whereas the distribution of poverty by household size, those with 5-8 members and those with over 10 members have the higher rate of poverty.

The low level of economic development of Kosovo and the high unemployment rate are considered main factors of the level of poverty in Kosovo.

7 Gross Domestic Product in Kosovo 2004-2008, KAS, Prishtinë, 2009

8 Consumption Poverty in the Republic of Kosovo in 2011, KAS 2012, pg 3

9 Consumption Poverty in the Republic of Kosovo in 2011, KAS 2012, pg 3

2. AIR

Air is a very important element for human health and the surrounding environment generally. It is constantly under the influence of pollution from many sources. Although air pollution comes mainly from human activities, it can also be affected by natural phenomena.

Air is considered as polluted when the air contains substances in quantities that could harm the health of people, animals and plants, or may cause material damage. Some pollutants can have global impacts – e.g. increasing greenhouse gas effects, or damage to the ozone layer. Any source of pollution is contributing to the territory where it appears, but air pollution is taking a global dimension.

As sources of air pollution in Kosovo are considered Energy, Industry and transportation.
This chapter presents data on emissions and air quality collected by reports of economic operators, and continuous automatic monitoring systems. For air quality, there are available data provided by operators who make their own monitoring within their industrial areas. Yet, involvement of economic operators is not satisfactory, because except KEC, Sharrcem and Ferronikel, other operators do not report their emissions from production processes.
The data reported, data evaluation and assessment are based on the laws and administrative instructions for air, as well as on EU directives, and on the reporting methodology of the European Environment Agency.
The data refer mainly to 2012, while the emissions trend includes data for several years.

2.1. Monitoring and assessment of air emissions

Assessment of emission from power plants PPA and PPB

Dust
To show dust emissions at PPA and PP B data calculated by environmental officials of KEC are presented through Fig.7., where are clearly shown exceedances in both plants, compared to the maximum allowed values (MAV).

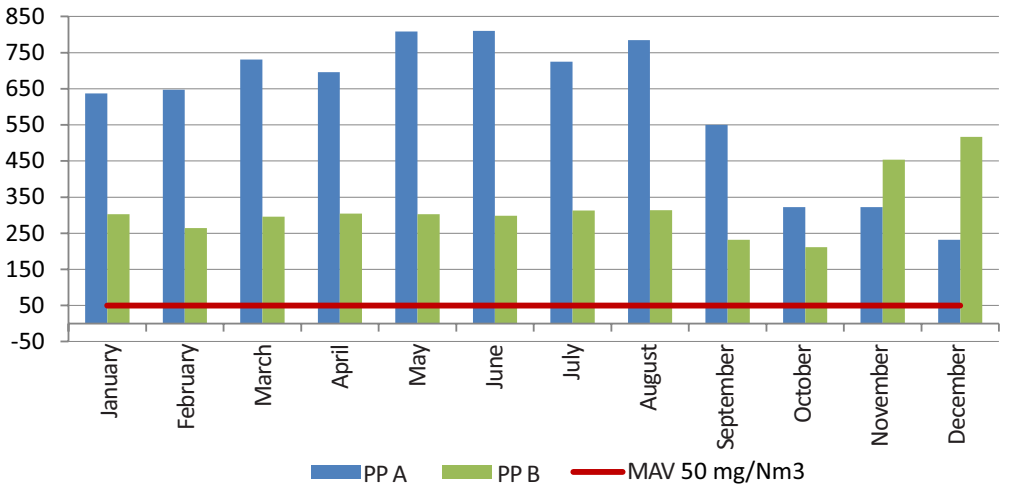


Fig.7. Dust emissions calculated in mg/Nm^3 for PPA and PPB during 2012

During the period 2007-2012 , in PPA and PP B, from the data for dust emissions presented in fig. 8 and fig. 9 it is shown that there is an improvement in 2012 compared to previous years, although the exceedances of maximum allowed values (MAV) are still very high in all years.

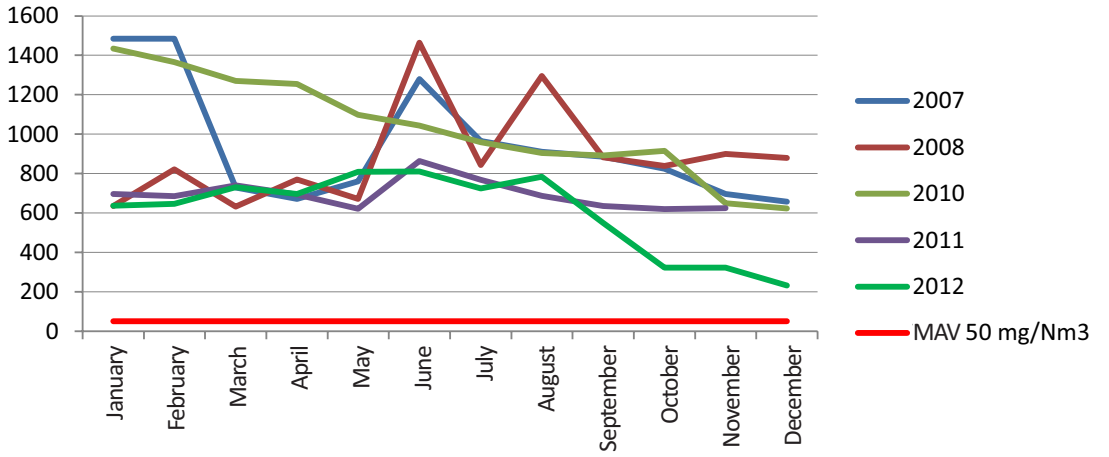


Fig.8. Calculated dust emission in mg/Nm^3 for PPA during 2007-2012

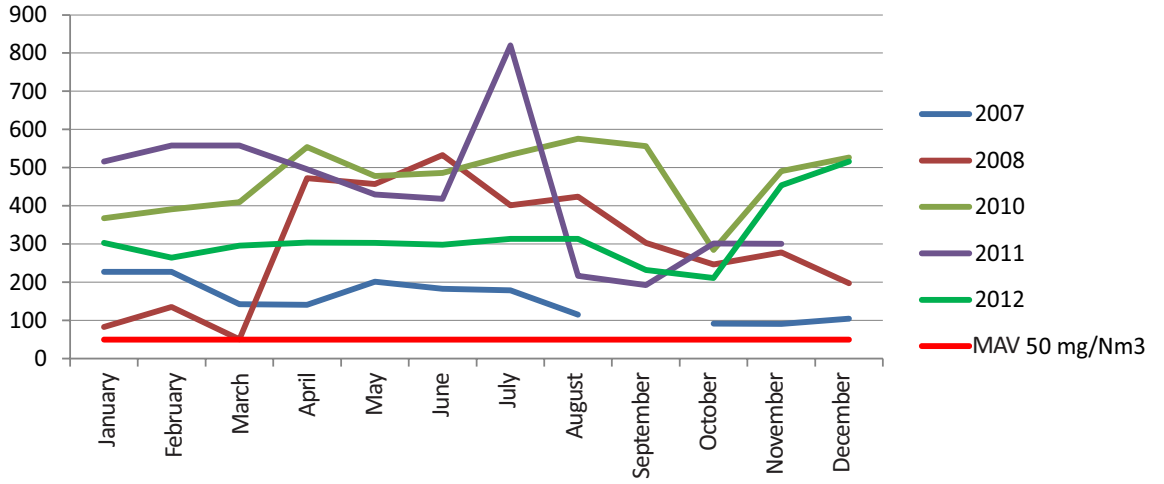


Fig.9. Calculated dust emission in mg/Nm^3 for PPB during 2007-2012

Sulphur dioxide (SO_2)

To show the state of SO_2 in PPA and PPB in 2012 data presented in Fig.10 are calculated, which show for exceedances of the maximum allowed values (MAV) in both PPA and PPB.

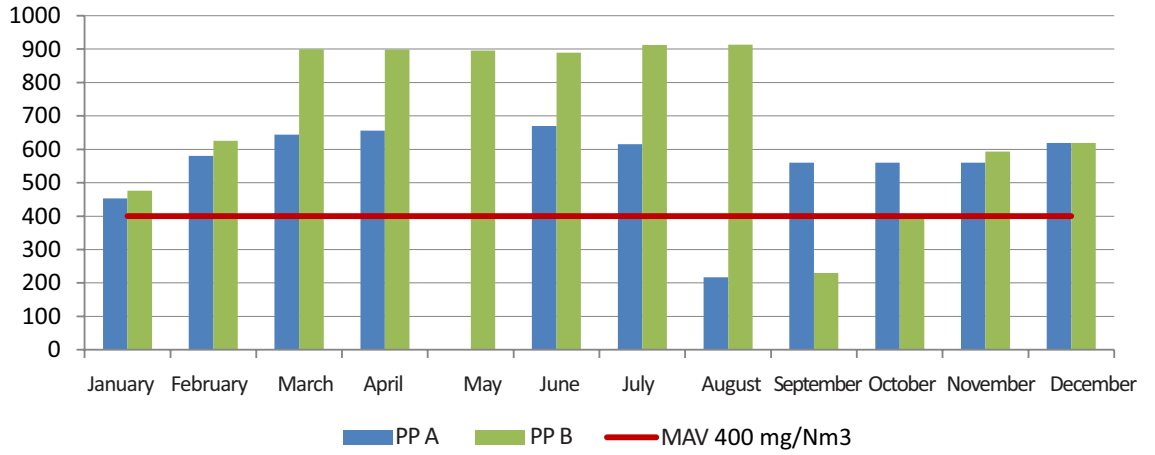


Fig.10. Calculated emissions of SO_2 in mg/Nm^3 for PPA and PPB during 2012

The trend for SO_2 emissions during the period 2007-2012 in PPA and PPB is presented in Fig. 11 and Fig. 12, which show that except in 2007, in all other years there were recorded exceedances of maximum allowed values (MAV).

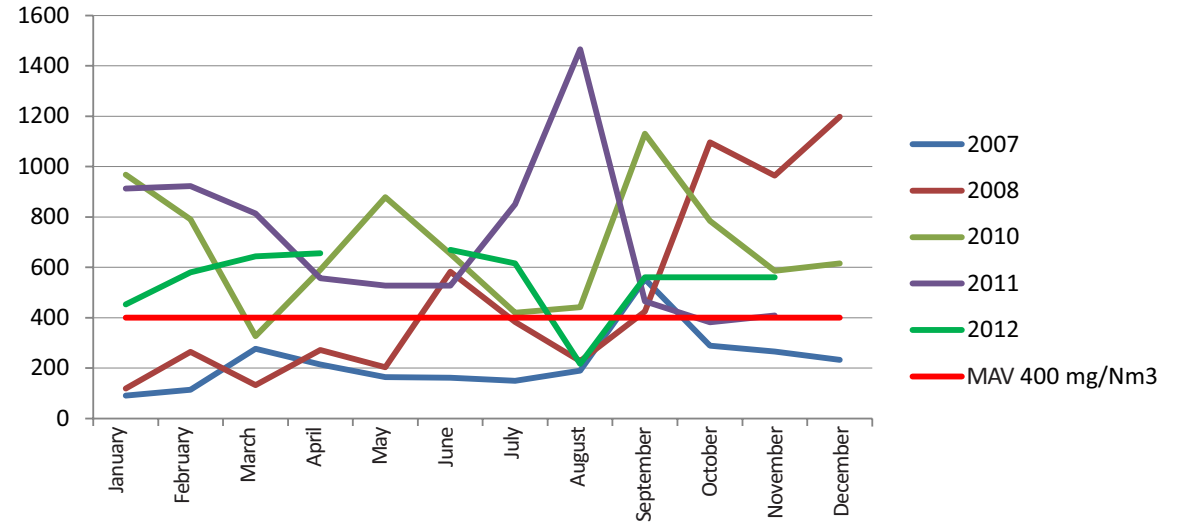


Fig.11. Calculated emissions of SO_2 in mg/Nm^3 for PPA for the period 2007-2012

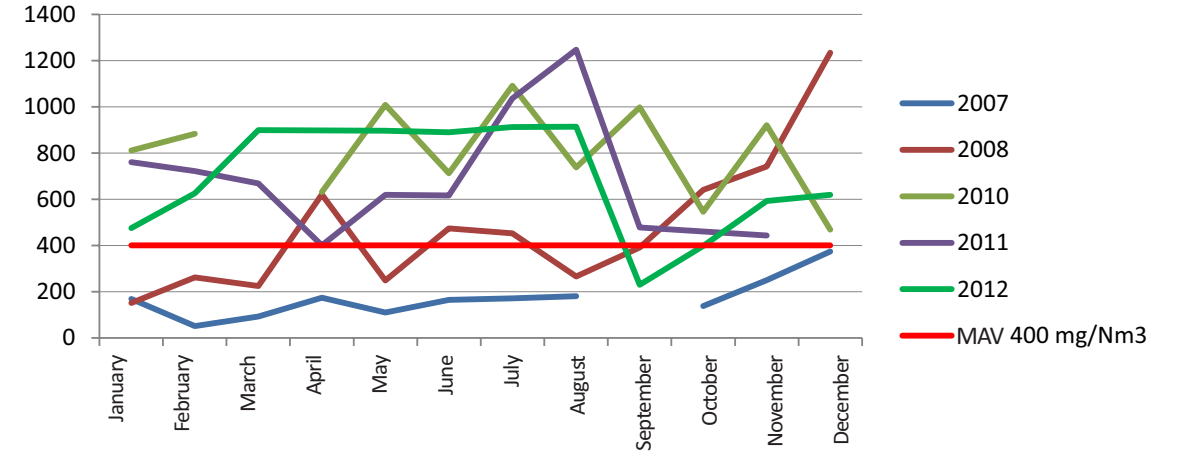


Fig.12. Calculated emissions of SO_2 in mg/Nm^3 for PPB for the period 2007-2012

Nitrogen oxides (NOx)

NOx emissions of PPA and PPB in 2012 are shown in Fig.13, which show exceedances of the maximum allowed values (MAV) in both power plants.

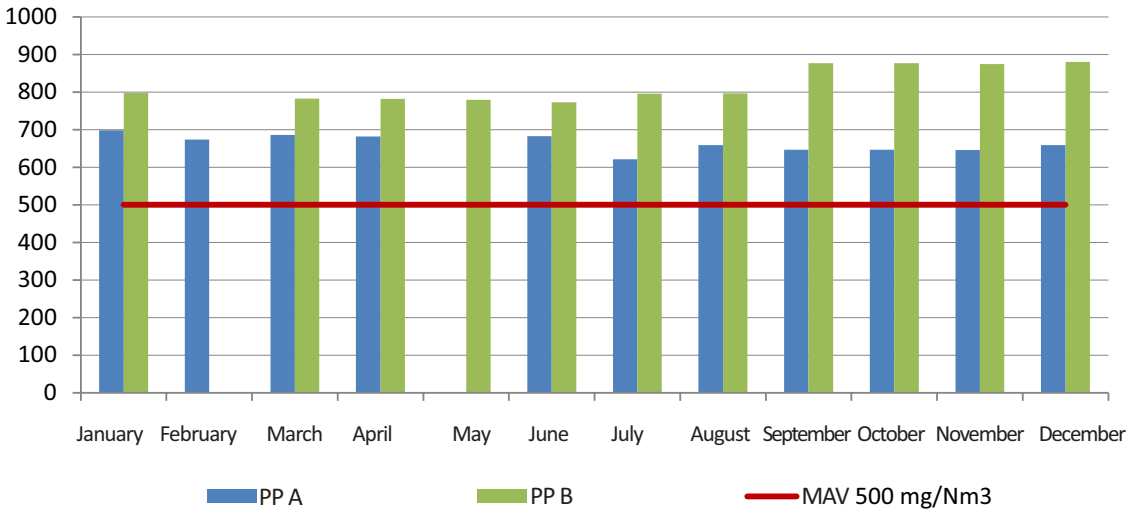


Fig.13. Calculated emissions of NOx in mg/Nm^3 of PPA and PPB during 2012

Trend of NOx emissions for years 2007-2012 in PPA and PPB is presented in fig. 14 and fig. 15 which show for exceedances of maximum allowed (MAV) in all years.

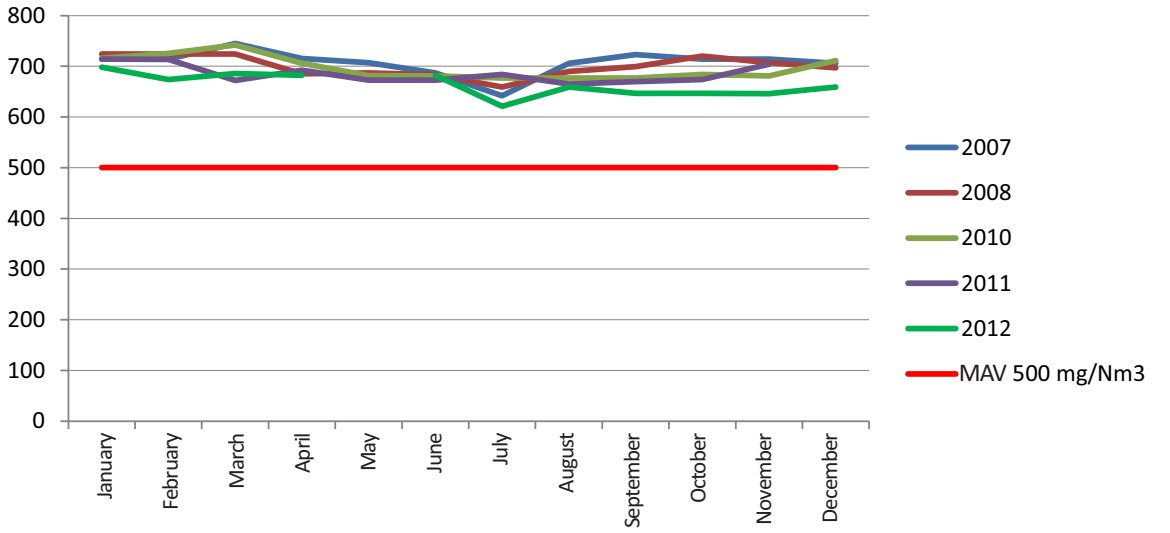


Fig.14. Calculated emissions of NOx in mg/Nm^3 for PPA during 2007- 2012

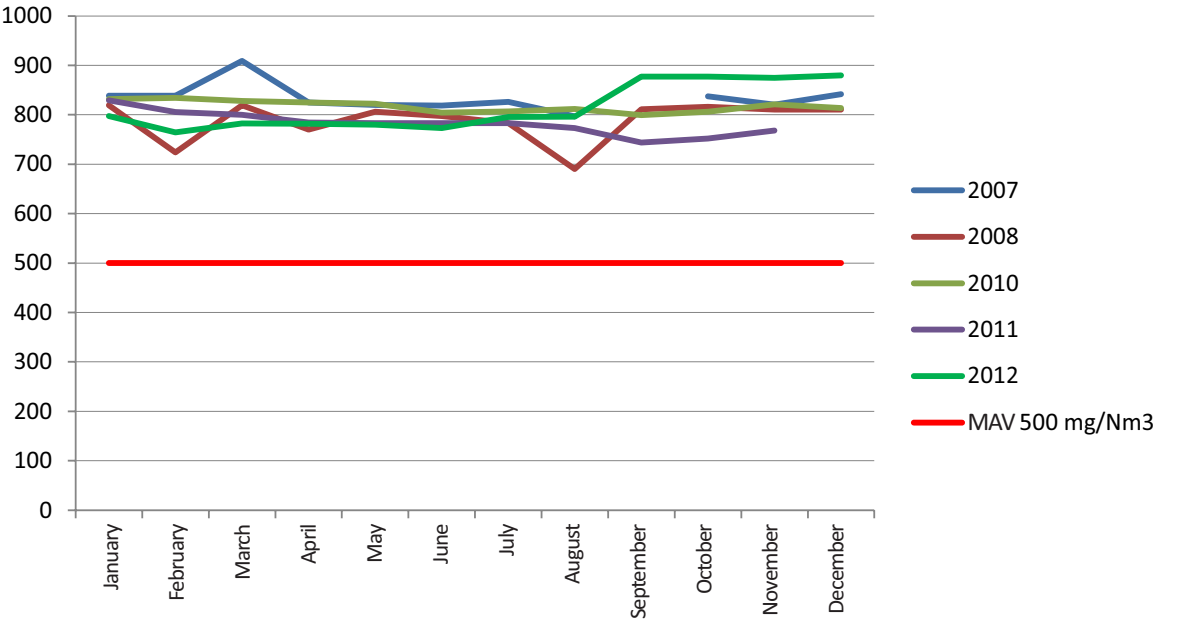


Fig.15. Calculated emissions of NOx in mg/Nm^3 for PPB during 2007- 2012

Carbon dioxide (CO_2)

CO_2 emissions in 2012 at PPA accounted 2,762,053 t /, whereas in PPB 3,314,555.

In Table 7 is presented the trend of CO_2 emissions during 2007-2012 at PPA and PPB.

Tab.7. CO_2 t/year at PPA and PPB for the period 2007- 2012

	2007	2008	2009	2010	2011	2012
PPA	2,087,938	2,008,196	2,364,253	2,848,117	2,893,087	2,762,053
PPB	3,636,361	4,338,011	4,689,615	4,249,301	3,463,901	3,314,555
PPA+PPB	5,724,299	6,346,207	7,053,868	7,097,418	6,356,988	6,076,608

It should be noted that in Kosovo A, (PPA5 and PPA3) are placed new electro filters, and in the near future it is expected the installation of electro filters in PPA 4.

By the results of dust emissions of PPA5 can be concluded that instalment of new electro filters has significantly reduced the emissions, and resulting with emission rates within the Maximal Allowed values [10].

Assessment of emissions in "Sharrcem"

Dust

Dust emissions of three months of 2012 are presented in Fig.16 [11]. Lack of data in this year is explained with renovation activities undertaken from Sharrcem, which includes investments on environmental improvements, that refers to replacing the existing filters.
The fig.16 shows that during the months June to July of 2012, dust emissions were below the maximum allowed values.

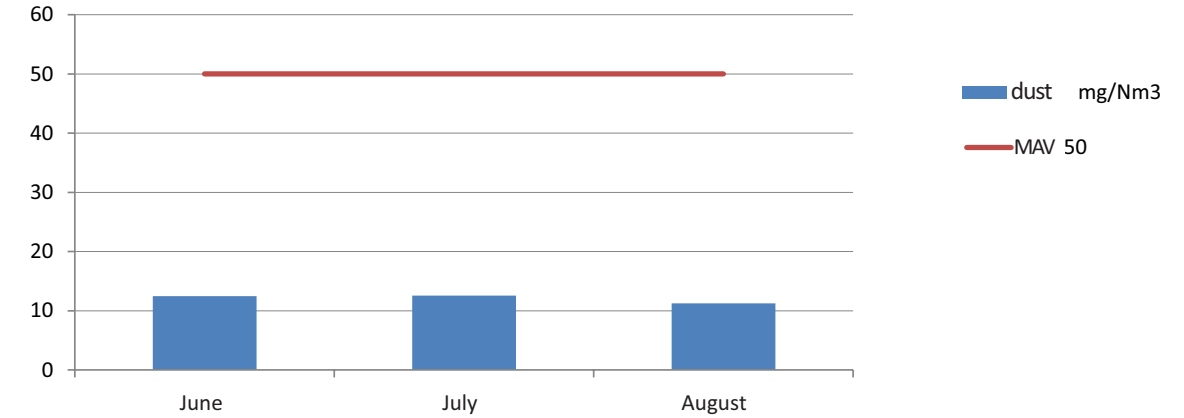


Fig.16. Measured dust emission in mg/Nm^3 during months June, July and August of 2012 in Sharrcem.

Sulphur dioxide (SO_2)

In the figure 17, is showed that during June and July of 2012, SO_2 emissions were very low compared to maximum allowed values.

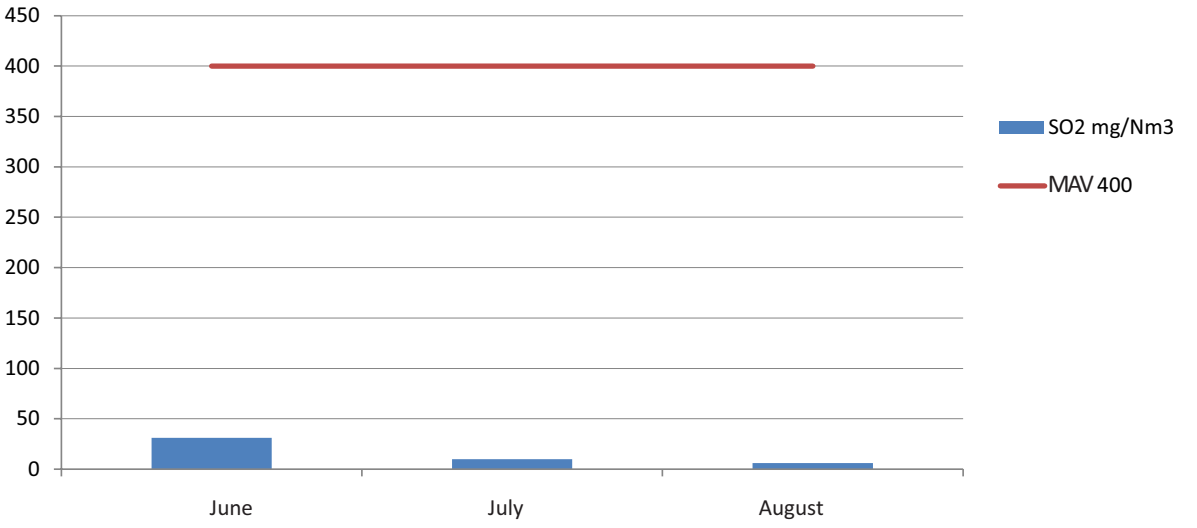


Fig.17. Average values of SO_2 in mg/Nm^3, during June, July, August of 2012 in Sharrcem.

10 Report on the state of environment in KEC - 2012

11 Monthly reports, SHARRCEM, 2012

Nitrogen oxides (NOx)

Fig.18 indicates that during the months of June to July 2012, NOx emissions are below the maximum allowed value.

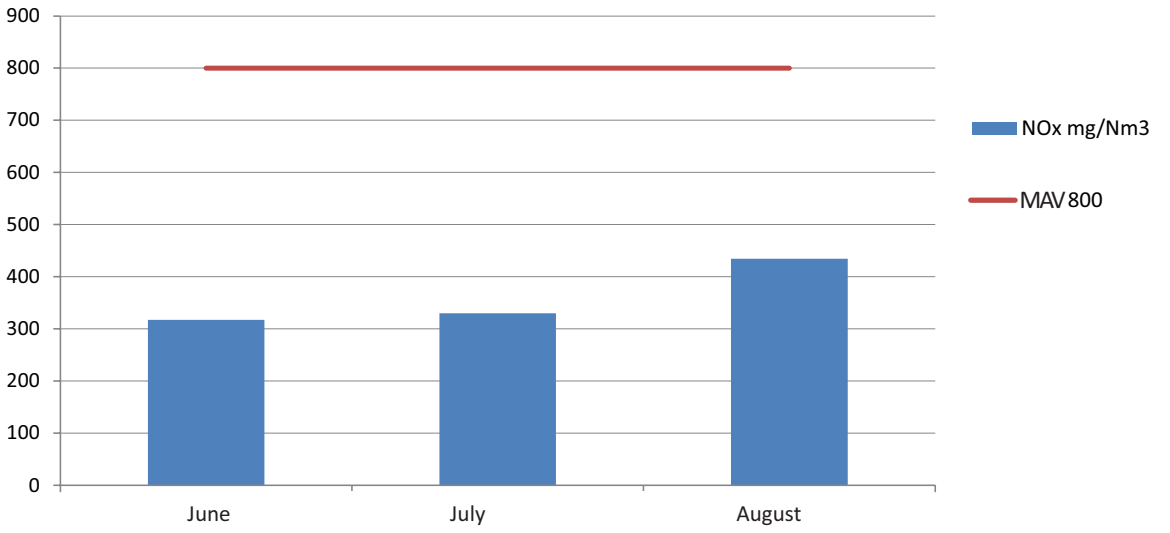


Fig.18. Average values of NOx in mg/Nm^3 during June, July, August of 2012 in Sharrcem.

Assessment of emission in Ferronikel

For determination of air emissions Ferronikeli conducts measurements in several sites: rotary kiln, electric furnaces at two measuring points, convector, dryer, and heating facilities [12].
Below are presented data from monitoring of emissions of Dust, SO_2 and NOx in the rotary kiln. The following results are given in mg/m^3 unit, and not in mg/Nm^3. This did not allow for comparison of results with the maximum allowed values.

Measured emission in the rotary kiln in 2012

Table.8. Measured dust emission in 2012

Months	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Dust emission mg/m^3 in 2012		117.4	55.38	44.62	91.22	50.49	64.36	76.9	70.13	86.95	83.2	103.53
MAV	50 mg/Nm^3											

Table.9. Measured emissions of SO_2 in 2012

Months	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
SO_2 emissions mg/m^3 in 2012		1.54	504	1.47	2.03	770	800.8	948.8	848	746	708	807.4
MAV	800 mg/Nm^3											

Table.10. Measured emissions of NOx in 2012

Months	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
NOx emissions mg/m^3 in 2012		181	125	269	158	415	95	345	198	190	326	320
MAV	400 mg/Nm^3											

12 Monthly reports from NewCoFerronikeli, 2012

2.2. Air quality monitoring and assessment

Monitoring of air quality in Kosovo is conducted by the HMIK and by several economical operators such as Ferronikeli and KEC.

2.2.1 Air quality monitoring network in Kosovo

Based on the Lawson Environment, Nr.03/L-025, Law on air protection from pollution, Nr.03/L-160, and law on Hydro-meteorological activities, Nr.02/L-79, the KHMI is obliged to conduct the air quality monitoring in entire Kosovo territory.

The Sector of air quality monitoring in Kosovo possesses:

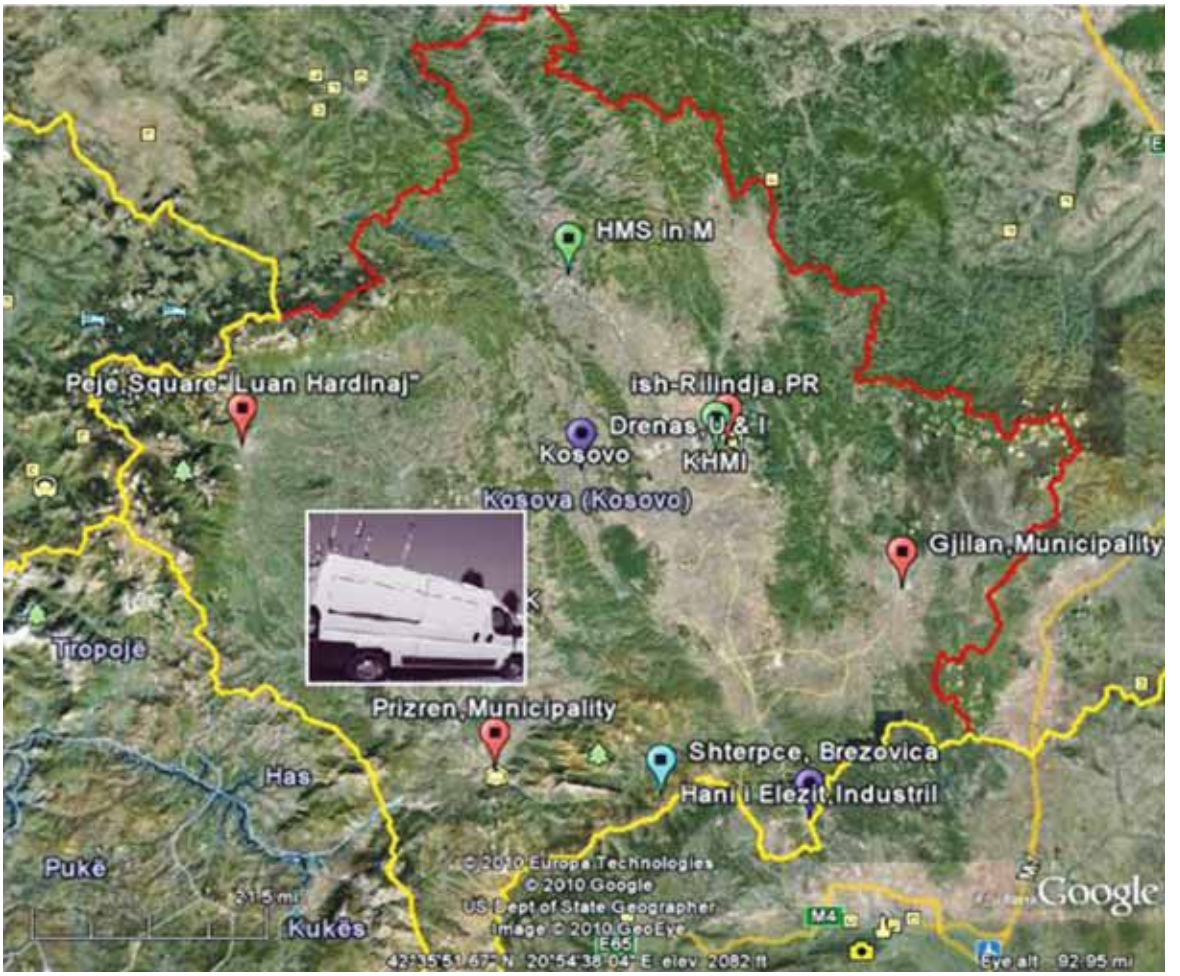
- Automatic air quality monitoring stations
- Laboratory of air chemical analysis for determining organic and inorganic pollutants in the air;
- Laboratory for preparation of air samples for laboratory analysis;
- Laboratory for calibration of air analyzers.

By the end of 2009, the first automatic air quality monitoring station has begun to operate in Pristina, located at the HMIK yard.

The number of stations is assigned on the basis of preliminary study to determine the monitoring points based on the criteria of Directive 2008/50/EC, and the AI on criteria for determination of monitoring points, the number and frequency of measurements, methodology, form and timing of data reporting, Nr.15/2010.

Based on the above mentioned study, it is decided that the Kosovo air quality monitoring network will have 9 automatic monitoring stations, and one mobile monitoring station. The zoning was made as well. Kosovo will have one agglomeration (Pristina), and the rest of the country will form one zone.

During 2011-2012, the air quality monitoring network in Kosovo is equipped with five fixed air quality monitoring stations, which were donated by the EC Liaison Office (MESP-IPA Project). The stations are equipped with automatic analyzers of sulphur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), ozone (O_3), analyzer of suspended particulate matters PM_{10}/$PM_{2.5}$ (with fractioning for PM_{10} and $PM_{2.5}$), sampler of PM_{10} and $PM_{2.5}$ particles, and sensors for measuring meteorological parameters such as temperature, relative humidity, air pressure, as well as wind direction and speed. These stations are located in Gjilan, Hani i Elezit, Sterpce - Brezovicë , Prizren and Peje.
In general, the monitoring network in Kosovo will have nine fixed automatic air quality monitoring stations, which are distributed in 8 municipalities (Tab.11) and one (1) mobile station.



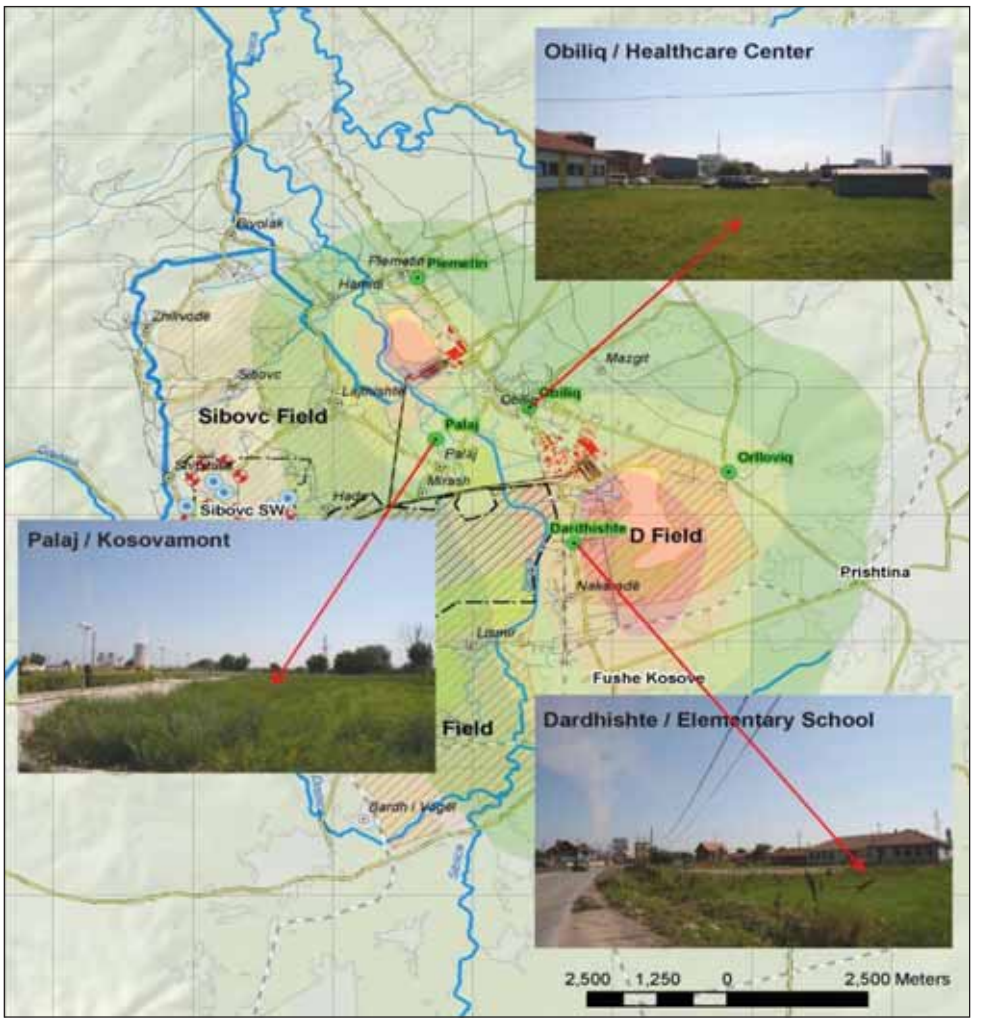
Map1. Air quality monitoring network in Kosovo

Tab.11. Air quality monitoring stations in Kosovo (Stations of KEC area are excluded)

Code of the station	Name of station stacionit	Managed by	Type of station	Measured parameters
Code of the station	Name of station stacionit	Managed by	Type of station	SO_2, NO_2, CO,O_3, PM_{10}/$PM_{2.5}$
KS0102*	Prishtine-Oborri ish-Rilindja	IHMK	Trafik urban	NO_2, PM_{10}/$PM_{2.5}$
KS0103*	Drenas-Oborri i Komunës	IHMK	Sfondi Urban	SO_2, PM_{10}/$PM_{2.5}$
KS0204*	Mitrovicë-Stacioni i Meteorologjisë	IHMK	Sfondi Urban	CO,O_3, PM_{10}/$PM_{2.5}$
KS0305	Pejë- Shkolla fillore "Lidhja e Prizrenit"	IHMK	Sfondi Urban	SO_2, NO_2, CO,O_3, PM_{10}/$PM_{2.5}$
KS0406	Prizren- Oborri i Komunës	IHMK	Sfondi Urban	SO_2, NO_2, CO,O_3, PM_{10}/$PM_{2.5}$
KS0507*	Brezovica-Zona e skijimit	IHMK	Sfodni Rural	SO_2, NO_2, CO,O_3, PM_{10}/$PM_{2.5}$
KS0508	Hani i Elezit- Shkolla fillore "Ilaz Thaqi"	IHMK	Trafik suburban/ sfodni industrial	SO_2, NO_2, CO,O_3, PM_{10}/$PM_{2.5}$
KS0609	Gjilan-Oborri i Komunës	IHMK	Trafik urban	SO_2, NO_2, CO,O_3, PM_{10}/$PM_{2.5}$
*Stations not operating during 2012				

2.2.2. Expansion of air quality monitoring network

By the end of 2012, given the World Bank support, MED has funded the purchase of three air quality monitoring stations in KEC area (see Tab. 12). By the end of December 2012, an agreement was reached between MED and MESP to pass these stations at the ownership of MESP/KEPA. These stations are incorporated into air quality monitoring the network of in Kosovo and represent the monitoring industrial area.



Map.2. Locations of monitoring stations in KEC area

Tab.12. Air quality monitoring stations in KEC area (industrial zone))

Code of the station	Name of station	Managed by	Type of station	Measured parameters
KS0110	Obiliq- Family health center	HMIK	Industrial	SO_2, NO_2, CO,O_3, PM_{10}/ $PM_{2.5}$
KS0111	Dardhishtë-Primary school	HMIK	Industrial	SO_2, NO_2, CO,O_3, PM_{10}/ $PM_{2.5}$
KS0112	Palaj-Kosova Mont	HMIK	Industrial	SO_2, NO_2, CO,O_3, PM_{10}/ $PM_{2.5}$

By the end of 2012 an agreement was made between the NIPH and MESP /KEPA to transfer the two air quality monitoring stations under the management of KEPA/HMIK, which are now part of the national air quality monitoring network of Kosovo.

Given the support of other institutions and agreements made with MESP, the current air quality

monitoring network of Kosovo possesses a total of 12 fixed monitoring stations, and one (1) mobile station managed by MESP / KEPA / HMIK (without accounting two stations from NIPH, which are not yet operational).

Frequency of measurements - frequency of measurements is regulated by AI Nr.15/2010 for "Criteria for Determining Air Quality Monitoring points, number and frequency of measurement, classification of monitored pollutants, methodology, form and time of Data Reporting ".

Allowed norms of air quality-air quality norms in Kosovo are regulated by the administrative instruction on limit values -air quality norms, Nr.02/2011.

2.2.3. AIR QUALITY ASSESSMENT

Air quality assessment is based on the data collected from continuous monitoring of air quality in Kosovo (Gjilan, Hani i Elezit, Prizren, Peja and Drenas) in 2012 [13].
The data collected are reviewed and referred to limit values for different periods of exposure, target values, limit values of upper threshold and lower threshold for evaluation of human health protection and ecosystem, as defined by the Directive 2008 / 50 EC , and administrative Instruction-limit values of air quality norms Nr.02/2011.

Air quality monitoring results

Data presented in this report are derived from measurements conducted by automatic system of continuous monitoring in four fixed monitoring stations, and one mobile monitoring station. The monitored parameters are: sulphur dioxide (SO_2), nitrogen dioxide (NO_2), Ozone (O_3), carbon monoxide (CO) and suspended particles PM_{10} and $PM_{2.5}$. In each of these stations the meteorological parameters are measured as well such as: wind speed, wind direction, temperature, relative pressure and humidity of the air.
Data from air quality monitoring in 2012 for all monitoring stations are presented in the following figures.

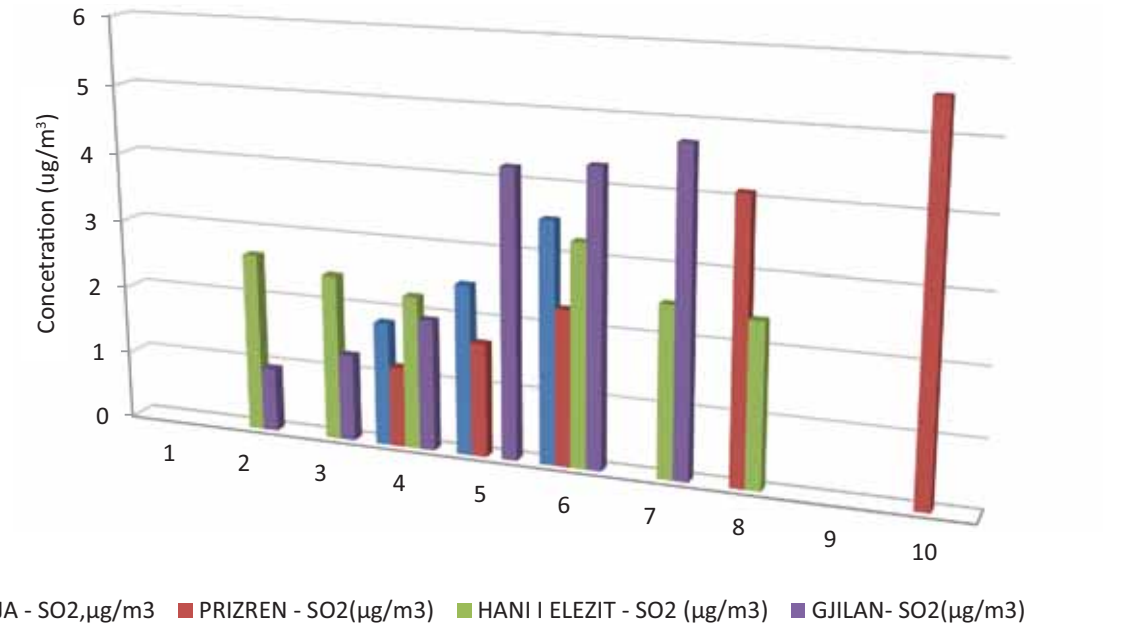


Fig.19.Monthly average values of SO_2 (ug/m^3) in 2012

13 Annual report of air quality monitoring -2012, HMIK

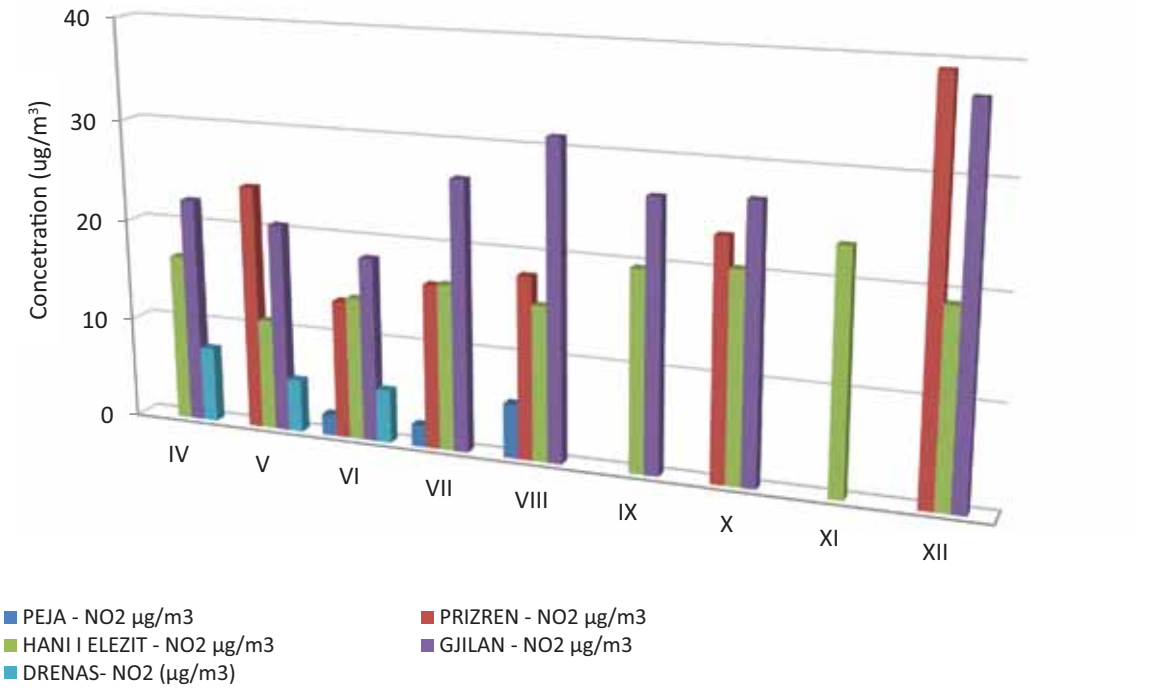


Fig.20. Monthly average values of NO_2 (ug/m^3) in 2012

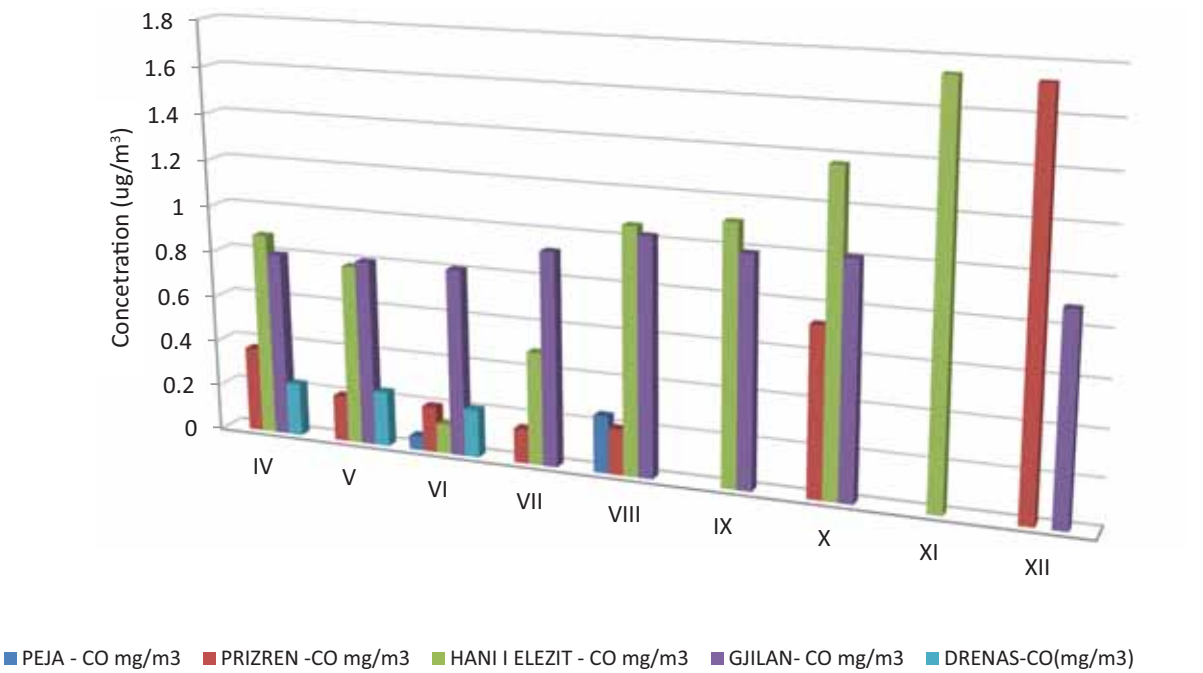


Fig.21. Monthly average values of CO (mg/m^3) in 2012

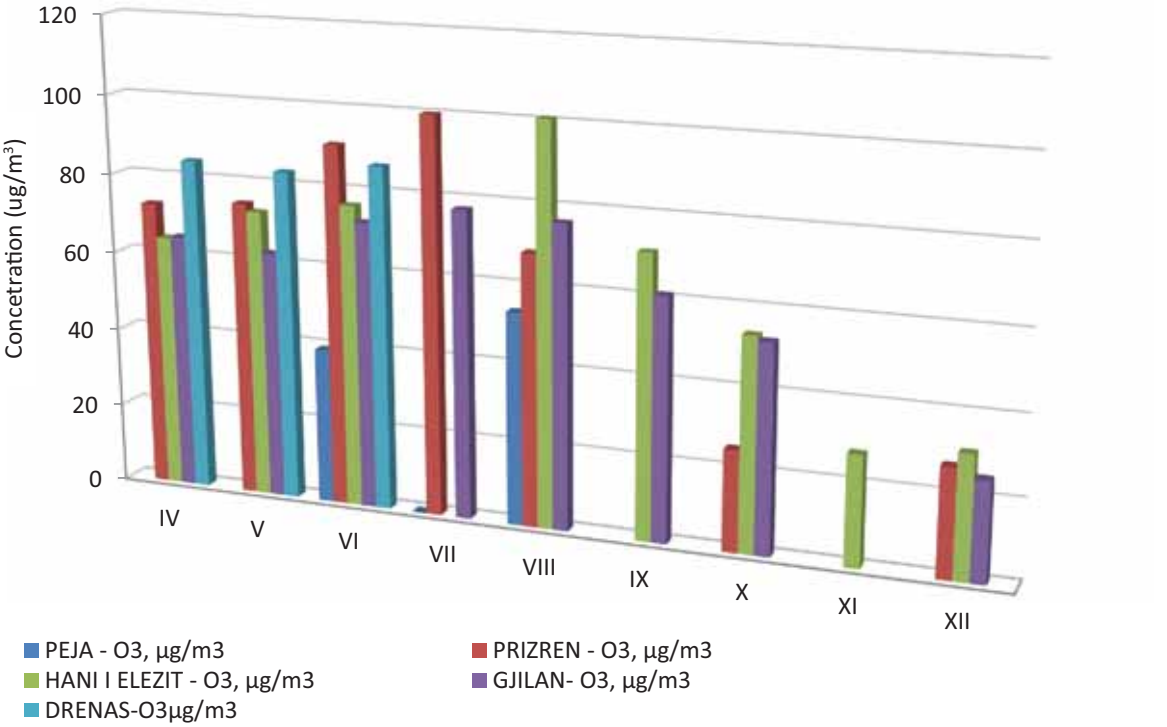


Fig.22. Monthly average values of O_3 (ug/m^3) in 2012

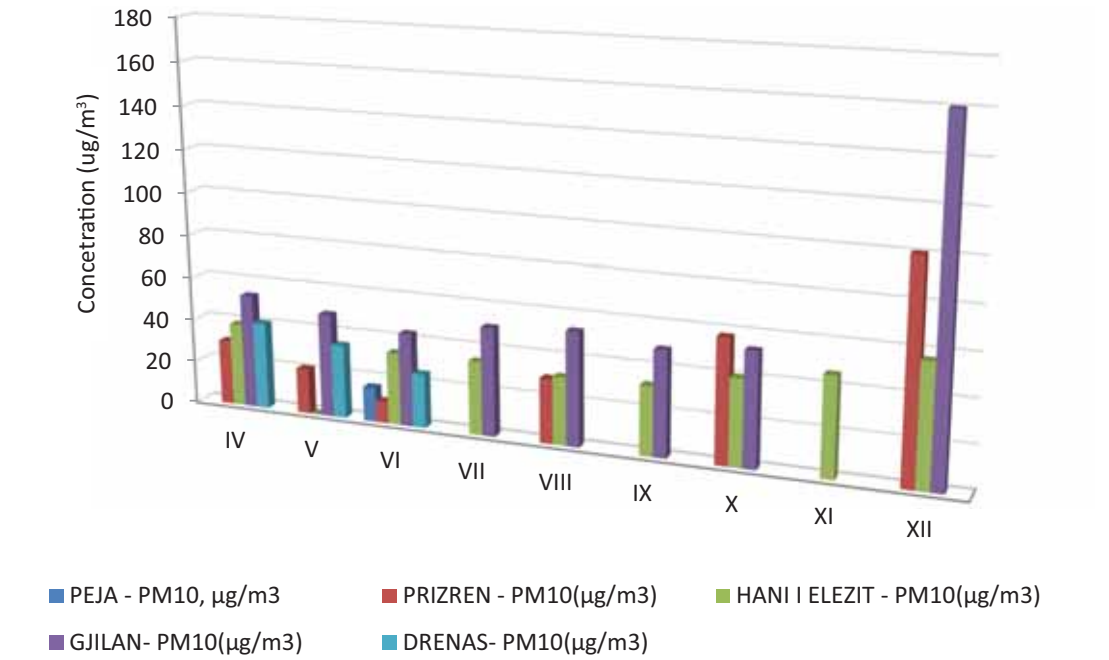


Fig.23. Monthly average values of PM_{10} (ug/m^3) in 2012

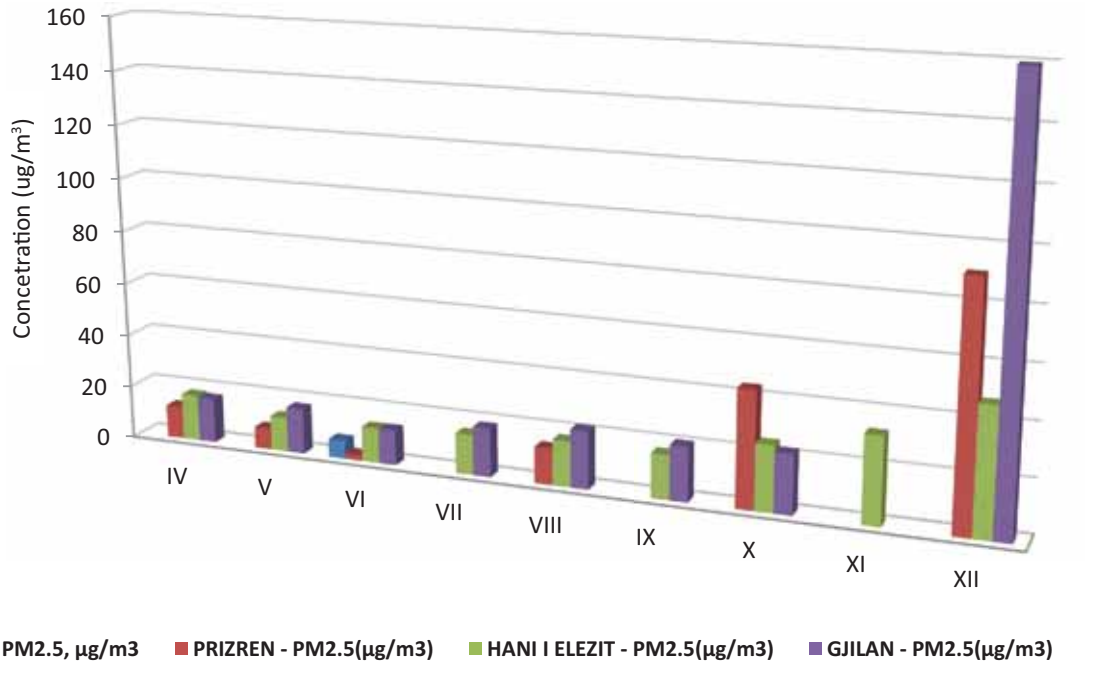


Fig.24. Monthly average values of $PM_{2.5}$ (ug/m^3) in 2012

Analysis of data (results) of air quality monitoring

Data analysis (results) for the air quality assessment in Kosovo is made by taking as a point of comparison the EU standards deriving from the Directive 2008/50/EC on ambient air quality, and Administrative Instruction on limit values and air quality standards, Nr.02/2011.

Sulphur dioxide (SO_2)

The table below shows for an assessment of air pollution with SO_2, making a comparison of actual SO_2 concentration with limit values, see Tab.13.

Tab.13.Assessment of SO_2 concentration in ambient air quality, according to the requirements of the Directive 2008/50 and UA Nr.02/2011

Objective	1 hour	24-hours
Limit values of human health protection	No exceedances	No exceedances
Alert threshold	No exceedances	-
Upper assessment threshold	-	No exceedances
Lower assessment	-	No exceedances

Nitrogen dioxide (NO_2)

Evaluation of NO_2 air pollution is made by comparing the actual NO_2 results with the limit values, which are given in the table below.

Tab.14.Assessment of NO_2 concentration in ambient air quality, according to the requirements of the Directive 2008/50 and UA Nr.02/2011

Target	1 hour	24-hours
Limit values of human health protection	No exceedances	No exceedances
Alert threshold	No exceedances	-
Upper assessment threshold	Exceedances recorded in Hani i Elezit and Gjilan	No exceedances
Lower assessment threshold	Exceedances recorded in Hani i Elezit and Gjilan	No exceedances

The limit values of 1 hr and annual averages of human health protection were not exceeded at any station Average limit value of 1 hour and annual average, for the protection of human health, not exceeding in any monitoring station.

The limit value of 1 hr average of upper assessment threshold for human health protection (140 ug/m^3), has been exceeded in:

- ✓ Hani Elezit ----- 1 case
- ✓ Gjilan ----------2 cases

The limit value of 1 hr average of lower assessment threshold for human health protection (100 ug/m^3), has been exceeded in:

- ✓ Hanin e Elezit ---------3 cases
- ✓ Gjilan ----------6 cases

The maximal number of annual allowed exceedances (18 cases) was not exceeded.

Carbon monoxide (CO)

Evaluation of CO air pollution is made by comparing the actual CO results with the limit values, which are given in the table below.

Tab.15.Assessment of CO concentration in ambient air quality, according to the requirements of the Directive 2008/50 and UA Nr.02/2011

Target	8-hours
Limit values of human health protection	No exceedances
Upper assessment threshold	No exceedances
Lower assessment threshold	No exceedances

Ozone (O_3)

A comparison of ozone monitoring results with the limit values is given in the table below, Tab.16

Tab.16.Assessment of O_3 concentration in ambient air quality, according to the requirements of the Directive 2008/50 and UA Nr.02/2011

Target	1 hour	8-hours
Information threshold of human health protection	Exceedances recorded in Hani i Elezit	-
Alert threshold	No exceedances	-
Long term objective of human health protection	-	Exceedances recorded in Hani i Elezit and Peje
Target values of human health protection	-	Exceedances recorded in Hani i Elezit and Peje

The limit value of information threshold of human health protection (180ug/m^3), is exceeded in one (1) case within a year, in the Hani i Elezit station, which reached the values 189,62 ug/m^3 , whereas no exceedances were recorded in other stations.
The limit values of long term objective of human health protection (120ug/m^3), is exceeded in the following stations:

- ✓ Pejë ----------4 days
- ✓ Hani i Elezit---------25 days

The long term objective of human health protection is allowed to be exceeded maximum 25 days within a year.
The target value of human health protection (120ug/m^3) is exceeded in the following stations:

- ✓ Pejë ----------4 days
- ✓ Hani i Elezit---------25 days

Particulate matter – PM_{10}

Assessment of air pollution with particulate matter PM_{10} is done by comparing the monitoring results of PM_{10} concentration, with limit values, as shown in the following table.

Tab.17.Assessment of PM_{10} concentration in ambient air quality, according to the requirements of the Directive 2008/50 and UA Nr.02/2011

Target	24 hours	Year
Limit values of human health protection	Exceedances recorded in Prizren, Hani i Elezit and Gjilan	Exceedances recorded in Gjilan and Prizren,
Upper assessment threshold	Exceedances recorded, Gjilan and Hani i Elezit	Exceedances recorded, Gjilan and Hani i Elezit
Lower assessment threshold	Exceedances recorded, Gjilan and Hani i Elezit	Exceedances recorded, Gjilan and Hani i Elezit

The value of annual average concentration at the Monitoring station in Gjilan reaches 50,2 ug/m^3 and exceeds the limit values of annual average (40ug/m^3). Also, it exceeds the limit values of upper assessment threshold (28ug/m^3), and lowers assessment threshold (20ug/m^3) of human health protection.

The annual average concentration at the monitoring station in Hani i Elezit was 35,54 and exceeds the upper assessment threshold (28ug/m^3), and lower assessment threshold (20ug/m^3) of human health protection, but it does not exceed the limit values of annual average (40ug/m^3).

Whereas the annual average concentration at the monitoring station in Prizren is 42,47ug/m^3, which means it exceeds the three limit values of human health protection: upper threshold (28ug/m^3), lower threshold (20ug/m^3), and annual average (40ug/m^3).

At the monitoring station in Pejë, the number of valid measurements was very low, which means, there were no sufficient data to conduct the assessment.

Exceedances of PM_{10} daily limit values

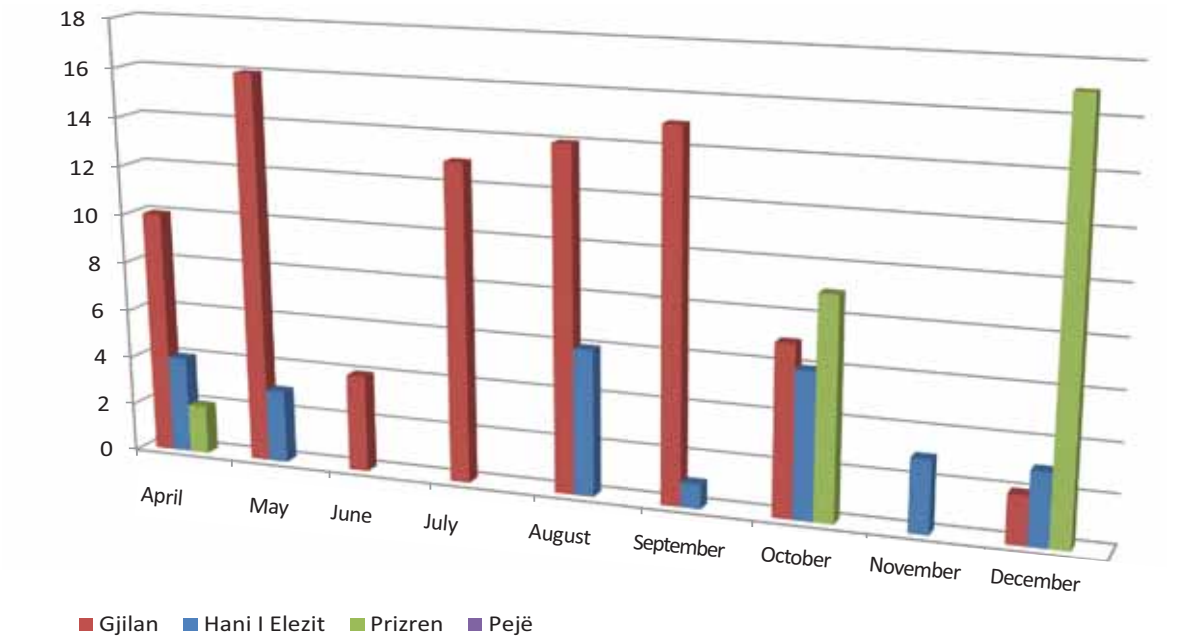


Fig.25. Number of days with daily limit value exceedances of PM_{10}(50ug/m^3)

The number of days with exceedances of PM_{10} limit value for each month is presented in Fig.25. This

includes all the monitoring stations where the daily limit value exceedances were recorded.
The air quality monitoring station in Gjilan recorded 81 days with exceedances of PM_{10} daily limit values (50ug/m^3) throughout the year, whereas exceedances are allowed in 35 days a year. This means the number of allowed days in a year is exceeded.
The daily limit value of upper assessment threshold of human health protection (35ug/m^3), is exceeded in 155 days (cases).
The daily limit value of lower assessment threshold of human health protection (25ug/m^3), is exceeded in 175 days (cases).

The air quality monitoring station in Hani i Elezit – throughout 2012 recorded 26 days with exceedances of PM_{10} daily limit values (50ug/m^3), which means there is no exceedance of annual allowed days. The daily limit value of upper assessment threshold of human health protection (35ug/m^3), is exceeded in 96 days (cases) during 2012.
The daily limit value of lower assessment threshold of human health protection (25ug/m^3), is exceeded in 147 days (cases) during 2013.

The air quality monitoring station in Prizren during 2013 recorded 28 days with exceedances of PM_{10} daily limit values (50ug/m^3) of human health protection, whereas exceedances are allowed in 35 days a year. This means the number of allowed days in a year is not exceeded.
The daily limit value of upper assessment threshold of human health protection (35ug/m^3), is exceeded in 50 days (cases).
The daily limit value of lower assessment threshold of human health protection (25ug/m^3), is exceeded in 70 days (cases).

Particulate - Matter $PM_{2.5}$

Assessment of air pollution with particulate matter $PM_{2.5}$ is done by comparing the monitoring results of $PM_{2.5}$ concentration with the limit values, which is described in the following table, Tab.18.

Tab.18.Assessment of $PM_{2.5}$ concentration in ambient air quality, according to the requirements of the Directive 2008/50 and UA Nr.02/2011

Target	Year
Limit values of human health protection	Exceedances recorded in Gjilan, Prizren, and Hani i Elezit
Upper assessment threshold	Exceedances recorded in Gjilan, Prizren, and Hani i Elezit
Lower assessment threshold	Exceedances recorded in Gjilan, Prizren, and Hani i Elezit

Air quality monitoring station in Gjilan – annual average concentration of $PM_{2.5}$ (25ug/m^3) at the monitoring station in Gjilan reaches 18,6ug/m^3, which means both the upper assessment threshold value (17ug/m^3), and the lower assessment threshold value (12ug/m^3), of human health protection were exceeded.

Air quality monitoring station in Hani i Elezit – annual average concentration of $PM_{2.5}$ (25ug/m^3) in this station reached 21.9ug/m^3, which means both the upper assessment threshold value (17ug/m^3), and the lower assessment threshold value (12ug/m^3), of human health protection were exceeded.

Air quality monitoring station in Prizren – Also, in this air quality monitoring station both the upper assessment threshold value (17ug/m^3), and the lower assessment threshold value (12ug/m^3), of human health protection were exceeded. The annual average concentration of $PM_{2.5}$ in this is 28.4 ug/m^3.

2.2.4 AIR QUALITY IN INDUSTRIAL AREAS

In industrial areas the air quality is monitored by operators (with a potential for pollution) them self. Such operators are: Ferronikel and KEC

Air quality data from Ferronikeli [14]
For assessment of air quality in Feronikel throughout 2012, data on PM_{10} and SO_2 monitoring results from the two monitoring sites are analysed. There are the Airpointer 1 and Airpointer 2 installed in the Feronikeli area.

Particulate matters PM_{10}

In the figure 26, is shown that the maximal value of PM_{10} monthly average in the airpointer 1 reached 121,78 ug/m^3 in November, whereas in airpointer 164,99 ug/m^3 in May.

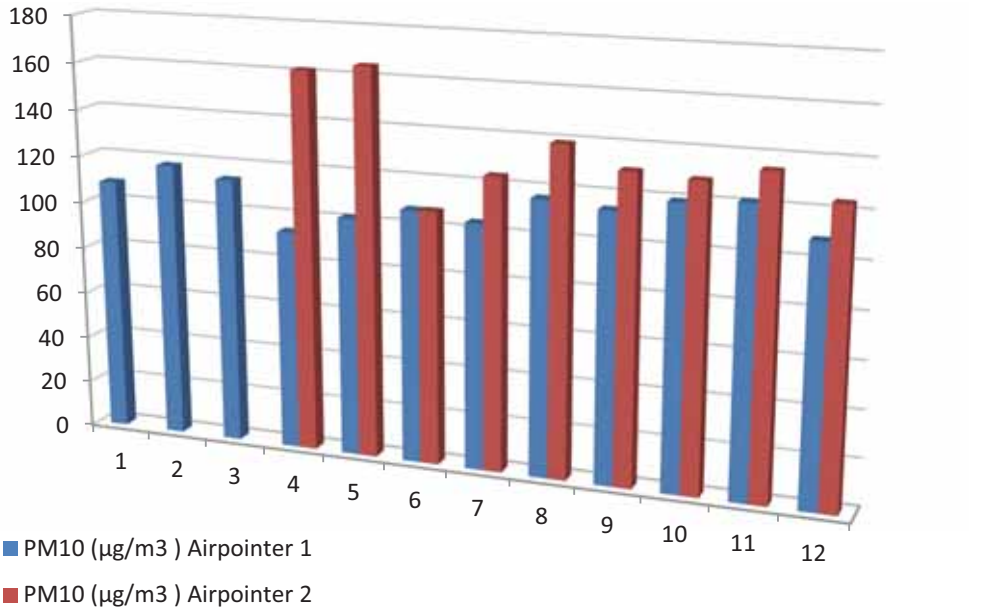


Fig. 26. Monthly average values of PM_{10} in measuring points: Airpointer 1 dhe Airpointer 2

Sulphur dioxide (SO_2)

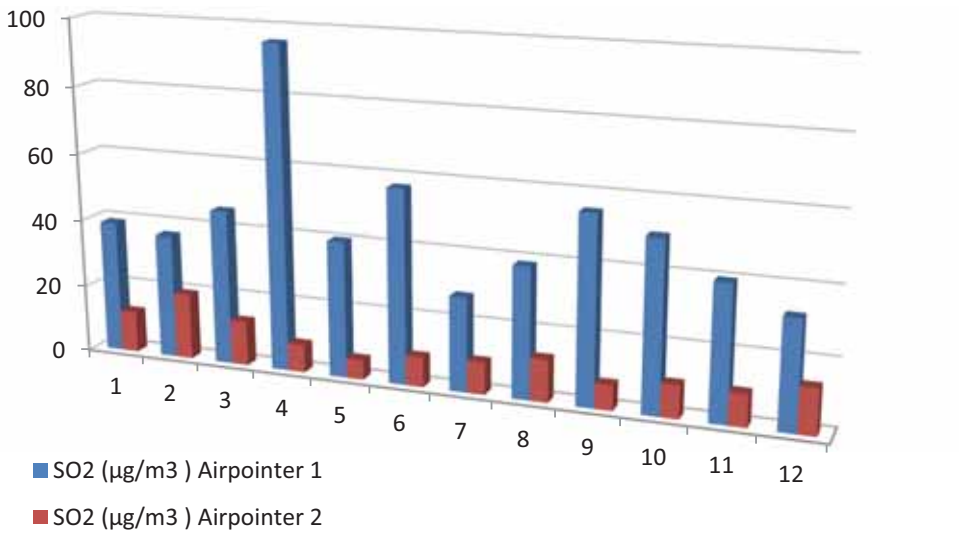


Fig.27. Monthly average values of SO_2 in measuring points: Airpointer 1 dhe Airpointer 2

14 Monthly reports from Feronikeli, 2012

In the figure 27 is shown that the maximal value of SO_2 monthly average in airpointer 1 reached 95,67 ug/m^3, and in airpointer 2 reached 19,59 ug/m^3.

Air quality data from KEC [15]

In the KEC industrial area, air quality monitoring includes the following parameters: SO_2, smoke black, particulate matters, and aero-sediment.

The graph below presents the results of SO_2 measurements in INKOS – PPA, and Kastriot – PPB for 2012.

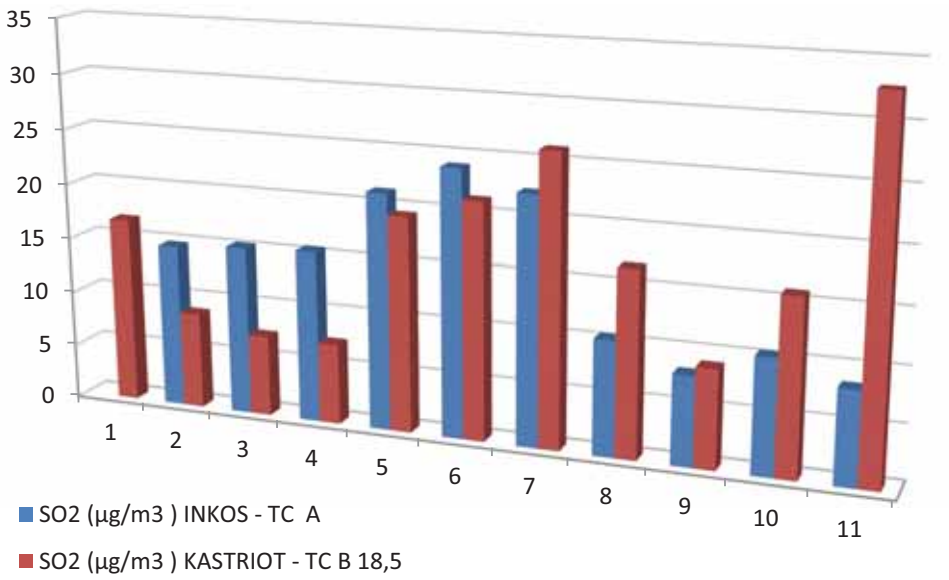


Fig.28. Monthly average values of SO_2 in INKOS-PPA and Kastriot-PPB for the year 2012

The figure 28 shows that maximal value of monthly average in PPA reached 24 ug/m^3 whereas in PPB reached 32,7 ug/m^3.

2.2.5. METEOROLOGICAL CONDITIONS IN AIR QUALITY MONITORING SITES

In air quality monitoring stations, the meteorological parameters are integrated as well. To complement the presentation of data collected from air quality monitoring network, there are reported also summary data of meteorological parameters, which influence the mechanism of accumulation, transport, diffusion, dispersion and transformation of pollutants in the atmosphere. The meteorological parameters monitored in these stations are:

- Air temperature
- Atmospheric pressure
- Air humidity
- Wind direction and speed

Description of meteorological situation is a summary analysis on the impact of meteorological factors in the possible occurrences, especially in the creation of ozone and in the maximum accumulation of PM_{10}.
Among the most important meteorological parameters that influence the distribution of pollutants in the air are the wind direction and wind. Other parameters are important as well.
Dominant wind directions are presented in the below figures.

15 Report on the state of the environment in KEC for 2012

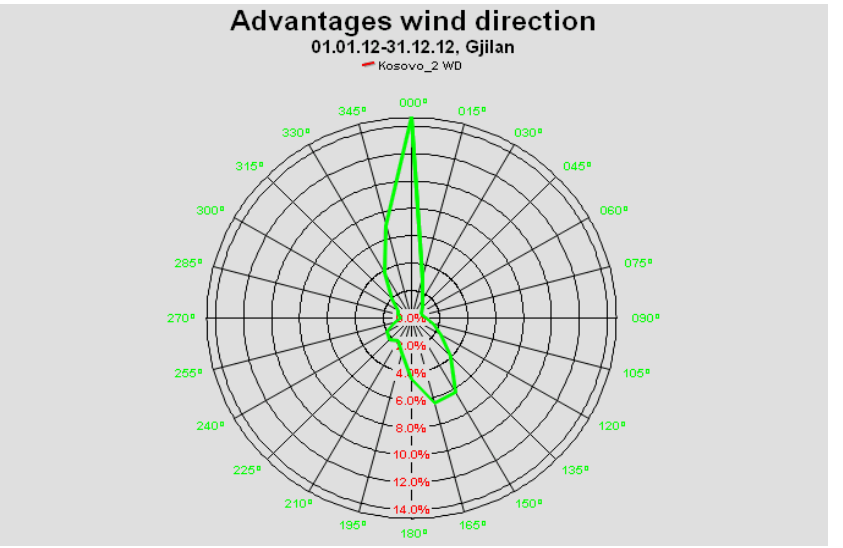


Fig. 29. Wind rose for station in Gjilan

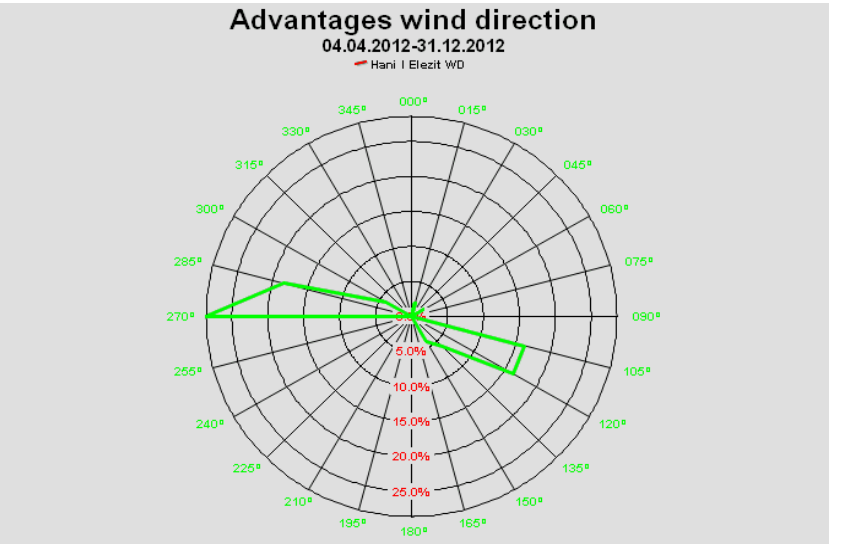


Fig.30. Wind rose for station in Hani i Elezit

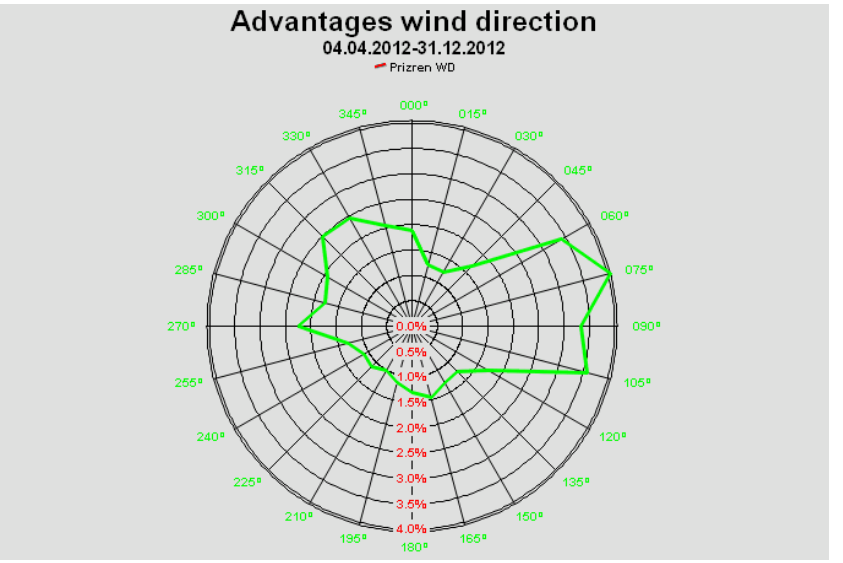


Fig.31. Wind rose for station in Prizren

2.3. Conclusions and recommendations

Conclusions

Following the evaluation and processing of collected data it is indicated that the highest exceedances in three monitoring stations belonged to PM_{10} and $PM_{2.5}$ pollutants, whereas it may be concluded that the primary problems of air pollution in Kosovo are:

- Air pollution with PM_{10} and $PM_{2.5}$ particulate matters which threat human health, vegetation, animals and materials;
- PM_{10} and $PM_{2.5}$ values during the winter seasons are increased from air emissions from heating plants and/or activities;
- Based on the available dated, it may be concluded that air quality in Kosovo is not satisfactory

Recommendations

In order to provide a more completed and reliable air quality monitoring and assessment, it is needed to:

- To insure financial means for maintenance of monitoring equipments;
- Increase the number of monitoring parameters in accordance with the air related laws, and regulations ;
- Undertake concrete steps from MESP and other responsible institutions to reduce PM_{10} and $PM_{2.5}$ pollution;

3. Water

3.1. Water resources

From the territory of Kosovo, in average humidity year, the water flow is 3.6 x 109 m^3 (billion), (121.2 m^3 /sec), while the total volume accumulated in existing reservoirs is 569.690.000, which represents only 15.7% of the overall average amount. Most of the rivers belong to the Black Sea basin 50.7%, Adriatic Sea 43.5% and Aegean Sea 5.8%. Most rivers are characterized by irregular seasonal flow. River flows are higher during winter season or early spring.

Topographic water catchment area of Kosovo is 11.645 km^2, which means that only about 758 km^2 or 6.5% is inconsistent with its total area.

The hydrography of water flows of Kosovo is split into four river basins: the Drini i Bardhe, Ibri, Morava e Binçës and Lepenci.
The Drini i Bardhe river has the greatest length in kilometres within the territory of Kosovo with 122 km, while the Lumëbardhi i Prizrenit is shortest with 31 km. Data on the length of main rivers within the territory of Kosovo are presented in the tab.19.

Table 19: Length in kilometres of main rivers in Kosovo[16]

Name	Length in km inside the territory of Kosovo	Surface m^2
Drini i Bardhë	122	4.622
Sitnica	90	2.873
Lumëbardhi i Pejës	62	424.9
Morava e Binqës	60	1.552
Lepenci	53	679.0
Ereniku	51	510.3
Ibri	42	1.155
Lumëbardhi i Prizrenit	31	262.6

Kosovo river flows pour into three sea basins: Black Sea, Adriatic Sea and Aegean Sea. The main rivers that belong to the Black Sea basin are: Ibri, Sitnica with its branches (Llapi, Drenica); and Morava e Binçës. Rivers that belong to the Adriatic Sea are the Drinii Bardhe with its branches (Lumëbardhi i Pejes, Lumëbardhi i Decanit, Lumëbardhi i Prizrenit, Klina, Ereniku, Mirusha, Toplluha and Plava). The Lepenci river with its main branch (Nerodime) belongs to the Aegean Sea.

Watershed lines (river basins), flow in different directions. The flow ratio ranges from 3.93 l/sec/km^2 (Morava e Binçës) to 42.46 l/sec/km^2 (Lumëbardhi i Decanit).
For more information see the table 20.

Table 20. River basin, surface, water flow quantity, and discharge place.

Nr.	Riverbasin	S[km^2]	Q[m^3/s]	q[l/s*km^2]	Annual flow [mil.m^3]	Flow direction
1	Drini i Bardhë	4649	61.0	14.6	2.200	Adriatic Sea
2	Ibri	4009	32.6	8.13	771	Black Sea
3	Morava e Binçës	1564	6.1	4.35	330	Black Sea
4	Lepenci	0.685	8.7	12.7	307	Aegean Sea

The hydrometric network is consisted of 27 stations. In all stations the water flow is measured automatically and permanently, through sensors, each 15 minutes and each hour. Hatchets are installed at each hydrometric station, which enable reading the water level and comparison with sensor. In

16 Environmenta facts, KAS, 2007

some hydrometric stations, a system which uses the elevator is installed, which enables measuring of water speed. In several stations throughout Kosovo river basins the water speed is measured in order to calculate the water runoff (Q =m^3/s),
In table 21 are presented data on annual average runoff values, for the stations that were functional during 2010-2012.

Table 21: Annual average runoff values (Q=m^3/s) according to stations[17]

NR.	RIVER	STATION	2010	2011	2012
	Bistrica Pejës	Drelaj	0.503	0.438	-
1.	Bistrica Pejës	Drelaj	0.503	0.438	-
2.	Bistrica Pejës	Grykë	0.614	0.530	-
3.	Mirusha	Mirushë	0.832	-	-
4.	Ereniku	Gjakovë	0.690	0.519	0.597
5.	Bistrica Prizrenit	Prizren	0463	0.361	0.589
6.	Bistrica Prizrenit	Vlashnje	0.914	-	-
7.	Drenica	Drenas	1.443	-	-
8.	Llapi	Lluzhan	1.141	0.843	0.699
9.	Sitnica	Vragoli	0.802	-	-
10.	Llapi	Milloshevë	0.990	0.543	0.566
11.	Morava Binçës	Viti	0.333	0.290	0.216
12.	Nerodime	Kaçanik	0.233	-	-
13.	Lepenci	Hani Elezit	0.692	0.619	0.547
14.	Lepenci	Brod	0.492	0.397	0.433
15.	Brod	Mlik	0.763	0.579	0.638

Photo: Hydrometric station in the Bistrica e Pejës river – Gryka e Rugovës and the elevator system for water flow measurement

17 Hydrometeorological Institute of Kosovo

Surface accumulations- In order to meet water needs for drinking, irrigation, fishing, tourism and electricity production, many countries have built dams to collect water streams and rivers, during the seasons with high flow rate and to use it during seasons when rainfall are very low and demand is very high.
Kosovo has some surface water accumulations, otherwise known as artificial lakes (Batllava, Gazivoda, Radoniqi, Perlepnica and Badovci), as well as a number of small lakes for irrigation. The table 22 shows the main characteristics of water accumulations.

Table 22: Main water accumulations in Kosovo, surface, water flow, and volume

Name of accumulation	Water flow (river)	River basin surface [km^2]	Average flow [m^3/sec.]	Accumulation Volume Million [m^3]	
				Usable	Total
Gazivoda	Ibër	1060	13.5	350	390
Pridvorci	Ibër	-	-	0.435	0.49
Batllava	Batllavë	226	1.06	25.1	30
Badovci	Graçankë	103	1.05	27.0	31.6
Livoçi	Livoç	53.6	-	-	-
Radoniqi	Lumëbardhi i Deçanit	130	0.16	102	113

3.2. Water quality monitoring

River water quality in the territory of the Republic of Kosovo is monitored by the Hydrometeorological Institute of Kosovo. The river water quality is determined on the basis of physical, chemical and heavy metal analysis. This monitoring network is consisted of 54 monitoring sites. 10 physical parameters are measured 11 times a year, 39 chemical parameters are measured 11 times a year, and 8 parameters of heavy metals are measured twice a year

Drini i Bardhe river basin – includes 10 rivers with 23 monitoring sites (10 referent monitoring sites which are monitored twice a year, whereas 13 monitoring sites along the rivers are monitored 11 times a year).

Ibri river basin - includes 8 rivers with 18 monitoring sites (5 referent monitoring sites monitored twice a year, whereas 13 monitoring sites along the rivers are monitored 11 times a year)

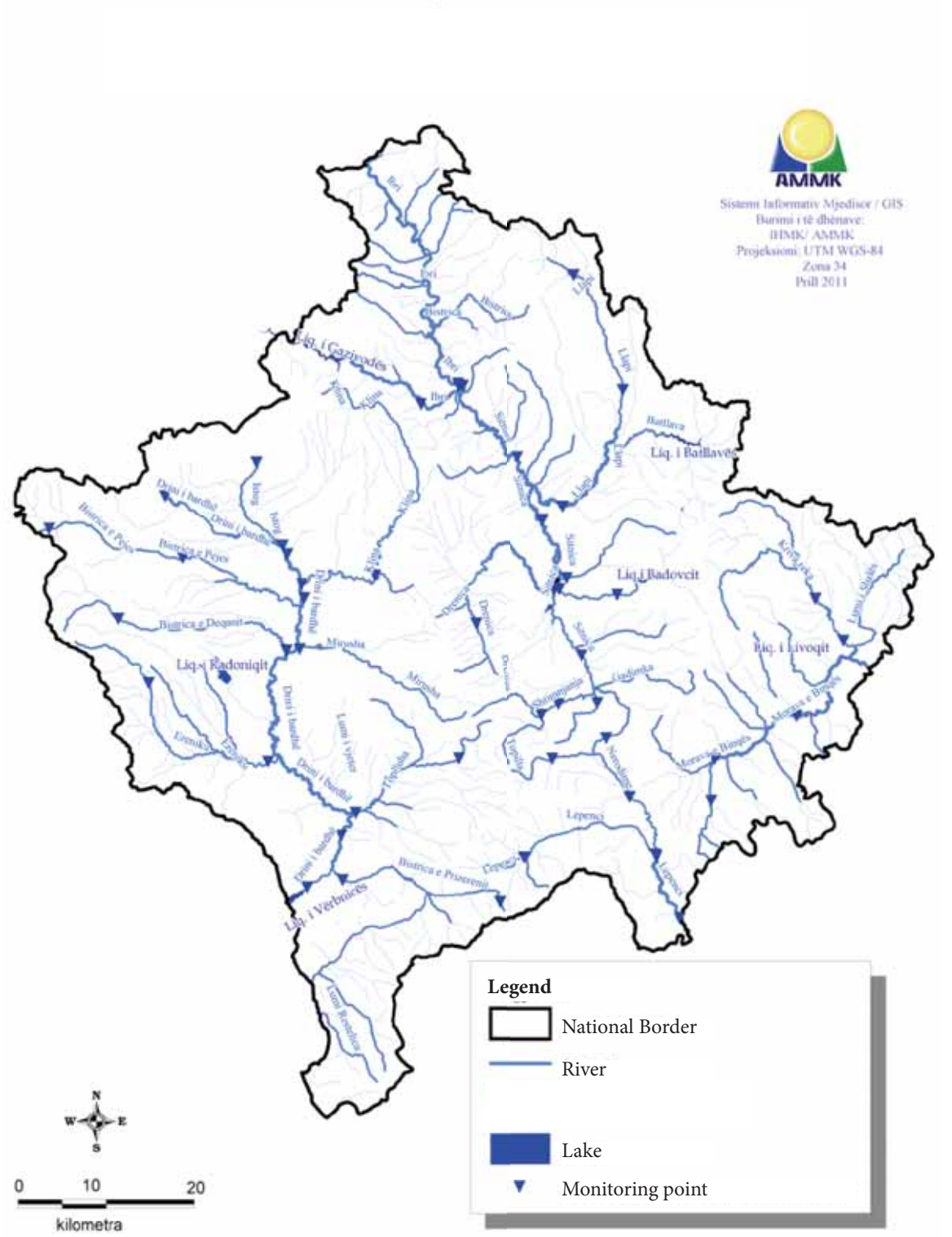
Morava e Binqës river basin - includes 2 rivers with 6 monitoring sites (2 referent monitoring sites monitored twice a year, whereas 4 monitoring sites along the rivers are monitored 11 times a year)

Lepenci river basin - includes 2 rivers with 7 monitoring sites (2 referent monitoring sites monitored twice a year, whereas 5 monitoring sites along the rivers are monitored 11 times a year)

Codes of monitoring sites of four river basins are presented in the below table

Table 23: Codes of monitoring sites

Code	Lokacion	River	Sea of discharge
RV01_032	Klina në Klinë	Lumi Klina,	Deti Mesdhe/Deti Adriatik
RV01_041	Drelaj	Lumbardhi i Pejës	Deti Mesdhe/Deti Adriatik
RV01_042	Pejë Dalje	Lumbardhi i Pejës	Deti Mesdhe/Deti Adriatik
RV01_043	Grabanicë	Lumbardhi i Pejës	Deti Mesdhe/Deti Adriatik
RV01_051	Bajë e Malishevës	Lumi Mirusha	Deti Mesdhe/Deti Adriatik
RV01_052	Volljak	Mirusha Klinë	Deti Mesdhe/Deti Adriatik
RV01_061	Deçan Hyrje	Lumbardhi i Deçanit	Deti Mesdhe/Deti Adriatik
RV01_062	Kralan	Lumbardhi i Deçanit	Deti Mesdhe/Deti Adriatik
RV01_071	Jasiq	Ereniku Jasiq	Deti Mesdhe/Deti Adriatik
RV01_072	Ura e Terzive	Lumi Erenik	Deti Mesdhe/Deti Adriatik
RV01_081	Zhdrellë	Lumi Rimnik	Deti Mesdhe/Deti Adriatik
RV01_082	Xërxë	Lumi Rimnik	Deti Mesdhe/Deti Adriatik
RV01_091	Buqallë	Lumi Toplluha	Deti Mesdhe/Deti Adriatik
RV01_092	Piranë	Lumi Toplluha	Deti Mesdhe/Deti Adriatik
RV01_101	Prevallë	Lumbardhi i Prizrenit	Deti Mesdhe/Deti Adriatik
RV01_102	Vlashnje	Lumbardhi i Prizrenit	Deti Mesdhe/Deti Adriatik
RV02_011	Kushtovë	Ibri	Deti i Zi
RV02_012	Ibri Mitrovicë	Ibri	Deti i Zi
RV02_013	Kelmend	Ibri	Deti i Zi
RV02_021	Bablak	Sitnica	Deti i Zi
RV02_022	Sitnica Lipjan	Sitnica	Deti i Zi
RV02_023	Sitnica Vragoli	Sitnica	Deti i Zi
RV02_024	Sitnica Plemetin	Sitnica	Deti i Zi
RV02_025	Sitnica Nedakovc	Sitnica	Deti i Zi
RV02_026	Sitnica Mitrovicë	Sitnica	Deti i Zi
RV02_031	Murgullë	Llapi	Deti i Zi
RV02_032	Podujevë	Llapi	Deti i Zi
RV02_033	Llapi Milloshevë	Llapi	Deti i Zi
RV02_041	Bresje	Prishtevka	Deti i Zi
RV02_051	Graqanka Vragoli	Graqanka	Deti i Zi
RV02_061	Krojmir	Drenica	Deti i Zi
RV02_062	Drenica Vragoli	Drenica	Deti i Zi
RV02_071	Petrovë	Lumi i Topillës	Deti Mesdhe/Deti Adriatik
RV02_072	Muzeqinë	Lumi Shtime	Deti i Zi
RV03_011	Kurbuliq	Morava e Binçës	Deti i Zi
RV03_012	Kllokot	Morava e Binçës	Deti i Zi
RV03_013	Uglar	Morava e Binçës	Deti i Zi
RV03_014	MoravaDomorovc	Morava e Binçës	Deti i Zi
RV03_021	Zebincë	Kriva reka	Deti i Zi
RV03_022	Kriva reka Domorovc	Kriva reka	Deti i Zi
RV04_011	Prevallë Subain	Lepenc	Deti Mesdhe /Deti Egje
RV04_012	Lepenci Kaçanik	Lepenc	Deti Mesdhe /Deti Egje
RV04_013	Hani i Elezit	Lepenc	Deti Mesdhe /Deti Egje
RV04_021	Jezerc	Nerodimja	Deti Mesdhe /Deti Egje
RV04_022	Bifurkacioni	Nerodimja	Deti Mesdhe /Deti Egje
RV04_023	Gërlicë	Nerodimja	Deti Mesdhe /Deti Egje
RV04_024	Nerodimja Kaçanik	Nerodimja	Deti Mesdhe /Deti Egje



Map 3: Monitoring sites of physical-chemical quality of surface waters

Drini i Bardhe River Basin

This river basin is the largest among other country river basins. Monitoring network of this basin includes 23 monitoring stations that measures physical-chemical parameters. Three of these stations are based on the Drini i Bardhe river itself, starting from its source in Radavc on top hill of Peja. The next monitoring station is basen at the contiguity point of the rivers Burim and Klina and the third station is based after the contiguity of revers Lumëbardhi i Pejes, Lumëbardhi i Decanit, Mirusha, Ereniku, Rimniku and Toplluhë. The third station is placed next to the bridge above the river in Gjonaj

i Hasit. The quality of water along its flow varies from station to station. Water at the source is to a good quality (as the first monitoring station shows) and the two ther stations show for significant pollution that comes from urban wastewater discharged at above mentioned rivers. Also pollution comes from the irrigation of agriculture lands near the rivers.
In all river springs the water quality is very good. The data of physical-chemical analysis for the last two years indicate that these waters belong to class I. The situation begins to change on around settlements, due to urban and industrial wastewater discharge over the course of this river basin. Also, rivers are polluted by waste disposal sites, mostly located near bridges or other locations near rivers. Up to the contiguity point with the Istog River, the water quality is mainly good. Drastic changes appear in the area Ruhot-Zllakuqan and Zllakuqan-Kline. At the contiguity point of the Drini il Bardhe and Klina rivers, the situation becomes miserable because the results show for the category IV of water quality. Hence, the water of Drini i Bardhe River basin is polluted by discharges of sub- basins therein, which sub-basins previously were impacted by urban and industrial wastewaters. This situation continues up to the Lumëbardhi i Prizrenit river discharge in Vllashnje.

General comments on sub - basins of Drini i Bardhe River Basin.
Istog river - It begins at the mountain above the city of Istog, with great purity, and very good quality in comparison to other rivers. In terms of water quality, this river does not undergo any major changes up to the contiguity point with Drini i Bardhe. Monitoring data so far, show the Istog River is known as the cleanest river in Kosovo.

Lumëbardhi i Pejës (Bistrica e Pejës)– It is formed by some sources along Rugova Gorge, which sources in the first monitoring station in Drelaj show good quality of physical-chemical parameters, while at the next station after the discharge of urban and industrial wastewater shows that the water quality is decreased. The characteristic of this river, during the summer season (and/or irrigation season) runs out of water for a period of approximately two months. The third monitoring station is near Klina, before contiguity point with the Drini i Bardhe River, which show for poor water quality.

Klina River – The first monitoring station is in Cerpule. This site station is not near the spring, which means many activities and impacts occurs before the site. For this reason the water quality at both monitoring stations of this rover is poor

Mirusha River – It is formed in the hills above the Bllace village (MA Theranda) by many small water sources. At the Banja e Malisheves village (which according the monitoring plan of the future will serve as referent point it takes the shape of a real river, by merging with the strong watersource known as "Uligja e Banjes". This river is monitored by only one station, located at Volljak, several meters before the contiguity point with the Drini i Bardhe River. ts water quality is characterized by small turbidity, the quantity of dissolved oxygen ranges between8.37-10.90 mg/l, conductivity between587-638 μS/cm, therefore, the river water may be considered as medium/high water quality River.

Lumëbardhi i Deçanit - The first monitoring station in this river according to the HMIK, is located at the 3rd km of the town of Decan, above the church, where the water quality is shown to be very good. The second monitoring station is located 10 m before the contiguity point with the Drini i Bardhe River, at Kralan village of Gjakova municipality. The water quality in this location is not so alarming, but in comparison with the first station there are indicated increased values of parameters. In this water stream is appeared a significant water turbidity due to extraction of gravel from the riverbed by private companies. It is occurred only a few tens of meters above the monitoring station of this river.

Ereniku - The first water quality monitoring station in this river is located in the mountains above the village Jasiq of Junik Municipality, where no influence from human activities is indicated, and the water quality is very good. The second station is located near to the contiguity point with the Drini i bardhe River, near the "Terzisë"bridge in Gjakova. The quality of the river at this station is poor. By the analysis, it is evidenced the presence of detergents. The river has always froths over the surface, which is the result of any activity for textile washing (clothing), car washing or any use of detergents from other industries operating in the region and that discharge their waters without proper treat-

ment, even if it is not allowed.

Rimniku– monitoring of this river starts at a place called Zhdrellë, not far from its source. It is recognized as a source of higher conductivity (529 - 770 μS/cm) than all other sources and content of significant amounts of heavy metals. The next station is a few meters before the contiguity point with the Drini i Bardhe River, in Xerxe, where are indicated small amounts of oxygen and large amount of ammonium ion, phosphates, etc.

Toplluha- the first monitoring station in this river is located at a place called Buqallë, above the tourist complex "Solid", Municipality of Suhareka. The river water is to a good quality in all parameters measured. The second station is located in the village Piranë, before the contiguity point with the Drini i Bardhe River, where the water quality is poor. This river is known as river with permanent high turbidity due to the extraction of gravel from its bed.

Lumëbardhi i Prizrenit - The first monitoring station is located at the gorge of Prevalla that shows for very good water quality. Second station is in the Vlashjne village, 3.5 km before contiguity point with the Drini i Bardhe River. The second station shows for the poor water quality, due to the wastewater discharges along the river course.

INTERPRETATION OF RESULTS

Given the monitoring results of first and last monitoring stations of rivers, an overview of analysis is made. In the following part will present graphs of interpretation annual average values (AAV [18]) of each parameter in each river of this basin.

Dissolved oxygen (dissolved O_2)- It consistently stands in considerable values along this river course (basin) where the values have varied from 6.34 mg/l to 11.79 mg/l in 2008. In 2009 the values ranged from 5.09 mg/l to 11.38 O_2 mg/l. The year 2010 shows a change in the maximum amount of dissolved oxygen 7.52, mg/l from previous years that ranged from 10.88 mg/l. In 2011 are registered the minimum 5.99 mg/l O_2, maximum value8.99 mg/l. In 2012, the minimum value of dissolved oxygen was 6.61 mg/l, and maximum of annual average values was 10.22 mg/l O_2 .

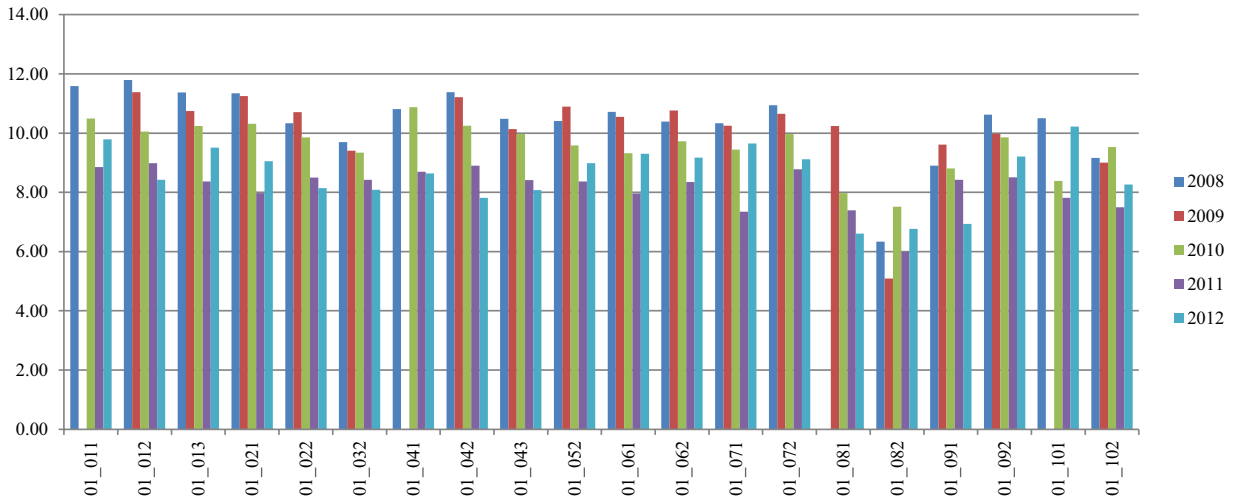


Figura 32: Oksigjeni i tretur në pellgun e Drinit të Bardhë

Biochemical Oxygen Demand (BOD5)- in the graph, this parameter includes the results of monitoring stations along the rivers only (not results from the springs), and results with the following overview: in

18 AAV- from series of monthly values are calculated the annual average values

2008 the minimum values is 1.39 mg/l O_2, and maximum values 7.73 mg/l O_2. In 2009, this parameter reaches the values 1.51-7.17 mg/l O_2. In 2010 the value is 7.81 mg/l, whereas in 2011 is showed 6.20 mg/l O_2. In 2012 is appeared a same situation, from 2.22 mg/l O_2 to 6.95 mg/l dissolved O_2.

If compared the annual average values with the series of values measured it is indicated that the BOD5 is found in much higher values.

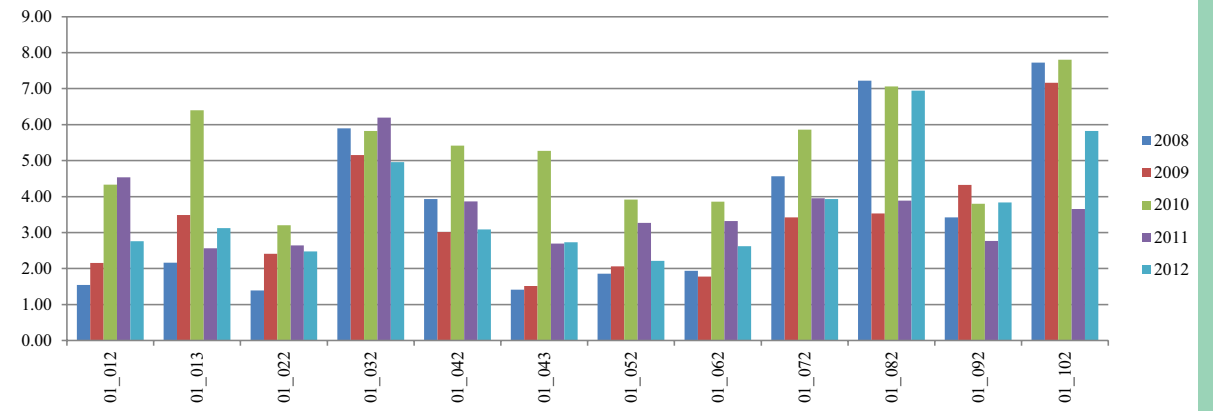


Figure 33: Biochemical oxygen demand in Drini i Bardhë river basin

Regarding the quality, it may be concluded that no significant pollution is recorded at any of the monitoring stations.

Electric conductivity (EC) – during the years 2008,2009,2010,2011 the lowest values is recorded in Lumëbardhi i Prizrenit- Prevallë 151 µS/cm, 120 µS/cm, 102 µS/cm, 112 µS/cm and 130µS/cm, whereas in years 2008 and 2010 the highest values are recorded on river Rimnik-Xërxë 681 µS/cm and 689 µS/cm. In the years 2009 and 2011 the maximal values is recorded in the same river (Rimnik), but in another sampling site - Zhdrellë 665 µS/cm and 770 µS/cm.

In 2012 the maximal annual average is recorded in Klina river, in the sampling site Klinë 695 µS/cm.

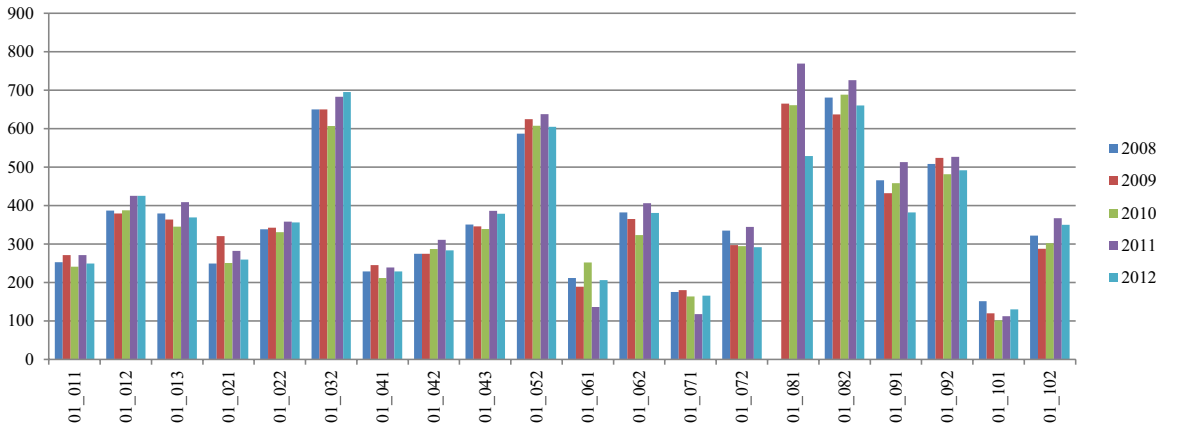


Figure 34: Electrical conductivity in Drinit i Bardhë river basin

Hydrogen ion concentration (pH)- overall, during 2008, the neutral values were registered, where the lowest values is recorded in Istog- Istog with 7.57, and the highest value (8.08) is recorded in Rimnik river - Zhdrellë. Similar values are recorded in 2009, with the minimum (7.76) in Lumëbardhi i Prizrenit– Vllashje, and maximum value (8.31) in Lumëbardhi i Pejës river– Drelaj. In 2010 a lower pH values is recorded in Klina river - Klinë (7.74), whereas the maximum is recorded in Rimnik river

- Zhdrellë (8.34). The year 2011 was characterised with an extension of pH values, with the lowest values recorded in Lumëbardhi i Prizrenit river – Prevallë (7.45), and maximum values in Toplluha river - Buqall (8.55).

The lowest pH values in 2012 are recorded in Lumëbardhi i Prizrenit- Prevallë (7.8), whereas the maximum values are recorded in Toplluha river- Buqallë (8.6)

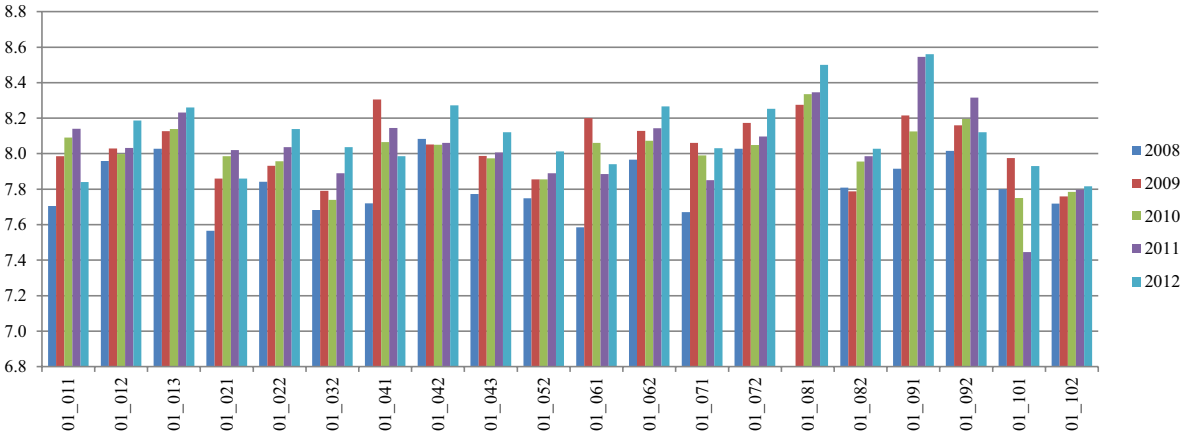


Figure 35: Hydrogen ion concentration in Drini i Bardhë river

Nitrate nitrogen (N-NO_3-) - in 2008, in Erenik river, at Jasiq sampling point nitrates were ate detection limit (0.1 mg/l N-NO_3- is the detection limit of the detection equipment used), whereas the maximum value of this parameter is recorded Rimnik river - Xërxë (2.297 mg/l N-NO_3-).

During 2009, in detection limit values are recorded: Lumëbardhi i Pejës-Drelaj, Lumëbardhi i Deçanit-Deçan, Rimnik- Zhdredhë and Lumëbardhi i Prizrenit- Prevallë, whereas the maximum of this parameter is recorded Toplluha river - Piranë (1.994 mg/l N-NO_3-). In 2010 the limit detection values are recorded in Lumëbardhi i Pejës-Drelaj and Rimnik river-Zhdrellë, whereas the maximal annual average values is recorded in Toplluha river-Piranë (1.973 mg/l N-NO_3-). In 2011 the detection limit values are recorded in Drini i Bardhë river-Radavc, Lumbardhi i Pejës-Drelaj, Lumbardhi i Deçanit- Deçan, Ereniku-Jasiq and in Lumbardhi i Prizrenit-Vllashnje, whereas the maximum of annual average value is recorded in Toplluha river- Piranë (2.765 mg/l N-NO_3-).

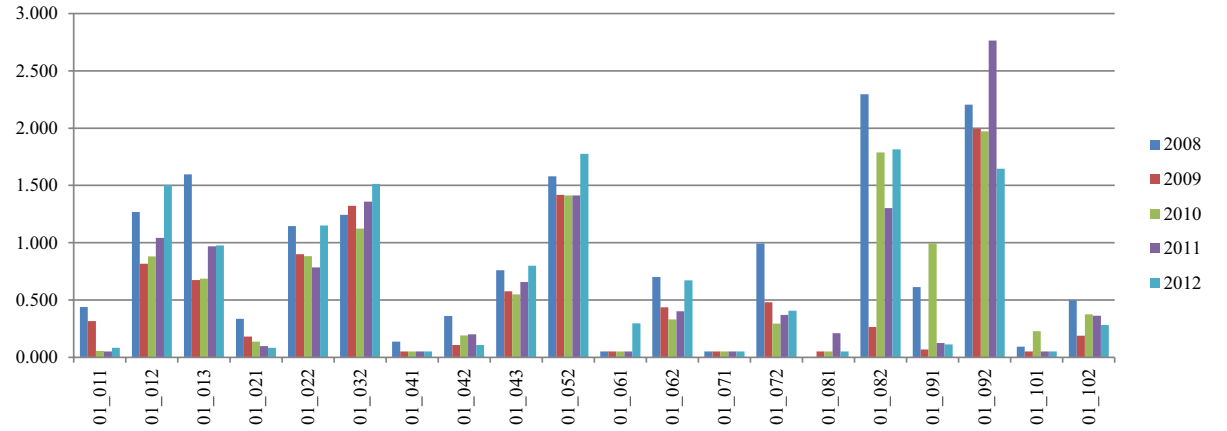


Figure 36: Nitrate nitrogen in Drini i Bardhë river basin

In 2012, detection limit values are registered in the following sampling sites: Drini i Bardhë-Radavc, Ereniku-Jasiq, Rimniku-Zhdredhë and Lumbardhi i Prizrenit-Vllashnje. The maximum of annual average values is registered in Rimnik river-Xërxë (21.815 mg/l N-NO_3-).

Nitrite nitrogen (N-NO_2-) during 2008, in the detection limit (0.003 mg/l N-NO_2-) are registered the following: Drini i Bardhë-Radavc; Lumëbardhi i Pejës- Drelaj; Toplluha river-Buqallë and Lumëbardhi i Prizrenit-Prevallë. Throughout the years 2009, 2010 and 2011, the minimum of annual average value is recorded in Drini i Bardhë river-Radavc 0.01398 mg/l N-NO_2; Rimnik river-Zhdrellë 0.23104 mg/l N-NO_2- ; and for 2011 the Drini i Bardhë river- Radavc 0.01064 mg/l N-NO_2.

During 2012 in the detection limit (0.003 mg/l N-NO_2-) are registered: Drini i Bardhë-Radavc; Ereniku-Jasiq; Rimnik- Zhdrellë; Toplluha- Buqallë and Lumbardhi i Prizrenit- Prevallë.

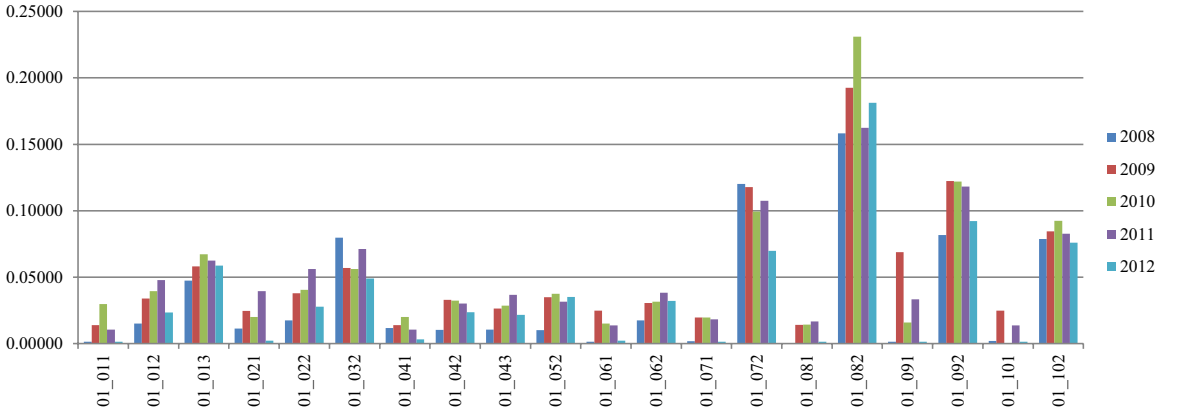


Figure 37: Nitrite nitrogen in Drini i Bardhë river basin

The maximum of annual average of this parameter, for all years (2008 - 2012) is registered in Rimnik river-Xërxë, with an interval of values from 0.1582 – 0.2310 mg/l N-NO_2-.

Ammonia nitrogen (N-NH4+)- in 2008 this parameter is registered at the detection limit (0.001mg/l N-NH4+) for the following monitoring sites: Drini i Bardhë river-Radavc, Lumëbardhi i Pejës river-Drelaj, Toplluha river- Buqallë, and in Lumbardhi i Prizrenit river- Prevallë. In years 2009 and 2010 Istogu river-Istog (0.1245mg/l N-NH4+ and 0.1323 mg/lN-NH4+), whereas in 2011 the minimal value of annual average is registered in Drini i Bardhë river-Radavc (0.0455 mg/l N-NH4+). In 2012 at Drini i Bardhë river-Radavc and Lumbardhi i Prizrenit-Prevallë are registered at detection limits (0.001mg/l N-NH4+).

Maximum annual average values for years 2008, 2009, 2010, 2011 an 2012, are appeared in Rimnik river-Xërxë, which as more significant concentration values of this parameter (from 2.0718 mg/l to 3.7639 mg/lN-NH4+). These results are indicated because this river passes along agriculture land, and untreated urban wastewaters of Rahovec town and surrounding villages are discharged in this river as well.

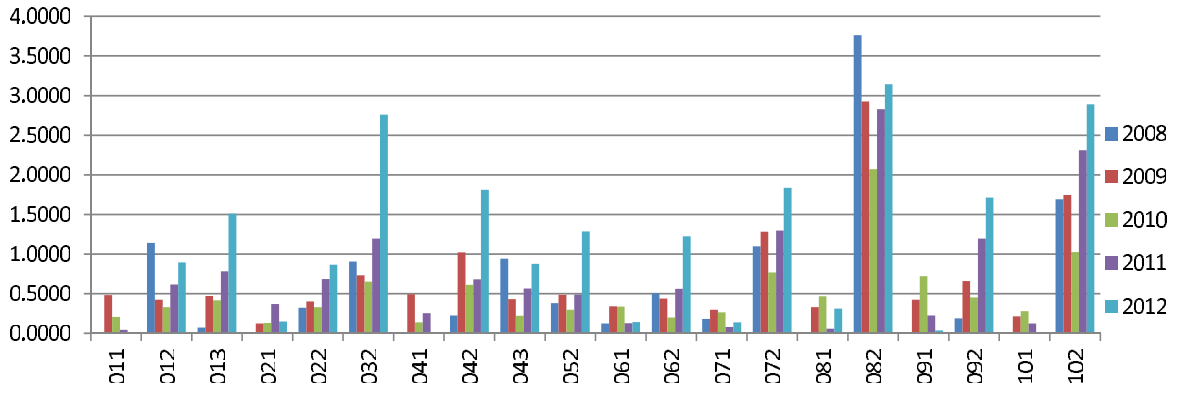


Figure 38: Ammonia nitrogen in the Drini i Bardhë river basin

Referring to the allowed values, which should not exceed 1.5 mg/l, it is indicated that except at the water springs, where the water quality is good, in other monitoring sites the water quality ranges between moderate poor.

Orthophosphate phosphor ($P\text{-}PO_4^{3-}$) - The minimum of AAV is recorded as follows: 2008 Dini i Bardhë-Radavc 0.0054 mg/l $P\text{-}PO_4^{3-}$, 2009, Lumëbardhi i Prizrenit- Prevallë 0.0018 mg/l $P\text{-}PO_4^{3-}$; 2010 Erenik river-Jasiq 0.0033 mg/l $P\text{-}PO_4^{3}$. In 2011 orthophosphate phosphor is registered at limit detection value (0.001 mg/l $P\text{-}PO_4^{3-}$) in the following sampling sites: Istog river-Istog; Lumëbardhi i Deçanit-Deçan, and Rimnik river-Zhdrellë. In 2012, the detection limit values are registered in Drini i Bardhë-Radavc, and Rimnik river-Zhdrellë. Whereas the maximal annual value is registered in Rimnik river-Xërxë, for all years with a value from 0.319 mg/l – 0.591 mg/l $P\text{-}PO_4^{3-}$.

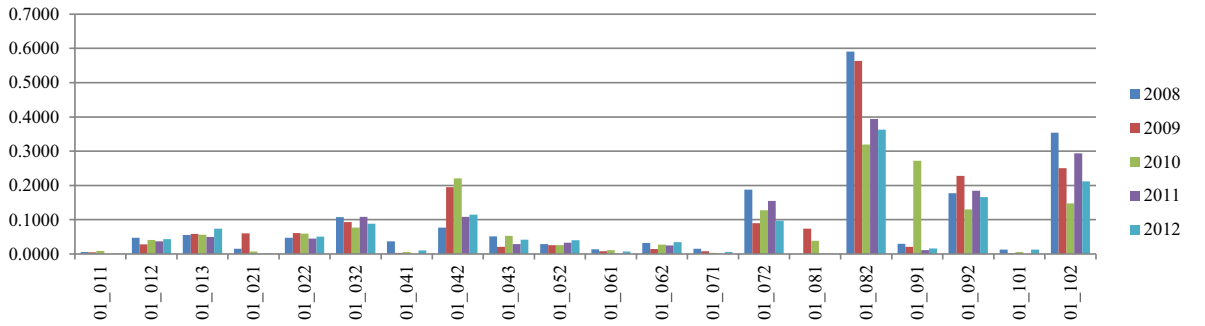


Figure 39: Orthophosphate phosphor in Drini i Bardhë river basin

Total phosphor (poly and ortho)- monitoring results of total phosphor in the Drini i Bardhë river basin shows large oscillations (this parameter in the graph presents results from the monitoring sites along the river). In 2008, the minimum annual average values of total phosphor is 0.037 mg/l in the sampling site in Mirushë-Volljak, while for years 2009, 2010, 2011 and 2012 the Lumbardhi i Deçanit river-Kralan results with the annual average minimum between 0.034-0,048 mg/l P.

Whereas the Maximum annual values (MAV) for all the five years are recorded in the Rimnik river, at the sampling site in Xërxë, with the values between 0.482 - 1.016 mg/l P.

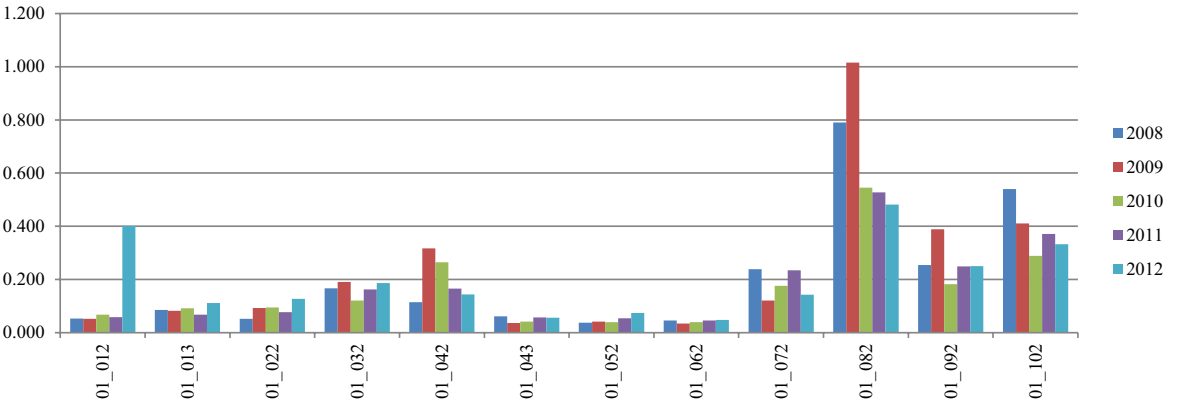


Figure 40: Total phosphor (poly and ortho) in Drini i Bardhë river basin

IBRI RIVER BASIN

Ibri River basin has a total of 18 monitoring stations. Three of them belong to the Ibri River. The first station is located in Kushtovë and it shows for a satisfactory water quality. The next monitoring station is located at the outskirts of town after all urban and other wastewater discharges that affect the water quality. This monitoring station shows for poor water quality. The third station is located in Kelmend after contiguity point with Sitnica River, which includes water from other sub-basins of this river basin. During the monitoring period is not observed any case to be alarmed.

Sitnica River - Along its stream from Ferizaj to Mitrovica, it represents the most polluted river in Kosovo. Regarding the physical parameters, suspended substances are present and exceed the maximum allowed values. This comes from the fact that in this river, are flowed one branch of the Nerodime River as well as rivers: Graqanka, Pristina, Drenica, Llapi, Trepca and other smaller water streams, where all these rivers converge Sitnica River and contain urban and industrial wastewater discharged. The measured chemical parameters such as COD and BOD5 indicate also for the permanent river pollution.

Graqanka - as the result of water pumping of Kishnica and Artana mines into the Graqanka River, the water of this river is continually polluted. There are evidenced high values of electric conductivity and sulphate ion. It should be mentioned that during the hot summer season this river runs out of water.

Prishtevka- monitoring of the river is made in Bresje of Fushë Kosova, before to its flow into the Sitnica River. Actually, it cannot be named as a river, because it is rather a water stream that collects all urban wastewater discharged by Pristina town. In this situation it has exceeded quantity of nitrites, suspended materials, COD and CBO5, lack of dissolved oxygen, detergents, etc.

Llap-This River is monitored since its river spring above the Murgullë village, and continues in outskirts of Podujeva town, and the last - third monitoring station is located in Millosevë, before the contiguity with Sitnica River. This river has no exceedances of MAV.

Drenica – monitoring of the river starts from Krojmir to the contiguity point with Sitnica in Vragoli. During the spring season it is showed a better quality at the first monitoring station, while the second station in Vragoli shows for significant changes, such as the conductivity is increased for several hundred units, as a result of wastewater discharges from surface mines of KEC.

Shtimja - There are two monitoring stations, one at the part where no external influence from human activity, where the water quality is very good, and the second station is located after the discharge of all urban wastewater from all surrounding villages and the Shtime city itself, where the water quality of the river belongs to a very poor category.

INTERPRETATION OF RESULTS OF IBËR RIVER BASIN

In the following part of the report, through the AAV results presented in graphs, the state of waters in Ibri river basin will be interpreted via annual average values, for a number of selected parameters measured in the rivers of this basin, by the HMIK.

Dissolved oxygen (O_2 dissolved)- variations are indicated in different stations, but except the Prishtevka river, (Bresje sampling site) where the O_2 quantity is low, in all other stations the 02 quantity is considered normal.
If we compare results between 2008 and 2009, no significant changes are recorded. Higher O_2 values are measured in Ibër river- Kushtov, (12.40 mg/l O_2) and Ibër river- Mitrovicë (12.83 mg/l O_2). The minimal values for 2008 and 2009 are recorded in Prishtevka river- Bresje. It has to be considered that these values represent annual average values, because during the monthly measurement dynamics, there were situations when no dissolved O_2 is found.

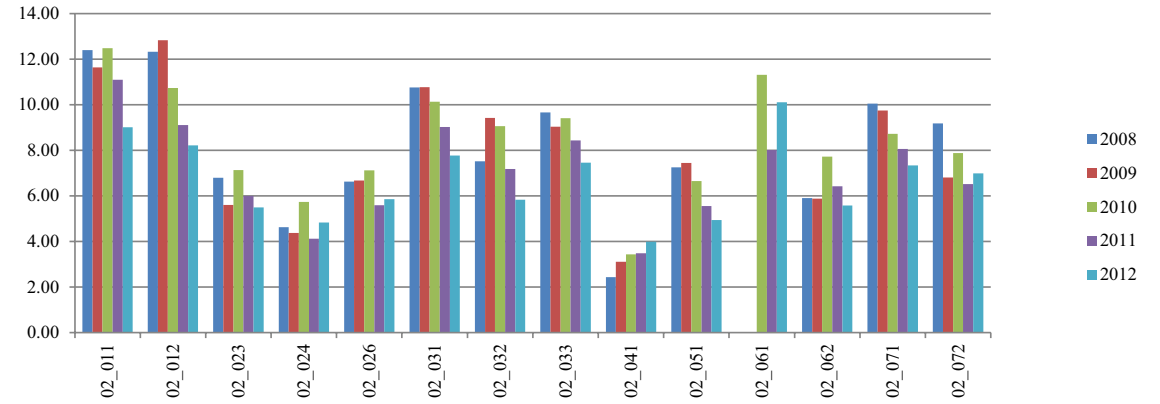


Figure 41: Dissolved oxygen in Ibri river basin

Same overview appears for years 2010 and 2011. The maximum of annual average is recorded in Ibër river-Kushtov 11.10 mg/l O_2, the minimum is recorded in Prishtevka river- Bresje 3.48 mg/l of dissolved O_2.
In 2012 minimum of annual average value is recorded in Prishtevka river- Bresje 3.98 mg/l O_2.
The five years trend, show that the Prishtevka river (Smapling site in Bresje) has the lowest oxygen quantity.

Biochemical oxygen demand (SHBO5)-this parameter in the graph represents the results from the monitoring sites along the river only. (Stations at the spring not included). Comparison of values between the years 2008, 2009, 2010, 2011 and 2012 show for slight changes, which means there are slight changes in the water quality as well. The maximal value of SHBO5 is recorded in Bresje sampling site (Prishtevka river) with annual average value 17.95 mg/l O_2 in 2008, 19.67 mg/l O_2 in 2010, 11.43 mg/l O_2 in 2011; and 14.18 mg/l O_2 in 2012 .

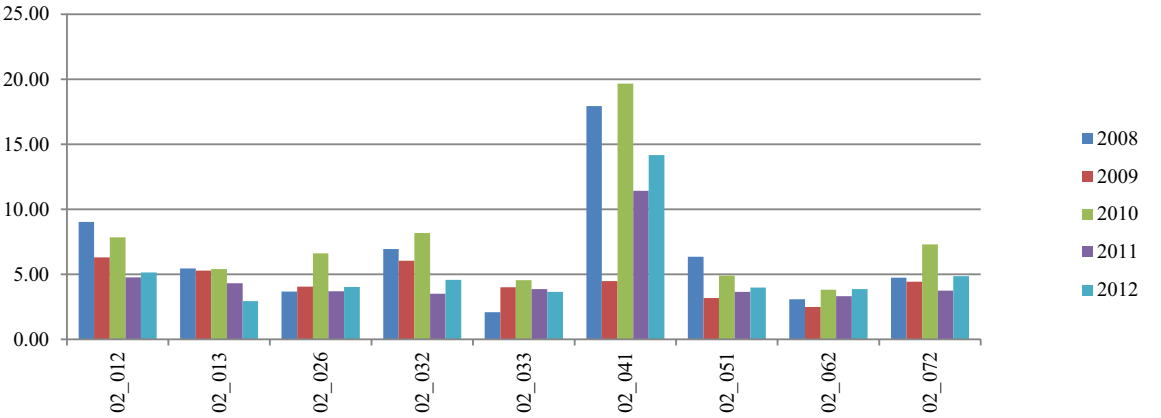


Figure 42: Biochemical oxygen demand in Ibri river basin

Electrical conductivity – Taken in general the same situation remains in all five years. The lowest annual values of electrical conductivity (for all five years) are registered in Ibër river - Kushtovë, with values between 303-335 μS/cm. Whereas the highest annual average values (for all five years) are recorded in Graqanka river – Vragoli with values between 1426-1621 μS/cm.

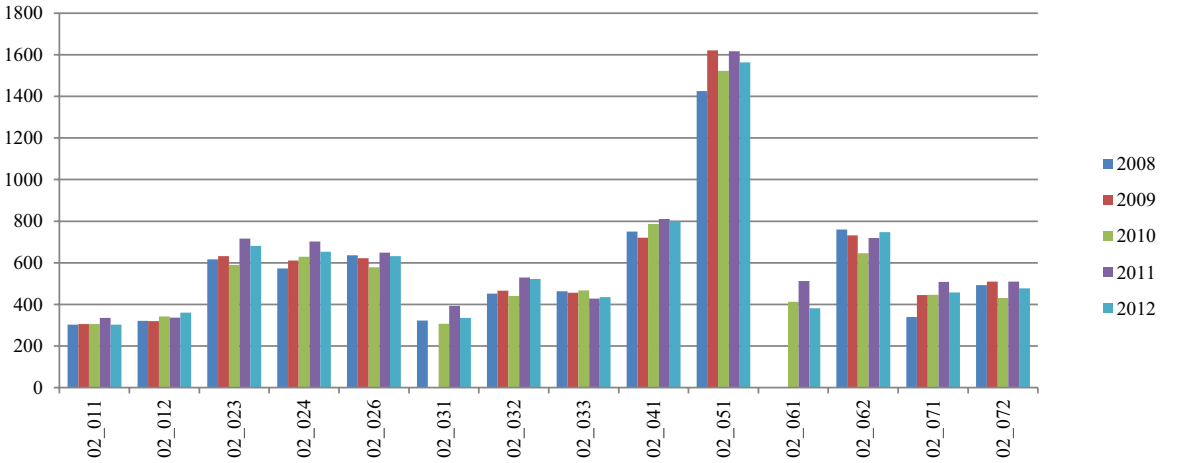


Figure 43: Electrical conductivity in Ibri river basin

Hydrogen ion concentration (pH)- the pH values usually turns out between 7.48 and 8.16 in 2008. In 2009 these values are between 7.50- 8.24; in 2010 between 7.69-8.19; in 2011 the pH values were between 7.7–8.49; whereas in 2012 between 7.9 – 8.4.

In general, it may be said these values belong to week alkaline medium.

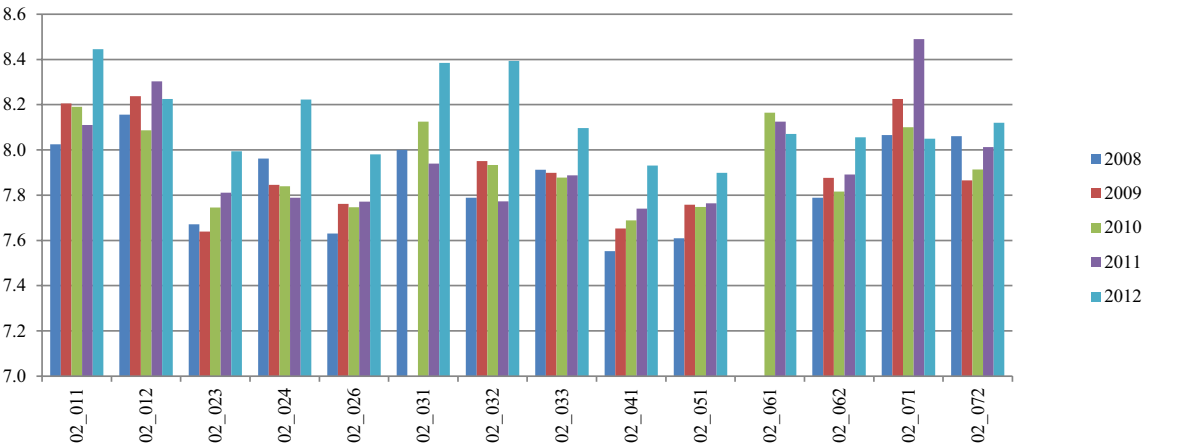


Figure 44: Hydrogen ion concentration in Ibri river basin

Nitrate nitrogen (N-NO_3-)- the detection limit value (0.1 mg/l N-NO_3-) for all years is recorded in Topoilla river-Petrove, while the detection limit for 2010 is recorded also in Ibri-Kushtovë and Llapi-Murgullë. Except the Topilla river-Petrove, in 2012 the detection limit value is recorded in sampling sites Ibri- Kushtovë and Sitnica- Lipjan.

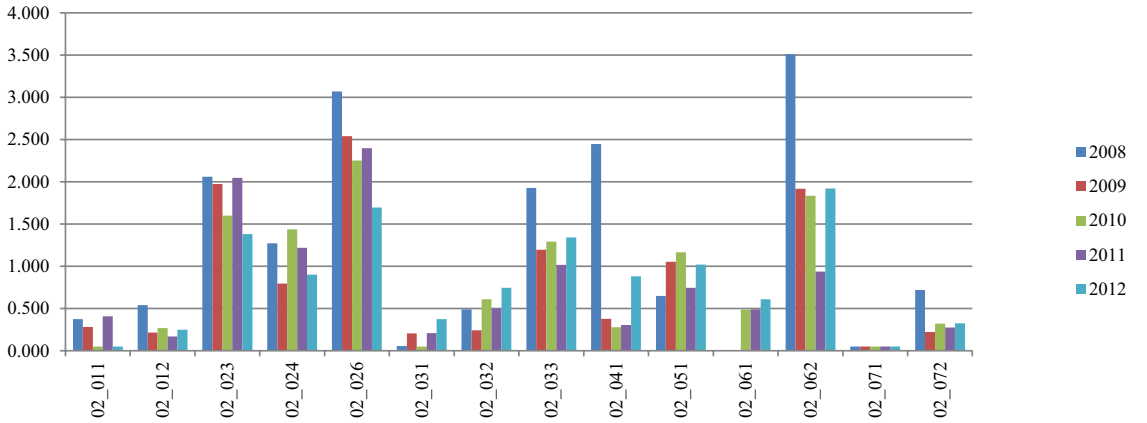


Figure 45: Nitrate nitrogen in Ibri river basin

Maximums of annual average values of nitrate nitrogen, throughout years are presented as follows: Sitnica river- Sitnica Mitrovicë for 2009 (2.540 mg/l $N\text{-}NO_3$-), for 2010 (2.252 mg/l $N\text{-}NO_3$-), for 2011 (2.398 mg/l $N\text{-}NO_3$-). Whereas the Drenica river-Vragoli, in 2008 as a maximum annual average value recorded (3.512 mg/l $N\text{-}NO_3$), and for 2012 the value is 1.921 mg/l $N\text{-}NO_3$-.

Nitrite nitrogen ($N\text{-}NO_2$-)- For all five years (2008-2012), the Sitinica river sampling site in Mitrovicë represents the maximum of AAV. In 2008 this parameter reached the value 0.194 mg/l $N\text{-}NO_2$-; in 2009 a slight decrease is recorded (0,158 mg/l $N\text{-}NO_2$-); in 2010 a slight increase 0.185 mg/l $N\text{-}NO_2$-, whereas in 2011 is recorded a decrease of nitrite nitrogen of 0.175 mg/l $N\text{-}NO_2$-, These decreasing continues in 2012 with the value of 0.154 mg/l $N\text{-}NO_2$-.
From the above, may be concluded for a poor river water quality.

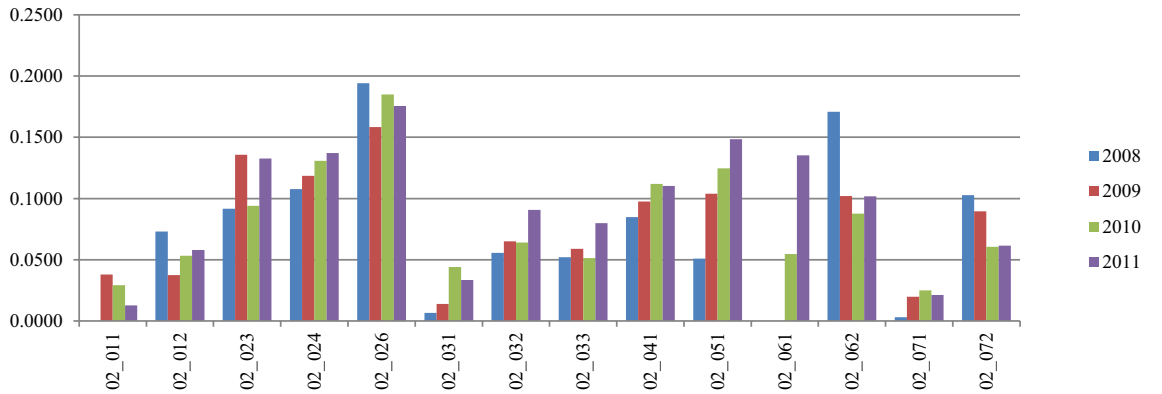


Figure 46: Nitrite nitrogen in Ibri river basin

Ammonia nitrogen (N-NH4+)- same as the previous parameter, this parameter show the highest value in Bresje sampling site of Prishtevka river, which has the highest values comparing to other sampling sites as well. In all years 2008, 2009, 2010 and 2011, the Prishtevka river- Bresje sampling site shows the highest annual average value.

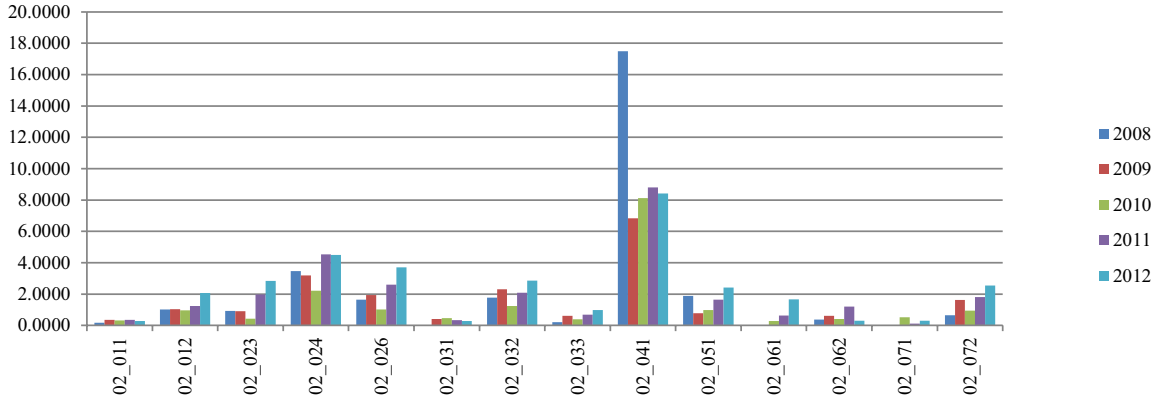


Figure 47: Ammonia nitrogen in Ibri river basin

In 2012, same situation is registered. The Prishtevka river, sampling site in Bresje shows the highest value of annual average value 8.416 mg/l N-NH4+, whereas the minimum of AAV is recorded at river springs.

Orthophosphate phosphor ($P\text{-}PO_4^{3-}$)- the minimum AAV for this parameter in 2008 is recorded in Topilla river - Petrovë 0.003 mg/l $P\text{-}PO_4^{3-}$, whereas for other years this minimum is recorded in Iber river- Kushtovë: in 2009 the value is 0.009 mg/l $P\text{-}PO_4^{3-}$, in 2010 the value is 0.010 mg/l $P\text{-}PO_4^{3-}$; and in 2011 the value 0.001 mg/l $P\text{-}PO_4^{3-}$. In 2012 the minimum of AAV of orthophosphate phosphor is recorded in Drenica river - Krojmir. Whereas, the maximum of AAV for all years is recorded in Prishtevka river- Bresje, which ranges from 0.728 mg/l $P\text{-}PO_4^{3-}$ to 1.191 mg/l $P\text{-}PO_4^{3-}$.

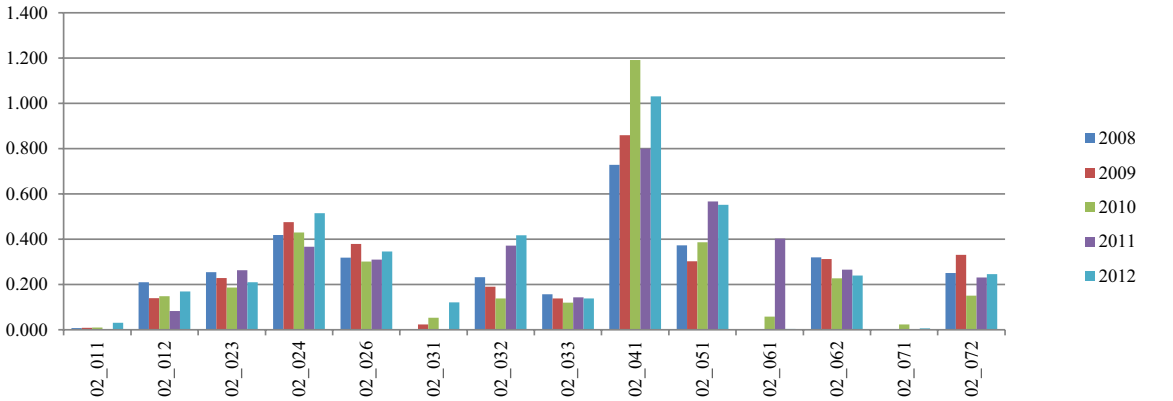


Figure 48: Orthophosphate phosphor in Ibri river basin

Total phosphor (poly and ortho)- results of this parameter in the graph presents data from sampling sites in the station along the rivers, and do not include results from the sampling sites at river springs. It results with the following figures: the maximum of AAV of total phosphor for four years is recorded in Prishtevka river- Bresje, with the values from 0.964 mg/l P – 1.215 mg/l P, whereas the minimum if the AAV for years 2008, 2009 and 2010 is recorded at Llap river- Milloshevë, with the values 0.222 mg/l P, 0.186 mg/l P and 0.159 mg/l P. In 2011, approximately same results are recorded: the minimum of AAV is recorded in Ibër- Mitrovicë 0.128 mg/l P, whereas the maximum of AAV is recorded in Prishtevka river- Bresje with the value 1.041 mg/l P.

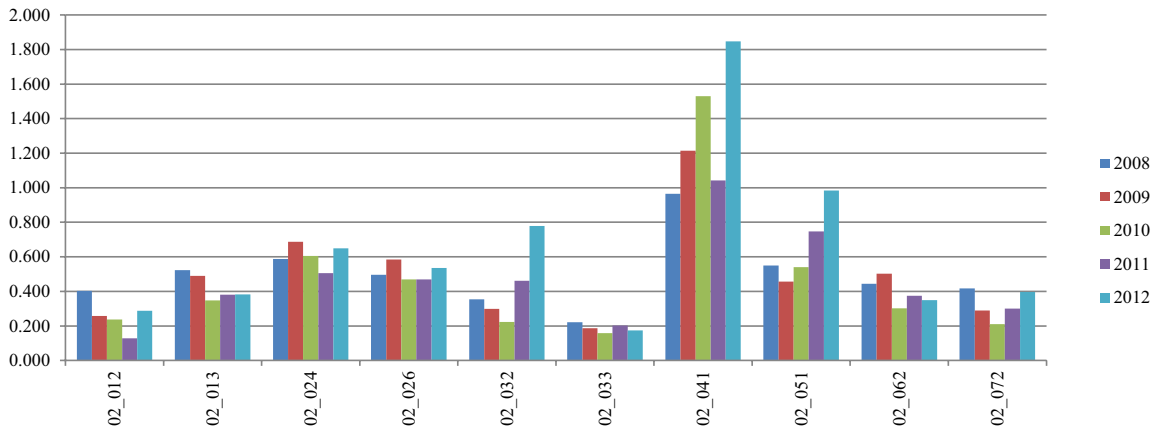


Figure 49: Total phosphor (poly and ortho) in Ibri river basin

In 2012, the total phosphor has the following values: the minimum of AAV in three first years is recorded in Llap river - Milloshevë 0.175 mg/l P, whereas the maximum of AAV in Prishtevka river - Bresje with the value 1.847 mg/l P.

MORAVA E BINÇËS AND LEPENCI

General comments on rivers of Morava e Binçës and Lepencit river basins

Morava e Binçës river- Monitoring in this river takes place by starting at Kurbuliq, and then Kllokot, Ugljare and on the border with Serbia in Domorovc. This river joins the Krivareka river of Dardana. This river collects the urban and industrial wastewaters of Vitia, Gjilan and Dardana.

Kriva Reka river - This river includes two separate streams, where water at the first monitoring point resulted with high quality, while at the second monitoring station in Domorovc, it is indicated a decrease of the water quality. The parameters that resulted in higher pollution are: turbidity, ammonia and nitrites.

Lepenc river- This river has two sources, one in Prevalla mountain, and the other in Brezovica mountain. Both have very good water quality. This situation continues up to the water discharge of the company "Silkapor" where time by time waters discharged by this company significantly impacts the water quality of the river. This phenomenon continues for several kilometres and it is indicated in the second monitoring station of the river, which is located before the river contiguity point with the Nerodime River in Kaçanik. After converging with the Nerodime River, the measurements are made at the third station at Hani i Elezit, which is positioned at cross border with Macedonia. The water quality at this point is within the allowed limits.

Nerodime River - The river begins in the Jezerc mountains (where the first monitoring station is located) of Ferizaj municipality with a high water quality, while the second station is located after the discharge of urban and industrial wastewater of Ferizaj. The water quality of this river gets decreased along the river course, up to the next station that is located before the contiguity point with the Lepenci River.

INTERPRETATION OF RESULTS OF MORAVA E BINÇËS AND LEPENCI RIVER BASIN

Interpretation of results from sub river basins of Morava e Binçës and Lepenc is made by considering the maximum and minimum of annual average values, of different years, different parameters and sampling sites.

Dissolved oxygen (O_2 dissolved) – from the graph can be seen a tendency of decreasing of dissolved oxygen values at the stations after the urban waste collectors are discharged. In the upper water stream, waters are clean and oxygen abundant. Deteriorating of river oxygen results due to the oxygen consumption increase after the organic matters and other wastewaters are discharged into the river.

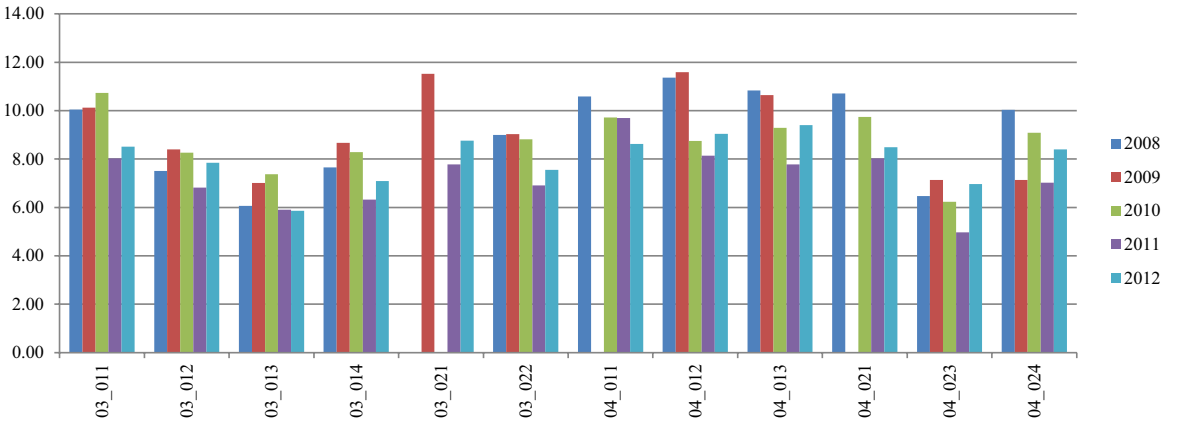


Figure 50: Dissolved oxygen (mg/l O_2) in Lepenci and M. Binçës river basin

Water of Morava e Binçës river – Uglar, for two years results with small quantity of dissolved oxygen which is as a consequence of untreated urban and industrial wastewater discharged into the river. In two first years the minimum of AAV is 6.06 mg/l O_2 and 7.01 mg/l O_2, whereas the maximum of AAV is recorded in Lepenc river - Kaçanik 11.37 mg/l O_2 and 11.59 mg/l O_2. In 2010 similar values are recorded, the minimum of AAV 6.24 mg/l O_2 is recorded in Nerodimja river-Gërlicë and maximum of AAV 10.73 mg/l O_2 in Morava e Binçës river - Kurbuliq. In 2011 in Nerodimja river- Gërlicë the minimum of AAV was 4.97 mg/l O_2 and the maximum of AAV was 9.69 mg/l.
Also, in 2012 no significant changes are of this parameter are recorded. The minimum of AAV is recorded in Morava e Binçës river - Uglar 5.86 mg/l O_2, whereas maximum of AAV is recorded in Lepenci river - Hani i Elezit 9.40 mg/l O_2.
It has to be mentioned that in no monitoring station is exceeded the minimum value (below 3 mg/l).
Biochemical oxygen demand (SHBO5) - this parameter in the graph, presents only results of monitoring sites along the rivers, and does not include sampling sites at river springs. In 2008 minimum of AAV is recorded in Lepenc river-Kaçanik (2.68 mg/l O_2), whereas the maximum of AAV is recorded in Nerodimja river-Gërlicë (11.97 mg/l O_2). In 2009 the minimum of AAV is recorded in Lepenc- river Kaçanik (2.92 mg/l O_2), and the maximum of AAV is recorded in Morava e Binçës river - Uglar 14.08 mg/l O_2.

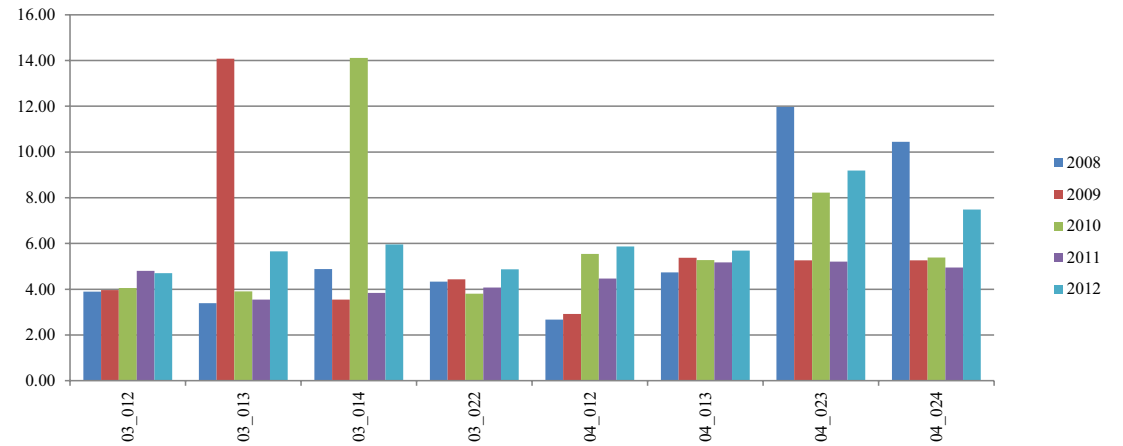


Figure 51: Biochemical oxygen demand (mg/l O_2) in Lepenci and M. Binçës river basin

The minimum of AAV in 2010 is recorded at Kriva Reka river-Domorovc (3.81 mg/l O_2), and the maximum of AAV is recorded in Morava e Binçës river - Domorovc (14.12 mg/l O_2). In 2011 the minimum is recorded in Morava e Binçës river - Uglar (3.55 mg/l O_2), whereas the maximum of AAVis recorded in Nerodime river - Gërlicë (5.21 mg/l O_2).

Also, in 2012 the minimum of AAV is recorded in Morava e Binçës river- Kllokot (4.7 mg/l O_2), and the maximum of AAV is recorded in Nerodime river - Gërlicë (9.19 mg/l O_2).

Electricity conductivity- in 2008 values of this parameter round from the lowest one in Nerodimja river- Jezerc 138 μS/cm, up to the highest one in Morava e Binçës river - Morava e Binçës 684 μS/cm. In 2009, the lowest value was recorded in Lepenc river – Prevallë, whereas the maximum annual average value recorded in Kriva Reka river - Kriva Reka Domorovc is 628 μS/cm. In 2010 the minimum of AAV is recorded in Lepenc river – Prevallë 86 μS/cm, whereas the maximum of AAV is recorded in Morava e Binçës river – Uglar (503 μS/cm).

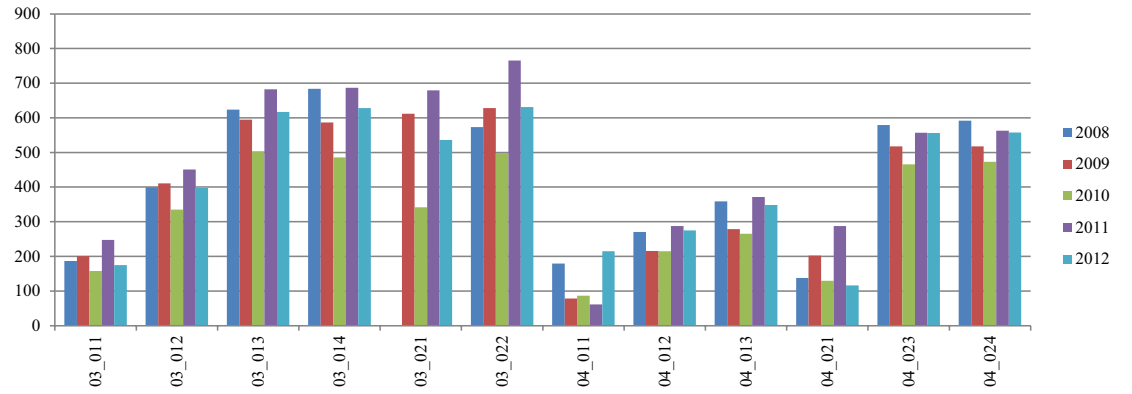


Figure 52: Electricity conduction (μS/cm) in Lepenci and M. Binçës river basin

Also, the minimum of AAV in 2011 is recorded in Lepenc river- Prevallë (62 μS/cm), whereas the maximum of AAV in Kriva Reka river - Kriva Reka Domorovc (765 μS/cm).

In 2012 the minimum of AAV is recorded in Nerodimja river - Jezerc (116 μS/cm), wheres maximum of AAV in Kriva Reka river - Kriva Reka Domorovc (632 μS/cm).

Hydeogen ion concentration (pH)- the pH values rounds between 7.61 up to 8.14 in 2008. In 2009 pH values were between 7.64-8.27. In 2010 between pH 7.63 – 8.24. In 2011the pH values were between 7.62 – 8.26; and in 2012 between 7.73 - 8.32.

In general, waters of these river basins belong to a moderate alkaline environment.

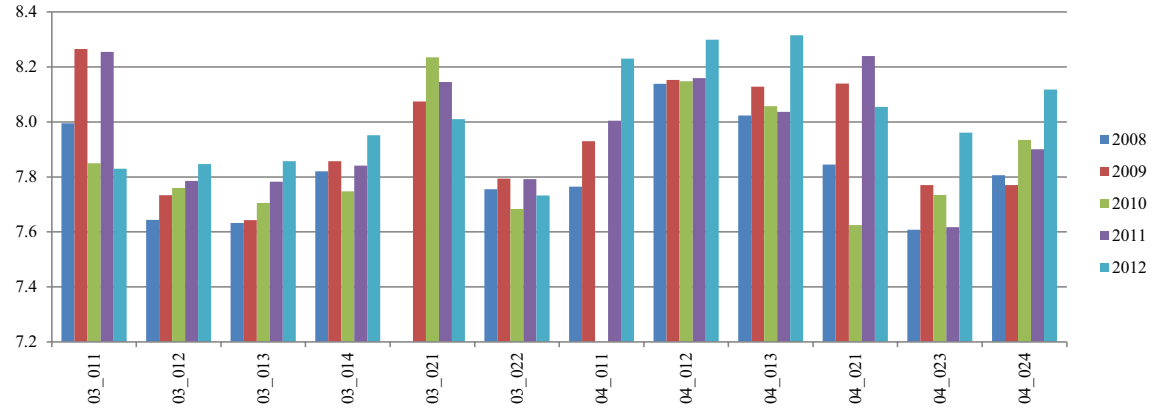


Figure 53: Hydrogen ion concentration in Lepenc and M. Binçës river basin

Nitrate nitrogen (N-NO_3-)- in 2008 minimum of AAV recorded in Lepenc river - Prevallë was 0.154 mg/l N-NO_3-, whereas maximum of AAV was recorded in Lepenc river- Kaçanik (2.851 mg/l N-NO_3-). Throughout years 2009, 2010, 2011 and 2012 the minimum is appeared in detection limit (0.1 mg/l N-NO_3-) in following sampling sites: for years 2009, 2010 and 2011 Kriva Reka river - Zebincë, Lepenci - Prevallë and Nerodimja river- Jezerc.

The maximum values of AAV in 2009 is recorded in Morava e Binçës river- Morava e Binçës Domorovc (1.923 mg/l N-NO_3-), in 2010 in Kriva Reka river - Domorovc (1.595 mg/l N-NO_3) and in 2012 the Morava e Binçës river - Uglar (1.384 mg/l N-NO_3-).

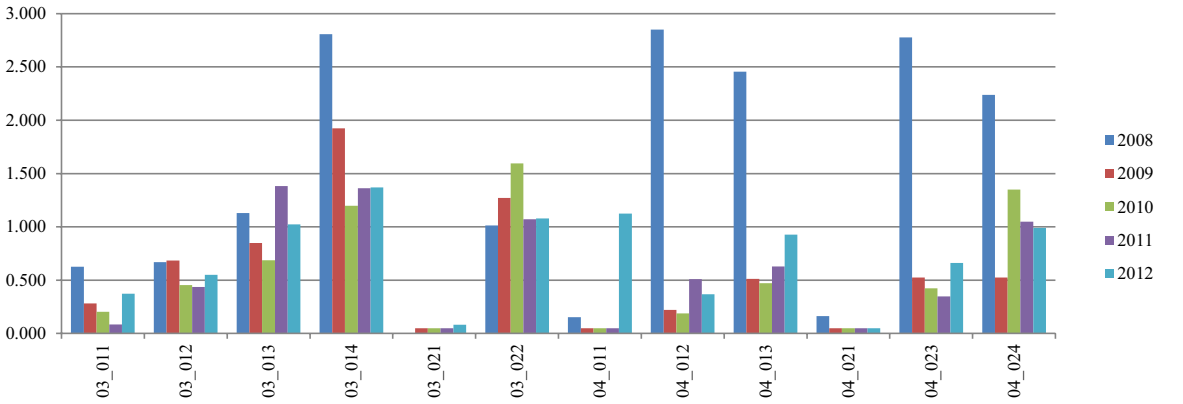


Figure 54: Nitrate nitrogen (mg/l N-NO_3-) in Lepenci and M. Binçës river basin

In 2012 as a minimum is recorded the detection limit (0.1 mg/l N-NO_3-) in sampling site Nerodimja river - Jezerc, whereas the maximum of AAV is recorded in Morave e Binçës river - Domorovc (1.370 mg/l N-NO_3-).

Nitrite nitrogen (N-NO_2-)- in 2008 minimum of AAV is recorded in Lepenci river - Prevallë (0.0046 mg/l N-NO_2-), whereas the maximum of AAV is recorded in Nerodimja river - Kaçanik (0.3297 mg/l N-NO_2-). In 2009, minimum of AAV is recorded in Kriva Reka river - Zebincë (0.0149 mg/l N-NO_2-), whereas the maximum of AAV is recorded in Morava e Binçës river - Morava e Binçës Domorovc (0.1471 mg/l N-NO_2-). In 2010 the minimum of AAV is recorded in Lepenc river- Prevallë (0.0201 mg/l N-NO_2-), and maximum of AAV is recorded in Nerodimja river - Kaçanik (0.2592 mg/l N-NO_2-).

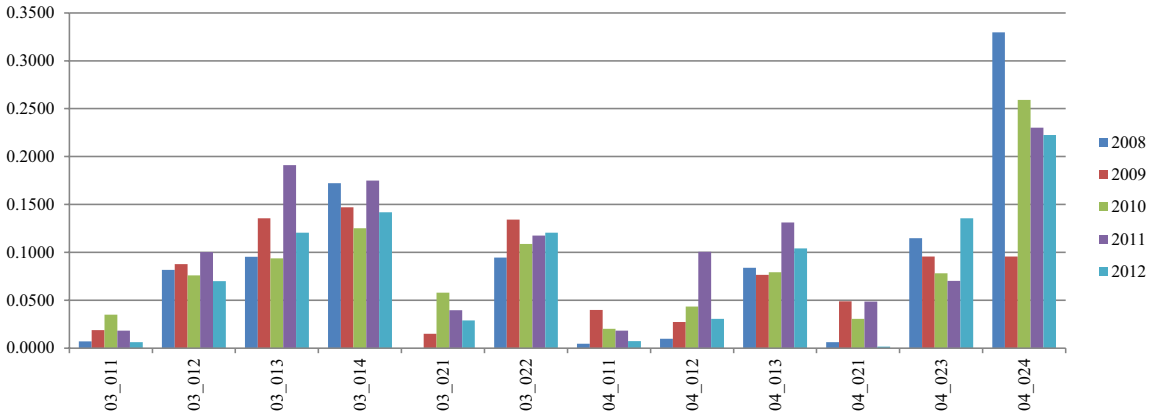


Figure 55: Nitrite nitrogen (mg/l N-NO_2-) in Lepenci and M. Binçës river basin

In 2011, no significant differences were recorded. The minimum of AAV was recorded in Lepenc river - Prevallë (0.0182 mg/l N-NO_2-), whereas the maximum of AAV in Nerodimja river - Kaçanik (0.2302 mg/l N-NO_2-). In 2012 nitrite nitrogen in this river basin appears with the minimum of AAV 0.0017 mg/l N-NO_2-, and the maximum of AAV is recorded in Nerodimja river - Kaçanik 0.2226 mg/l N-NO_2.

Ammonia nitrogen (N-NH4+)- as a pollution element it is found in large quantities, in particular after the large urban and industrial wastewater collectors are discharged into the rivers. In alkaline conditions pH > 10 in the surfaces of receiving environment, ammonia has damaging effects in water fauna. Its presence in water results with unpleasant odours.

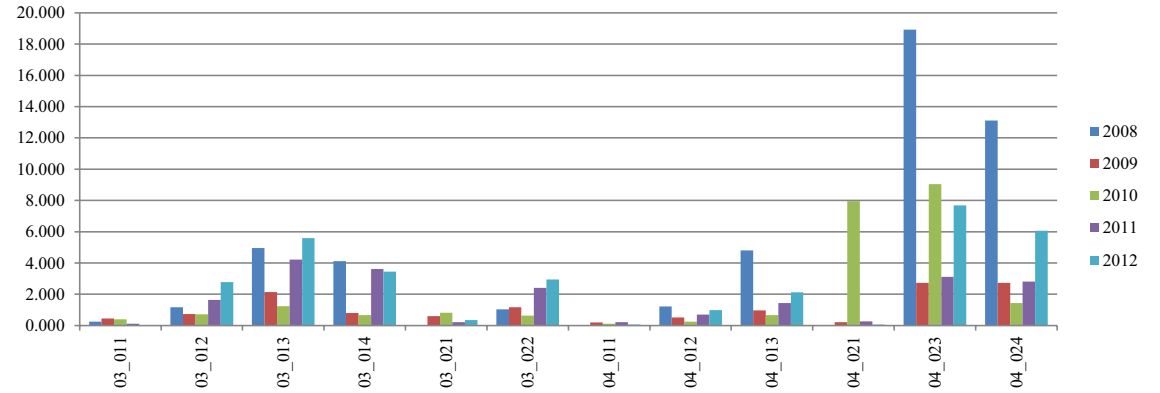


Figure 56: Ammonia nitrogen (mg/lN-NH4+) in Lepenci and M. Binçës river basin

A detection limit value (0.001 mg/l N-NH4+) was recorded in 2008 in Nerodime river – Jezerc, whereas the maximum value is recorded in Nerodime river - Gërlicë (18.921 mg/l N-NH4+). In 2009 and 2010 minimum annual values were recorded in Lepenc river - Prevallë Subain 0.1906 mg/l N-NH4+ and 0.1089 mg/l N-NH4+, whereas the at the Nerodimja river - Gërlicë are recorded the maximal values 2.7230 mg/l N-NH4+ and 9.0467 mg/l N-NH4+. In 2011 the minimum of AAV is recorded in Morava e Binçës river - Kurbuliq (0.1089 mg/l N-NH4+), whereas teh maximum of AAV is recorded in Morava e Binçës river - Uglar (4.2234 mg/l N-NH4+).

In 2012, the ammonia nitrogen, as a minimal value of annual average was recorded in Morava e Binçës river - Kurbuliq (0.0233 mg/l $N\text{-}NO_2$-), and as a maximal annual value was recorded in Nerodimja river - Gërlicë (7.6902 mg/l $N\text{-}NO_2$-).

Orthophosphate phosphor ($P\text{-}PO_4^{3}$-)- the minimum of AAV in 2008 and 2011 is recorded in Nerodimja river - Jezerc (0.003 mg/l $P\text{-}PO_4^{3}$-). In 2009 and 2012 the minimum of AAV is registered at Kriva Reka river - Zebincë (0.004 mg/l $P\text{-}PO_4^{3}$) and in 2010 Lepenc river - Prevallë (0.006 mg/l $P\text{-}PO_4^{3}$-). Whereas, the maximum of AAV in all four years is registered in Nerodimja river – Gërlicë, with intervals between 0.330 mg/l $P\text{-}PO_4^{3}$- to 0.865 mg/l $P\text{-}PO_4^{3}$-.

Based on the results of four years monitoring, it may be concluded that the maximal value of this parameter is registered in Nerodimja river - Gërlicë.

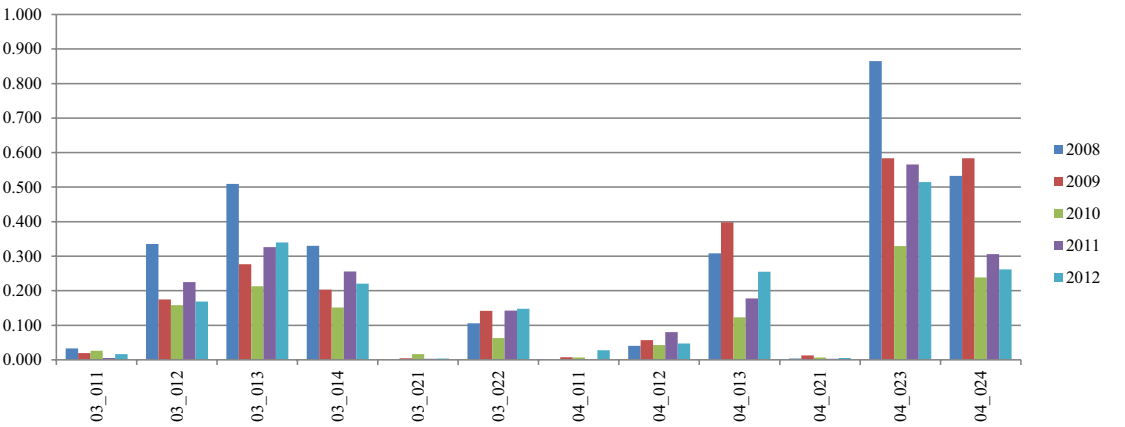


Figure 57: Orthophosphate phosphor (mg/l $P\text{-}PO_4^{3}$-) in Lepenci and M. Binçës river basin

JThe increased values of phosphate ions are mainly recorded in the monitoring sites which locations are after the urban and industrial wastewaters are discharged.

Total phosphor (poly and ortho)- in the sampling sites near the water springs very low quantities of this parameter were recorded, therefore, in the graph are presented only data from monitoring sites along the rivers. In the period 2008-2011, the minimum of AAV is recorded in Lepenc river - Kaçanik with an interval of values between 0.064 mg/l P – 0.168 mg/l P. Whereas the maximum of AAV for the four years is recorded in Nerodimja river – Gërlicë, with values between 0.420 mg/l P- 1.247 mg/l P.

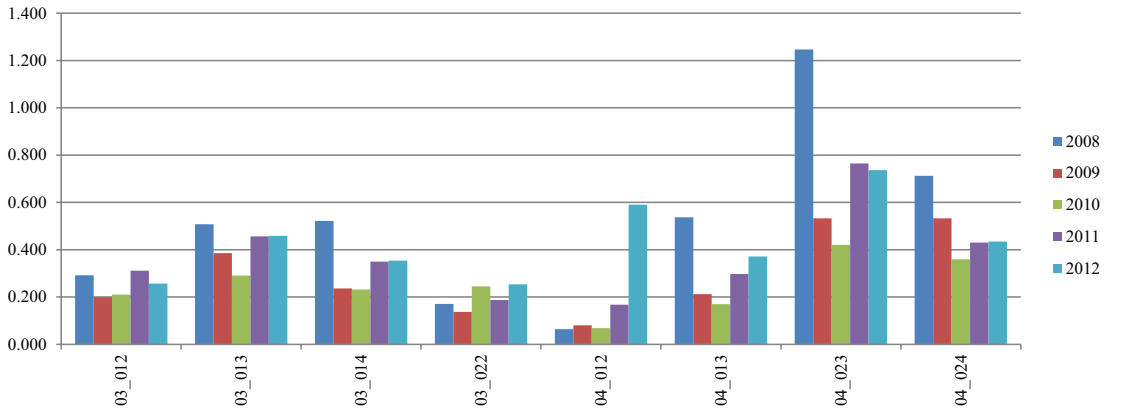


Figure 58: Total phosphor (poly and ortho)(mg/l P) in Lepenci and M. Binçës river basin

In 2012, the minimum value of annual average is recorded in Kriva Reka river - Kriva Reka Domorovc (0.254 mg/l P), and the maximum value of annual average is recorded in Nerodimja river - Gërlicë (0.736 mg/l P).

Water Pollution by heavy metals

The KHMI has started to monitor the heavy metals in surface waters since 2008. A monitoring gap was occurred in two years, and since 2011 heavy metals are again monitored. Some of them are toxic elements such as: Pb2+, Cd2+, Cu2+, Cr6+, Ni2+ etc. But, among them are included as well the essential elements such as: Fe, Zn, Mn, and Cr.

Table 24: Maximal allowed values for some heavy metals in surface waters according to the legislative decree 11 May 1999 nr.152 [19]

Nr.	Metali	Simboli	Njësia matëse	VML
1	Kadmiumi	Cd	µg/l	5
2	Kromi	Cr	µg/l	50
3	Mangani	Mn	µg/l	50
4	Hekuri	Fe	µg/l	200
5	Nikeli	Ni	µg/l	20
6	Plumbi	Pb	µg/l	10
7	Bakri	Cu	µg/l	1000
8	Zinku	Zn	µg/l	3000

In this report we will present graphs of metals only for those parameters which have exceeded the Maximum Allowed Values (MAV)

19 " LEGISLATIVE DECREE 11 MAY 1999,NR. 152", Provisions from water protection from pollution, Directive 91/271/EEC on urban wastewater treatment.

Drinit i Bardhë river basin- Based on the Legislative Decree of 11 May 1999 the manganese and iron metals have exceeded the MAV (below graphs of these metals)
Manganese metal – In 2008 exceedances of manganese metal are registered in the following monitoring sites: Erenik river - Ura e Terzive, Rimnik river - Xërxë, Toplluha river in the two monitoring sites, and at the Lumëbardhi i Prizrenit river - Vllashnje. In 2011, in referent stations are recorded detection limits 1.5 μg/l. Whereas exceedances of MAV were recorded mainly in the monitoring sites along the rivers such as: Istog- Zllakuqan, Klina- Klinë, Ereniku - Ura e Terzive, Rimnik river - Xërxë and Toplluha river- Piranë.
Also, in 2012 detection limits are registered in referent stations, whereas exceedances of manganese metal are registered in the following sampling sites: Drini i Bardhë river - Gjonaj, Lumbardhi i Pejës - Pejë and Grabanicë, Lumbardhi i Deçanit - Deçan, Erenik - Ura e Terzive, Rimnik - Xërxë, Toplluha river - Piranë and Lumbardhi i Prizrenit river – Vllashnje.

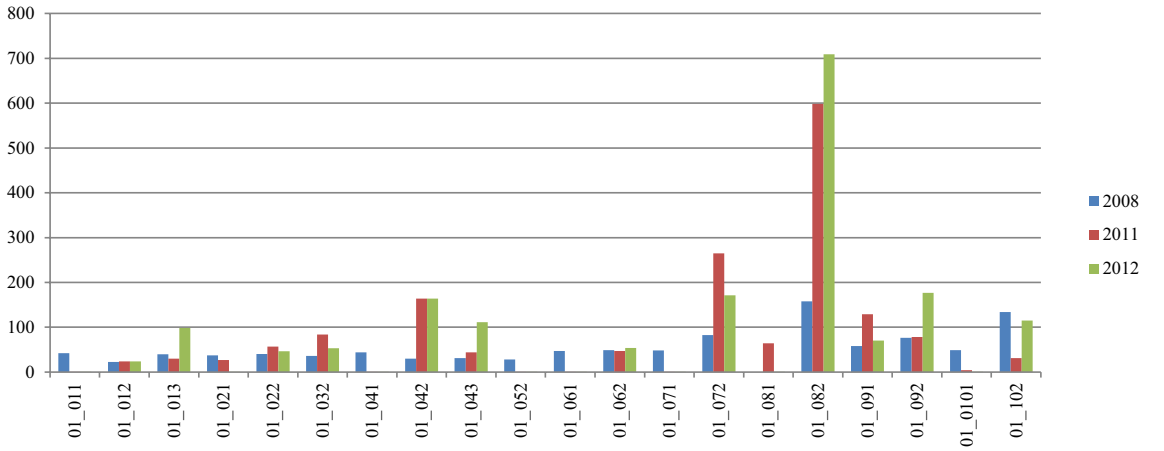


Figure 59: Manganese metal in Drini i Bardhë river basin

In the three years of monitoring, in Drini i Bardhë river basin, the Rimnik river- Xërxë marks the highest pollution with manganese metal.

Iron metal- no iron metal exceedances were recorded in 2008. In 2011 as a detection limit (1.5 μg/l) appeared in Istog river- Istog. Exceedances were recorded in the following monitoring sites: Istog river - Zllakuqan, Lumbardhi i Pejës- Grabanicë, Erenik- Ura e Terzive, and in Lumbardhi i Prizrenit river - Vllashnje.

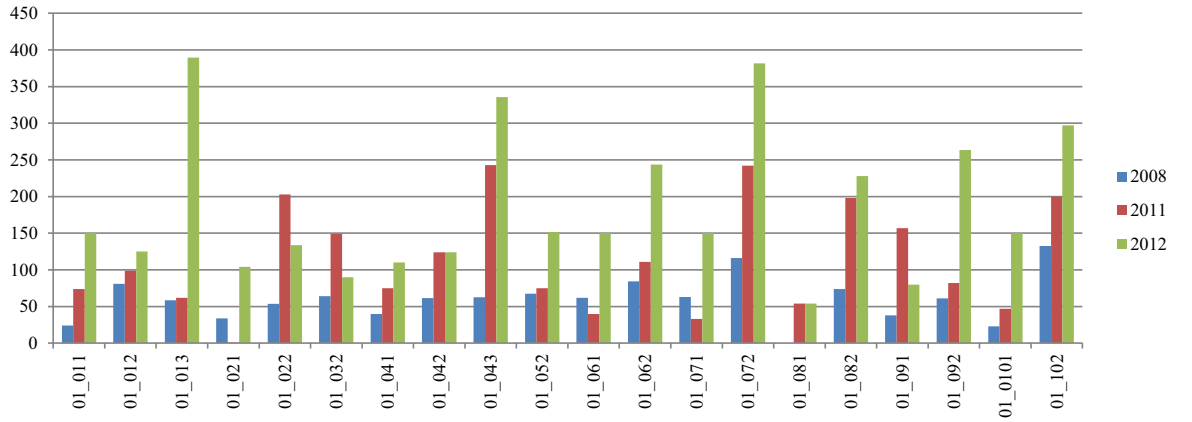


Figure 60: Iron metal in Drini i Bardhë river basin

In 2012, exceedances of MAV with iron metal are recorded in the following monitoring stations: Drini i Bardhë - Gjonaj, Lumbardhi i Pejës - Grabanicë, Lumbardhi i Deçanit - Krelan, Erenik - Ura e Terzive, Toplluha river – Piranë, and Lumbardhi i Prizrenit river - Vllashnje.

Ibri river basin – In this river basin is evident the presence of heavy metals such as: chrome, zinc, manganese, and iron. Only metals that have exceeded Maximum Allowed Values in this river basin will be presented in the graph.

Chrome metal – in 2008 in detection limit (1.5 μg/l) appears in the following monitoring stations: Ibër river - Kushtovë and Mitrovicë, Sitnica- Mitrovicë, Llap river – Murgullë, and Drenica river - Krojmir. Esceedances of MAV are recorded in the following monitoring stations: Sitnica river - Vragoli and Plemetin, Llapi - Podujevë, Prishtevka - Bresje, Graçanka river – Vragoli, and Drenica river - Vragoli. In 2011 the detection limit appears in Topilla river - Petrovë. Whereas exceedances of MAV are recorded in: Ibër river - Kelmend, Sitnica- Vragoli and Plemetin, Llapi- Podujevë, and Drenica river - Vragoli.

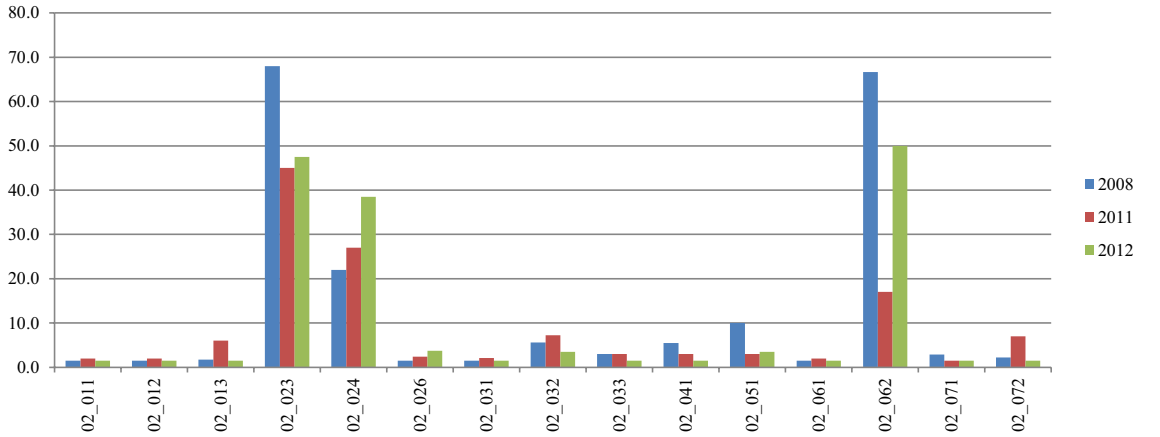


Figure 61: Chrome metal in Ibri river basin

Also in 2012, almost all referent stations are appeared with detection limit values. Whereas exceedances of MAV are recorded in Sitnica river – Vragoli and Plemetin, Drenica river – Vragoli, which also show for most chrome polluted monitoring sites in this river basin.
Zinc metal- throughout the three years of heavy metals monitoring no exceedances of MAV of zinc were registered, however it is appeared in quite high concentrations. This results from waters of the Mine flotation in Stan Tërg. In 2008 the annual average values of zinc metal is 290 μg/l; in 2011 - 1280 μg/l; and in 2012 - 694 μg/l.

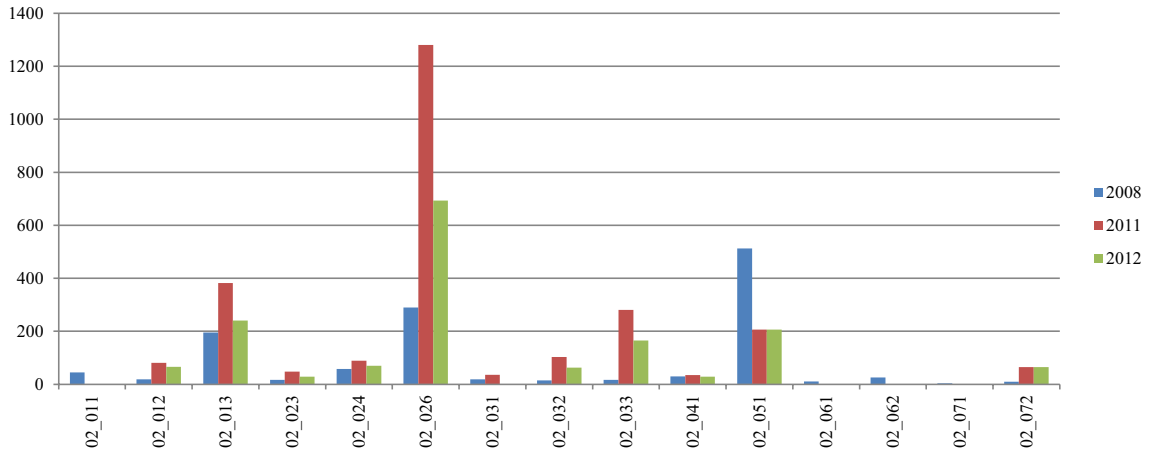


Figure 62: Zinc metal in Ibri river basin

Manganese metal – in the ibri river basin, in the last three years was evidenced in all monitoring sites. In this report we provide only results where the MAV is exceeded. In 2008 values lower than the MAV were registered in the following stations: Ibër river - Kushtovë and Mitrovicë; Llapi – Murgullë; and Drenica - Krojmir. In 2011 values under the MAV were recorded in the following stations: Sitnica

river - Plemetin, Llap river- Murgullë and Milloshevë, Drenica – Krojmir, and Topilla river - Petrovë. In 2012, in the following stations no exceedances are recorded; Ibër - Mitrovicë, Drenica - Krojmir, and Topilla river - Petrovë.

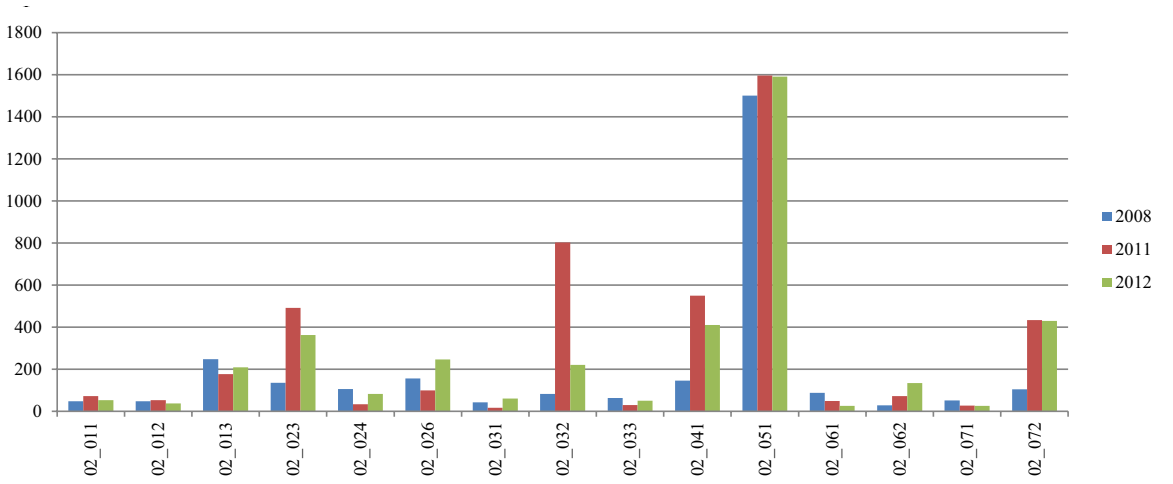


Figure 63: Manganese metal in Ibri river basin

It has to be mentioned that, for the three years, the Graqanka river recorded the highest values of manganese metal concentration.

Iron metal- No iron metal exceedances of MAV were recorded in 2008. In 2011 exceedances were recorded in Shtime river - Muzeqinë. In 2012, exceedances of MAV were recorded in the following monitoring stations: Prishtevka river - Bresje, Graqanka river - Vragoli and Shtime river - Muzeqinë.

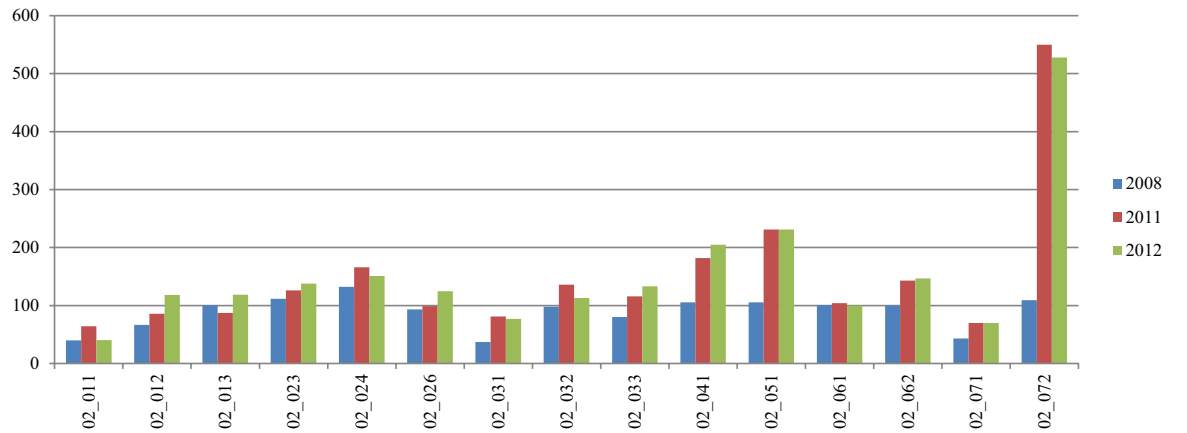


Figure 64: Iron metal in Ibri river basin

PTherefore, the Shtime river – Muzeqinë shows the highest iron metal pollution in this river basin. In 2011 the annual average value was 550 μg/l, and in 2012, a slight decreased value (528 μg/l).

Morava e Binçës and Lepenci river basin- in these two sub basins, the iron and manganese metals recorded exceedances of allowed values of the EU directive 152/1999, whereas other metals are found to be in smaller quantities then the MAV.

Manganese metal - In 2008 exceedances of MAV were recorded in all monitoring stations except in three monitoring stations of Lepenc river. The maximum value of annual average is recorded in Morava e Binçës river- Uglar (189 μg/l). In 2011, except in the referent stations, in all other monitoring stations exceedances of MAV of manganese metal were recorded.

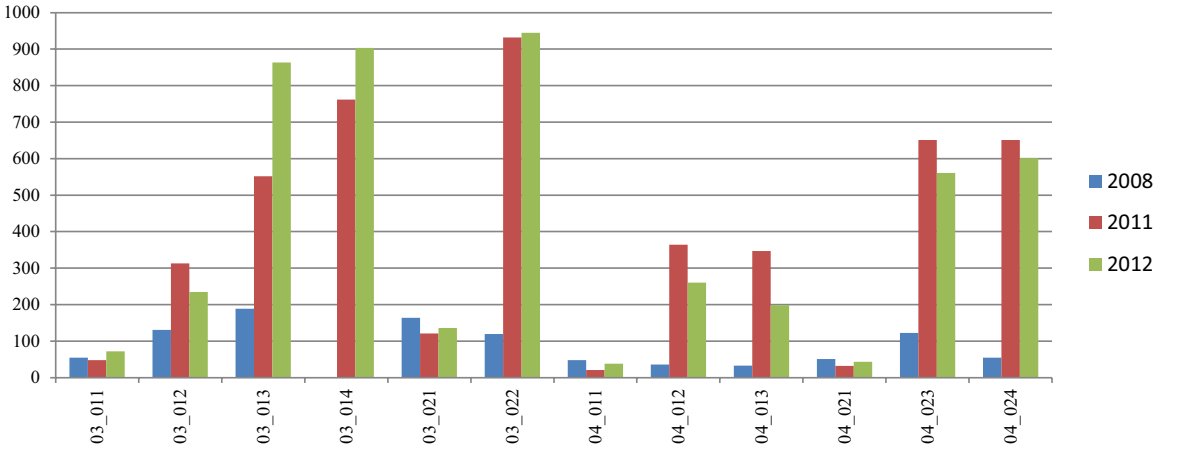


Figure 65: Manganese metal in Morava e Binçës and Lepenci river basins

In 2012, exceedances were recorded in all monitoring stations, except in two monitoring stations of Lepenc river basin.
The maximum value of annual average for both years (2011 and 2012) is recorded in Kriva Reka river- Kriva Reka Domorovc .

Iron metal- In 2008, exceedance of MAV was recorded only in Morava e Binçës river – Uglar. In years 2011 and 2012 iron metal exceedances of MAV were recorded in: Morava e Binçës – all stations (except the referent station); Kriva Reka river - Kriva Reka Domorovc; and Lepenc river- Lepenci Kaçanik and Han i Elezit.

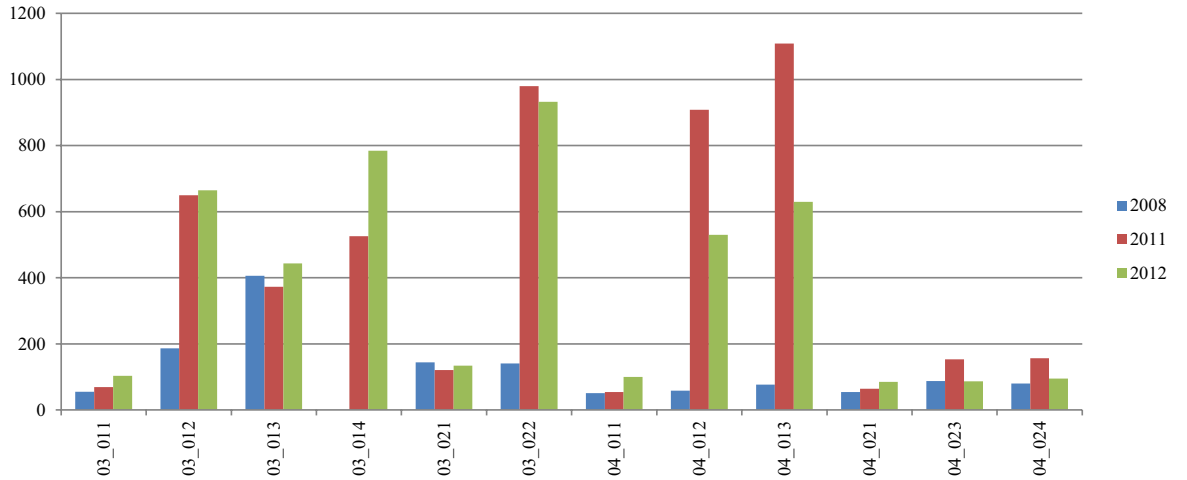


Figure 66: Iron metal in Morava e Binçës and Lepenci river basins

3.3. Conclusions and recommendations

Conclusions

- Kosovo still lacks the national water strategy;
- The current legal basis still needs harmonization with the EU directives;
- Water management in Kosovo is still in the construction phase of infrastructure for water supply, irrigation system, control of wastewater disposal, development of hydro- energy potential, flood control, erosion, etc.
- One of most important problems in water sector is the lack wastewater treatment plants;
- Despite the significant progress made, there are still problems in inter-institutional cooperation in solving problems in the water sector, especially at the local level.
- It is evident the lack of scientific researches in the field of water research, especially for ground water resources.
- The surface water monitoring system needs to be strengthened, while there is no groundwater monitoring.
- Due to the population growth, as well as the growing number of households connected to the water system, the demand for water continues to grow.

Recommendations

- Development of long-term strategy for water management;
- Complete the legal framework for water and its harmonization with EU directives.
- Strengthen the surface water monitoring system and establish the groundwater monitoring;
- Promoting the sustainable use of water resources;
- Establishment of wastewater treatment plants;
- Expand /increase the population coverage with water supply and sanitations networks;
- Establish water conservation measures in all sectors;
- Maintenance and expansion of water supply and sewerage system;
- Increase cooperation and information between central and local institutions;
- Conduct scientific research in the water sector, especially in ground water resources;
- Awareness raising and education on water use and water management responsibility;
- Assessment of needs for investments in water infrastructure;

4. Land / Soil

4.1. Land use

The continuous impact of human activities leads to degradation of land surfaces by causing harmful environmental and socio-economic effects. The challenge is to prevent land degradation through specific policies and measures for land protection. In Table 25 are presented data on land use classes in hectares (ha), whereas in table 26 are presented categories of land by municipalities.

Table 25. Total land surface according to land use classesf[20]

Land use	Surface (ha)
Forest	464800
Forestry land	28200
Agriculture land	342400
Pasture and meadow	153200
Wasteland	23400
Urban area	40000
Water surface	4600
Not classified (other)	41600
Total	1098200

According to the table, by total area of 464 800 ha, 278 880 ha or about 60% is classified as public forest land. The remaining part 40% (185,920 ha) is privately owned. These figures vary both by the old statistical data and the cadastral records.

Table 26: Land categories according to municipalities[21]

Name of municipality	Land categories/ ha			
	Wastelands used as pastures	Unused waste-lands	Contaminated lands	Total
Deçan	960			960
Gjakovë	800	420		1220
Gllogoc	1600			1600
Gjilan		2332.4		2332.4
Dragash		60		60
Istog	4000	410	48	4458
Kaçanik	300	116		416
Klinë	800			800
Fushë Kosovë	360	228	157	745
Kamenicë	3583			3583
Mitrovicë	2532.9			2532.9
Leposaviq				
Lipjan	350			350
Novo Bërdë				

20 Ministry of Agriculture, Forestry and Rural Development, 2009

21 Semiannual administrative survey / the office of Agriculture statistics -MAFRD

Obiliq	1400	1350	147	2897
Rahovec	3513	1520		5033
Pejë	1020	4493		5513
Podujevë	1805	1478		3283
Prishtinë				
Prizren	200	150	5	355
Skenderaj	1600			1600
Shtime	149		1	150
Shtërpcë		215		215
Suharekë	3550	900	17	4467
Ferizaj				
Viti	500	12		512
Vushtrri	450	271.7		721.7
Zubim Potok				
Zveçan			20	20
Malishevë	2217.05			2217.05
Total	31689.95	13956.1	375	46021.05

Main factors affecting land loss in Kosovo are: Settlements (unplanned constructions), industry (solid waste, surface mining) construction of roads and highways, household waste and landfills, erosion, and uncontrolled gravel exploitation.

One of the most common forms of agricultural land loss is the change of destination of agricultural land into construction land. According to the data of MAFRD, provided by Municipal Departments of Agriculture, during the period
1999-2008, the designation of approximately 2,580.50 ha of agricultural land has been changed without permission of Municipal Assemblies. Whereas, destination of around 1690.00 hectares of agricultural land has been changed with permission of Municipal Assemblies.

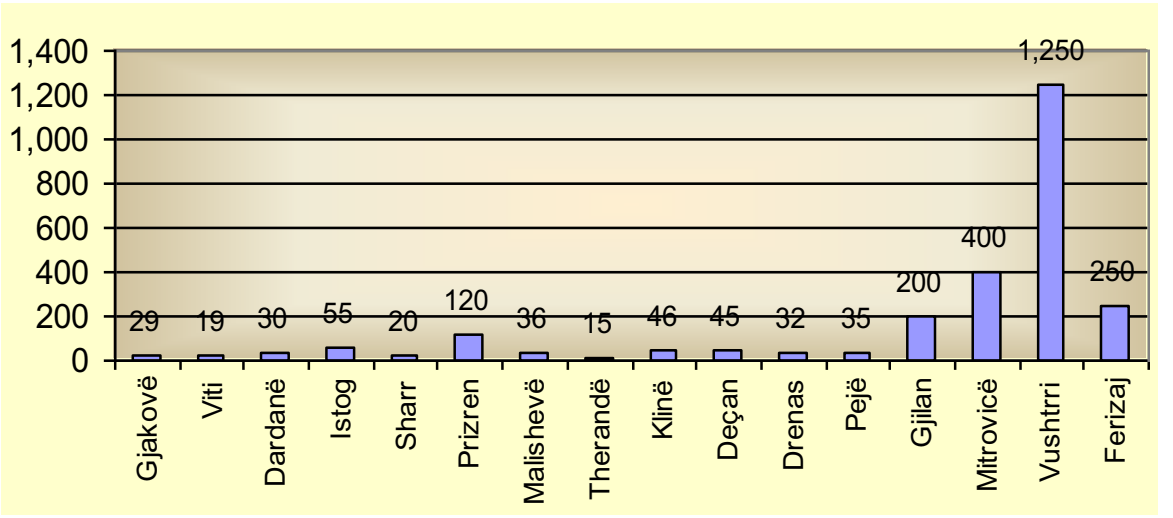


Figure 67: Surface of agriculture land which destination is changed without permission of local authorities 1999-2008[22]

22 Ministria e Bujqësisë Pylltarisë dhe Zhvillimit Rural, 2009

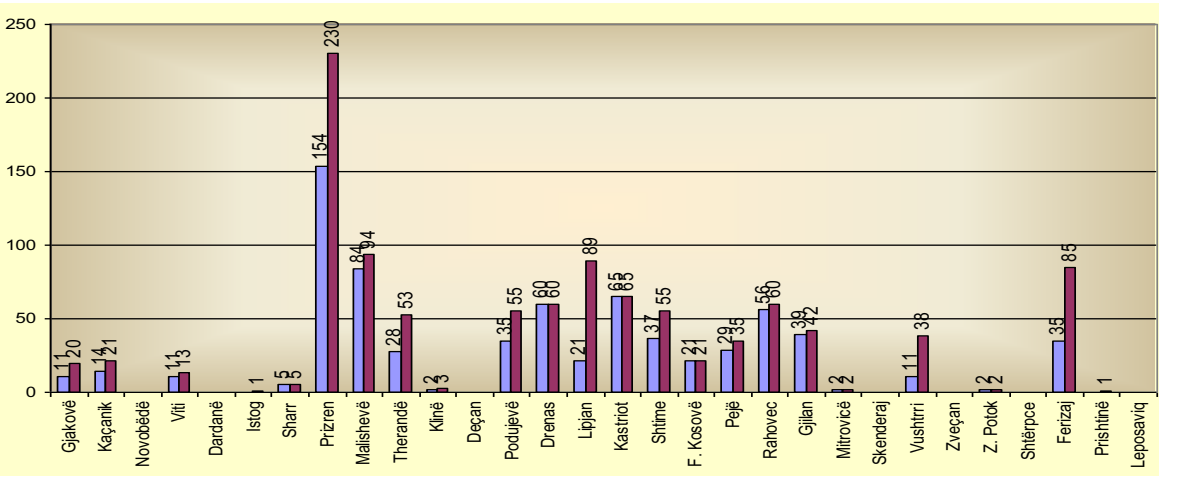


Figure 68: Surface of agriculture land which destination is changed with the permission of local authorities 1999-2008

According to MAFRD assessment, it is estimated that about 400 ha of agricultural land within a year is changed the destination of land use into construction land.

4.2. Soil pollution

Contamination of lands with heavy metals - This category of pollution results by industrial processes. Heavy metals and highly toxic which contribute to pollution are: metal mercury, and organic-metric compounds as dimethyl-mercury of Hg $(CH_3)_2$, arsenic, lead, cadmium, beryllium, etc. Their effects are very negative for organism causing damage to the nervous system, cardiovascular system, and urinary system. Also, they cause pneumonia and severe skin wounds.

In Kosovo there is still no system for land (soil) monitoring. Currently nor the economic operators with high polluting potential do not regularly monitor the quality of soil (land), therefore KEPA lacks soil quality data. In 2008, NewCo "Ferronikeli Complex" has made some soil analysis (measurements) inside the fence of the factory, and in several other locations around, to verify the concentration of some heavy metals. Data from these measurements are presented in the following table.

Table 27: Locations and results on soil pollution with heavy metals in the area of NewCo "Ferronikeli Complex"[23]

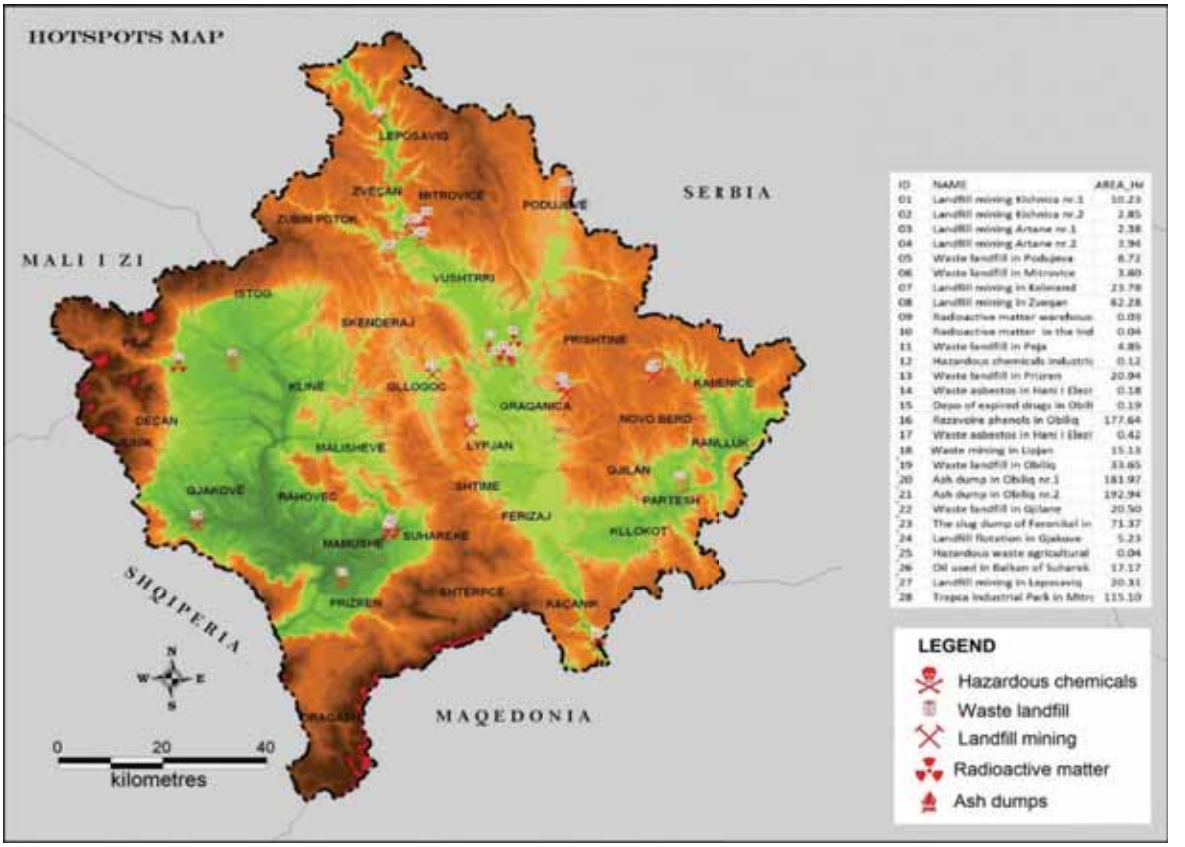
Location of sampling points	Heavy metals / unit			
	Iron-Fe %	Nickel-Ni mg/kg	Cobalt-Co mg/kg	Chrome-Cr mg/kg
West from smelter		628.0	20.0	204
South west from smelter	3.50	557.0	3.0	102
Close to the fire brigade of Drenas	2.96	136.5	Detection limit	40
Terstenik near the mill	2.96	72.5	Detection limit	13
Çikatovë	2.88	308.5	Detection limit	54
Under the clinker landfill	2.50	334.0	Detection limit	66
Suka	3.81	648.0	Detection limit	158
Water tanks of the factory	2.59	140.0	Detection limit	n.d.

Referring to the Administrative Instruction for the maximum allowed values for discharge and distribution of pollutants in the land, by the analysis presented in the table for heavy metals such as Nickel (Ni) and Chromium (Cr), the MAV were exceeded, because the MAV for the metals was 50 mg / kg.

23 NewComplex Feronikeli, 2009

4.3. Environmental hotspots

The Kosovo Environmental Protection Agency, by implementation of the project for identification of threatened environments in Kosovo, 2008-2009, has identified 110 polluted and contaminated sites. Of them, 28 sites are with high polluting potential .The identified contaminated sites are proposed to be considered as hotspots. Environmental hotspots in Kosovo are created during the industrial activities from the past, resulted from mining activities, old and unmanaged landfills, chemicals storages, waste oils, expired pesticides etc.



Map 4. Locations of hotspots in Kosovo

PFor threatened environments - hotspot, there are various definitions of environmental terminology, depending on what area the environmental hot-spot is perceived. The most acceptable definition is that hotspots represent locations with high concentrations of pollutants. Hotspots can also be lands / soils chemically contaminated from the mining industry, waste activities, and other pollutants that affect groundwater, soil and air. As environmental hotspots were identified mines with high concentration of heavy metals, agricultural waste landfills, waste sanitary landfill, municipal rehabilitated landfills, illegal landfills, hazardous chemical industrial waste and radioactivity.

More detailed data on locations of hotspots, surface, and potential pollution sources are presented in table 28.

Table 28: Environmental hotspots according to location, activity, surface and potential pollution sources [24]

Nr	Site	Activity in the past	Surface	Potential Pollution Sources				
				Heavy metals	Chemical substances	Oil products	Organic matters	Others
1.	The facility of ex Agriculture enterprise in Shirokë-Therandë	Storage of pesticides and fertilizers	0.04 ha	-	+	-	-	-
2.	The facility of ex factory of auto spare parts in Pejë	Storage of hazardous industrial chemicals	0.12 ha	-	+	+	-	-
3	Facility in Mazgit	Storage of expired drugs	0.19 ha	-	+	-	-	-
4	Municipal sanitary landfill in Podujeve	Waste landfill	5 ha	-	+	+	+	+
5.	Municipal sanitary landfill in Pejë	Waste landfill	2 ha	-	+	+	+	+
6	Regional sanitary landfill in Gjilan	Waste landfill	20.50 ha	-	+	+	+	+
7	Regional sanitary landfill in Prizren	Waste landfill	14 ha	-	+	+	+	+
8	Regional sanitary landfill in Mirash-Obiliq	Waste landfill	40 ha	-	+	+	+	+
9	Municipal sanitary landfill in Mitrovicë	Waste landfill	7 ha	-	+	+	+	+
10	The tires and conveyor production plant-Suharekë	Waste oils and soil contamination	14 ha	-	+	+	-	-
11.	Industrial Park in Mitrovicë	Industrial landfill	44.5 ha	+	+	-	-	-
12	South east part of Cikatove - Drenas	Waste from clinker of Feronickel	4 ha	+	-	-	-	-
13	Slag landfill of Ferronickel-Çikatovë-Drenas	Landfill of industrial slag of Ferronickel	24 ha are, impacted area 71.37 ha	+	-	-	-	-
14.	The mine landfill near the dam, Badovc	Landfill of heavy metals	2.85 ha	+	-	-	-	-
15	Landfill of sterile material in Kishnicë	Landfill of heavy metals	10.23 ha	+	-	-	-	-
16	Landfills Mareci 1 and Mareci 2, the water stream, Mine in Artanë	Landfill of heavy metals	2.38 ha	+	-	-	-	-
17	Landfills Mareci 1 and Mareci 2, the water stream, Mine in Artanë	andfill of heavy metals						
18	Landfill in Kelmend-Mitrovicë	Landfill of heavy metals	23.78 ha	+	-	-	-	-
19	Radioactive materials in the industrial complex Trepçe- Mitrovice	Storage of radioactive materials –thorium nitrate	0.04 ha	-	-	-	-	+
20.	Radioactive matters at "Tuneli i Parë", Mitrovicë	Storage of radioactive materials –Strontium, Thorium and Americium	0.03 ha	-	-	-	-	+

24 Report, Environmental Hotspots in Kosovo, KEPA 2011

21	Industrial landfill in Zveçan	Landfill of heavy metals	62.28 ha	+	-	-	-	-
22.	Industrial landfill in Leposaviq	Landfill of heavy metals	20.31 ha	+	-	-	-	-
23.	Ash dump in PPA	Industrial landfill	181.97 ha	+	+	+	-	+
24	Ash dump in TPP B	Industrial landfill and the impact areal	192.94 ha	+	+	+	-	+
25	Phenol tanks	Storage of phenol	177.64 ha	+	x	x	-	x
26	Mine in Devë-Gjakovë	Landfill of heavy metals	1 ha	+	-	-	-	-
27	Mine in Golesh-Municipality of Lipjan	Exploitation and processing of heavy metals	15.13 ha	+	-	+	-	-
28	Two landfills of asbestos materials	Landfills of asbestos materials	0.60 ha	+	+	-	-	+

4.5. Conclusions and recommendations

Conclusions

- Lack of national soil quality monitoring network;
- Lack of programs and plans for rehabilitation of contaminated soil;
- Lack of programs for monitoring of pesticides and fertilizers;
- Lack of plans and programs for land protection from erosion and flooding;
- Lack of strategy for soil protection from pollution;
- Uncontrolled change of land use destination;
- Expansion of settlements in agricultural lands;
- Expansion of road transport, and establishing of new industrial areas in agricultural lands;
- Fragmentation of parcels;

Recommendations

- Establish the integrated soil monitoring program, and continuous monitoring of soil quality;
- Complete the strategic and legal framework for soil protection from pollution;
- Develop programs, plans and measures for agricultural land protection;
- Develop programs, plans and measures for rehabilitation of contaminated lands;
- Develop programs, and plans for land protection from erosion; and erosion monitoring;
- Promote organic agriculture and ecological products;
- Implement systematic control of food products;
- Establish monitoring and controlling system for pesticide use;
- Establish monitoring and controlling system for use of fertilizers;
- Develop policies on sustainable land use;
- Implementation of regulative and urban plans;
- Identify the polluted areas, and develop rehabilitation program

5. Nature protection and biodiversity

5.1. Protected areas - state

Kosovo has 99 nature protected areas, and includes a surface of 118505.5 ha, or (11.4 % of Kosovo territory). According to the category of protection there are: 11 Nature Reserves, 2 National Parks, 84 Nature Monuments, 1 Nature Regional Park, and 1 nature protected landscape. The largest surface of protected areas belong to the National Parks "Bjeshkët e Nemuna" (62.488 ha) and "Sharri" (53.469 ha), or 93.5 % of total surface of protected areas.

Table 29: Nature protected areas[25]

Category	Name	Nr:	Surface /ha
I	Nature reserve	11	846.92
	R.N. Botanic	7	
	R.N. Animal	2	
	R.N. Hydrologic	1	
	R..N. geologic	1	
II	National Park	2	115957
III	Nature Monument	84	5691.48
	M.N. Speleological	5	
	M.N. Hydrologic	16	
	M.N. Geomorphologic	7	
	M.N. Botanic	56	
V	Regional Park of Nature	1	1126
	Protected landscape	1	69
	Total	99	118505.5 ha*

As regards management, only 3 protected areas have management bodies.
The "Sharri" national park is managed by the Park Directorate, with the office in Prizren, which is subordinated by MESP/KEPA. The directorate manages with the territory of national park with the surface of (53.469 ha), that belongs to the territory of municipalities of Prizren, Suharekë, Dragash, Shtërpce and Kaçanik. Also, the directorate manages the nature reserves which are situated within the national park territory, such as: "Maja e Arnenit", "Pisha e Madhe", "Oshlaku" and "Rusenica".

The regional Park "Gërmia" is managed by the public enterprise "Hortikultura", whereas the nature monument of special importance "Shpella e Gadimës" (the cave in Gadime) is managed by a body that is not supervised by local or central institutions. The other nature monument of special importance "Ujëvarat e Mirushës" is not yet managed by any authority. Other nature monuments that were protected by local authorities are partially managed by respective local authorities.

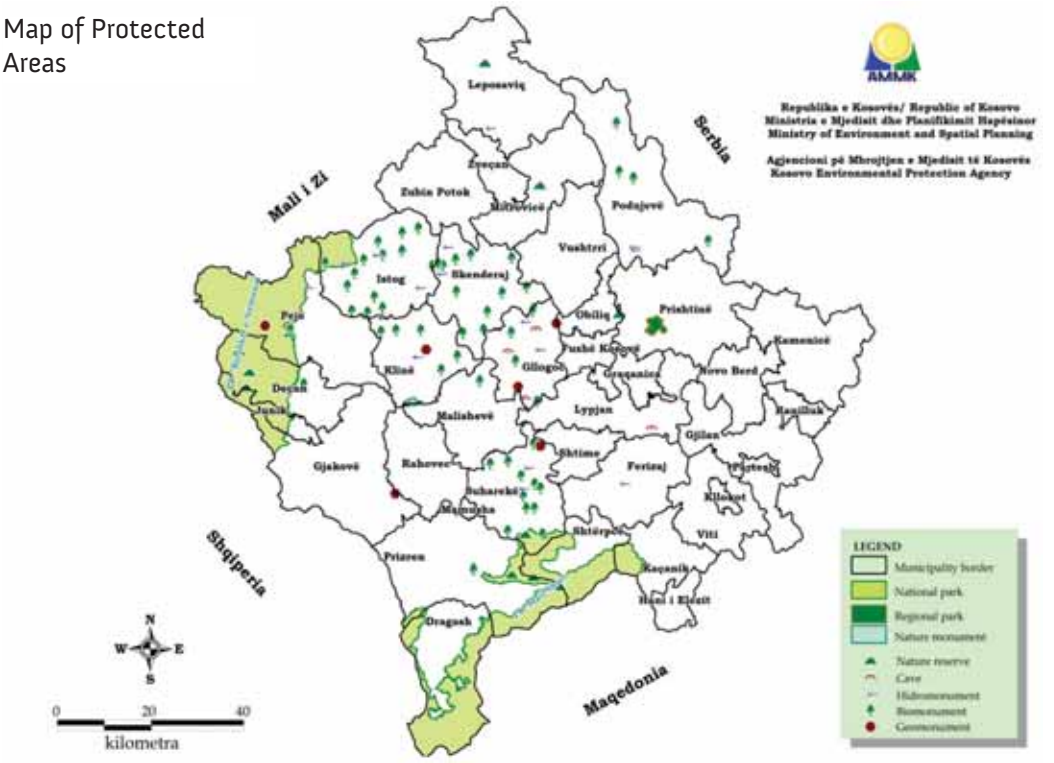
During 2011-2012, the Kosovo Institute of Nature Protection (KINP), has conducted regular field visits and has prepared reports for the state of the visited areas. In particular the KINP provided professional opinions on biodiversity, and on interventions made in the protected areas. Actual problems are evidenced and concrete measures to problem resolving are recommended.
More often the KINP has visited the protected areas with rare and special nature values such as: the marble cave in Gadime, national park "Mali Sharr", national park "Bjeshkët e Nemuna", regional park

25 Kosovo Institute of Nature Protection
* This figure does not include surface of protected areas that are within national parks

of nature "Gërmia", regional park of nature "Mirusha", nature reserve "Bifurcation in Nerodime River", nature monument "Gryka e Rugovës", water spring of Drini i Bardhë river, and other protected areas. The nature protected areas throughout territories of municipalities are monitored as well, such as in Drenas, Skenderaj, Istog, Klinë, Therandë, etc, as well as areas proposed for legal protection in municipalities of: Mitrovicë, Malishevë, Gjakovë, Viti etc.
Also, a particular attention is dedicated to working on preparation of professional study document, to justify and propose putting under the legal protection of new nature areas, and local domesticated species.

An important project in this period was construction of a bear sanctuary for brown bears in Kosovo. This project was financed by the international German organization "Vier Pfoten", which activity include confiscation of all bears kept illegally in mini-zoo parks, and restaurants, and collecting them in the bear sanctuary that is constructed by this organization near the Badovci lake in Pristina.
Based on work plan of activities, the KINP started develop the professional study document, to justify and propose putting under the legal protection the "Henc wetland", which is a potential area, to be declared an Important Bird Area – IBA.
Also works have been done on professional study document, to justify and propose putting under the legal protection of local domesticated species such as Kosovo long crowing rooster, and Deltar Ili (Illyrian sheepdog).
KINP, in cooperation with the bird association "FINCH", during 2012 have prepared the publication "Në kërkim të zogjve". This publication is the first of this nature in Kosovo. Birds are important country environmental quality indicators, therefore information provided in this publication are found to be important.
Among other important activities in the nature and biodiversity sector, implemented during 2011-2012 are: approval of two important laws for national parks, NP "Sharri" and PK "Bjeshkët e Nemuna"; development of spatial plan for "Ujëvarat e Mirushës"; researches in the caves "Gryka e Madhe" in Rugova Gorge, and cave of Radavc researched by Czech and Slovenian speleologists in cooperation with the local Association of Speleologists "Aragoniti" from Peja and with KEPA/KINP experts, as well as preparation of digital maps for these two caves; participation in activities in the frame of project "Dinaric Arc Parks".

Map of Protected Areas



Map 5: Protected areas

5.2. National Park "Sharri"

Assessment of the state of natural resources of the National Park for 2011-2012 is based on the continuous activities (research, monitoring and controls) on the ground, in all managed areas of the National Park, especially in the territories of Prizren and Suhareke municipalities. In assessing the situation, were analysed the negative impacts and consequences of biotic factors (human, insects and plant diseases), and abiotic (fires, natural disasters, wind, snow, etc.) of the flora, fauna, and ecosystems of National Park.

State of forest ecosystems

The state of forest ecosystems is hampered due to the negative effects of biotic and abiotic factors. These factors have led to deterioration of forest health, by causing considerable forest damage and endangered biological sustainability, in particular Rrobulli forests.

Beech forests (Fagetum montanum, F. subalpinum)

Beech forests are widely spread (afro 65 %) in the national park. The condition of the forest is relatively good. Forest damages are caused mainly by natural factors (wind and snow), and illegal logging, which this year compared to previous years have been significantly smaller. Illegal logging of forests in particular were occurred in Delloc region (areas: Tëbanët e Bukoshit, Kroni i Mbretit, Qadriqe) where are operating criminal groups that thieve the wood from forest of surrounding villages (Maçitevë , Delloc etc.). The volume of forest damage in this region was 65 m^3. Smaller illegal logging of forests, are registered in several other areas of the National Park, such as Gradanci (30 m^3), Prevalla (25 m^3) and Manastreci (12 m^3). The prevention of illegal logging mainly resulted from ongoing efforts of teams of NP Directorate, good cooperation with the municipality of Suva Reka, police and local residents. Most of the perpetrators of illegal logging are identified and proceeded to the relevant courts, but the problem is delaying procedures from the courts.

Considerable beech forests damages are registered in the parts of the territory of the National Park that belong to municipalities of Shtëprce and Kacanik. This is due to the lack of management powers of the Directorate of NP (MESP) in these two municipalities. Shterpce is run by Serb parallel institutions, and Kosovo Forest Agency in Kaçanik, who have made major cutting of forests, estimated to hundreds or thousands of cubic meters. For this, the highest authorities of MESP were informed.
In different regions of the beech forests, it is noted the presence of sporadic phytopatologic factors (plant disease), including the tree canker (Nectria ditissima) and the tinder fungus (Fomes fomentarius). These biotic factors occur mainly in beech wood, which have weakened immunity due to aging and various injuries caused by other biotic and abiotic factors.

Tinder fungus in the beech tree (Fomes fomentarius)

Tree canker (Nectria ditissima)

Rrobulli forests (Pinetum heldreichii)

The health condition of Rrobullë forests (Pinetum heldreichii) is significantly affected by forest fires that occurred in 2000 and 2007 as well as the great development of damaging insects (Blastophagus sp.) Insects were massively appeared after forest fires as a result of weakened immunity of damaged trees. Rrobulli forests, due to endemic-relict character, represent the most important forests of the National Park, however, these forests are also the most damaged. Since the majority of Rrobulli trees are affected from fire and insects, there is a possibility of extended forest dying, by threatening the biological existence of these forests.

Improvements of Rrobullë forest health and natural regeneration is seen in last two years in Oshlak (Prevalla region). This resulted by undertaking sanitary cleaning of dry, rotten and infected wood. Sanitation interventions are undertaken in Rrobulli forests, located in the second zone of protection, outside the strictly protected nature areal of Arneni Peak .

In 2011, fire forest damages in Rrobull forest are registered in Pashallarë area, where nearly 4 hectares of these forests were burned, whereas with the intervention of NP Directorate workers , Suhareke municipality, fire brigade and local residents, the fire was localized, and prevented larger forest damage.

Natural restoration of Rrobullë forests is insufficient, due to substantial forests damage , weakening of trees the vitality and the presence of dense herbaceous species.

Photo- Infected trees

Burned Rrobulli forest in great pine area

Arnen Forests (Pinetum peucis)

The state of Arnen forests (Pinetum peucis) is good. These forests are under well regeneration situation in locations “Ujërat e Humbur” and “Pashallare” by expanding the forest surface, and creating new forest composition. Considerable damages to Arnen forests are occurred in the tourist area of Brezovica (above the motel Molika) as a result of logging forest area of about 1 ha.

Altogether, there are cut about 5000 trees of a diameter from 3 cm to 40 cm and age from 5 to 42 years. The total amount of timber cut has been above 50 m^3. The wood was collected in the tourist area (under the hotel Molika). This case was forwarded to the appropriate court by the MESP inspectorate of.

Photo: Arnen forests in area of "Ujërat të Humbur"

Other coniferous and deciduous forests

Significant fire damage suffered the Hormoq forests in Pashallares area stretching in Shterpce municipality (over 5 hectares of these forests were burned). Also, about 50 hectares of low forests and bush were burned in Oshlak. These fires occurred in late August and early September. With the commitment of employees of the Directorate of National Park, fire brigade and other institutions, the fires are localized avoiding larger losses in catastrophic consequences. In most cases the fires were caused by irresponsible and careless people, who in any case are not identified.

Photo: Localization of fire in Pashallarë

Photo: Fire in Oshlak (Aufust 2011

The state of shrub, herbaceous ecosystems and endemic plants

The most important shrub ecosystems in the National Park are: Pine (Pinus mugo), the Siberian juniper (Juniperus nana) and bilberry (Vaccinium myrtillus and V. uliginosum). The condition of the vegetation is good, while damages were caused (in early September) by fire in the area of approximately 10 ha, in Pashallarës area.

Vegetations of juniper and blueberry bushes have suffered considerable damage from fires that occurred in November, whereby about 200 ha of these ecosystems were burned. These fires were caused by irresponsible people, while fires were largely affected by drought during the autumn and unsuitable terrains for intervention on fire fighting.

State of rare herbaceous plants, which provide unique value to the National Park's flora is good and stable. These plants are found mainly in higher areas (over 1800 m) at the National Park , and belong to the high mountain pastures.

Some rare species of medicinal plants are subject to illegal use by irresponsible people. Most endangered plant is gentiana (Gentiana lutea) which is collected by the local residents and people who trade it, since it has special curative value. Gentiana is found in the highest parts (over 1800 m) of the territory of the National Park, and as a result of uncontrolled exploitation in the past, its survival is quite vulnerable. In this year attempts for illegal collection of this plant have been limited due to the continuous efforts of the Directorate of National Park.

Gentiana lutea threatened medical plant and

Burnmullera dieckii – stenoendemic plant

State of Fauna

The overall state of fauna in National Park can be considered as relatively good. From the investigations made in the field most wild animals that have been recorded by previous surveys are verified, while data for some of the most important species of National Park are presented in the following table:

Table 30: State of wild animals in NP (Municipalities of Prizren and Suharekë) for 2011-2012.

Lloji i kafshës së egër	Number during 2011
Brown bear (Ursus arctos)	45-50
Deer (Capreolus capreolus)	50-60
Lynx (Lynx lynx)	6-8
Wild goat (Rupicarpa rupicarpa)	250
Wild boar (Sus scrofa)	200
Rabbit (Lepus europeus)	150-200
Wolf (Canis lupus)	10-15
Greuish eagle (Aquila chrysaetos)	6
Stone patridge (Alectoris greace)	200
Hazel grouse (Tetrastes bonasia)	30-40

Number of most animals is increased compared to previous years, but the number of some wild animals such as the lynx and gray eagle is quite small. Most of mammal species that have been recorded during previous surveys have been verified in the field, however, for determining the exact number, more intensive researches are needed in all areas of the National Park.

To ensure proper legal and institutional protection of rare animal species, their habitats need to be declared as strict nature reserves, as proposed in the Draft Spatial Plan of the National Park "Sharr Mountain" (2009). Many wild animals such as bears, wolves, lynx, fox, rabbit, wild boar, deer, etc. migrate to different parts of the National Park and outside it.

Health status of wild animals is good (no sick or dead animals were seen), whereas the permanent threat to wildlife remains hunting by irresponsible people.
The natural reproduction of wild animals is relatively satisfactory, especially for brown bear and wolf, which in the National Park are well developed.



Lynx Lynx threatened specie, Ursus arctos and Canis lupus-well developed animals in the

5.2. Conclusions and recommendations

Conclusions
- Non sufficient implementation of existing legislation;
- Lack of sufficient institutions for nature protection;
- Lack of management bodies for protected areas;
- Lack of spatial plans and management plans of protected areas;
- Uncontrolled use of nature resources;
- Lack of scientific biodiversity researches;
- Lack of full inventory of flora, fauna and habitats;
- Insufficient budget for nature;

Recommendations
- Research and inventory of species and habitats;
- Development of Kosovo red list of flora and fauna;
- Support cross-border projects on nature protection;
- Preparation of spatial and management plans for nature protected areas;
- Development of programs and projects on awareness raising for nature protection;
- Establishment of coordination office, for identification, ratification and implementation of conventions and other international agreements on nature protection;

6. Waste

6.1. Municipal waste

The waste management system in Kosovo is in an unsatisfactory situation, which presents a major problem for our country. Approximately, the population covered with the waste collection service was as follows: 42% (2007), 39% (2008), 42% (2009) and 49% (2010). The Pristina region covers the highest percentage of population with this service, respectively 64% (2007), 52 % (2008), 53% (2009), and 55% (2010), whereas the Mitrovica regions the lowest rate, with 29% (2007-2008), 30% (2009 e 2010). The greatest increase in 2010 reached the Ferizaj region with 66%. In urban areas (cities), waste collection service is provided to 90% of population, whereas in rural areas to 10%. All waste collection companies have in total 189 machines, including tractors and trucks of different types, which are mostly old, and significantly affects the quality of services.

More detailed data on services provided for waste collection according to companies and regions are presented in table 31.

Table 31: Population provided with waste collection service, according to the companies and regions, for period 2007-2010 expressed in % [26]

No.	Company	Region	Year			
			2007	2008	2009	2010
1	Ambienti	Pejë	44%	29%	36%	54%
2	Çabrati	Gjakovë	51%	53%	52%	56%
3	Ekoregjioni	Prizren	32%	39%	38%	37%
4	Higjiena	Gjilan	44%	26%	33%	47%
5	Pastërtia	Ferizaj	33%	35%	44%	66%
6	Pastrimi	Prishtinë	64%	52%	53%	55%
7	Uniteti	Mitrovicë	29%	29%	30%	30%

The below figure shows the waste structure, by waste types in Kosovo. The quantity is calculated based on researches made in the following Kosovo cities: Prishtine, Prizren, Viti and Hani i Elezit. Researches are parts of municipal waste management plans, supported by GIZ, JICA and LOGOS.

26 Waste and Water Rregullatory Office,WWRO 2010.

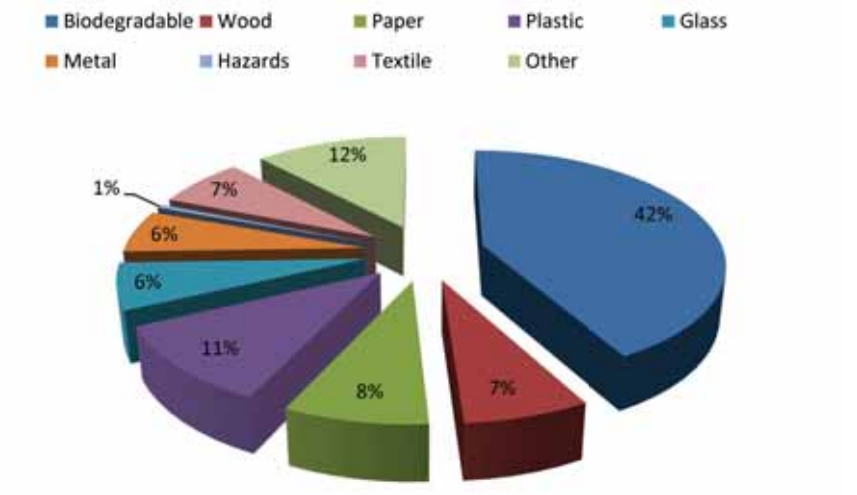


Fig.69. Waste quantity according to the type (2012)

The below figure shows the waste structure, by waste types in Kosovo. The quantity is calculated based on researches made in the following Kosovo cities: Prishtine, Prizren, Viti and Hani i Elezit. Researches are parts of municipal waste management plans, supported by GIZ, JICA and LOGOS.

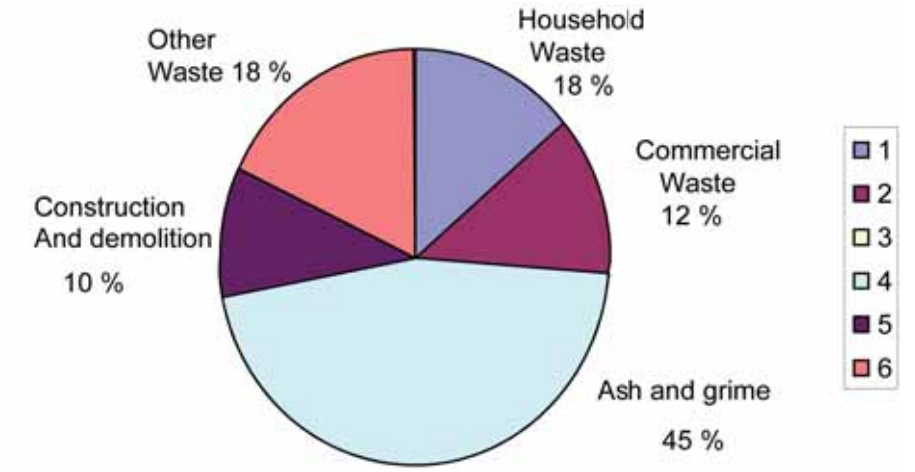


Figure 70. Waste according the type in Kosovo 2008 (%) [27]:

Data presented in tables 32, 33, 34 and 35 show that larges waste quantity during 2009, is disposed of in Pristina landfill (84,660.59 tonnes), whereas the smallest waste quantity in Landfill of Sharri (Dragash) (4807.00 tonnes). Same situation was in 2010 where the largest waste quantity was disposed of in Pristina landfill (83,742.23 tonnes), and the smallest quantity in Sharri landfill (5081.7 tonnes). In 2011 the largest quantity is disposed of in Pristina landfill (81,816.63 tonnes), and the smallest in Sharr (5248.00 tonnes). Also, in 2012 the largest quantity is disposed of in the Pristina landfill (78,393.54 tonnes) and the smallest in Sharr (4,530.00 tonnes).

IF we compare data on waste quantities landfilled in sanitary landfill in period 2009 – 2012 it is indicated that the waste quantity was increased each year.

Waste generation quantity was higher during 2011. In 2012, it is recorded a slight decrease of waste quantity disposed in the sanitary landfills by waste collection companies.

27 Report state for waste in Kosovo 2008, KEPA

Table 32. Waste quantity in Kosovo regional and municipal sanitary landfills for 2009, in tonnes[28]

Nr.	Sanitary landfill	January	February	March	April	May	June	July	August	Sept	October	Nov	Dec	Total
1	Prishtinë*	6,967.45	6,060.84	7,794.76	8,539.91	8,299.89	8,588.45	4,383.72	6,335.95	7,264.75	7,831.62	5,206.45	7,386.80	84,660.59
2	Gjilan*	3,642.26	3,236.29	3,604.45	4,537.04	4,582.66	4,336.01	2,392.61	4,488.12	2,552.47	2,513.01	4,129.69	2,551.62	42,566.23
3	Prizren*	2,705.50	2,543.73	3,088.40	3,836.50	3,520.25	3,377.93	1,968.20	4,267.22	4,553.70	1,691.30	3,672.67	3,402.00	38,627.40
4	Podujevë*	360.33	358.84	463.06	610.02	509.86	503.32 T	353.05	448.96	496.45	589.86	589.17	618.93	5,398.53
6	Pejë**	1677	1480	1820	1899	1823	1930	2250	2370	2160	2040	1855	1873	23177
7	Sharr	314	296	331	415	426	366	534	573	450	419	359	324	4807.00
8	Mitrovicë**	2,302.64	1,927.15	2,888.88	3,308.14	3,045.8	3,031.27	3,378.98	2,903.9	3,014.58	3,099.68	2741.01	2,553.79	34,195.82
9	Ferizaj*	1,069.39	1,250.90	1,002.60	1,732.20	1,411.50	609.30	710.30	285.29	1,845.17	1,895.93	991.75	969.75	13,774.08
	Totali	19,038.57	17,153.75	20,993.15	24,877.81	23,618.96	22,238.96	15,970.86	21,672.44	22,337.12	20,080.40	19,544.7	19,679.8	247,206.65

Tabela 33. Sasia e mbeturinave në deponit sanitare regjionale dhe komunale të Kosovës për vitin 2010 të shprehura në ton[29]

Nr.	Sanitary landfill	January	February	March	April	May	June	July	August	Sept	October	Nov	Dec	Total
1	Prishtinë*	6,423.75	6,326.54	6,852.50	6,395.38	6,706.95	6,330.10	7,063.85	7,331.98	7,508.48	7,826.96	8,077.71	6,898.03	83,742.23
2	Gjilan*	2,093.95	2,231.51	3,070.35	3,695.06	3,176.08	2,577.95	3,658.85	3,088.35	2,716.37	2,573.78	2,260.79	1,951.08	33,094.12
3	Prizren*	2,855.10	2,772.46	3,507.78	3,912.80	3,966.40	4,067.30	4,645.91	5,380.65	5,098.00	5,538.78	5,958.34	4,685.90	52,389.42
4	Podujevë*	513.60	407.97	18.80	1,355.10	26.95	2,507.72	38.11	40.49	44.05	567.01	594.01	510.80	6,624.61
6	Pejë**	1,662	1,395	1,400	2,226	2,177	2,168	2,168	2,756	2,440	2,178	2,202	1,884	24,656
7	Sharr	282.5	292	301.2	415	408	409	457	628	628	420	421	420	5081.7
8	Mitrovicë**	2,275	2,307	2,992	2,707	2,708	2,763	3,502	3,555	3,950	3,569	3,231	2,909	36,469
9	Ferizaj*	988.75	357.90	643.10	667.40	569.10	1,294.59	1,061.55	1,672.30	1,608.00	1,608.60	1,496.50	1,521.40	13,489.19
	Totali	17,094.65	16,090.38	18,785.73	21,373.74	19,738.48	22,117.66	22,595.27	24,452.77	23,992.90	24,282.13	24,241.35	20,780.21	255,546.27

28 KLMC and WWRO, 2009

29 KLMC and WWRO, 2010

Table 34. Waste quantity in Kosovo regional and municipal sanitary landfills for 2011, in tonnes [30]

Nr.	Sanitary landfill	January	February	March	April	May	June	July	August	Sept	October	Nov	Dec	Total
1	Prishtinë*	6,129.63	5,503.53	6,663.36	6,898.88	6,868.26	6,811.13	7,111.31	7,293.80	7,572.41	7,090.16	6,845.34	7,028.82	81,816.63
2	Gjilan*	1,690.72	1,651.22	2,811.63	2,531.37	2,687.38	2,857.74	3,196.94	3,646.87	3,440.74	3,100.12	2,658.29	2,663.49	32,936.51
3	Prizren*	4,517.30	4,015.60	4,994.20	5,086.26	5,812.93	5,544.70	6,135.50	7,035.70	6,290.30	5,946.53	5,112.50	4,571.40	65,062.92
4	Podujevë*	399.89	391.09	903.84	522.36	651.86	345.00	648.98	691.07	711.45	698.47	602.11	548.99	7,115.11
6	Pejë**	1427	1316	1763	2182	2128	2152	2117	2398	2075	2099	1853	1740	23,250.00
8	Mitrovicë**	2416.22	2213.39	3161.5	3122.78	3196.14	3724.74	3776.18	3756.65	3344.42	2903.31	2520.9	2425.74	36,561.97
9	Ferizaj*	1,348.40	1,185.60	981.85	1,257.79	1,497.20	1,651.74	1,886.45	1,966.70	1,954.50	1,831.80	1,701.00	1,533.90	18,796.93
	Totali	17,929.16	16,276.43	21,279.38	21,601.44	22,841.77	23,087.05	24,872.36	26,788.79	25,388.82	23,669.39	21,293.14	20,512.34	265,540.07

Table 35. Waste quantity in Kosovo regional and municipal sanitary landfills for 2012, in tonnes [31]

2012	Sanitary landfill	January	February	March	April	May	June	July	August	Sept	October	Nov	Dec	Total
1	Prishtinë*	5287.08	5096.30	7592.91	6757.77	6371.67	6895.66	6996.11	7614.35	7097.02	6832.30	6092.71	5759.66	78,393.54
2	Gjilan*	1967.35	1933.20	2949.51	2455.28	2948.26	1968.33	1850.30	3324.31	2710.95	3517.97	3520.11	2608.01	31,753.58
3	Prizren*	4047.20	3246.60	6207.46	5378.50	6198.80	5070.90	5298.30	6950.20	5456.00	5245.90	5210.70	3438.60	61,749.16
4	Podujevë*	489.20	377.00	650.34	551.40	1166.70	652.55	581.75	644.70	674.00	701.30	540.70	498.45	7,528.09
6	Pejë**	2122.00	1189.00	2847.00	2472.00	3138.00	2754.00	2948.00	3855.00	2921.00	3121.00	2785.00	2471.00	32,623.00
7	Sharr	377.5	377.5	377.5	377.5	377.5	377.5	377.5	377.5	377.5	377.5	377.5	377.5	4,530.00
8	Mitrovicë**	2296.87	1847.29	3255.76	2839.98	3162.07	2562.78	3052.78	3278.53	2804.41	3133.40	2687.63	2536.51	33458.20
9	Ferizaj*	1326.60	947.48	2143.78	1759.03	1703.60	983.40	478.10	719.10	795.30	1459.09	1096.23	861.80	14,273.51
	Totali	17,913.8	15,014.37	26,024.26	22,591.46	25,066.6	21,265.12	21,582.84	26,763.69	22,836.18	24,388.46	22,310.58	18,551.53	264,309.08

* KDMK

**ZRRUK

30 KDMK dhe ZRRUK, 2011

31 KDMK dhe ZRRUK, 2012

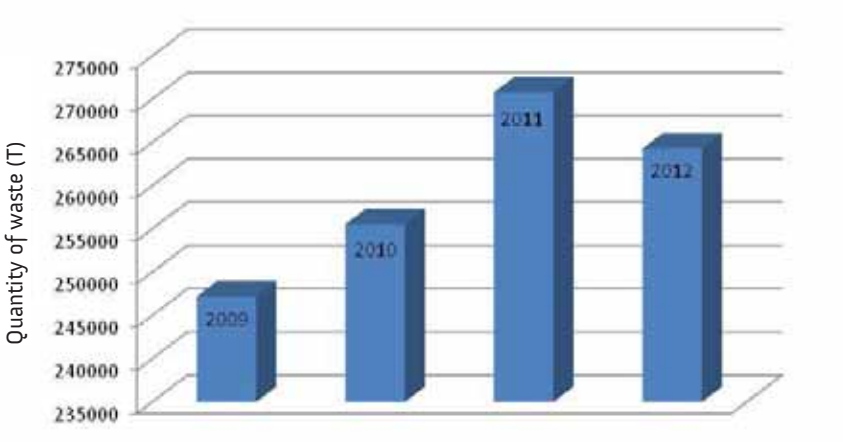


Figure 71: Waste quantity disposed in sanitary landfill according to years

Waste quantity generated per person in Kosovo in 2008 was 167 kg, in 2009-193 kg, in 2010-297 kg, and in 2011-335 kg. This shows for significant increase of waste quantity per capita per year. Comparing to other regions, the largest annual quantity of waste per capita is generated in Pristina region, in 2008-0.9kg, 2009-1.2 kg, 2010-1.4 kg, and 2011-1.3 kg. Whereas in other regions 2008 & 2009-0.3 kg, 2010- 0.6 kg, and 2011-0.8 kg.

Table 36. Municipal waste quantity collected in Kosovo, per capita (kg/year and kg/day) for 2008- 2011[32]

Collection place	2008			2009			2010			2011		
	Collected quantity	Waste	Waste / capita / day	Collected quantity	Waste	Waste / capita / day	Collected quantity	Waste	Waste / capita / day	Collected quantity	Waste	Waste / capita / day
Unit	1000/ Ton	Kg/Capita		1000/ Ton	Kg/Capita		1000/ Ton	Kg/Capita		1000/ Ton	Kg/Capita	
Pristina and region	198	396	0.9	218	436	1.2	222	511	1.4	230	488	1.3
Regjionet tjera ne Kosove	153	95	0.3	187	117	0.3	293	223	0.6	352	278	0.8
Kosova gjithesej	351	167	0.5	405	193	0.5	515	297	0.8	582	335	0.9

Data presented in figures 72, 73 and 74, show that the largest waste quantity is collected according to the service "door to door", whereas the waste quantity collection service for collective housing is smaller. The difference of waste collection quantity by "door to door" and the collective housing is smaller in other Kosovo regions, comparing to Pristina region.

32 Municipal waste survey 2011, KAS

Figure 72: waste % according to the collection type in Kosovo

In Kosovo waste collection door to door was 57 %, whereas collection from collective housing was 43 %.

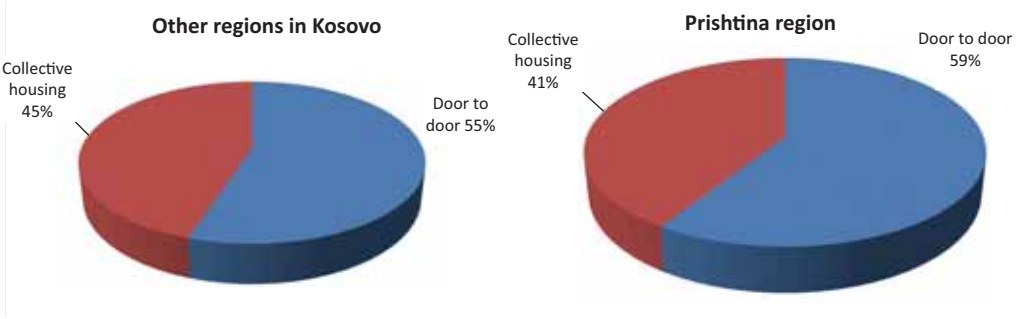


Figure 73 and 74: % of waste collection according the type of collection per region

In other Kosovo regions, municipal waste collection ratio was 45% collective housings and 55% door to door. Whereas, in Pristina region was 41% collective housing and 59% door to door.

6.2. Industrial waste

According to the survey made by Kosovo Agency of Statistics, in 2010 the industrial waste quantity was 580,154 tonnes, of them 36,241 tonnes are hazardous waste and the rest non hazardous waste (Fig.76). Below are presented tables with the industrial waste quantity from businesses with seven or more employees and those with less than seven employees.

Figure 75: Industrial hazardous and non hazardous waste[33].

33 Industrial waste survey 2010, KAS

The highest amount of waste generated is in the sector of food products and beverages, 49% of industries with more than seven employees, and 69% of industries with less than seven workers (Tables 37 and 38). From these tables is showed that a large amount of waste is coming from mines. Mines also generate large amounts of hazardous waste.

Table 37: Quantities of waste generated, and hazardous waste from companies with seven or more employees[34]

Group	Type of industry	Non hazardous waste tonnes	Hazardous waste tonnes
14	Mines and quarries	172.686	35.500
15-16	Food beverages and tobacco production,	297.173	550
17-19	Production of Leather covers; luggage, handbags, footwear, harness	297	-
20-22	Publication and printing	445	85
23-25	Production of tires and plastic products	3451	-
26	Production of other non-metalic mineral products	94.490	34
27-29	Production of machineries and equipments	415	-
30-35	Production of transport equipments	-	-
36	Furniture production	47	30
37	Recycling	15.326	-
40	Supply of energy, gas, and heat water.	11	-
41	Water collection cleaning and distribution	244	-
Total		566.666	36.199

Tabela 38: Quantities of waste generated, and hazardous waste from companies with less than seven employees [35].

Group	Type of industry	Non hazardous waste tonnes	Hazardous waste tonnes
14	Mines and quarries	2.654	1.0
15-16	Food beverages and tobacco production,	9.403	-
17-19	Production of Leather covers; luggage, handbags, footwear, harness	211	-
20-22	Publication and printing	37	-
23-25	Production of tires and plastic products	45	0.3
26	Production of other non-metalic mineral products	344	-
27-29	Production of machineries and equipments	16	0.2
30-35	Production of transport equipments	352	-
36	Furniture production	265	-
37	Recycling	226	40.0
40	Supply of energy, gas, and heat water.	-	-
41	Water collection cleaning and distribution	-	-
Total		13.588	41.5

The total quantity of industrial hazardous and non hazardous generated waste in tonnes is 580,154 tonnes, where 66% are treated.

34 Survey on industrial waste 2010, KAS

35 Survey on industrial waste 2010, KAS

Table 39: Quantities of generated waste, hazardous waste, and treated waste[36]

Type of Industry	Generated waste in tonnes	Generated waste in tonnes	Generated waste in tonnes
C, D and E	580,154	36,241	383,323

6.3. Sanitary landfills

Sanitary landfill in Pejë- This landfill has an area of 4.85 ha. Although built according to standards, current status and management of the landfill is not appropriate. This landfill is not functional because almost no space for waste disposal. The fact that the lagoon pumps are not working and that the waste disposed are not covered, makes this landfill to get to further deterioration and eventual closure.

Sanitary landfill in Gjilan – In this landfill are collected wastes from municipalities of Gjilan, Kamenica, Viti, Novo Brdo, Kacaniku, Shtimja and Ferizaj. The size of the landfill is 20:50 ha and duration of its use is estimated up to 15 years. Total capacity is 1.222 222 m^3, while monthly capacity is 4000 t. The regional waste landfill in this municipality, even though built according to the standards, because of inadequate management, by now it has become a major environmental pollutant in this locality. In this landfill there is continued burning of waste, which is a permanent risk to landfill workers, and air pollution. Currently pumps are operating in the landfill, and the landfill waters are not mixed with the surface waters.

Landfill in Prizren- the landfill has 14 hectares, it is located in Landovica village of Prizren. It is built in 2004 with funding assistance from the European Union. As a result of inadequate management, landfill pumping system does not work. The landfill wastewater come outside the lagoon and mixed with surface waters. These waters are contaminated with various chemicals from various substances that are deposited in the landfill. Another problem is insufficient waste coverage.

Sanitary landfill in Mirash- In this landfill is collected waste from municipalities: Pristina, Obilic, Lipjan, Kosovo Polje and Drenas Gllogoc). The total size of the site is approximately 40 ha. Lifespan 15 years. The total capacity is 3.500 000 m^3, while monthly capacity 6000 T. During monitoring visits in this landfill is noted that the situation is very serious because of not proper management of landfill. As a result of mismanagement and not functional pumping, a large basin with waste waters is created, which mix with surface waters and groundwater. Also, in this landfill it is not done waste compacting and coverage so the space of the decreasing.

Sanitary landfill in Podujevë – This landfill serves the localities of Podujeve municipality. Its size is 5 ha. Lifespan 15 years. Total capacity 925 000 m^3, whereas monthly capacity 2000 T. In this landfill the situation is not satisfactory, because the equipments for waste compacting are not working. The pumping system is working adequately and no waters are flowing from the landfill.

Sanitary landfill in Mitrovicë- In this sanitary landfill are collected waste from Mitrovica , Vushtrri , Skenderaj and Zubin Potok. The landfill is located near the village Germove. Landfill has a surface of 7 ha, with duration of 15 years, and with a storage capacity of up to 2.000000 t. Since the construction and now on there are no information for disposal of 36 thousand tons of urban wastes per year. If analyzed the landfill capacity and the waste quantities currently disposed it may be concluded that the lifespan of the landfill is over 50 years. Since its construction, and to date, is followed by various problems, technical and professional ones. These problems make the landfill to have inappropriate conditions, by impacting seriously the environment and human health. Since time ago, the landfill waste water and surface waters are mixed. This is because the water pumps are not operating.

36 Survey on industrial waste 2010, KAS

6.4. Conclusions and recommendations

Conclusions

- The waste administration system is not effective, and there are many deficiencies;
- Municipal wastes are collected in national scale up to 50%;
- There are poor conditions of Kosovo landfills, and there is also a number of illegal landfills;
- There is no waste monitoring system, and no effective mechanisms for waste selection;
- Lack of waste recycling projects, and there is need for investments in waste sector;
- Low fee collection from waste services;
- Insufficient cooperation among institutions;

Recommendations

- Strengthen the management institutions and local institutions on waste management;
- Complete and implement the legal basis on waste management;
- Promote waste recycling;
- Awareness raising related to waste disposal in adequate places, and for paying for waste collection services;
- Forbid waste disposal in illegal landfills and in open fields;
- Develop programs for reducing risks from waste;
- Develop databases and maps to improve waste administration;

7. Environment and public health

7.1. Environmental impact on public health

To date studies have shown that contaminated environment has a negative impact on public health. The quality of life and the life expectancy is affected from a variety of environmental factor such as: air quality, life standard, working environment conditions and many other direct or indirect factors.

The unfavourable state of environment, access of population to water and sanitation services, exposure to polluted air, waste and chemicals are some of the key indicators of quality of life, in relation to the environment.

It is evident that the environmental pollution causes serious problems in public health, respiratory diseases, heart diseases, the skin diseases and premature deaths, and other diseases accompanied by hormonal disorders, growth and development disorders, cancer, allergies etc.

Although there is a trend of increasing living standards and the gradual improvement of the environment, there is still much to be done to create conditions for a quality environment. Increased number of health problems is affected by the absence of socio-economic conditions. From this general situation it be estimated that the population health is not satisfactory. Although cases of infectious and parasitic diseases have decreased, due to awareness, education, treatment, care, since 1999; still cases of Hepatitis A, meningitis, diabetes and intestinal diseases are high compared with countries in the region and the EU.

Of the total number of patients enrolled in primary health care in 2010, within the group of diseases related to the environment and environmental factors, the largest number of patients is registered with infectious disease with 53762 cases or 28%, as well as respiratory diseases with 6962 cases per year, or 3.6% of the total number of patients.

While there are relatively few recorded cases of morbidity and mortality from external factors. For more details see the following tables.

Table 40: Cases of illnesses related to the environment and its factors, compared to total number of registered illnesses[37]

Nr.	Type of disease	Nr. Of cases 2011	%
1	Respiratory system	6962	3.6
2	Cardio vascular	5139	2.7
3	Skin and sub skin illnesses	1453	0.8
4	Tumours	2943	1.5
5	Urogenital system	2189	1.1
6	Infective and parasits	53762	28.0
7	Digestion system	3192	1.7
8	Injury, poisoning and other consequences caused by external factors	2871	1.5
9	External factors of morbidity and mortality	579	0.1

In the following table are presented types of infective diseases and their incidence in Kosovo for period 2008 - 2009.

37 Health statistics 2011, KAS 2012, pg 13

Table 41: Trend of infectious diseases and their incidence in Kosovo 2008 and 2009[38]

Disease	2008		2009	
ITPR - Pneumonia	13136	624	14537	690.6
Diarrhoea acute	52515	2494.7	47111	2238.05
Varicela	5140	244.2	5354	254.3
Syndrome of blood Diarrhoea	64	3.04	130	6.2
Meningeal Syndrome	397	18.8	378	17.9
Paraliza acute flakcide	1	0.05		
Haemorrhagic fever syndrome	7	0.33	14	0.7
*Egzantemic syndrome	5	0.24	27	1.3
Epidemic parotit	797	37.8	909	43.2
Acute icterus A	1271	60.3	1193	56.7
Icterus B, HBs	95	4.5	159	7.6
Pertussis	37	1.7	20	0.9
Tularemy	46	2.2	88	4.2
Brucellosis	73	3.5	64	3.04
TBC	948	45.04	901	42.8
*Intoxicatio alimentaris	460	21.8	466	22.1
*Typhus abdominalis	29	1.4	6	0.3
Suspicion in influence	26684	1267.6	41959	1993.3
Influence A (H1N1)			308	14.6
Other infectious diseases	1817	86.3	2375	112.8
Total	103522	4917.9	115999	5510.64

Whereas, if analysed death cases in Kosovo, according to the diseases classification for period 2006-2011, it may be concluded that the biggest number of dead people were with diseases of blood circulation system, tumours, and diseases of respiratory system. (Table 42).

Table 42: Causes of deaths in Kosovo 2006-2011[39]

Nr.	Type of disease	2006	2007	2008	2009	2010	2011
10	Respiratory system	203	145	152	236	243	264
11	Cardio vascular	2766	2561	2794	2796	3465	3260
12	Tumours	546	573	597	575	754	827
13	Urogenital system	114	133	100	102	76	72
14	Infective and parasits	28	34	29	25	30	30
15	Digestion system	50	66	89	76	55	52
16	Injury, poisoning and other consequences caused by external factors	11	13	2	1	5	0
17	External factors of morbidity and mortality	74	129	82	85	170	274

38 National Institute of Public health of Kosovo, 2010

39 Causes of deaths in Kosovo 2006-2007 and 2010-2011, KAS. Prishtinë, pg 59 and 35..

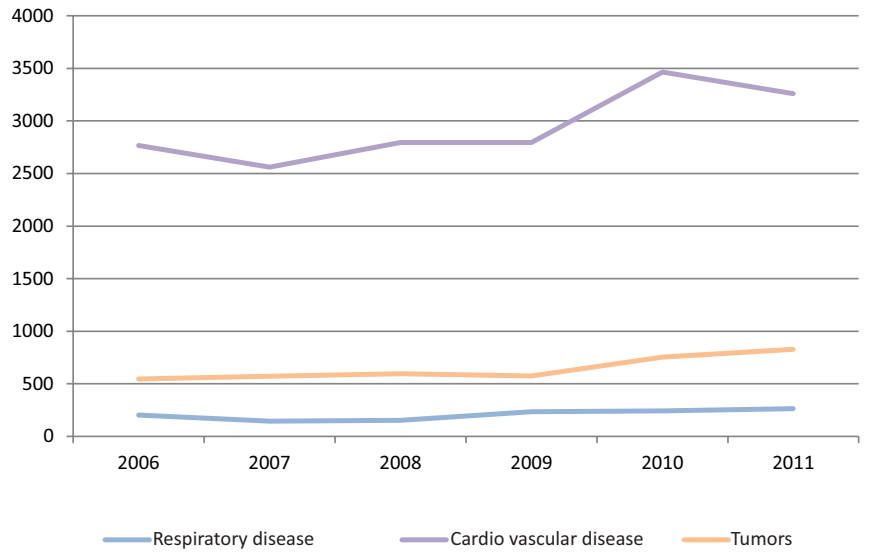


Fig 76: Causes of deaths in Kosovo

7.2. Drinking water quality and public health

Incomplete coverage of Kosovo population with water supply is an evident problem. Also, surface and ground waters are not protected from pollution, and the determined sanitary areas are not respected.

As regards to the water supply in Kosovo, the share of ground water and surface water resources used for water supply is approximately equal, 55 % from surface water and 45 % from groundwater resources. About half of the drinking water quantity is supplied from five large water reservoirs, and a substantial quantity (31%) is supplied from natural springs, which presents a large water resource with high water quality.

There are seven licensed RWC in Kosovo, the service areas of which cover about 96% of the population, and which provide water supply to 60% of the population living in those areas. Of 40% of the population who do not receive water from RWCs, it is estimated that about 7% live in the communities supplied with water from the pumping, systems of which (3%) are not managed by anyone. The remaining 33% do not have a pumped water system, and receive water from household wells or springs.
It would be reasonable to estimate that the majority of 40% of the population that is not supplied by the RWCs are not supplied with disinfected water. This is one of main concerns about water quality and the risk of public health .
With this we can say that the quality of untreated water supplied to the population differs from region to region. Surface water content depends on the mineral composition of the soil through which water flows, and by the structure of the aquifers. This is a serious problem given that the standards are not respected for sanitary areas. It is an absolute priority to establish monitoring mechanisms to ensure accurate data on water quality and quantity in Kosovo.

The National Public Health Institute of Kosovo is responsible for monitoring the quality of drinking water supplied by public water supply companies. The NPHIK monitors, analyzes and reports on the suitability of water quality on a regular basis.

Most of bacteriological residues are in the water supply of systems of small towns / rural areas (usually wells or springs), although there are reported cases of non-suitability of drinking water quality (mainly bacteriological residues) even in public water supply systems. One of concerns may be the fact that there are not yet conducted drinking water analyzes to determine the level of pesticides,

which under the Drinking Water Directive requires additional tertiary treatment (with granulated activated carbon with capital cost, but parametric maximum limits for individual and aggregate pesticides are respectively 0.1 and micro grams 0.50 micro gram/l), but the analysis to determine the level of radioactivity in potential locations.

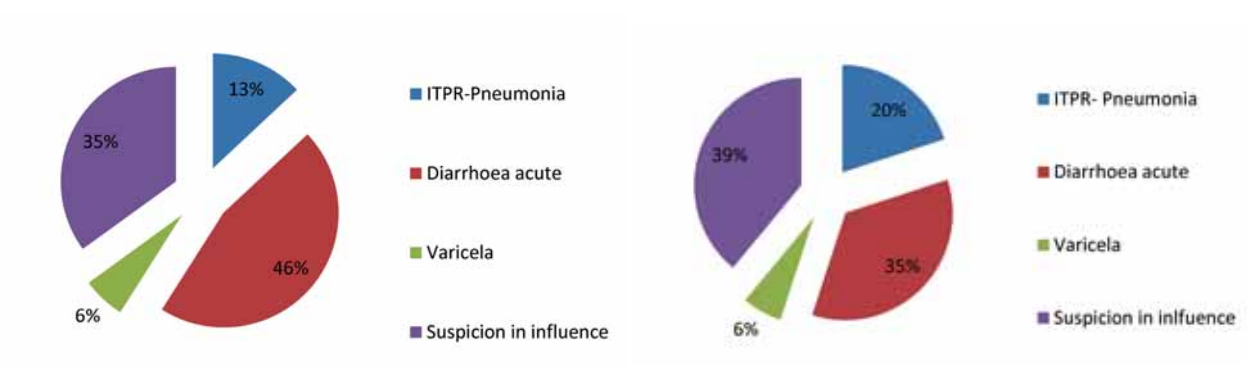
About 50% of the population has access to sewerage network. Cases of infectious and parasitic diseases have decreased significantly since the post-war period until today. One of the factors that contributed to the reduction of infectious and parasitic diseases is the increase number of population that have access to sanitation for sewage.

National Institute of Public Health of Kosovo (NIPH), regularly undertakes activities aimed at establishing a control over the quality of drinking water. Based on data from monitoring of drinking water sources from this institution, it is found that drinking water pollution from bacteriological contamination is greater than from chemical contamination. 74% -90% of water wells by NIPH are contaminated with faecal.

Table 43: Report of infectious diseases in Kosovo, according to the municipalities, 2009[40]

Municipality	ITPR-Pneumonia	Diarrhoea acute	Varicela	Suspicion in influence	Total
DEÇAN	31	2	1021	673	16
SHARR	130	1	163	472	92
FERIZAJI	1730	18	3926	2671	521
FUSHË KOSOVË	281	14	772	1242	128
GJAKOVË	37	8	260	1165	142
GJILANI	791	6	2188	2535	330
DRENAS	175	23	1304	1339	250
BURIM	75	1	452	766	13
KAÇANIK	123	4	596	656	64
HANI I ELEZIT	5		913	35	57
DARDANË	359	1	1988	742	101
KLINË	390	3	2263	1627	166
LIPJAN	371	15	1195	1287	150
MALISHEVË	290	10	1999	1097	167
MITROVICË	1544	10	1824	6091	284
ARTANË	11		3	64	5
KASTRIOT	272	8	514	738	134
PEJË	752	6	1217	2498	202
JUNIK	9		383	265	33
PODUJEVË	881	9	1661	1891	146
PRISHTINË	2149	116	4557	8742	867
PRIZREN	1704	17	5009	3903	790
RAHOVEC	1656	6	1390	1405	152
SHTIME	161	4	479	170	28
SKENDERAJ	38	10	860	1269	118
THERANDË	303	2	3221	553	55
VITI	57	4	1211	1226	140
VUSHTRRI	212	10	590	1989	203
TOTAL	14537	308	41959	47111	5354

40 National Inatitute of Public Health, 2010



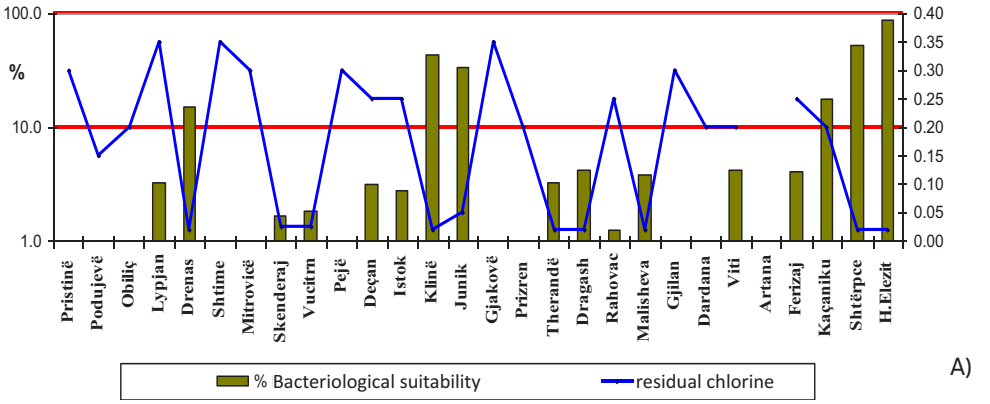
A) B)

Figure 77: Percentage of cases of infectious diseases in Kosovo, A) 2007 and B) January-June 2009

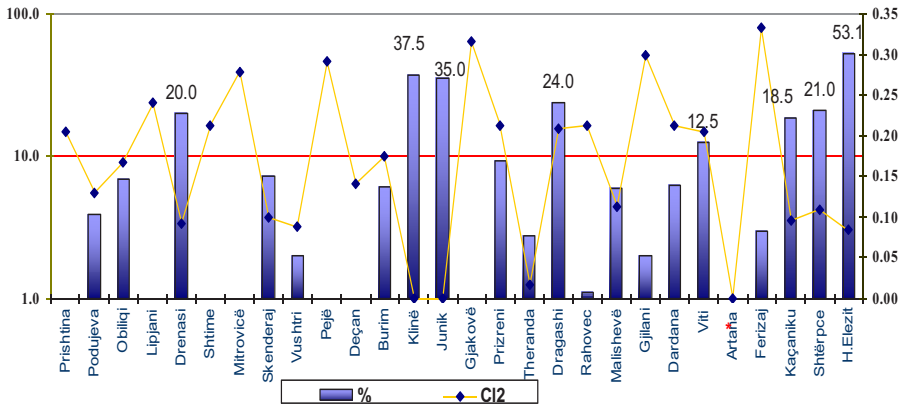
Table 44: Percentage of contaminated samples and quantity of residual chlorine[41]

Bacteriological control			Chemical control			Total analysed samples	Residual chlorine mg/l
Analysed samples	Contaminated samples	%	Analysed samples	Contaminated samples	%	13.049	0-1-0.2
9.577	522	5.50	3.454	165	4.7		

The table 44, shows that from 9.577 analysed samples from NIPH, 522 of them or (5.50 %) were bacteriological contaminated samples, and from 3.454 analysed samples 165 of them or (4.7 %) are chemically contaminated.



A)



B)

Figure 78: Bacteriological suitability and values of residual chlorine of drinking water from central supplying systems in Kosovo A) 2007 and B) January-June 2009

41 Some environmental facts, KAS 2009

The value of residual chlorine rounds between 0.1-0.2 mg/l, which means within the allowed values of World Health Organisation (MAV 0.2 mg/l).

7.3. Air quality and public health

Scientific studies have proven public health impacts of air pollution and in particular the particulate matter (PM). The main effects of PM on public health are respiratory diseases and cardiovascular effects. Effects attributable to long-term exposure include mortality due to cardiovascular and respiratory diseases, chronic respiratory diseases (asthma, chronic obstructive pulmonary disease, and chronic pathological changes), lung cancer, chronic cardiovascular diseases, and obstacles to intrauterine growth as for example low weight at normal birth.

In a survey conducted by the World Bank, it is emphasized that based on the coefficient exposure / response, annual concentrations of PM in ambient air, and the data for exposed population, it is estimated that urban air pollution in Kosovo causes 835 premature deaths, 310 new cases of chronic bronchitis, 600 hospital admissions, and 11,600 emergency visits. The health effects represent the loss of more than 8,700 DALYs per year.

Table 45: The calculated health impacts from air pollution in Kosovo[42]

Health impact	Cases per year	DALY/10,000 cases	Total DALY* year
Cardio pulmonary Mortality ($PM_{2.5}$)	748–800	80,000	5,987–6,399
Mortality ALRI**(PM_{10})	57–61	80,000	458–488
Mortality ALRI (PM_{10})	2	340,000	59–63
Chronic bronchitis (PM_{10})	299-320	22,000	658–705
Hospital admissions (PM_{10})	580–620	160	9–10
Emergency visits (PM_{10})	11,200–12,000	45	50–54
Days with limited activities (PM_{10}) (thousands)	1,976–2,117	3	593–635
Disease of respiratory tract children (PM_{10})	22,900–24,500	65	149–159
Respiratory symptoms (PM_{10}) (thousands)	6,291–6,741	0.75	472–506
Total			8,435–9,019

These calculated cases are usually higher than the number of registered patients with respiratory diseases, because not all the patients with respiratory symptoms visit a doctor or hospital.
Within the group of diseases related to the environment and environmental factors, the greatest group is the one of patients with respiratory illness - 663.353 cases per year or 31.5% of total patients.

42 Source: Environmental analysis, Assessment of environmental degradation costs, institutional review, and review of public expenditures for environment, World bank 2011
*Health effects of air pollution converted in lost life years as a consequence of illness.
**Acute infection of respiratory tract

7.4. Conclusions and recommendations

Conclusions

- Kosovo still has a large number of cases with infectious diseases;
- The largest number of cases with infectious diseases is related to the state of environment, especially the diseases that come from air and water pollution;
- The large number of cases of water diarrhoea can be related to poor economic and hygienic conditions, quality of drinking water, lack of sanitation, poor waste management, etc.;
- The large number of cases of Hepatitis A is an indicator that shows the low level of hygiene and the use of drinking water from contaminated wells;
- The large number of cases with respiratory system diseases is an indicator of air pollution;
- The quality of drinking water in the national level is not satisfactory;
- Disinfection of drinking water is not sustainable;
- Protection areas of water resources are lacking in many cases;

Recommendations

- Keep detailed statistics for the number of infectious diseases and environmental diseases;
- Develop regular reports on the quality of drinking water and make them available to the public;
- Insure the quality of drinking water at the national level;
- Disinfection of drinking water should be established in the territory of Kosovo;
- Establish protection zones of drinking water resources;
- Undertake continuous monitoring of water quality of water accumulations;
- Invest in improving water quality and air quality;

8. Measures of environmental protection

8.1. Implementation of Kosovo environment strategy and action plan

During 2011-2012, the Ministry of Environment and Spatial Planning has revised the Strategy for Environmental Protection and Sustainable Development 2005-2015, and the Action Plan for the Environment. As a result of this process the Strategy for Environmental Protection and Sustainable Development 2013-2022 is drafted. This paper has identified key environmental problems and determined strategic orientations.
In order to implement the Strategy for Environmental Protection and Sustainable Development 2013-2022 and obligations arising from the Law on Environmental Protection, the Kosovo Environmental Action for the period 2013-2017 is developed. Drafting of these documents is also supported by the Swedish Government through the Swedish International Development Cooperation Agency (SIDA).
Currently, the Strategy for Environmental Protection and Sustainable Development 2013-2022 is in the process of review and approval at the Government of Kosovo and the Kosovo Assembly.

8.2. Sectorial strategies and action plans

In addition to drafting the environmental legislation, the Kosovo Environmental Strategy and Action Plan also requires development of sectoral strategies and action plans for key environmental sectors such as water, air , biodiversity, waste and other environmental issues such as climate change, land protection , forest protection, management of chemicals, noise protection , protection from ionizing and non-ionizing radiation, etc. During 2011, the National Assembly adopted the Strategy and Action Plan for Biodiversity 2011-2020, whereas in the procedure for approval are the waste strategy and Action Plan, and the strategy and action plan for air quality.
During 2012, is initiated development of Kosovo Strategic Plan for Water, Climate Change Strategy, and several other strategies provided by the environmental legislation that are necessary for the efficient management of the environment.

8.3. Development of local environmental action plans

By the Law on Environmental Protection, municipalities are required to develop local environmental action plans. Until now, 27 municipalities have developed Local environmental action plans. In some municipalities these plans are approved, while in others they are in the process of adoption. Some of LEAPs are developed with financial support from SIDA, implemented by Regional Environmental Centre (REC), while others are developed in the frame of a European Commission project, implemented by EPTISA.
In 2011, with the support of Swedish International Development Agency, the Regional Environmental Centre (REC) office in Pristina has started the project to develop Local Environmental Action Plans - LEAPs in 10 municipalities of Kosovo, namely in the municipalities of Obilic, FusheKosove, Gracanice, Partes, Podujeve, Hani i Elezit, Istog, Decan and Junik.
Also 14 local waste management plans are developed, according to the requirements of the waste law. Municipalities that have developed local plans for waste management are: Pristina, Prizren, Hani i Elezit, Viti, Decan, Junik, Peje, Malisheve, Gracanice, Kllokot, Ranilug, Partes, Novoberde and Kamenice. While the municipalities of Mitrovic, Rahovec, FusheKosove and Istog, are in process of developing local waste management plans.

8.4. Development of legislation and EU approximation

During 2012, in the context of completing the environmental legislation and other issues related to environmental protection important laws have been enacted such as:

- Law on national park "Bjeshkët e Nemuna" 04/L-086; approved on 13.12.2012 Decree nr. DL- 60 -2012, Dated 26.12.2012
- Law on national park "Sharri" 04/L-087; approved on 13.12.2012; Decree nr. DL- 059 -2012, Dated 26.12.2012
- Waste law 04/L-060; approved on 24.05.2012; Decree nr. DL- 027 -2012; Dated 08.06.2012
- Law on Kosovo Agency for Protection from Radiation and Nuclear Safety 04/L-067; approved on 24.05.2012; Decree nr. DL- 028 -2012; Dated 08.06.2012

Also several administrative instructions and regulations for specific environmental areas are approved.

Besides development of environmental legislation, special attention is paid to aligning national legislation with the European one. The European Commission has monitored the progress of harmonization of Kosovo environmental legislation with EU, and its implementation.

Table 46: Progress monitoring results of harmonisation of Kosovo environmental legislation with the EU directives [43]

Areas	EU directive	Rate of harmonization (%)
Horizontal legislation	EIA directive (85/337/EEC)	62
	EIS directive (2001/42/EC)	100
	Environmental information directive (2003/4/EC)	26
	Public participation directive (2003/35/EC)	60
Air quality	Framework directive on air quality (96/62/EC)	75
	Directive on limit values of SO_2, NO_2, NOX, particulate matter, and lead on air (99/30/EC)	47
	Directive on benzene and carbon monoxide (2000/69EC)	50
	Directive on ozone (2002/3/EC)	57
	Directive on arsenic, cadmium, mercury, nickel, and aromatic polycyclic hydrocarbons in air (2004/107/EC)	20
Waste management	Waste directive (2006/12/EC)	95
	Directive on hazardous waste (91/689/EC)	100
	Directive on waste packages	88
	(94/62/EC)	90
	Directive on landfills (99/31/EC)	69
Water quality	Water framework directive (2000/60/EC)	16
	Directive on urban wastewaters (91/271/EEC)	25
	Directive on drinking water (98/83/EC)	68
	Directive on nitrates (91/676/EEC)	7
Nature protection	Bird directive (79/409/EEC)	83
	Directive on habitats (92/43/EC)	73
Industrial pollution control	IPPC directive (96/61/EC)	97
	Directive on large combustion plants (2001/80/EC)	64
Chemicals	Directive on hazardous substances (67/548/EEC)	xx
	Directive on GMO control (2001/18/EC)	79

43 European Commission, DG ENV, Progress Monitoring Report, Year 3 -2009. August 2009

8.5. Investments on environmental protection

During the years 2010-2012 a part of environmental investments was oriented in the rehabilitation of several landfills and the closure of old landfills of municipal and industrial waste.

Other MESP investments are carried in the implementation of projects for the construction of seven centres for sterilization of infectious hospital waste, as well as the implementation of the project for hazardous waste, by constructing the facilities for temporary storage of hazardous waste.

In the water sector, it is invested in regulation of riverbeds and development of feasibility studies for wastewater treatment.

Table 47: Projects on water sector 2010-2012[44]

Name of project	Project budget €	Time of implementation
Rehabilitation and construction of embankments along the Sitnica river	9,400,000.00	2010 – 2012
Regulation of Lumëbardhi i Prizrenit riverbed	1,000,000.00	2010 – 2012
Implementation of the first phase of socio-economic project for wastewater treatment in Prizren	3,000,000.00	2010 – 2012
Feasibility study and project for wastewater treatment in Pejë	70,000.00	2010 – 2012
Feasibility study and project for wastewater treatment in Prishtinë	150,000.00	2010 – 2012
Study of lots where sand and gravel in Drini i Bardhë may be extracted	1,700,000.00	2010 – 2012
Construction of embankments along the Drini i Bardhë river	1,105,000.00	2010 – 2012
Assessment of dam safety and supply with monitoring equipments	505,000.00	2010 – 2012
Construction of sewage network in Deçan municipality and several villages.	1,800,074.00	2010 – 2012
Regulation of Drenica riverbed	1,200,000.00	2010 – 2012
Regulation of Toplluha riverbed in Suharekë	1,500,000.00	2010 – 2012
Regulation of riverbed in Mamushë	1,000,000.00	2010 – 2012
Construction of sewerage networks in villages Runik and Banjë of Skenderaj municipality	550,000.00	2010 – 2012

Donor investments have been oriented towards capacity building and improvement of environmental situation in general, but also in establishing the environmental monitoring network.(Table 48).

44 Water Department -MESP

Table 48: Donor investments in period 2009-2012[45]

Nr	Donatori	Titulli i projektit	Shuma e financuar
1.	EU (IPA-2010)	Support for improvement of environmental conditions in Kosovo –Twinning project	1,800,000.00 €
2.	EU (IPA 2009)	Support for environmental sector in Kosovo – Twinning project	1,100,000.00 €
3.	EU (IPA-2009)	Establishing the air quality monitoring network	2,035,000.00 €
4.	KFW	Wastewater system and project for improvement of Bistrica river infrastructure in Prizren	5,000,000.00 €
5.	JICA	Capacity building for sustainable management of recyclable materials	5,171,000.00 €
	Czech Trust Fund + UNDP	Zhvillimi i Sistemit per Inventarin e Gazrave të Seres në Kosove	70. 000 US Dollar
6.	Czech Trust Fund + UNDP	Development of System for greenhouse gases inventory	70. 000 US Dollar
7.	SWECO/SIDA	Support for development of environment strategy and action plan	375,000.00 €
8	UNDP	Feasibility study for treatment of locations in Artana mine	12. 500 €
9	UNDP- FINLAND	Biodiversity conservation and spatial sustainable development in Dragash municipality	3,000,000.00 €
10	GIZ	Land management/ Cadastre of Kosovo lands	2.5 milion €
11	Czech Embassy	Construction of wastewater treatment plant in Halilaq	300,000.00 €
12	World Bank	Water supply for central Kosovo (Iber river basin and HS Ibër-Lepenc	200.000.00 €
13	KFW (WBIF)	Feasibility study for four wastewater treatment plants in four regions of Kosovo	1.8,000,000.00 €

8.6. Developments and challenges in strengthening the environmental institutions

Among the major developments in strengthening, promotion and technical capacity building of environmental institutions during the period 2010-2012 should be mentioned:

- KEPA continued cooperation with the EEA - EIONET and is involved in all activities of the European Environment Agency;
- KEPA's CEO became a member of EPA Network;
- The Agency for Protection from Radiation and Nuclear Safety is established;
- The directorate of National Park Directorate «Bjeshkët e Nemuna» is established;
- A special unit for environmental crimes is established within the Kosovo Police;
- Establishment of air quality monitoring network and supply with necessary equipment HMIK;
- Establishment of Advisory Board for Environmental Protection.
- Environmental Protection Departments are established in Mitrovica and Obiliq municipalities;
- The Agency for Energy Efficiency is established under the Ministry of Economic Development;

Among the challenges and obstacles in strengthening the environmental institutions, in this period are underlined the following::

- Lack of management body for Mirusha Regional Park;
- Malfunction of the National Water Council;
- Lack of soil quality monitoring network;
- Limited capacity of environmental institutions on some environmental issues, such as climate change;
- Lack of capacity for environmental protection at local level;

45 MESP, 2012

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- Kosovo Agency of Statistics
- Cement production Plant “Sharrcem”
- Hydrometeorological Institute of Kosovo
- National Institute of Public Health of Kosovo NIPH
- Kosovo Landfill Management Company -KLMC
- Regional Water Company – RWC, Prishtina
- Kosovo Energy Corporate-KECK
- Ministry of European Integration
- Ministry of Agriculture Forestry and Rural Development
- Ministry of Economic Development
- Ministry of Environment and Spatial Planning
- Ministry of Internal Affairs
- Ministry of Infrastructure
- Ministry of Trade and Industry
- Ministry of Health
- Trepça Enterprise (Under KPA administration)
- NewCo Feronickel
- District heating company-Termokos sh.a
- Regional Environmental Centre, office in Kosovo, REC
- Kosovo Association of Water Supply and Sewerage Systems -SHUKOS
- Waste and Water Regulatory Office-WWRO

10. Annexes

10.1. INDEX OF ABBREVIATIONS

KEPA	Kosovo Environmental Protection Agency
KARPNS	Kosovo Agency for Radiation Protection and Nuclear Safety
KAS	Kosovo Agency of Statistics
EU	European Union
LD	Legal Decree
WD	Water Department
EEA	European Environment Agency
EIONET	European Environment Information and Observation Network
EPA Net.	Network of Heads of Environment Agencies
TH	Total Hardness
GIZ	German Technical Cooperation
SS	Suspended solids
HP	Hydropower plant
IBA	Important Bird Area
HMIK	Hydrometeorological Institute of Kosovo
KINP	Kosovo Institute of Nature Protection
NIPHK	National Institute of Public Health of Kosovo
IPA	Instrument of Pre Accession
IUCN	International Union for Conservation of Nature
JICA	Japanese International Cooperation agency
EC	European Commission
KEC	Kosovo Energy Corporate
KFW	German Development Bank
KFOR	Peace keeping forces of NATO in Kosovo
KK	Municipal Assembly
KLMC	Kosovo Landfill Management Company
RWC	Regional Water Company
MAB	Reserve of Biosphere
MAFRD	Ministry of Agriculture, Forestry and Rural Development
MF	Ministry of Finances
MEI	Ministry of European Integrations
MESP	Ministry of Environment and Spatial Planning
NM	Nature Monument
MTI	Ministry of Trade and Industry
MEC	Ministry of Economic Development
POE	Publicly Owned Enterprise
WHO	World Health Organisation
EO	Economic Operator
NGO	Non Government Organization
OSCE	Organization for Security and Cooperation in Europe
PCB	Poly Chlorine Biphenyl
EC	Electricity Conductivity
pH	Hydrogen ion concentration
PIM	Industrial Park in Mitrovica
NP	National Park
KEAP	Kosovo Environmental Action Plan
LEAP	Local Environmental Action Plan
PMB	Chemical Products for protection of plants
TTD	Total Deposited Dust
REC	Regional Environmental Centre
NR	Nature Reserves
SIDA	Swedish International Development Agency
BOD	Biological Oxygen Demand
COD	Chemical Oxygen Demand
SHUKOS	Kosovo Association of Water Supply and Sewerage Systems
PP	Power Plant
PPA	Power Plant A
PPB	Power Plant B
TSP	Total Suspended Particulate
AI	Administrative Instruction
UNEP	United Nations Environmental Program
UNESCO	United Nations Program for Culture and Nature Heritage
MAV	Maximum Allowed Values
MAV	Monthly Average Value
AAV	Annual Average Values
EIA	Environmental Impact Assessment
SEA	Strategic Environmental Assessment
WWRO	Water and Waste Regulatory Office

10.2. Index of tables

10.3. Index of figures

10.4. Index of Maps

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