



**MINISTRY OF ENVIRONMENT AND SPATIAL
PLANNING**

**KOSOVO ENVIRONMENTAL
PROTECTION AGENCY**

STATE OF ENVIRONMENT IN KOSOVO 2008-2010

Report

Prishtina, 2011

Dear reader,



The Ministry of Environment and Spatial Planning, respectively Kosovo Environmental Protection Agency is bringing to you a very important document with the aim of informing you about the real environmental situation 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 and 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 environmental situation 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 all of our society. Therefore, our commitment together with our institutions and other relevant organizations for environment protection will be involved on drafting 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 the priority of the Republic of Kosovo will be economical development, which will be accompanied with growth and exploitation of natural resources and increasing the new energetic capacities, which necessarily will increase the impact in the environment. Undoubtedly that 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, MESPA will try maximally to respect the main principle of environment protection in relation to economical development the principle of sustainable development, so "to fulfil current vital needs, without prejudice of this right for future generations".

We will also be committed in preventing uncontrolled exploitation of natural resources, on prevention of the lawless utilization of the natural resources, expansion of protected areas, more efficient management of water, sustainable urban planning, advanced waste management and strengthening environmental inspection.

*Dardan Gashi
Minister of the Ministry of Environment
and Spatial Planning*

Acknowledgement



Dear readers and collaborators, in your hands you have a report, which contains basic information on the environmental state in Kosovo for 2008, 2009 and 2010. This report is prepared by the Kosovo Environmental Protection Agency, in the frame of fulfilling tasks and responsibilities that this institution has about the state of environment. Preparation of this report was assisted and supported also by other departments of the Ministry of Environment and Spatial Planning and other institutions that have responsibility in creating sectors of environmental protection.

We estimate that the real and continuous reporting on the environmental state is a very important tool, not only to inform the public but also to orient policies, strategies and priorities for the future of the country relating to environmental sector.

Given this fact KEPA has collected data on the environmental situation, the environmental pressures that are made from different sectors, for institutional and programmatic achievements about the environmental management, environmental investment and other relevant information. These data are now elaborated and will be presented in this report of environmental state.

We are aware that to achieve results on environment protection, it is required the cooperation and commitment by entire society. For this purpose we will be committed to further deepen cooperation with all institutions and hope that with increased cooperation and establishment of integrated monitoring systems will be increased the quality of reporting, environmental data collection and elaboration of these data. In this case KEPA, express special appreciation not only to the KEPA staff, who worked very hard for this report, but all individuals, governmental and nongovernmental institutions that have made their contribution through providing the necessary data for compiling this report.

*Ilir Morina
Chief Executive Officer, KEPA*

ABBREVIATIONS

EAR	European Agency for Reconstruction
ANP	Prishtina International Airport
ACDEI	Agency for Coordination of Development and European Integration
KEPA	Kosovo Environmental Protection Agency
KFA	Kosovo Forest Agency
EU	European Union
BFN	German Federal Agency for Nature Conservation
DANIDA	Danish International Development Agency
DPSIR	D-Driving Force, P-Pressure, S-State Environment, I-Impact and R-Reaction
WD	Water Department
EEA	European Environmental Agency
EIONET	European Environment Information and Observation Network
KSI	Statistical Office of Kosovo
LTMB	Learning Text-books and Means Body
TH	Total Hardness
FAO	Food and Agriculture Organization
KSF	Kosovo Security Force
GTS	Suspended Particles
GTZ	German Technical Cooperation
HEC	Hydro Power Plant
HIK	Hydro-meteorological Institute of Kosovo
KNIPH	National Institute of Public Health
IPA	Instrument for Pre- Accession Assistance
IUCN	International Union for Conservation and Nature
KEC	Kosovo Energy Corporation
KFOR	Kosovo Force
KFOS	Kosovo Foundation for Open Society
KFW	Development German Bank
KLMC	Kosovo Landfill Management Company
RWC	Regional Water Company
MAB	Biosphere reserves
MAFRD	Ministry of Agriculture, Forestry and Rural Development
MEF	Ministry of Economy and Finance
MIE	Ministry of European Integration
MTI	Ministry of Trade and Industry
MESP	Ministry of Environment and Spatial Planning
MTPT	Ministry of Transport and Post Telecommunication
CAN	Calcareous Ammonia Nitrate
PE	Public Enterprises
NPK	Nitrogen, Phosphor Calcium
WHO	World Health Organization
EO	Economic Operator
OSCE	Organization for Security and Cooperation in Europe
PCB	Poli Chlorine Bifenil
EC	Electric Conductivity
PH	Concentration of Hydrogen Ion
PIM	Industrial Park in Mitrovica
NP	National Park

NEAP	National Environmental Action Plan
LEAP	Local Environmental Action Plan
CPPP	Chemical Products for Plant Protection
NP	National Park
TDD	Total Disposal Dust
MDP	Municipal Development Plans
UDP	Urban Development Plans
REC	Regional Environmental Centre
BCO ₅	Biochemical Consumption of Oxygen
CCO	Chemical Consumption of Oxygen
WSSAK	Water Supply and Sewerage Association of Kosovo
SIDA	Swedish International Development Cooperation Agency
PP	Power plant
PPA	Power plant A
PPB	Power plant B
TSP	Total Suspended Particles
AI	Administrative Instruction
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UREA	Nitrogen Mineral Fertilizers
MVA	Maximum Values Allowed
AMV	Average Monthly Values
AAV	Average Annual Values
EIA	Environmental Impact Assessment
SEA	Strategic Environmental Assessment
WWRO	Waste and Water Regulatory Office

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1.

Introduction

1.1. Preface

Drafting of the report about the environmental situation in Kosovo, is based on Law of Environment Protection¹. According to Article 25 of this law, the Government of Kosovo with the proposal of the Ministry of Environment and Spatial Planning presented to the Assembly of Kosovo the Report about the State of Environment. The report should contain data for: environmental state and changes in environment compared to the previous report, environmental impacts on the population health, implementation of the 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 responsible institution for drafting this report.

This report, presents the situation of environment for the period 2008/2010, but previous information are available as well with the aim of comparison. This is the third official report about the state of environment which will be preceded officially but the Minister of MESP.

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

The report offers data for instigators and pressures in environment, describes current situation of mediums in the environment and the impact of this situation. Treats in a mass the following policies for protection and conservation of the environment and engagement of the governmental and non governmental institutions and society in general, in order to improve the situation. Such a form of reporting that is known as DPSIR² Model presents concerns about all environmental problems in the country and it is a very suitable method for assessment of the situation in the environment.

The Model DPSIR is a model adopted by European Environmental Agency (EEA), which is used also by EUROSTAT for production of environmental statistics.

This analytical model allows the organization of information and integration of socio-economic and environment elements, addressing the relationship between the five categories of indicators: the driving forces (such as agricultural production, industrial production, manufacturing technology, etc.) Pressures on the environment (such as: emissions to water, air and land), which influence the deterioration of environmental conditions (eg, concentration of heavy metals in the soil, raising average global temperatures), which then influence by imposing in this way the answer or response to relevant institutions to take appropriate measures (legislative measures, taxes, environmental programs for research and investigation etc.). (Figure 1).

¹ Law No. 03/L-025

² D- Driving Forces, P-Pressures, S-State of the Environment , I-Impacts, R-Responses

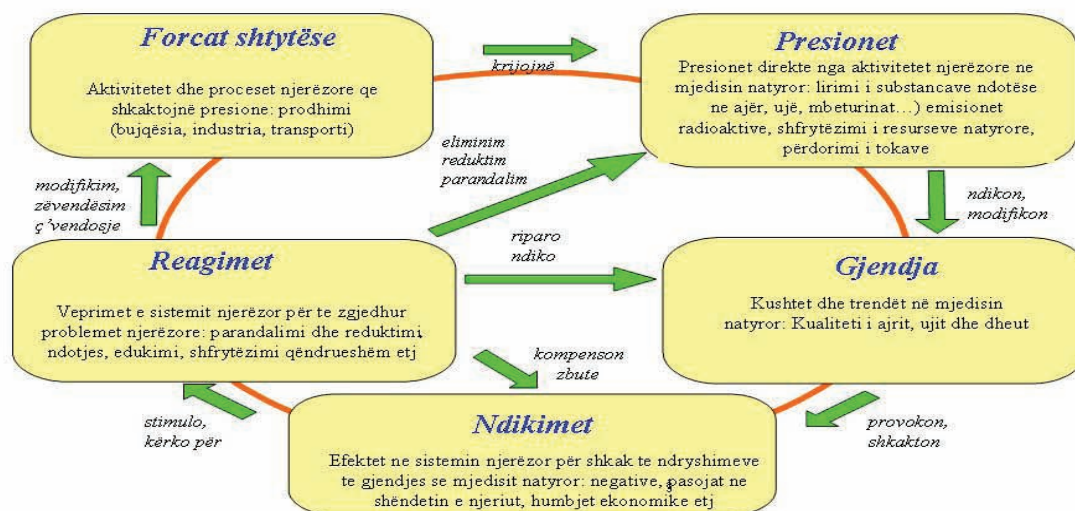


Figure 1: Analytical frame DPSIR

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

Contrary to the maximal commitment, 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 managing weakness.

We should accept that the quality of reporting depends on the quality of monitoring, implemented in a national level, and the level of organization of environmental information system. Knowing that these two environmental systems are not organized in an appropriate level here, we can make a conclusion that 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 information of the opinion for environmental state in Kosovo, however the data given here are as a good base for drafting of adequate environmental policies, and orientation of developments, pacifications and strategic investments in sectors which have impact in the environment, as are: economy, energy, transport and agriculture etc.

Through the reporting of the collected data in this document KEPA intends to fulfil conditions to establishing the bases of the cooperation and reporting with European Environmental Agency and EIONET³, by delivering the information about the state of environment in Kosovo, in these environmental institutions of the European Union.

The compilers of this publication are grateful to all those who have given their contribution in finalizing of this document, even through offering appropriate information or giving their suggestions or remarks

We do appreciate, and welcome all commitments, remarks and suggestions of the institutions, experts and well-minded of the environment, which will help us very much during the drafting of future publications on increasing their quality and credibility.

3 European Environmental Information and Observation Network

1.2. Report summary

The report State of Environment in Kosovo 2008-2010, contains 8 chapters. In the introductory section of the report except the preamble it is briefly presented the Profile of Kosovo, where there are data about the geographical position, landscape, climate, hydrographical, total movement of population, density, natural growth and other socio - demographics Data. In this chapter are described also the main pressures of environment developmental sectors. Here are presented the forms and the environmental impacts from the energy sector, industry, transport, agriculture, forestry and tourism.

The second chapter of the report describes the state of environment. The presentation of the environmental state is made under the relevant sectors. As regards the air sector are presented data on air quality, air quality monitoring, air emissions and the impact of various sectors in air quality. In the water sector are presented data on water resources of Kosovo, the quality of surface water and surface water monitoring under the river basin. In the context of data on land, in the report are presented data on land use categories, forms of loss of agricultural land, pollution of land, irrigated land surfaces, soil erosion and flooding. The state of biodiversity is presented through data on the number of protected natural areas, protected areas management, the condition of these areas, the state of flora and fauna and also the activities and initiatives undertaken for nature conservation. In this section it is presented a summary of problems and recommendations for biodiversity. Within the presentation of the situation with waste and chemicals management in this report there are included data on municipal waste generation, disposal of such waste, industrial waste, construction waste, vehicles waste and the import and use of pesticides and chemical fertilizers.

In the chapter environment and public health, the report provides information about the environmental impacts on human health, drinking water quality and disease coming out from contaminated environment. In this chapter are presented also the recommendations of the National Institute of Public Health in order to overcome the situation. Through the chapter on the use of natural resources, the report presents data on the use of water resources from different sectors, the degradation of river flows, the use of inert materials and use of forestry resources

The implementation of the Strategy, Action Plan and other environmental plans, is another chapter of the report, whereby the aim is to present how it is implemented the Kosovo Environmental Strategy, the number of projects implemented by the Environmental Action Plan, progress achieved in the development of sectoral strategies and action plans, and drafting the environmental plans and programs at the local level.

In chapter undertaken measures on environment protection it is performed a summary of key measures and actions undertaken by various institutions for improving the environment. These measures are included in environmental legislation and its harmonization with European legislation, the inventory of environmental hot-spots, spatial identification of potential pollutants, preparation of cadastre of water pollutants, regularization of river beds, forestation of forestry surfaces, illegal dumpsite rehabilitation, rehabilitation and recovery of high pollution areas and also the development and delays on strengthening the environmental institutions.

The chapter of investments for environmental protection provides a detailed overview of investment in the environmental sector, sources of funding and support from donors. Also, this chapter has data for the cost of some major projects in the environmental field.

In the chapter of references are presented all the resources which the report refers, whether provided by the state of environment monitoring, reports and publications, and other data from various governmental institutions, NGOs and public enterprises, the activity of which relates to the environment, or, which provide certain information about any environmental indicator.

In the last chapter are presented three annexes to the report, namely the index of tables, index of figures and index of maps. The data presented in the report are illustrated through 68 tables, 65 figures and 11 maps.

1.3. Kosovo Profile

Geographical Position-Kosovo is located in the central part of Balkan Peninsula. 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 km². 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 km² (this census does not include the municipalities of Leposavic, Zubin Potok and Zvecan)⁴. 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 km².

Relief-Kosova 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 270 m, while the highest 2656 m (Gjeravica). In terms of hypsometric the area below 300m above sea level includes only 16.4 km² (0.2%) to 1000 m are expanded 8754 km² (80.7%), from 1000 to 2000 m 1872.3 km² (17%) and over 2000 m to 250.6 km² (2.3%). The main forms in Kosovo landscape are: mountains with 63% and hollows 37%.

Climate - The climate is continental-sized, with a dominant influence of Adriatic-Mediterranean climate in Dukagjini Plane, through the valley of Drin i Bardhe, and with the lesser impact of change-Aegean Adriatic climate in Fushe Kosovo. The average annual rainfall is **596 m**. The average annual temperatures in Kosovo are **10 °C**, with the minimum temperature reached to **-27.2** and maximum **39.2**⁵. The main local factors that affect the climate of Kosovo are: landscape, water, land and vegetation.

Hydrography- it is estimated that Kosovo has only m3/water/year 1600 per capita. Kosovo waters are divided into 4 River Basin: Drini i Bardhe, Iber, Morava e Binçës, and Lepenci. From the territory of Kosovo in medium wet year flowing approximately about 3.8 x 10⁹ water, respectively 121.2 m³/sec. The potential for water energy in Kosovo is very small and so far its use is quite modest. The topographic conditions for the 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, and a number of small lakes for irrigation.

The Migration of Overall Number of Population and Prognosis -Kosovo for a long period of time (over 25 years) is facing with lack of statistics about the population, so the determination of the number of population is done mainly on the base of assessments and **prognosis**. The overall number of Kosovo population, even against the pressures and displacements, continuously has been increased with different numbers in the period after the Second World War.

During 63 years period of time (1948-2011) Kosovo population had an increase of 138.25%.

Table 1: The Migration of Overall Number of Population in Kosovo 1948-2011⁶

Year	No. Of inhabitants	Comments
1948	727820	Registration
1961	963988	Registration
1971	1243693	Registration
1981	1584440	Registration
1991	1956196	Assessment
2002	1985000	Assessment
2011	1733872	Preliminary registration

4 Census, family economies and housing building in Kosovo, preliminary results SOK 2011

5 Kosovo Hydro-Meteorological Institute, 2008

6 Natality statistics in Kosovo. 2008, SOK 2009

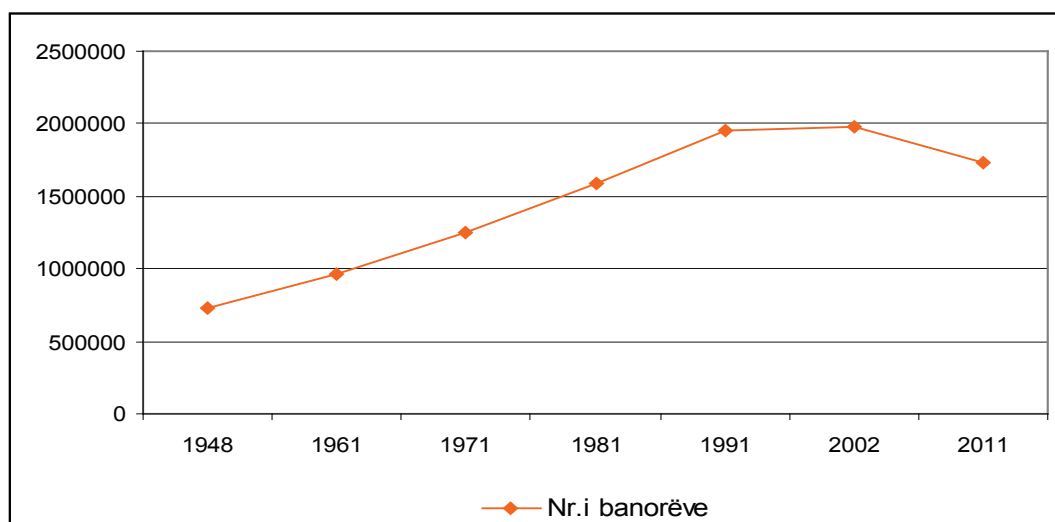


Figure 2: The migration of overall number of population in Kosovo 1948-2011

On the base of the projections of Kosovo population, the overall number will continue to be increased in the 50 years of this century, even with the slower rhythms, comparing to 60, 70, and 80 -ties of the last century.

The growth of overall population has an impact in the environment in many aspects, from which the most important are: Impact in the production rate, use of resources, way of land use, as well as producing waste and pollution of environment.

The relation between population and impact in the environment in the first view is: more people spend more products, natural potential, cause more damages and produces more waste.

The Natural Growth of Population -The Kosovo population has been rapidly grown during '60-t ies, when the rate of natality was the highest in a period after the Second World War ,with 29.9‰ (natality 44.1‰, whereas the mortality 14.2‰).

Table 2: Natality, Mortality and Natural Growth of Kosovo Population 1948-2010⁷

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

⁷ Mortality, statistics of Kosovo 2010, SOK, Prishtinë 2011

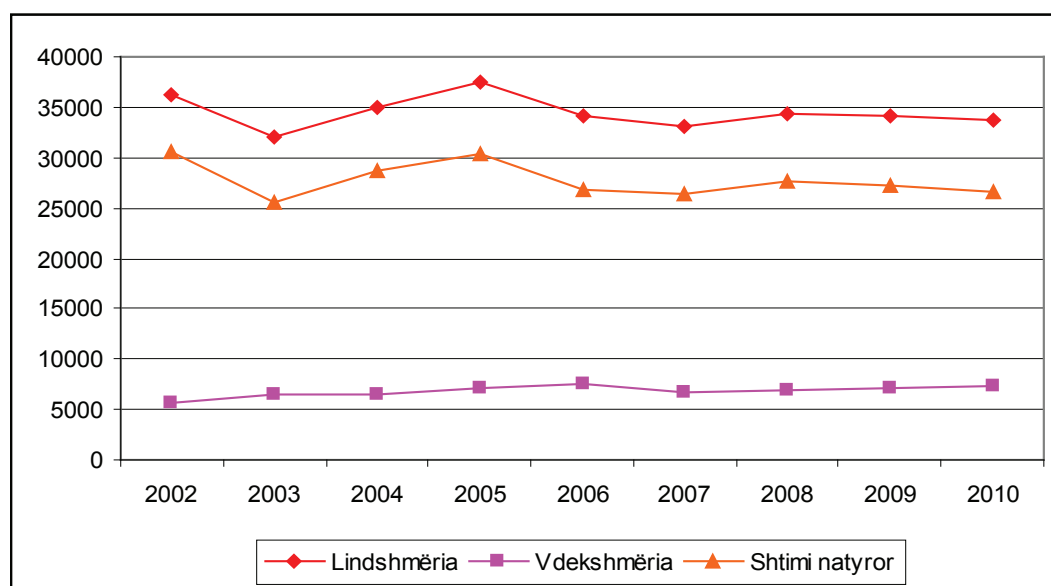


Figure 3: Natality, Mortality and Natural Growth of Kosovo Population 2002-2010

Taking in to account the data offered by Kosovo Statistics Institute, 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 km². This growth presents also the increase of the impact of population in the environment. The highest density of population is in the field of lowlands (over 600 b/km² -Fusha e Kosovës), in the highland regions is around the average of Kosovo, whereas in the mountains there is a lower density than Kosovo average.

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

Table 3: Density of population in Kosovo 1948-2011⁸

	1948	1953	1961	1971	1981	1991	2002	2011
No. Of inhabitants perkm ²	62.7	74.8	88.4	114.1	145.3	179.7	182	159

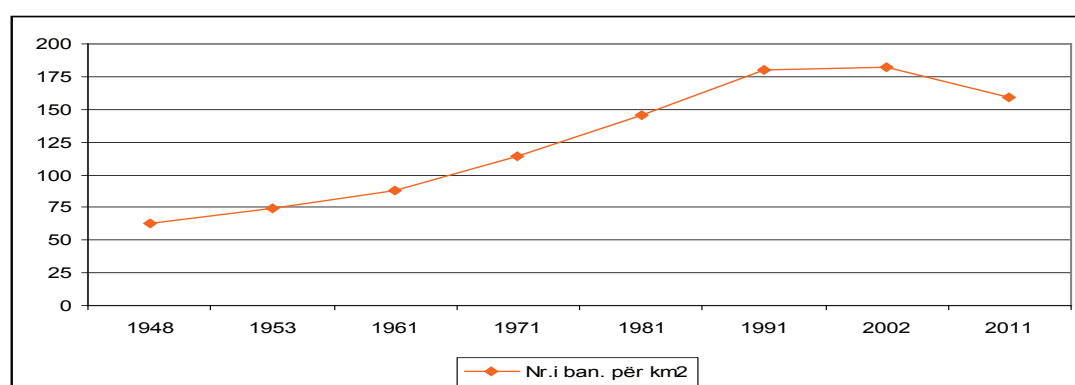


Figure 4: Density of Population in Kosovo 1948-2011

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

⁸ Kosovo Geography, ETMM,Pr,1994 and vital statistrics in Loso 2002, Preliminary study 2011, ESK.

The structure of population according to the age –Kosovo population is young. In 2006 the age group from 0-19 years old is 38 %, the age group from 20-64 is 56 %, whereas the group age over 65 years old is 6 % of overall population.

Table 4: The structure of population according to the age in Kosovo 1981-2006⁹

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

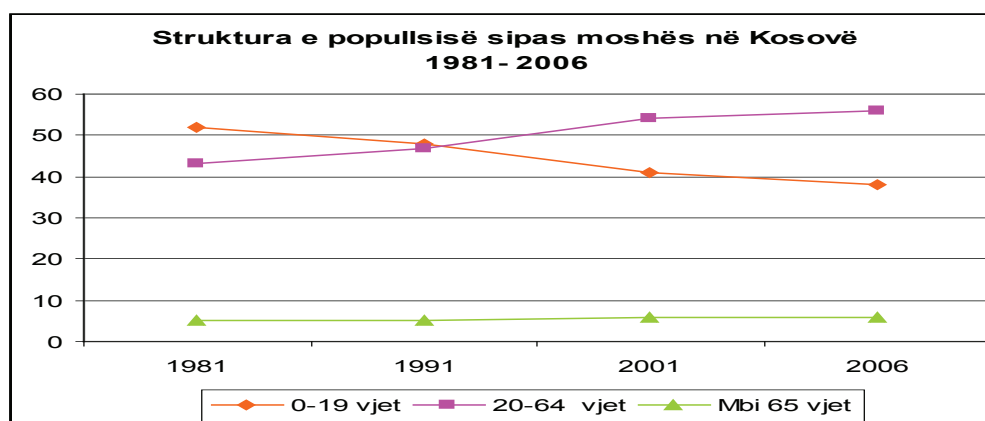


Figure 5: The structure of population according to the age in Kosovo 1981-2006

The structure of population according to the age has an impact in the environment through production and consumption, because from this structure is developed the labour contingent and population contingent is represented as consumer.

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: Income per person in Kosovo 1985-2009¹⁰

	1985	1990	1995	2000	2001	2004	2006	2008	2009
Income per person in €	1125	689	340	730	823	1457	1487	1784	1710

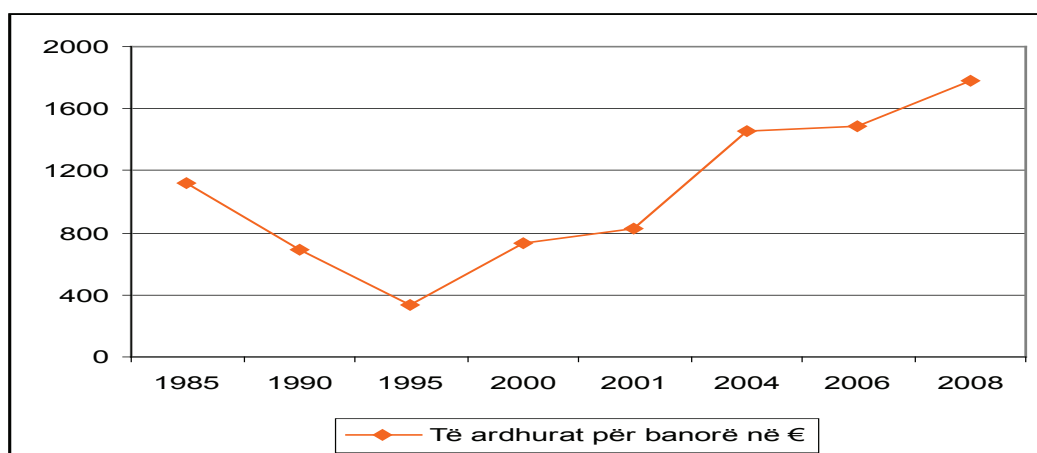


Figure 6: Income per person in Kosovo 1985-2008

9 For 1881, Bulletin 17, SOK, 1991-2001, Performance and Extension of Albanian Population in Former Yugoslavia, Economic Institute 1997, 2006, Kosovo in Numbers 2006, SOK, Prishtina 2007.

10 National bruto production in Kosovo 2004-2008, ESK, Prishtina, 2009

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 -The low level of Kosovo economic development and the highest level of unemployment is a result of high level of poverty in Kosovo. If we take in to account the definition that: poor is considered a family economy with less than 2\$ per day ,then we have that in 2004 in Kosovo there were living 60.6% of the population (12.9% ,in extreme poverty , with less than 1 \$ per person and 47.6% in a poverty with 2\$ per person, per day) .Comparing to 2000it has not been noticed any improvement in respect of poverty in Kosovo, but the level of extreme poverty shows an increase from 11.9% (2000) to 12.9%(2004), whereas the level of total poverty is the same, including here more than half of population (50.3%).

Table 6: General poverty according to nationalities and settlements in Kosovo¹¹

Indicator	Kosovo	Albanian	Serbian	Ashka-li	Others	Rural area	Urban area
Poverty at national level	50.3	50.4	36.9	80.9	67.6	51.7	48.7
Extreme poverty	12.7	12.6	5.9	37.5	19.6	10.8	14.9
Person with 1 dollar per day	12.9	12.8	3.9	36.7	16.8	10.6	15.1
Persons with 2 dollars per day	47.6	48.6	26.4	79.0	57.7	49.2	45.7

Based in the ethnic structure of the population and the level of poverty we may conclude a correlative relation between poverty and ethnic structure of the population. Municipalities with Albanian population are characterized with higher level of poverty, whereas the municipalities with Serbs population have lower level of poverty. The spreading of the poverty per settlements indicates that the national poverty is higher in rural areas, whereas the extreme poverty is in the urban areas.

¹¹ Human development report in Kosovo 2004, UNDP, Prishtina, 2004, pg. 126.

1.4. Environmental Pressures

The concept sectorial pressures represent the pressures in environment from the certain economical sectors and other sectors, through which the man, satisfying his socio-economic needs causes a delicate impacts in the environment. Exploitation of the area, exploitation of the natural resources and different kinds of services which have impact in the environment, are reflected in changing of natural equilibrium, exhausting of natural resources and in the human health. Dimensions of these impacts, the mechanism of actions and effects in environment are dependant by many factors. Failing to take adequate measures on their prevention and elimination in the majority of the cases, causes unrecoverable effects to environment.

With the aim of easier assessment of the impacts in environment, it is practiced that sectorial effects, to be grouped on the base of economic activities, which in reality are treated as specific sectors.

Some of the economic activities as are energy, industry, transport etc, undoubtedly are resources with emphatic impact on environment, whereas, agriculture, fishery, forestry etc are in other reports with environment and as such are rather dependant from situation in the environment. The study of their impacts in the environment, never should be left alongside .Whereas, tourism is an economical sector which effects in the environment are identified lately.

The revision of sector impacts in the environment of has an advantage, particularly during the development planning and drafting of respective strategies. Besides the discussion of sectoral effects one by one, it is with interest to be discussed the areas in which brings the impact of the joint actions of some different sectors. Chemicals belong to this group, their production and use nowadays is increased by some sectors

Energy- the energy plays an important and irreplaceable role in the modern human life. But its impacts in the environment are quite emphatic. Whatsoever, the method of energy production has a delicate impact in the environment due to operations following, form the providing of raw material and its transport to the production process and the consumption of energy.

Firstly there are analysed overall emissions from energy range, including here the pollution of air, water, land, waste management, noise and radioactivity. It is also important to be assessed the possible accidents, happening during the production process, transport and consumption of energy. Achieving of an equilibration between the demand for energy and protection of the environment is a great challenge. Choosing the types of energy sources and suitable technologies will be decreased the impact in the environment. For instance, if it has been chosen to be used natural gas, instead of coal, then emission of CO₂ will be decreased for 40 %.

However, every energetic building in different forms and sizes has an impact in the environment. By constructing water power station will come to the disorder of the underground waters and microcline, and in that case will be disordered the ecosystem in that area where the water power plant is constructed.

Industry- Industry is the key of economic development of a country, but at the same time has the major impact in the environment. Through industrial development will be spent the following resources: energy resources, water and other resources. From industrial activities are released emissions in water, air and ground. Industrial accidents represent another continuous threat to environment and human health. Whereas the production of waste by most of industries is another segment of this sector which impacts in the environment.

Agriculture - Agriculture in Kosovo was one of the main sectors of the employment and economic development. Comparing to 90-ies, after 2000 has been emphatic the increase of agricultural production and also the tendency on changing of agricultural development. It has been increased the number of farms and agriculture producers. It has been increased the use of chemicals and other products which have negative impact in the environment. In Kosovo there still does not exist any interest in production of ecological products.

Even if 53 % of the Kosovo land is qualified as agricultural land, only 3.9 % of the working force is employed in agriculture. From the total of agricultural land about 73% is cultivable land, whereas the other part is forests and yards.

Kosovo does not fulfil the population demands in food production, so the import of the food is needful. Because of the lack of certified laboratories, are imported foods of suspicious quality and very often without any authentic inspection in border points.

Forestry - Forests are the most advanced natural ecosystems, and have a great importance, because they are ecosystems with a very rich biodiversity. Forests are natural controllers of climate, they keep water and air quality, protect ground from erosion and rinsing of productive land layer. Also forests are the major accumulators of CO₂ quantity in earth and they are main suppliers of atmosphere with oxygen. They are natural renovator resources, products of which may be used in industry, for burning and for other purposes. Forests are ecosystems in which are grown a large number of flora and fauna with nutrition and medicinal importance to humans. Besides that they resist strong winds, they are recreation for humans as well.

Although, the human impact in forestry is very emphatic. Especially they are sensitive in air pollution. Uncontrolled cutting of woods impacts in presentation of many environmental changes, as erosion, climate changes, floods etc..

Transport - Transport has impact in overall quality of the environment, especially in urban environments. Most of the vehicles use oil, which means a release of emissions in air, water, and land. Also, during road construction are made changes of landscapes and lands, including here possible degradation of habitats. Unusable vehicles, also present a serious risk to environment. From the transport of dangerous substances it may come to accidents with fatal consequences to environment.

Tourism- Tourism presents one of the main fields of development in a country. Their developments have an impact in the environment, and, especially if there are not taken in to account the principles of sustainable development. Tourist resources there are almost in all Kosovo regions, "Malet e Sharrit" and "Bjeshkët e Nemuna" are most important zones. Untouchable values of nature as well as biodiversity of cultural-historical monuments make good chances for the development of tourism.

2. State of Environment

2.1. Air

Air is a very important element for human health and the environment generally surrounding us, which is constantly under the influence of pollution. Although air pollution comes from human activities, it can also be affected by natural phenomena. Air pollution occurs when substances released into the air in a quantities that could harm human health, flora and fauna and can cause material damage. Some air pollutants can also have global implications – e.g. increasing effect of greenhouse gases or ozone layer damage.

State

Data on air quality in Kosovo remains weak due to the lack of air quality monitoring network. Also still does not exist the inventory of polluters and is not designed the cadastre of air pollutants. As a result of this situation it cannot be talked authoritatively for the current level of air pollution and its quality. **As the main sources of air pollution** in Kosovo is considered the energy sector, traffic and heavy industry. Currently the biggest contributors of air pollution are the following:

- KEC that includes power plants (Kosovo A and B) and surface mining of lignite in Obilic;
- Traffic (road, air and railway traffic)
- Industrial Complex Ferronikeli in Gllogovc;
- Cement Factory – Sharcem- in Hani Elezit;
- Industrial Complex in Mitrovica;
- Central heating systems (Pristina, Gjakova and Mitrovica);
- Basic heavy industry (currently not working) in Gjakova, Peja and Gjilan
- Landfills of urban and industrial waste.

AIR EMISSIONS ACCORDING TO SECTORS

Energy

Power Plant Kosova A and Kosova B- Dust emissions are measured only in Power Plant Kosova "B", for instance the average dust emissions measured in 2008 was: about the Block - B1: 272.22 tons / month, while for the Block - B2: 254.49 t / month, while other parameters are (SO₂, NOx and CO₂) calculated from the team of environment within the Division of Energy Generation. In the following table are presents the emissions of KEK Power Plants and limits under the Directive 2001/80/EC.

Table 7: Current emissions and limits according to the memorandum of Athens

Polluter	PPA	PPB	Limit	To be achieved
Dust	902.32	156.35	50	31 December 2017
SO ₂	251.42	208.55	400	31 December 2017
NOx	705.75	835.08	500	31 December 2017

As it is shown from the table, dust emissions, compared with the limits under the Athens Memorandum requirement are very high, especially from the PP. Also, according to calculations NOx emission is above the required levels. SO₂ emissions, although according to calculations are lower than the limit of the Directive, they should be verified through continuous measurements. While CO₂ emissions calculated from the total coal use, is estimated to be about 5 million tons per year (Table 8).

Table 8: Emissions of CO₂ from *pp* Kosova A and PP Kosova B¹²

Power Plant	Blokes	Emissions of CO ₂ (t/year)
Kosova A	A1, A3, A5	1.532.930
Kosova B	B1, B2	3.608.876

Public heating- in Kosovo for a long time has been in operation three public heating in Prishtina, Gjakova and Mitrovica. Central Heating of Prishtina - Termokos operates during the six months period (winter season). This heating plant uses fuel oil (mazut) as fuel. Central Heating Termokos- provided general data about the emissions. Regarding the total fuel consumption for heating season for 2007/2008 was 9,320.16 t, while for the heating season for 2008/2009 was 9,438.82 t

While, in terms of total heating production of season for 2007/2008 has been 86,561.532 MWh and in season 2008/2009 has been 92,259.645 MWh.

Referring to the figures provided by the Central Heating -Termokos for 2010, it is shown that sulphur dioxide SO₂ (3% O₂) is 491.0 mg/Nm³, for SO₂ emission is therefore above the allowed values. The amount of CO is 118.0 mg/Nm³ and is also within the allowed limits.¹³.

¹² Report by Environmental Strategic and Social Assessment for Power Plant Kosova e Re, Patel & MEM 2008

¹³ Central Heating, Termokos, 2010

Industry

Cement Factory Sharrcem

Table 9: Presentation of average values of emissions in mg/Nm³ in the area of cement factory Sharrcem¹⁴

YEARS	2003	2004	2005	2006	2007	2008	2009	2010
Average emission of SO ₂	470	420	350	350	182	234	306	56.15
Average emission of NOx	820	548	590	580	564	593	536	447.93
Average emission of dust	250	108	120	100	60	77	61	67.60

Based on the data it can be noted that there exist high levels of dust, but not exceeding of the allowed values of SO₂ in 2010 it can be seen a very low value compared to previous years, and also for NOx in the recent year there are reduction values.

Absolute emissions of CO₂ in Figure 7 show that although the absolute values of CO₂ emissions show an increase, they are smaller for 9% toward the increase of cement production compared to previous years.

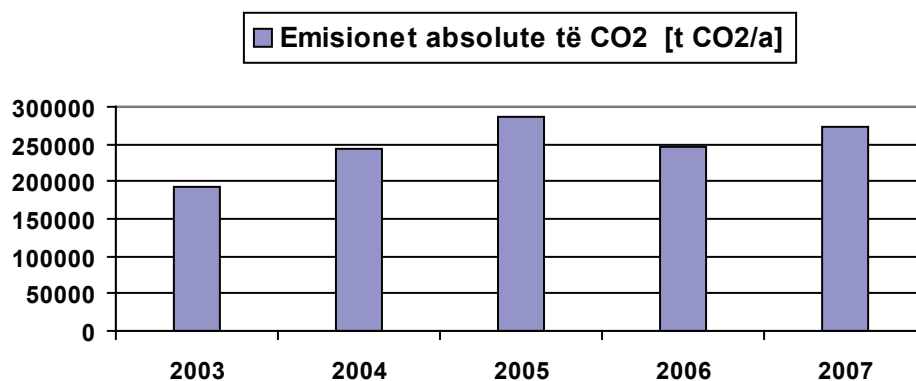


Figure 7: Absolute emission of CO₂ in the area of cement factory Sharrcem¹⁵

Ferronikel- Measurements for emission in Ferronikel are made by a licensed laboratory Farmahem from Skopje (Macedonia). Measurements were carried out for gaseous and dust emissions (TSP) in the smelter of Ferronikel in November 2009. The purpose of the measurements was to monitor the emissions into the atmosphere from the smelter. During the measurements have been implemented ISO standards for: O₂ and CO, NOx, SO₂, dust (total suspended particulates - TSP). In 2010 "Tehnotabi" as a licensed laboratory from Macedonia has carried out measurements on gas and dust emission (TSP) at the discharge points at the smelter of Ferronikeli, on a monthly basis.

Pollution inherited from Trepca: Mitrovica City as area with greater pollution arising from industrial activities has been the city with the highest level of environmental pollution. The consequences of contamination are still present even though Trepca is not operating. So far it has been worked for the assessment of environmental pollution in Trepca, by a Swedish expert, funded by Swedish Governmental Organization AIDA, and are identified all environmental problems there and has been compiled the list of priorities. Also, the project Health Risk Assessment of heavy metal pollution was funded by the Dutch government which is under the management of WHO.

Transport

Air Transport -In 2008 the total passengers at the Pristina International Airport was 1,185,064, while in 2009 the total of passengers has been increased and was 1,266,993,¹⁶ whereas in 2010 the number of passengers was 1,305,532.

The number of flights in Pristina Airport during 2008 was 7484, during 2009 7473, and in 2010 was 6143.

¹⁴ Cement Factory, Sharrcem 2010

¹⁵ Cement Factory, Sharrcem 2009

¹⁶ Prishtina International Airport, 2009

The amount of kerosene used for 2010 was 15,818,825 litres, for the year 2009 was 19,222.538 litres, whereas in 2008, 23,036,800¹⁷ litres. 2008 was 331034.6 litres, while in 2009 were spent 277608.92 litres gasoline 4636.43 and litres of diesel fuel in 2010 and spent 287,292 litres of diesel and 115,940 litres of diesel. (Table 10).

The quantity of spent fuel to the needs of the airport for 2008 was 331034.6 litres, while for 2009 were spent 4636.43 litres gasoline and 277608.92 litres naphtha, and for 2010 were spent 287292 litres gasoline and 115940 litres naphtha. (Table 10).

Table 10: Some indicators of the impact of PNA in air quality¹⁸

Indicator	2008	2009	2010
Number of passengers	1,185,064	1,266,993	1,305,532
Number of flights	7484	7473	6143
amount of kerosene used	19,222.538 litres	23.036.800 litres	15.818.825 litres
quantity of spent fuel	331034.6 litres	4636.43 litres gasoline 277608.92 litres naphtha	115940 litres naphtha 287292 litres gasoline

Railway transport- in 2007 there were spent 1,352,980 litres of naphtha, in 2008 1,395,863 litres, in 2009 1,297,310 litres, and in 2010 1,355.361 litres. Kosovo has 333.5 kilometres railway road. The Number of passengers for 2009 was 374,504 and 376,770 for 2010. The amount of conveyance of goods was 911,830, for 2010 were 1,217,612 net tons. The number of trains is 2508. In 2009 it is shown that the transport of goods has been increased compared to previous years, whereas the number of passengers has been decreased.

Road transport - significant contributor to air pollution in Kosovo is road transport. In Kosovo, each year approximately 350,000 vehicles are registered, while in the entire territory of Kosovo, according to data from 2010 the total number is 406,050. In the table below it is presented the number of vehicles according to the types.

Table 11: Data about the number of vehicles in Kosovo for 2008¹⁹

Year	Total	Vehicles	Jeep	Busses	Mini busses	Truck	Motorcycles	Trailers	Others
2008	211301	159522	1242	15095	4234	10630	2817	3344	7071

Greenhouse gases -based calculations for gases CO₂, CH₄, and N₂O for the years 2008 and 2009, the Energy sector is the largest source of greenhouse gases. Then comes the industry sector and Transport, meantime there are no calculated data about the amount of greenhouse gases from agriculture and municipal waste generation.

Table 12: Sources of greenhouse gases according to sector for 2008 and 2009²⁰

Source of greenhouse gases	Unit Gg (Giga Gram)					
	2008			2009		
	CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
Energy	6,221,976.11	5,388.79	252.56	7,040,831.31	5,578.54	269.94
Industry	11,054.45	1.32	0.18	11,474.52	1.37	0.18
Transport	1,073.30	0.15	0.07	1,110.44	0.15	0.07

17 Air BP Kosova, 2009

18 APN and Air BP Kosova, 2009

19 Ministry of Internal Affairs, 2009

20 Kosovo Environmental Protection Agency

AIR QUALITY MONITORING

Air quality monitoring in Kosovo is made by governmental institutions (HMIK and NIPH) and the economic operators that have impact on air quality (KEK, Sharrcem and Feronikeli NewCo). The air quality monitoring network in Kosovo is still uncompleted. The most part of the data from the monitoring of air quality are calculated by classical methods. An automatic station for air quality monitoring is located in the yard of Hydro-meteorological Institute of Kosovo in Pristina. In this device are analyzed: SO_2 , PM_{10} , NO_2 , NO_x , CO and O_3 . By the end of 2009, the HMIK received as donation from the Slovenian Government a station with an analyzer to measure PM_{10} , $\text{PM}_{2.5}$, PM_1 and sensors of the meteorological parameters (air temperature, pressure, humidity, wind direction and speed) which is put in place during June. It is expected during 2010 to be installed three more automatic monitoring stations in Pristina, Mitrovica and Drenas. In HKMI there is software of data and reports processing.

Also KNIPH has two automatic analyzers, through which transmits the air quality into two measuring points in Pristina. Currently, these two stations are out of operation due to technical problems.

- Hydro-meteorological Institute monitors the air in Mitrovica, Pristina and Drenas. This institution determines the concentration of SO_2 , soot and aero sediment (Total Dust deposited, pH, electrical conductivity, sulphate ions and chloride ions).
- National Institute of Public Health makes the measurement of air quality at two locations in Pristina, providing data for SO_2 , GTS (suspended particles).
- INKOS Institute also made the measurements in the area of Power Plants "Kosovo A and B".
- NewCo Feronikeli Complex makes self monitoring of environmental quality, especially for aero sediment and the presence of metals in the air at 9 monitoring points.

Monitoring of air quality by KHMI - From Figures 8 and 9 it is shown the exceeding of soot, whereas the values of SO_2 in the monitoring point of KHMI is shown a completely different situation where during the whole year it is not presented any exceeding of the values of SO_2 .

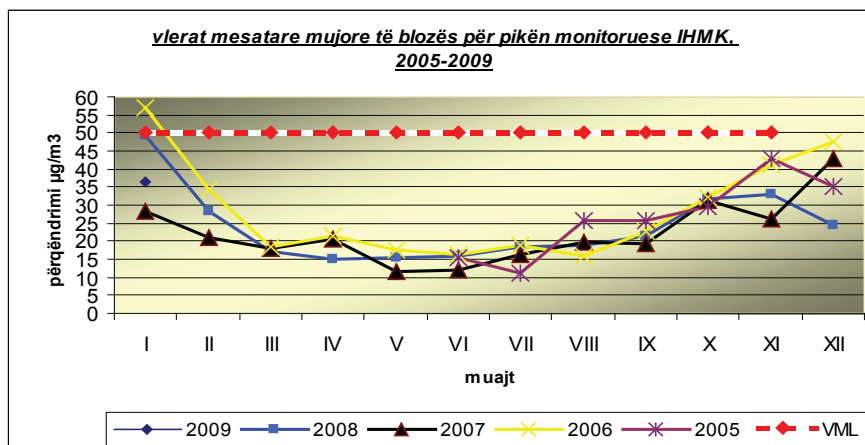


Figure 8: Average monthly values of soot ($\mu\text{g}/\text{m}^3$) in the monitoring point of KHMI, in Prishtina, 2005-2009²¹

21 Kosovo Hydrometeorological Institute, 2009

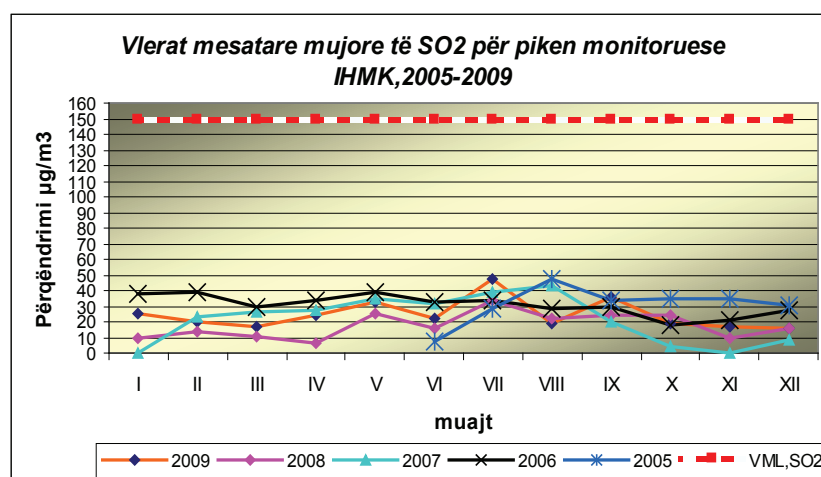


Figure 9: Average monthly values of SO₂ (µg/m³) in the monitoring point in IHMK, Prishtina , 2005-2009

Also the measurements are carried out for the aero sediment, and the results are represented in table 13.

Table 13: Average monthly values of (PTD) total deposited dust (aero sediment) in mg/m².d²²

Sample place	2009	2008	2007	2006	2005
KHMI	197.816	195.871	155.587	207.932	205.601
School "Bedri Gjinaj"	177.626	249.755	1248.054	130.225	120.345
School "Migjeni"	111.013	134.812	127.907	103.712	125.542
Alba Park Shupkovc	222.723	328.78	213.197	273.773	301.23
Vëllezërit Kuqi			120.471	183.117	129.512
Skool "Elena Gjika"	162.808	210.489	119.914	137.65	159.18
Industrial Park Trepça	187.515	1030.792	2898.926	125.336	142.021
OSCE	180.882	769.76	2263.313	107.422	106.238
Tobacco Factory	88.637	78.559	1336.365	102.135	121.012
Water Factory	66.468	104.272	79.21	97.682	132.279

Monitoring of air quality from KNIPH - average concentration of GTS during January-March 2009 is estimated at 60 µg / m³. Based on the above assumption, we may conclude that the annual average levels of PM₁₀ are close to 50 µg / m³, which exceeds the allowed limit for the EU, for PM₁₀.

The average concentration of SO₂ from early January until late of March 2009 was 16 µg / m³, in the location near the Ministry of Economy and Finance- MEF. The level of percentage of 99.73% of annual average values for that period was 161 µg / m³ and it can be said that SO₂ is below the EU limit that is 350 µg / m³. the percentage level of 99.18% calculated from average concentrations within 24 hours is about 102 µg / m³ and so it is below the associated value of the limit 125 µg / m³. Regarding the data of KNIPH station in western suburb of Pristina, the average between January and mid of May 2009 for NO₂ is about 30 µg / m³, which is also below the limit values. The average levels of KNIPH station, between January and mid-May 2009 may reach to the 40 µg / m³ of NO_x²³..

²² Kosovo Hydrometeorological Institute, 2009

²³ Kosovo National Institute of Public Health, 2010

Air quality monitoring by INKOS institute -INKOS Institute, at some point made determining of the concentration of key pollutants in the air. These include imission of SO₂ and soot (Kastriot and Bardh), sediments (in 6 taken pints) and air particles (in the yard of INKOS). Imission monthly average values of SO₂ and soot during 2008 are presented in the following two figures.



Figure 10: Comparison of imission of SO₂ in Kastriot and Bardh for 2008 24

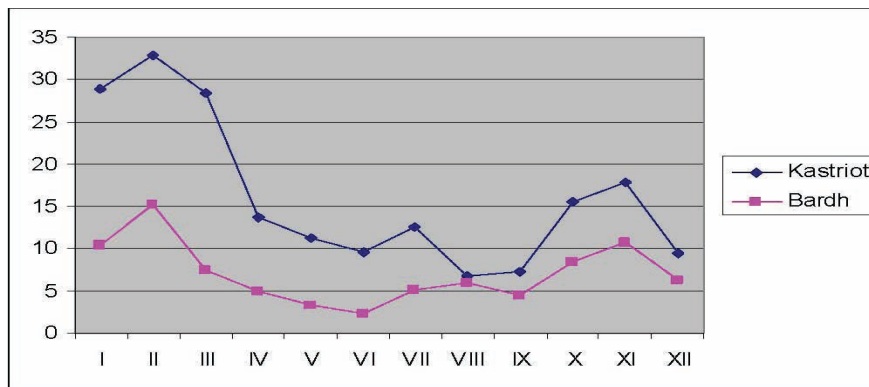


Figure 11: Comparison of imission of soot in Kastriot and Bardh for 2008

Sediments will be analyzed for total dust, total inorganic matters, total dissolved matter, pH, etc.. The standard for total dust is / 300 mg/(m²d). Based on the allowed criteria for SO₂ and soot: SO₂ - 110 µg/m³ and soot - 50 µg/m³ there is no exceeding for neither soot or for SO₂ for 2008.

For the determination of airborne particles it is used the gravimetric method. Measurements are made five days per month, from where is taken out the monthly average. From figures 12 and 13 it can be noted that during 2009 and 2010, there was no exceed of the allowed values for this parameter.

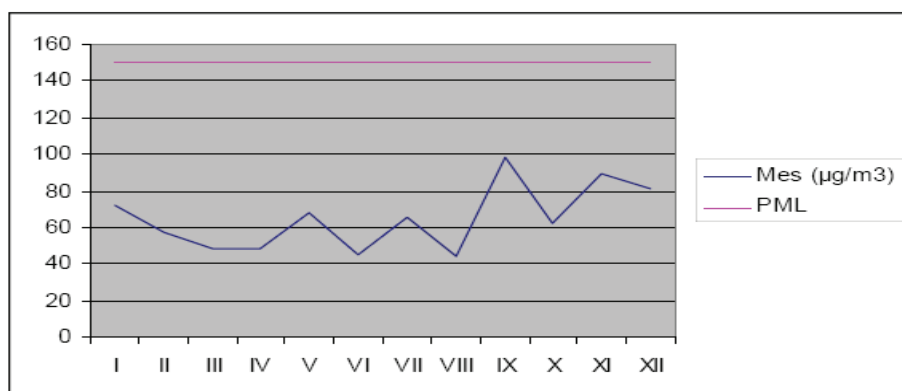
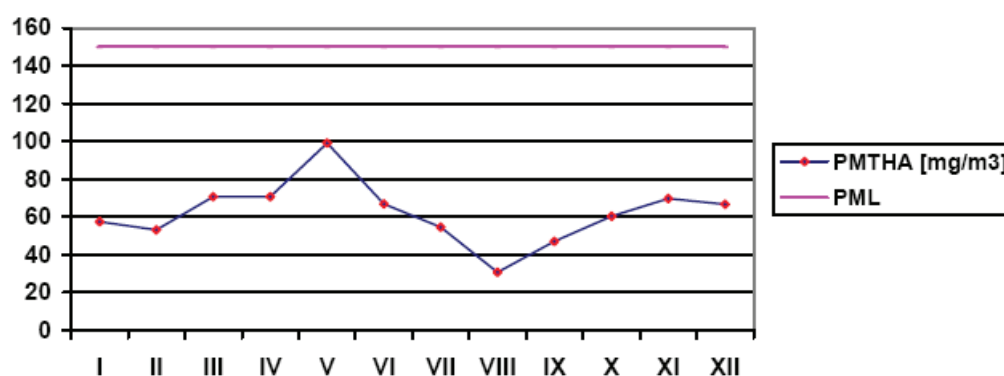


Figure 12: Average concentration of airborne particles during 200925

24 Institut INKOS, 2009

25 Institut INKOS, 2009

Figure 13: Average concentration of airborne particles during 2010²⁶

Air quality monitoring by NewCo Feronikeli- deposited dust (aero sediment) is analyzed according to German standard VDI 2119 Blata direction 2 (1972). Results are expressed in mg/m²/days. The standard for aero sediment (according to WHO) is 300 mg/m²/ day. Heavy metal content is determined by atomic absorption spectrometer (SAA). For monitoring of deposited dust (aero sediment) for 2009 and for 2010 are located 9 monitoring points (6 inside the factory and 3 outside the factory). Aero sediment monitoring results are presented in the following table.

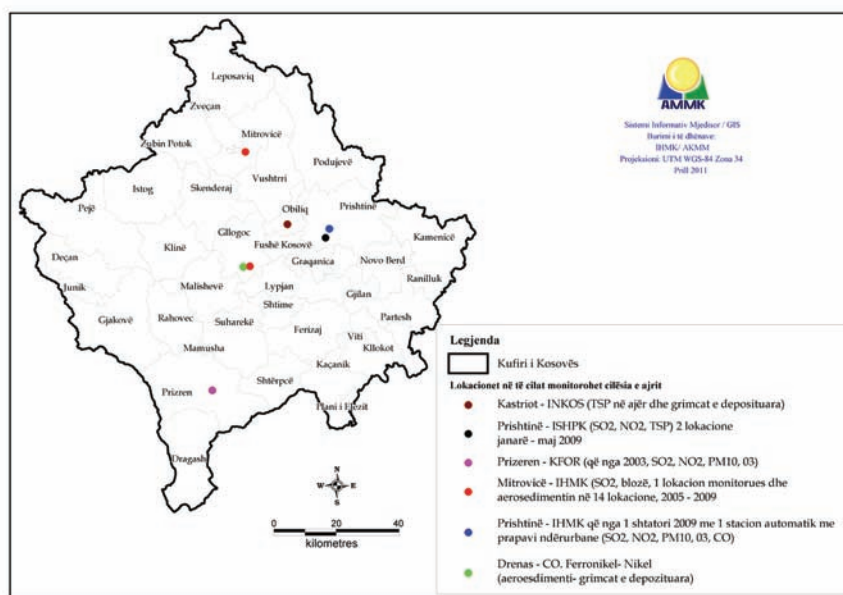
Table 14: Presentation of average value for aero sediment and heavy metals for 2009 and 2010²⁷

Nr.	As_mes mg/m ² /day		Fe_mes(mg/l)		Ni_mes(mg/l)		Co_mes(mg/l)		Cr_mes(mg/l)	
	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010
1	347*	403	0.025	0.024	0.014	0.015	0.018	0.015	0.02	0.021
2	265	299	0.023	0.023	0.014	0.016	0.018	0.016	0.025	0.024
3	262	292	0.027	0.022	0.016	0.016	0.022	0.018	0.023	0.023
4	234	233	0.022	0.023	0.02	0.016	0.022	0.017	0.021	0.023
5	308*	259	0.019	0.023	0.018	0.012	0.02	0.018	0.022	0.022
6	147	204	0.026	0.021	0.02	0.015	0.018	0.017	0.018	0.02
7	114	176	0.021	0.02	0.017	0.015	0.019	0.016	0.02	0.019
8	144	147	0.022	0.026	0.022	0.015	0.016	0.016	0.023	0.024
9	144	158	0.02	0.023	0.019	0.015	0.017	0.016	0.021	0.025

The table shows that in 2009 from the total of 9 monitoring points, the annual average, only in two points inside the factory is exceeded the WHO standard and the aero sediment parameter (total dust deposited). In a monitoring point the average yearly value results to be 347 mg/m²/day, while to the other point of monitoring we have the yearly average value of 308 mg/m²/day. According to the WHO standard the allowed value is 300 mg/m²/day. Whereas in 2010 we have exceeding the allowed value only in one point.

²⁶ Institut INKOS, 2010

²⁷ New Complex Feronikeli



Map 1: Air Quality monitoring location

Conclusions and Recommendations:

- Unable to make monitoring and evaluation of air quality because of the lack of monitoring network for the whole territory of Kosovo, about the air quality we can talk only for the areas that are monitored.
- From the data of automatic monitoring stations in terms of air quality with the pollutant PM10 for the area of Pristina, in many cases are recorded exceeds of limited values with this parameter.
- While with the parameters of SO_2 , NO_2 , CO , O_3 there are no cases of exceeded of limit values for this period of monitoring.
- From the monitoring data with classical methods (SO_2 , soot and aero sediment - dust deposited particles) has exceeded the limited values (WHO) with deposited particles in Mitrovica and with soot in Pristina.

In order to improve the conditions it is recommended:

- Expansion of the integrated air quality monitoring network for the whole territory of Kosovo (increasing the number of monitoring stations, organizing the monitoring system, investment in laboratory capacity expansion, analytical laboratory accreditation, building the calibrated laboratory, building the servicing unit for laboratory equipment and automatic monitoring stations, capacity building for air monitoring and laboratory analysis, capacity building for modelling systems (modelling the distribution of pollution)).
- Preparation and implementation of monitoring programs by the operators as set forth in the law on air protection.

2.1. Water

Water resources - From the territory of Kosovo, in average humidity flowing $3.6 \times 10^9 \text{ m}^3$ (billion), water ($121.2 \text{ m}^3/\text{sec}$), while the total volume accumulated in existing reservoirs is **569.690.000**, which represents only 15.7% of the overall average amount. The most part of the rivers belongs to the Deti i Zi (Black Sea) basin 50.7%, Deti Adriatik (Adriatic Sea) 43.5% and (Aegean Sea) Deti Egje (5.8%). Most rivers are characterized by irregular seasonal flow. River flows are higher during winter season or early spring.

Topographic water accumulation 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. 14.

Table 15: Length in kilometres of main rivers in Kosovo ²⁸

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 Binçës	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 is the Drini i Bardhe with its branches (Lumëbardhi i Pejës, 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).

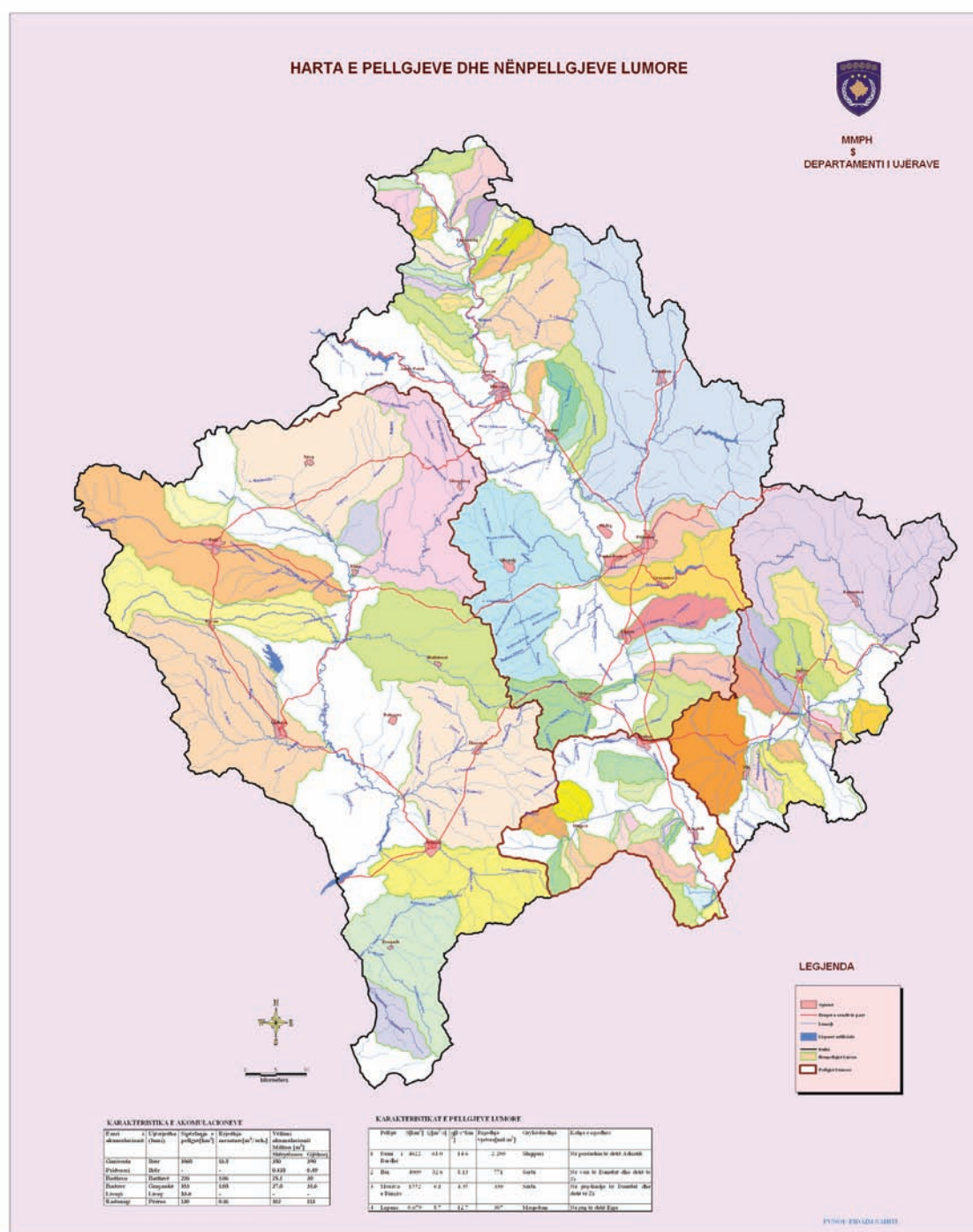
For more information see the table 15 below.

Table 16. Water accumulation basins, surface, water flowing quantity and discharge place ²⁹

No.	Basin	S[km^2]	Q[m^3/s]	q[$\text{l/s} \cdot \text{km}^2$]	Annual flowing [mil. m^3]	Flowing 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 Seal
4	Lepenci	0.685	8.7	12.7	307	Aegean Sea

²⁸ Some Environmental Facts, ESK, 2007

²⁹ State of Environment in Kosovo, KEPA 2008



Map 2: River basins and sub-basins

The hydrometric network consists of a number of measuring stations across the rivers where continuous and coordinated measurements on the water volume and physical-chemical parameters are carried out.

Within this project are located 22 hydrometric stations. At these stations are measured level (h) and flow (Q). In Table 16 are presented the data on the maximum, minimum and average values of annual flows at some stations.

Table 17: The maximum, minimum and average values of annual flows ($Q=m^3/s$) of hydrometric stations according to river basins³⁰

NR.	BASIN	STATIONI	RIVER	Q_{MIN}	Q_{MES}	Q_{MAX}
1	DRINI BARDHË	Berkovë	Istogut	0.48	3.75	186
2		Drelaj	Bistrica Pejës	0.32	4.20	83.50
3		Grykë	Bistrica Pejës	0.46	5.95	194
4		Klinë	Klina	0.00	1.49	49.20
5		Mirushë	Mirusha	0.02	1.21	23.30
6		Deçan	Bistrica e Deçanit	0.60	4.28	58.00
7		Rakovinë	Drini Bardhë	0.80	24.64	358
8		Gjakovë	Ereniku	0.06	12.33	542
9		Piranë	Toplluha	0.04	3.47	55.40
10		Gjonaj	Drini Bardhë	0.10	48.8	1118
11		Prizren	Bistrica Prizrenit	0.03	4.47	424
12	IBRI	Drenas	Drenica	0.02	1.52	32.80
13		Lluzhan	Llapi	0.90	5.01	63.80
14		Nedakovc	Sitnica	0.50	13.62	328
15		Milloshëvë	Llapi	0.00	4.48	82.70
16		Prelez	Ibri	0.80	13.39	452.80
17		Leposaviq	Ibri	0.50	30.85	667
18	MORAVA BINQËS	Konçul	Morava Binçës	0.03	9.21	1012
19		Domarovc	Kriva Reka	0.2	2.6	30.8
20		Viti	Morava Binçës	0.05	1.06	18.70
21	LEPENCI	Kaçanik	Nerodime	0.15	4.17	17.50
22		Hani Elezit	Lepenci	0.10	10.49	184

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. The negative and positive environmental impacts of water accumulations are presented in the following table No.15.

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.

Table 18: Main water accumulations in Kosovo, surfaced, water flow and volume³¹

Name of accumulation	Water flow (river)	Basin surface [km ²]	Average flow [M3/sec.]	Accumulation volume Million [m ³]	
				Users	Total
Gazivoda	Ibër	1060	13.5	350	390
Pridvorci	Ibër	-	-	0.435	0.49
Batllava	Batllavë	226	1.06	25.1	30
Badovci	Gračankë	103	1.05	27.0	31.6
Livoçi	Livoç	53.6	-	-	-
Radoniqi	Lumëbardhi i Deçanit	130	0.16	102	113

30 Kosovo Hydro-meteorological Institute, 2008

31 MESP- Water Department, 2008

According to Water Master Plan (1983), in the territory of Kosovo are supposed to be built twenty additional surface water accumulations as well as a number of micro-accumulations. In the following table are presented some features of surface water accumulations planned for construction.

Table 19: Basic characteristics of planned accumulations for construction

No.	Accumulation	River/flow	Surface (km ²)	Average flows (m ³ /s)	Annual discharges mil m ³ /year	Volume million m ³
1	Drelaj	Bistrica e Pejës	173	4.65	146.6	84.5
2	Kërstovc	Lumi i Binçës	118	3.20 (2.16)	100.96	40
3	Movë	Lumi i Klinës	239	1.2.	37.80	34
4	Morinë	Llabenica	26	2.25 (0.73)	70.78 (22.87)	38
5	Ripaj	Lumi Trava	59	2.38 (1.35)	74.88 (42.65)	36
6	Reçan	Bistrica e Prizrenit	155	4.55	143,32	68
7	Dragaçin	Lumi Dragaçin	36	0.25	7.92	6.76
8	Kremenata	Lumi Kremenatë	56	-	15.90	8.75
9	Binçë	Lumi i Madhë	72	0.63	19.49	1
10	Konqul	Morava e Binçës	1632	6.86	216.03	120
11	Firajë	Lumi Lepenc	229	5.34	168.30	16.5
12	Shtime	Lumi Topillë	102	0.66	20.91	113
13	Cecelija	Lumi i Zi	47	0.41	12.92	21
14	Makovc	Lumi Prishtevka	26	0.19	6.01	10
15	Majanc	Lumi i Kançandollit	88	0.68	21.35	30
16	Vaganicë	Lumi Lushta	46	0.23	7.24	8
17	Miraçë	Lumi Tërstena	31	0.20	6.30	6
18	Dobroshevc	Lumi Drenica	35	1.38	43.4	23.2
19	Pollata	Lumi Llap	111	1.23	38.63	37.5
20	Bistrica	Bistricë e Prizrenit	159	1.40	44.24	25

Thermal-mineral waters - The territory of Kosovo is rich in thermal and mineral water springs. So far, there has been little research to identify and study the values of these resources. According to the data recorded so far, there are about 30 thermal and mineral water sources in Kosovo. More detailed studies are conducted for the thermal sources of "Banja e Pejës", "Banja e Klllokotit" and "Banjska", which function as a healing thermal baths. Besides healing aspect, the Kosovo thermal waters can also be used for thermal power generation, but so far has not been any detailed study to analyze the production potential of these waters. In general, temperature of thermal and mineral waters in Kosovo ranges between 17-54 °C, while the degree of mineralization between 2-5 g/l. Sources of thermal and mineral waters in Kosovo contain sulphates, hydrocarbons, calcium and magnesium. The table.13 shows physical and chemical characteristics of some thermal-mineral sources of Kosovo.

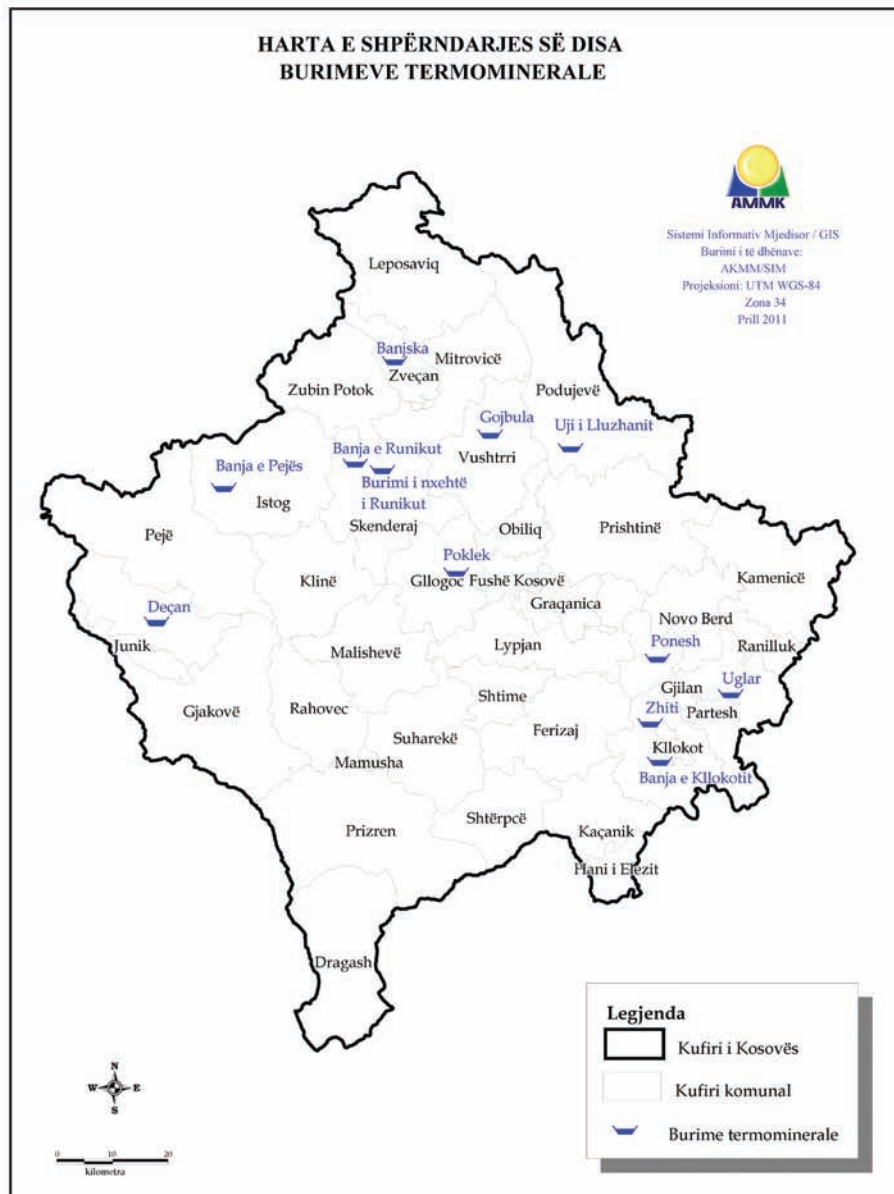
Table 20: Physical-chemical characteristics of some thermo-minerals sources in Kosovo³²

Nr	Locality	Q l/sec	t °C	pH	Mineralization/l	Specific component	Gas content
1	Banja e Pejës	4,00	48.9	6.9	2.04	H ₂ SiO ₃ ,Ra	CO ₂
2	Banja e Klllokotit	10,00	32.0	6.6	3.601	CO ₂ Ra,H ₂	CO ₂
3	Banjska	2.50	50.0	6.7	1.356	H ₂ SiO ₃	CO ₂
4	Banja e Runikut	15.00	24.8	7.1	0.598		CO ₂ -N ₂
5	Burimi i Nxehtë i Runikut	5.00	23.0	7.2	0.61	Ra	CO ₂ -N ₂
6	Gojbula	-	12.0	6.3	2.193	CO ₂	CO ₂
7	Uji i Lluzhanit	0.01	14.0	6.3	1.144	Ra,H ₂ SiO ₃	CO ₂

32 Geothermal Energy in Kosovo and development of its perspective, Avdi Konjuhi et al

8	Studencia	1.0	25.0	7.1	0.670	-	CO ₂ -N ₂
9	Deçan	2.00	12.5	6.3	1.433	CO ₂	CO ₂
10	Getnja e Sipërme	0.1	9.0	6.6	2.539	-	CO ₂
11	Poneshi	0.03	13.0	6.3	3.539	CO ₂ , Fe	CO ₂
12	Pokleku	1.00	13.0	6.3	3.52	Fe, Ra, CO ₂ H ₂ SiO ₃	CO ₂
13	Uglari	6.00	25.00	6.8	0.688	--	CO ₂ -N ₂
14	Zhitija	0.3	20.0	6.5	5.126	Fe, CO ₂	CO ₂
15	Dobërçani	--	26.8	6.4	--	--	CO ₂ , H ₂ S

In order to more rationally use the thermal and mineral waters in Kosovo, in the future should be paid special attention to developing strategies for using these waters; regulation of infrastructure and urban planning, conduct detailed research on the physical-chemical characteristics and quality of these water; and research on assessment for the potential geo-thermal energy productivity of these waters.



Map 3: Expansion of some thermo-mineral waters

Water Quality Monitoring

River Basin of Drin i Bardhe

This river basin is the largest among other country river basins. Monitoring network of this basin includes 24 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 based at the contiguity point of the rivers Burim and Klina and the third station is based after the contiguity of rivers Lumëbardhi i Pejes, Lumëbardhi i Decanit, Mirusha, Ereniku, Rimniku and Toplluhë. More accurately, 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 other stations show for significant pollution that comes from urban wastewater discharged at above mentioned 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 Burimi 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 the Drini i Bardhe River Basin.

Burimi (Istog) - It begin 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. The first monitoring station in Kuqishtë shows for good water quality in terms 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 third monitoring station is near Klina before contiguity point with the Drini i Bardhe River. This station show for poor water quality.

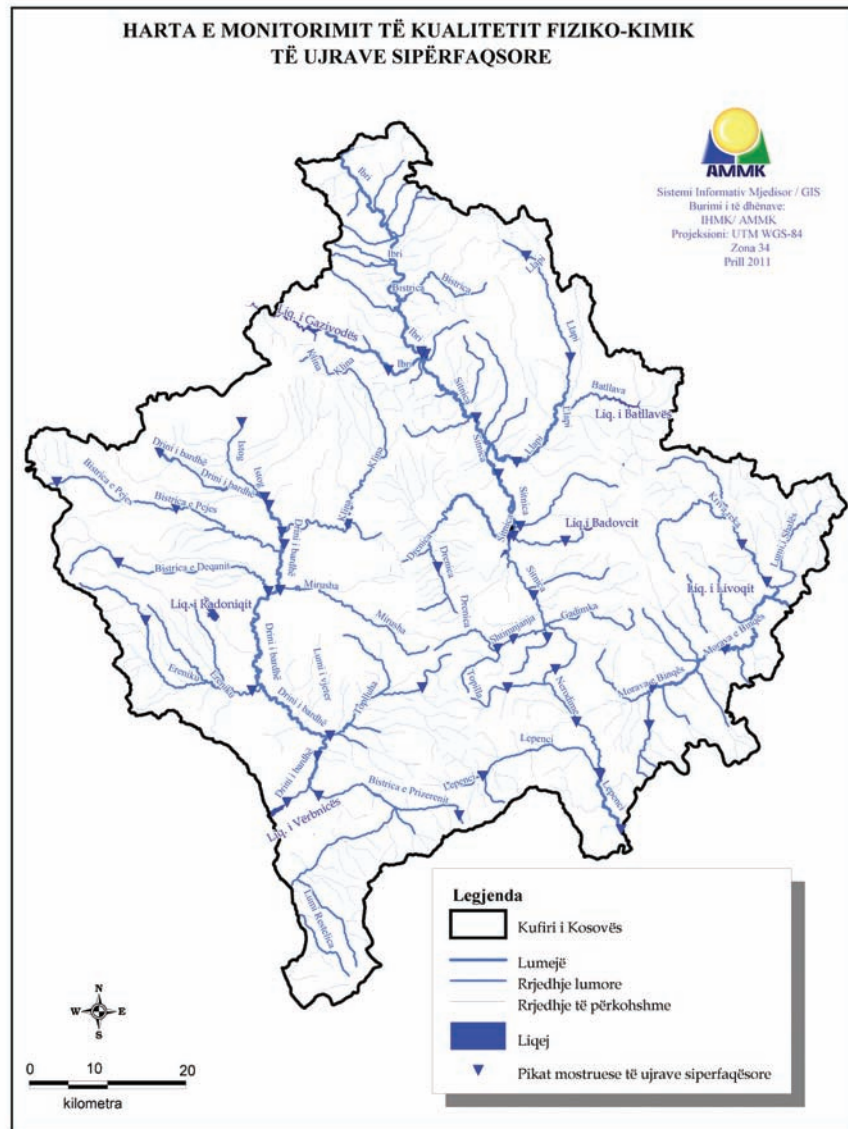
The characteristic of this river, during the summer season (and/or irrigation season) runs out of water for a period of approximately two months.

The Klina River - There are located two monitoring stations (the first one is located in Siqevë). The water quality is quite poor (showed at both monitoring stations), which is indicated by the results of laboratory tests listed later at this publication by the graphics.

The 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, it takes the shape of a real river, by merging with the strong water source 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. Its water quality is characterized by small turbidity, the quantity of dissolved oxygen ranges between 12-13 mg / l, conductivity between 500- 600 μ S/cm. Therefore, the river water may be considered as medium/high water quality River.

Lumëbardhi i Deçanit - The first monitoring station in this river is located at the the 3rd km of the town of Decani, 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 treatment, even if it is not allowed.



Map 4: Physical-chemical monitoring of surface waters

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 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. While 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 Prevala that shows for very good water quality. Second station is in the Vlashnje village, 3.5 km before contiguity point with the Drini i Bardhe River. The second station show for the poor water quality, due to the wastewater discharges along the river course.

Interpretation of results

The amount of dissolved oxygen (dissolved O₂)- It consistently stands in considerable values along this river course (basin) where the values have varied from 6.55 mg/l to 13.12 mg/l in 2007, in 2008 the values ranged from 5.8 mg/l to 14,64 O₂ mg/l. The year 2009 shows a change in the maximum amount of dissolved oxygen 12.69 mg/l from previous years that ranged from 13.12 mg/l for 2007 and 14,64 O₂ mg/l for 2008. Year 2010, the dissolved oxygen parameter the higher value results in Drini i Bardhe River - Gjonaj with 11,19mg/l, while the minimum value of this parameter in the river Rimnik-Xërxë is 7,52 mg/l.

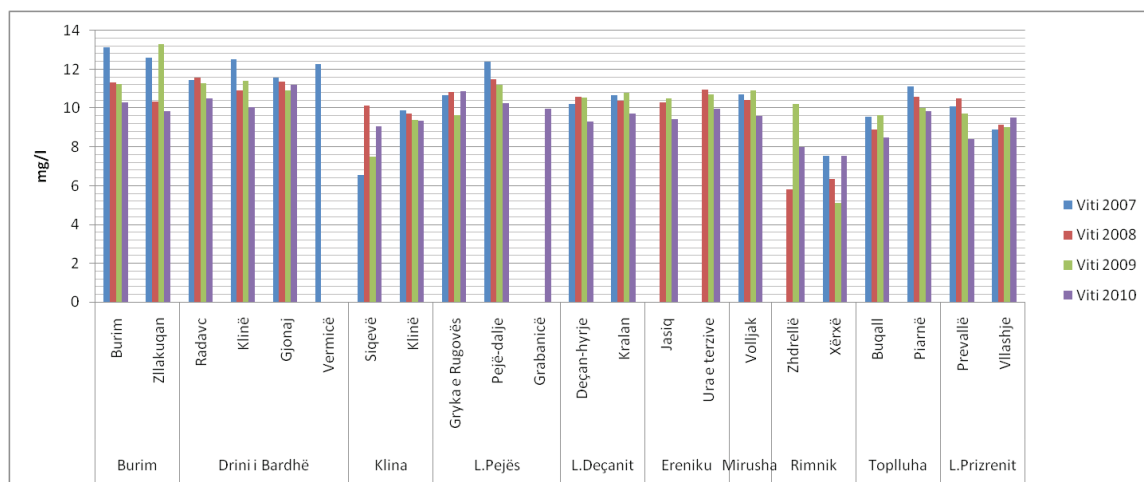


Figure 14: Dissolved oxygen in the river basin Drini i Bardhë

The biochemical oxygen demand (BOD₅) – in the measuring station in Vllashnje –Lumëbardhi i Prizrenit, the highest registered values are 6.74 mg/l for 2007, while in 2008 the maximum value reaches 7.22 mg/l in Xerxe (Rimnik River). The same situation is registered in 2009.

If we compare the annual average values with serial values, the BOD₅ is found in much higher values.

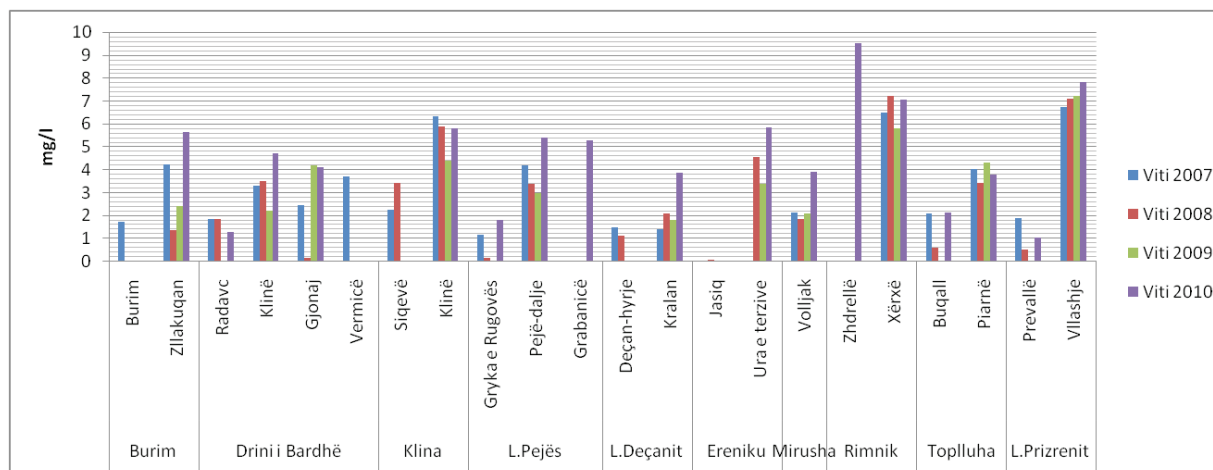


Figure 15: Biochemical oxygen consumption in the Drini i Bardhë river basin

As for the quality, we can say there is no significant pollution registered by any of the monitoring stations. The Parameter of Biochemical oxygen consumption for year 2010 is presented with the values not very different from other years. While in previous years not exist any measurements in sample site Rimnik-Zhdrell for 2010 this parameter represents the maximum annual average value. Lumëbardhi I Prizrenit -Prevallë is presented with the minimum annual average value 1.05 mg / l.

The electric conductivity – in years 2007, 2008 and 2009 the lowest conductivity values are showed in the Lumëbardhi i Prizrenit River (at Prevallë) 165 μ s/cm, 151 μ s/cm and 120 μ s/cm, whereas the highest values in River Klina- Siqueve with the values 850 μ s/cm

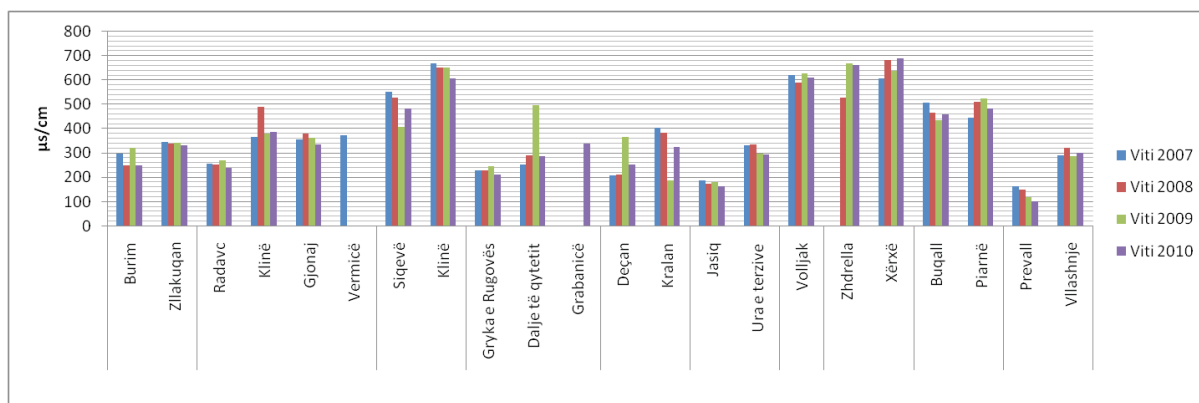


Figure 16: Electric Conductivity in Drini i Bardh River Basin

In 2008, the highest values is registered in the Rimnik River (at Xerxe) 681 $\mu\text{s}/\text{cm}$, while in 2009 the maximum value is recorded in the same river Rimnik, but at Zhdrellë sampling point 665 $\mu\text{s}/\text{cm}$. As for the years 2008, 2009 and 2010 Rimnik river -Xerxe leads to the maximum annual average value of electric conductivity 688.5 $\mu\text{s} / \text{cm}$, while river-Prevallë Lumëbardh Prizren has VMV 101.6 $\mu\text{s} / \text{cm}$.

Hydrogen ion concentration (pH) - Generally in 2007 is registered a slight alkaline value, between the lowest value 7.71 to highest value of 8.5, compared with 2008 when values where about neutral. The lowest value is registered in the Burimi River (at river spring) with 7.57 and the highest values are recorded in the Rimnik River (at Zhdrellë).

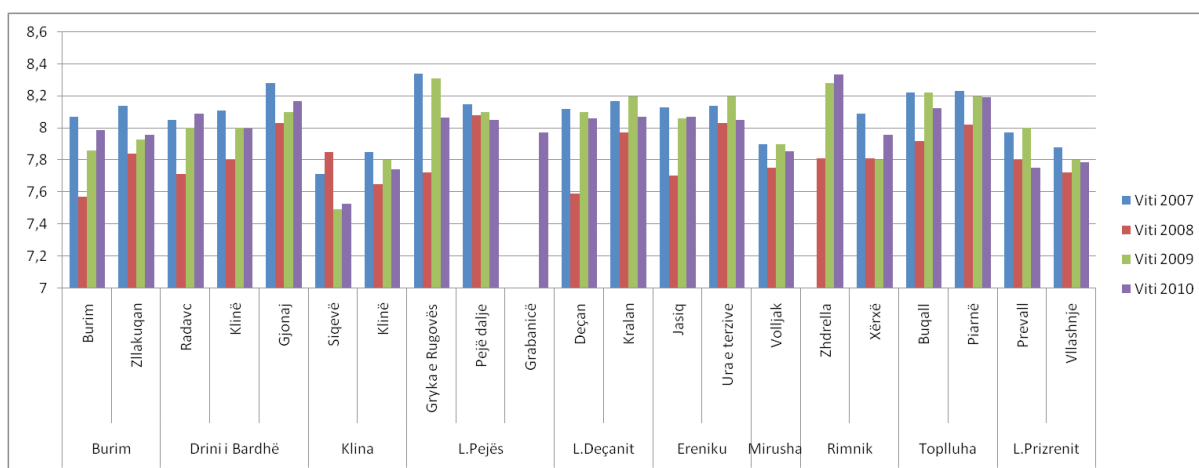


Figure 17: Hydrogen ion concentration in the Drini i Bardh River Basin

Similar values are registered in 2009, with a minimum of 7.49 Klina river (Siqevë) and maximum value 8.31 in Lumëbardhi i Pejes River. For 2010 the values of pH indicate approximate values similar to previous years.

Nitrites (NO₂-). In 2007, the annual maximum values of this parameter are registered in the Drini i Bardhe River, in Gjonaj and in Rimnik River in Xerxe with ~0.15 mg/L, while in 2008 the annual maximum values are registered in the Erenik River to the Terzive Bridge. During the serial measurements maximal value of this parameter was 0.94 mg/L in Erenik River to the Terzive Bridge in August. In this case, the water amount was minimal in comparison with previous annual period. The

years 2009 and 2008 show a sharp increase of this parameter in comparison with 2007, where at the Rimnik River, samples taken in Xerxe, results with a maximum annual value of 0.633 mg/L, which is simultaneously the highest average value recorded in this basin for these three years.

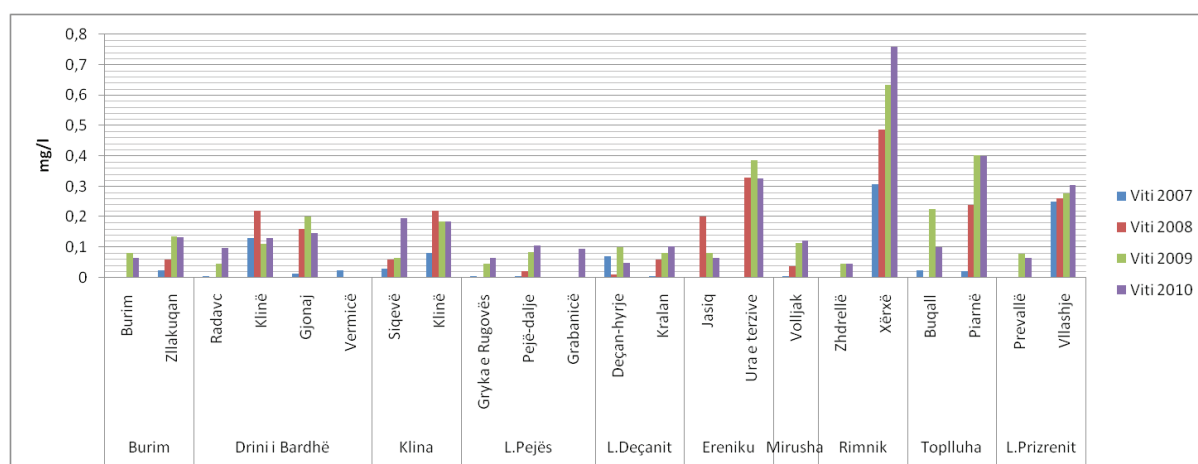


Figure 18: Nitrites in the Drini i Bardhe River Basin

Maximum allowed values for nitrites should not exceed the value of 0.01mg/L as it is the case at the water springs, but according to diagram, the values obtained during monitoring in some of these stations exceed the maximum allowed values, showing for the poor water quality. The year 2010 for nitrites parameter with maximum annual average value (0,76 mg/l) results the river Rimnik sample site Xërxë, for as much as the same river but the sample site Zhdrellë has the minimum of annual average value 0,05 mg/l.

Ammonia(NH₄⁺) – The monitoring station at Rimnik River (in Xerxe) shows for high concentration of this parameter for 2007, 2008 and 2009 with the value of 6.38 mg/ L, 4.84 mg/L and a slight decrease of 3.76 mg/L for 2009, and 2,66 mg/l for 2010. This results, because the river lies through agricultural lands, but without neglecting the all discharges of urban wastewaters of Rahovec town and surrounding villages that as untreated water, flows into the river stream.

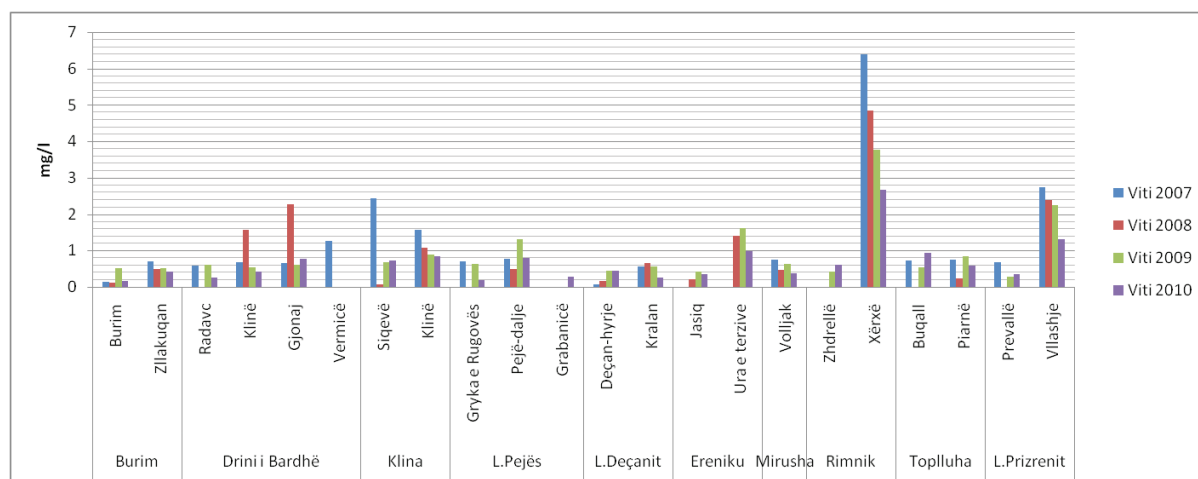


Figure 19: Ammonia in Drini i Bardhe River Basin

Based on the allowed values which must not be higher than 1.5 mg/L, it is noted that except at the water springs where the quality of water is good, at other monitoring stations, the water quality is to a mid and low level.

Sulphates (SO₄²⁻) – In Klina, Toplluha, and Rimnik rivers sulphates are shown to be much highly present than in all other rivers. The values for the year 2007 vary between 5.5 mg/l in Lumëbardhi i Pejes River – Gryka e Rugoves, and 45.15 mg/l in Klina River -Siqevë. In 2008 Sulphates ions varied between 1.8 mg/l in Erenik River - Jasiq and 31.4 mg/l in Rimnik River- Xerxe), while in 2009 and 2010 the Rimnik River - Xerxe, shows again annual maximum value of 52.2 mg/l(2009) and 39. 90 mg/l (2010).

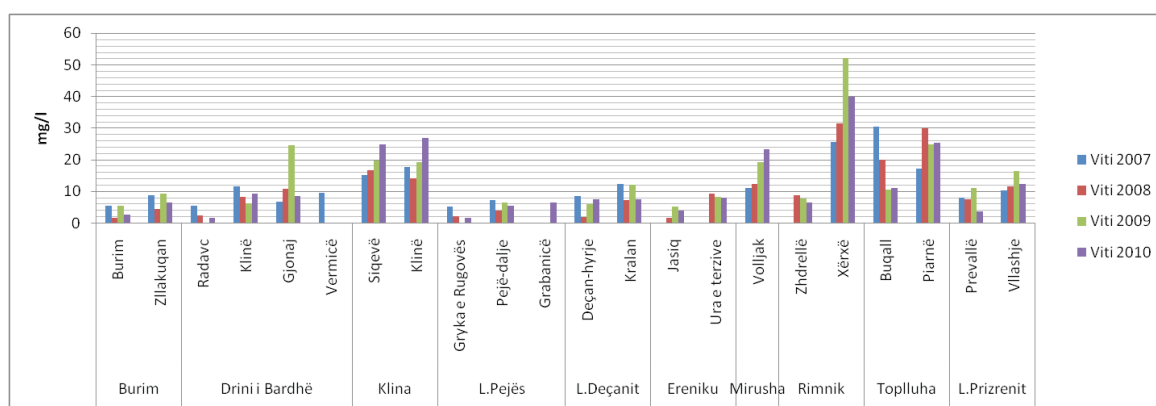


Figure 20: Sulphates in Drini i Bardh River Basin

According to the results presented in the diagrams the value of sulphates is within the allowed limit values for surface waters, because the limit value of sulphate ion in drinking water is 200 mg/l.

Phosphates(PO_4^{3-}) - In 2007 the phosphate ion values are ranged between 0.014 mg/l in the Lumëbardhi i Decanit River, near the Church and 2.05 mg/l in Rimmik River - Xerxe, while in 2008 the Klina River - Klina, showed higher values than other rivers with 2.09 mg/l. The lowest value this year is measured in Erenik River - Jasiq <0001 mg/l. While, for 2009 and 2010 the annual maximal value is registered in Rimmik River - Xerxe) with 1.728 mg/l, (2009) and 1, 93 mg/ (2010).

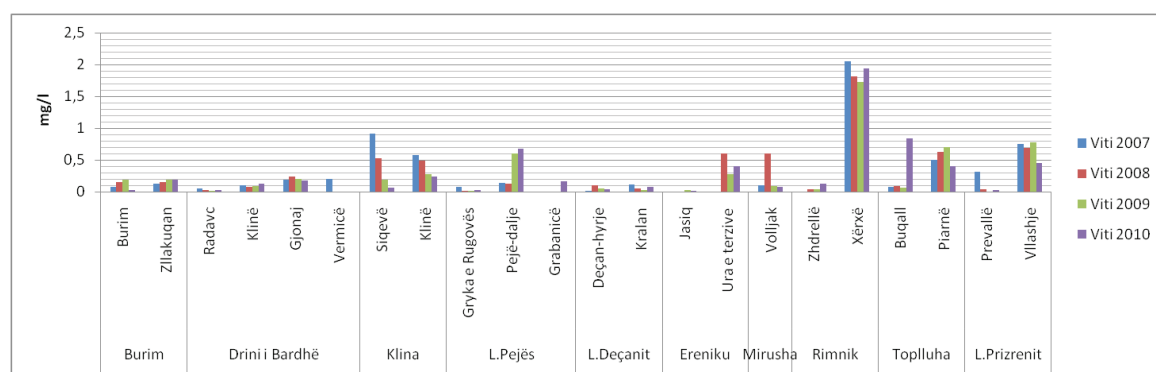


Figure 21: Phosphates in Drini i Bardh River Basin

Total phosphor (poly and ortho) - The value of total phosphor in the Drini i Bardh River basin showed high fluctuations. The total phosphorus content for 2007, ranges from 0.014 mg/l in the Mirusha River in Volljakë to 0.94 mg/l in Rimmik River -Xerxe, whereas in 2008 in Rimmik River - Zhdrellë the phosphorous concentration was 0.001mg/l, and 0.56 mg/l in river Rimmik - Xërxë. Also in 2010 like in 2007, 2008 and 2009 the highest annual average values of 0.55 mg/l is registered in Rimmik River – Xerxe.

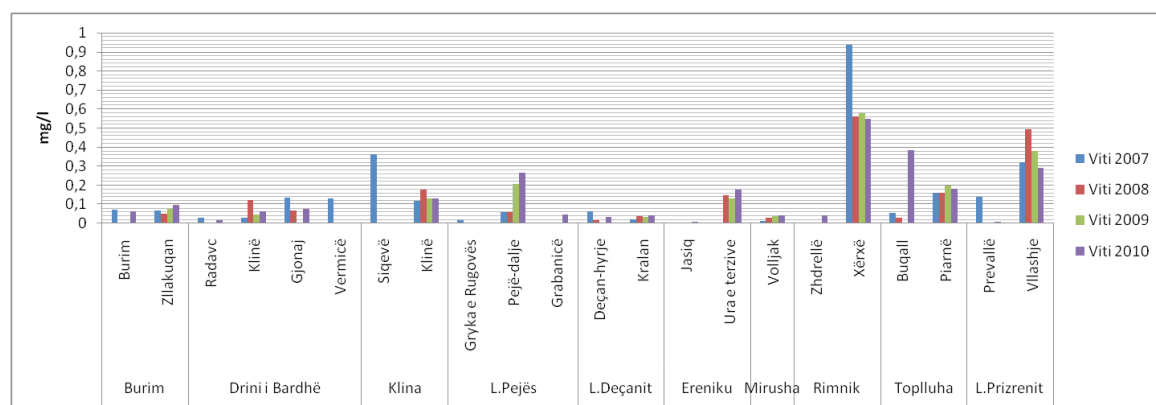


Figure 22: Total phosphor (poli dhe orto) in Drini i Bardhë River Basin

If compared to the Directive 152/99, it is indicated that the Rimniku River is of poor quality, while other monitoring stations of these rivers showed good water quality.

Total Hardness – The total water hardness is monitored at water springs only, because most of them are directly used for drinking water without any prior chemical and/or physical treatment. Based on laboratory analyses obtained, the water quality meets the WHO standard, that is <30 d0H. The water springs of Klina and Toplluha Rivers are not used as drinking water. The following diagram shows that values of two monitoring stations are higher than in other sources of rivers.

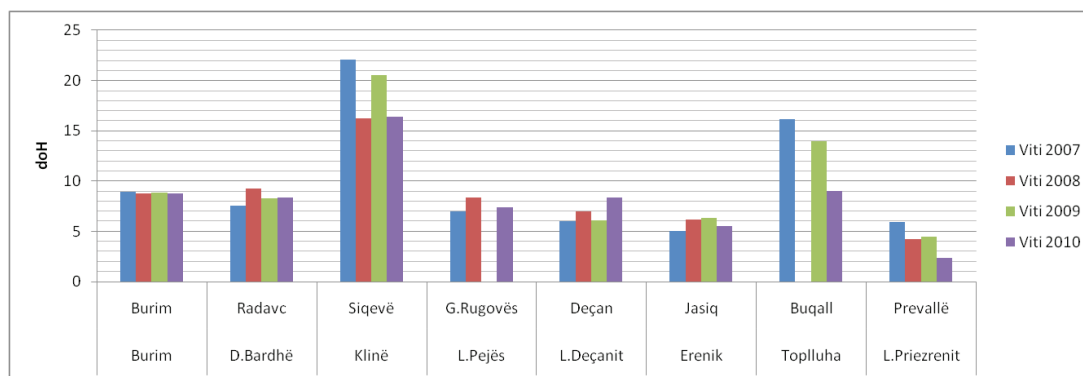


Figure 23: Total hardness in Drini i Bardhë River Basin

In 2007, the Erenik River - Jasiq shows the lowest value 5.06 d0H, while the Klina River – Siqevë shows the maximum value 22.05 d0H.

In Lumëbardhi i Prizrenit River (at Prevallë) the registered average water hardness for 2008 was 4.2 d0H, while the highest average values are registered at Klina River - Siqevë 16.24 d0H. Same situation appeared for 2009 and 2010 with an increased average value of water hardness in Klina river - Siqevë with 20.51 d0H (2009) and 16,38 d0H (2010).

IBRI RIVER BASIN

The Ibri River basin has a total of 17 monitoring stations. Three of them belong to the Ibri River. The first station is located at 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, since at all monitoring points the results are within the limits values under the category II.

General comments on Ibri river basin

Sitnica River - Along its stream from Ferizaj to Mitrovica, it represents the most polluted river in Kosovo. Regarding the physical parameters such as 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: Graçanka, Pristina, Drenica, Llapë, Trepça 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.

Gracanka - as the result of water pumping of Kishnica and Artana mines into the Graçanka River, the water of this river is continually polluted. There are evidenced high values of heavy metals such as zinc, nickel and lead. Also, there are registered high values of water conductivity and sulphate ion. It should be mentioned that during the hot summer season this river runs out of water.

Prishtina - 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..

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

Drenica - monitoring of the river starts from Komoran 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 KEK.

Shtime - There are two monitoring stations, one at the part where no external influence from human activity is identified and 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 belong to a very poor category.

Interpretation of results

Through the annual average values presented in the graphics will be interpreted the state of waters in the Ibri River basin, by providing annual average values for each parameter of each river of this basin.

The dissolved oxygen (O₂ dissolved) - it varies from one station to the other. But it may be concluded that in all water streams of this basin has O₂ dissolved except in Pristina River at Bresje, where lower quantity is registered. If we compare the values of 2007 with those of 2008, it is not indicated a huge difference. The highest O₂ value is measured in the Drenica River - Krojmir of 13.8 mg/L, while the minimum value in 2007 is registered in the Prishtina River - Bresje. It has to be considered that these are annual average values. There have been cases during monthly

Monitoring dynamics in this monitoring station - Bresje no dissolved O₂ is registered. The same situation is registered for the years 2008 and 2009.

For 2010 the situation remains the same, the high dissolved oxygen has the river Ibër - Kushtovë 12.48 mg/l, while the annual average value is in river Prishtina- Bresje 3,43 mg/l dissolved oxygen.

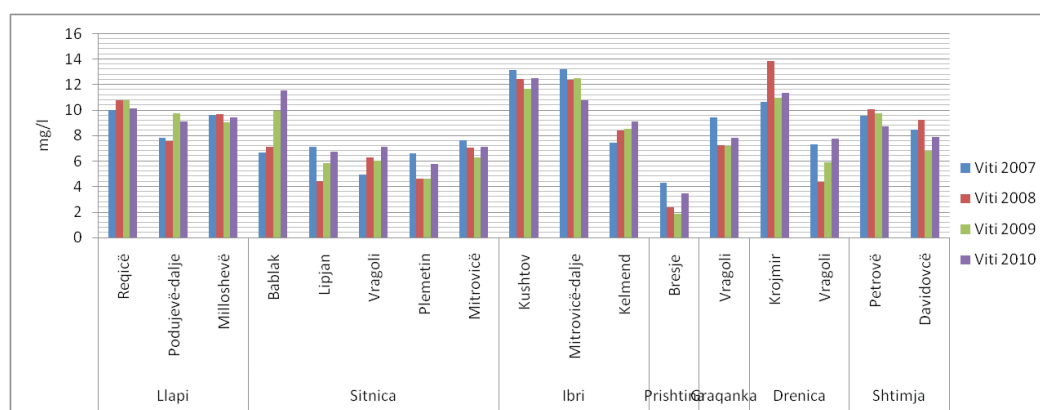


Figure 24: Dissolved Oxygen in Iber River Basin

Biochemical Oxygen Demand (BOD₅) – Among all measuring stations, the highest values for 2007 and 2008 are registered in the Prishtina River – Bresje where regularly are indicated higher values than in all other stations of the network for surface water quality monitoring in Kosovo. While comparing data between the registered values for 2007, 2008 and 2009, only minor changes are indicated, that means the water quality in this basin continuously is at the same condition. The maximum value of BOD₅ is registered in Prishtina River - Bresje station with an annual average of 19.8 mg/l for 2007 and 18.43 mg/l for 2008, while for 2009 this value was 15.1 mg/l. whereas for 2010 this value rises in 19,67 mg/l of BOD₅. The lowest values are showed by measurements on river water springs.

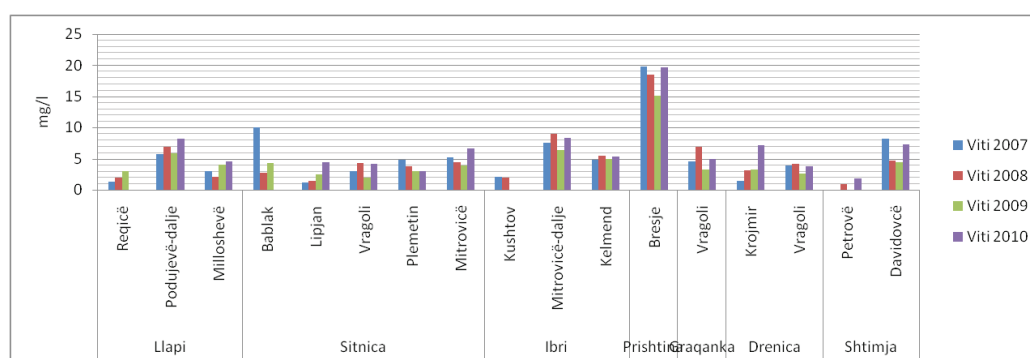


Figure 25: Dissolved oxygen in the Ibri River Basin

Electric conductivity - in 2007, the lowest value is registered in the Llap River (-Reqicë) 257 $\mu\text{S}/\text{cm}$, while the highest value is registered in Graçanica River - Vragoli 1512 $\mu\text{S}/\text{cm}$

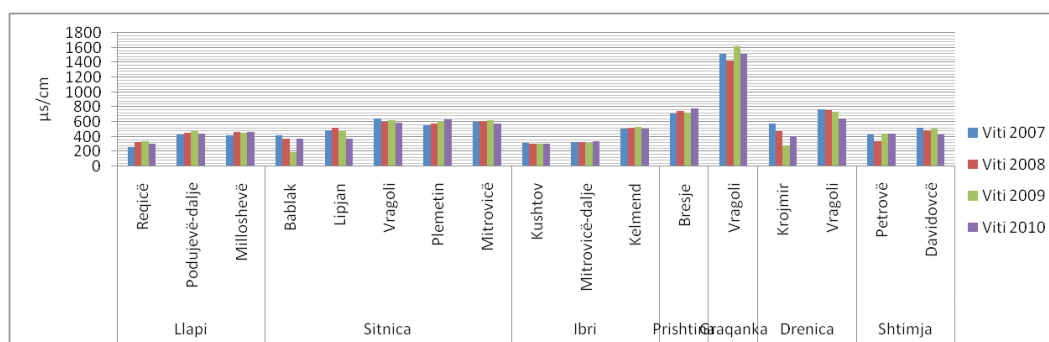


Figure 26: Electric conductivity in Ibri River Basin

In 2008, the values range from the lowest in the Shtime River (at Petrovë) 304 $\mu\text{S}/\text{cm}$ to the highest value in Graçanica River - Vragoli 1426 $\mu\text{S}/\text{cm}$.

The lowest recorded value in 2009 is registered in the Sitnica River at Bablak, while the highest annual average values is registered at the same sampling point the Graçanica River Vragoli 1621 $\mu\text{S}/\text{cm}$. As in other years, in 2010 Graçanica River Vragoli has the highest annual average value 1521.8 $\mu\text{S}/\text{cm}$ since the minimum of annual average value is measured in river Ibër-Kushtovë 305 $\mu\text{S}/\text{cm}$.

Hydrogen ion concentration (pH) – The pH values usually range between 7.74 to 8.49 values for 2007, while in 2008 these values were between 7.45 to 8.18. For 2009 the values range from 7.34 to 8.23. For 2010 pH ranges from 7.18 to 8.19. Generally, these waters belong to a poor alkaline environment.

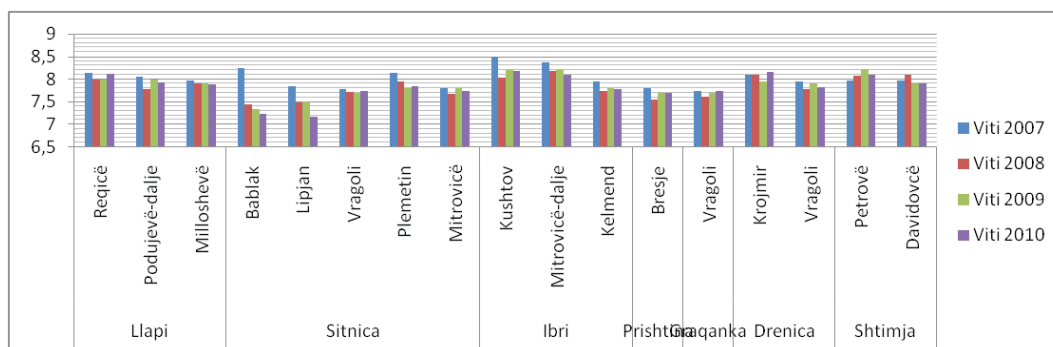


Figure 27: Concentration of hydrogen ion in Ibri River Basin

Nitrites (NO_2^-) – Values of this parameter are increased in 2008 compared with those of 2007. It shows that the amount of flow was lower in 2008 and resulted with the increase of values in some of the monitoring stations for this parameter in about 0.1 mg/l. In Sitnica River at Mitrovica, the value reaches 0.685 mg/l, and in Vragoli also it is indicated an increased value of 0.575 mg/l. It indicates for the poor water quality of this river. In 2009, an increased values is registered at Sitnica River at Mitrovica with 0.548 mg/l, while the lower value measured as annual average is registered in Llapi River - Reqicë 0.016 mg/l. In 2010 the annual average value is higher in river Sitnica- Mitrovicë 0.61 mg/l, whereas the lowest annual average value is measured in river Llap- Reqicë 0.015 mg/l.

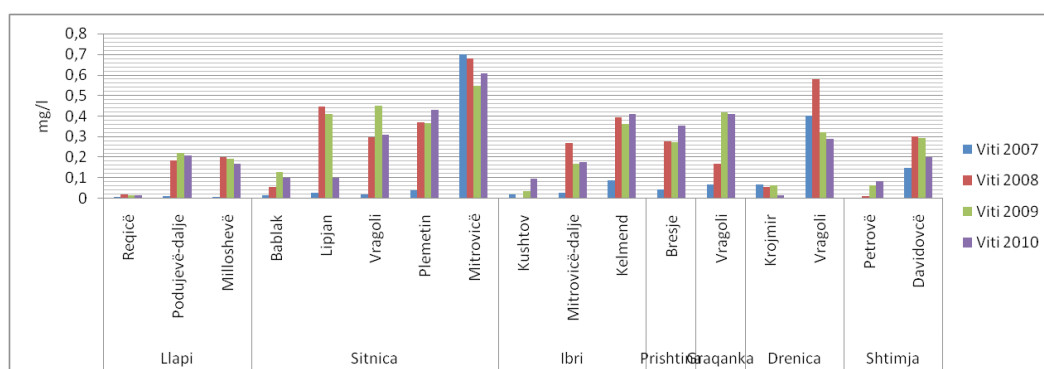


Figure 28: Nitrites in Ibri River basin

Ammonia (NH_4^+) – The monitoring station at Bresje in the Prishtina River, showed higher values than other stations of the river basin. In 2007, these values ranged between 0.1 mg/l in the Shtimja River (at Petrovë), to the highest value 13.5 mg/l in the Prishtina River (at Bresje). There are not differences in 2009. Highest values are registered in the Prishtina River (at Bresje) 8.582 mg/l and the minimum value is registered in the Ibri River (at Kushtovë) 0.455 mg/l. Also for 2010 with highest annual average value is river Prishtina-Bresje 10.44 mg/l and with minimal value river Drenic-Krojmir 0.36 mg/l.

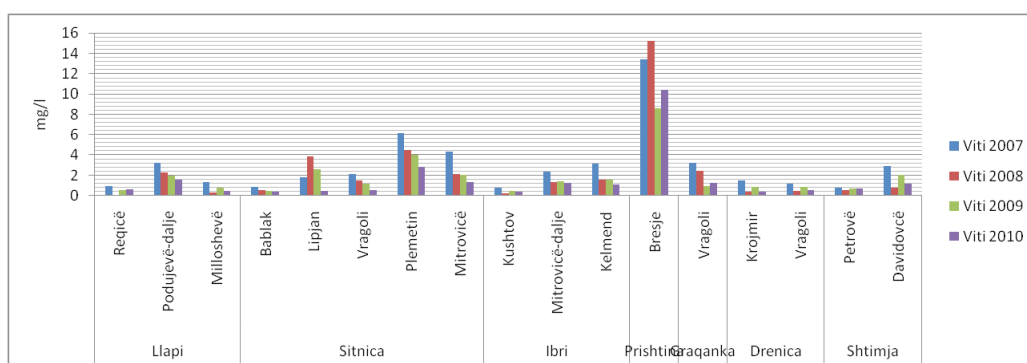


Figure 29: Ammonia in Ibri River Basin

Sulphates (SO_4^{2-}) - The graph where the rivers of Llap, Sitnica, Iber, Drenica and Shtimje are included, the sulphate values for 2007 ranged between 5.28 to 23.82 mg/l. In 2008 the values ranged between 2.7-27.5 mg/l, while for 2009 values ranged between 2.5 and 40 mg/l. These values do not show great variability from year to year. Also for 2010 the situation remains the same where the value ranges from 4.96 and 29.27 mg/l.

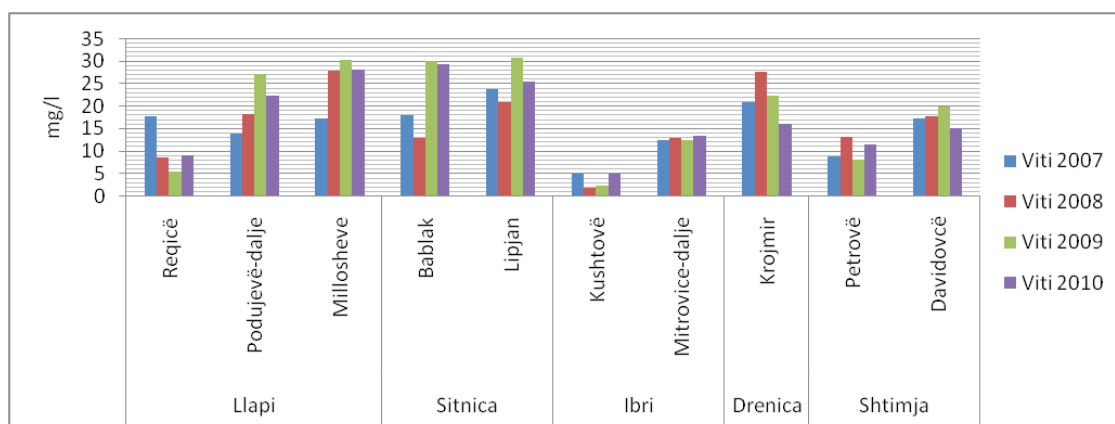


Figure 30: Sulphates in Ibri River Basin (with low values)

This parameter is divided into two diagrams due to the fact that in some stations, its value is tens of times larger than at the stations listed in the first diagram. In this graph are presented sampling points that showed higher values for SO_4^{2-} where in three of the years dominates the Graçanka River.

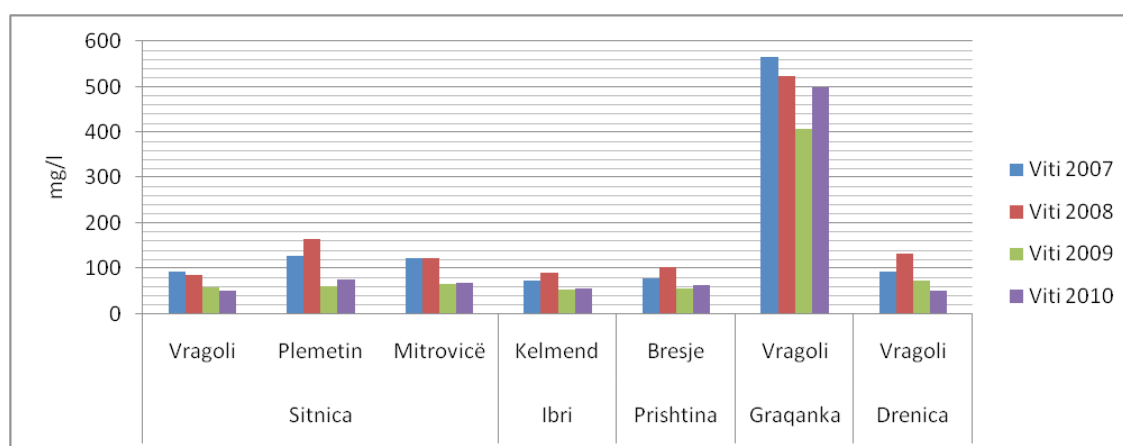


Figure 31: Sulphates in Ibri River Basin (with higher values)

Phosphates (PO_4^{3-}) - In 2007, the lowest values for this parameter are registered in the Ibri River - Kushtovë 0.053 mg/l, while the highest value in the Prishtina River - Bresje 2.44 mg/l. In 2008 the lowest value of phosphate ion is registered in the Shtimje River - Petrovë 0.014 mg/l, while the Sitnica and Drenica rivers - Vragoli reaches the highest phosphate ion value with ~ 4.8 mg/l.

In 2009, the Shtimje River - Petrovë resulted with minimal value 0.027 mg/l, while maximal value is registered in the Prishtina River - Bresje 2.629 mg/l.

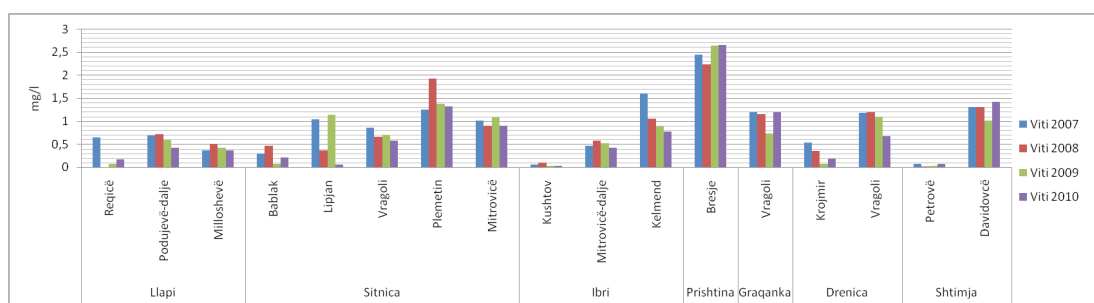


Figure 32: Phosphates in Ibri River Basin

As in years 2008, 2009 and 2010 the river Prishtina-Breshë results with higher annual maximum measurement 2.65 mg/l PO₄³⁻, while the minimum average annual value of the river Ibr-Kushtovë 0,03 mg/l

Total phosphorus (poly and ortho) – The presence of total phosphorus in 2007 ranged from 0.013 mg/l in the Ibri River - Kushtovë and 1.23 mg/l in the Prishtina River - Breshë. In 2008, the rivers Llap (at Recica), and Shtimje - Petrovë show maximum values of the phosphate ion <0.001 compared with the highest value of this parameter 0.67 mg/l in the Prishtina river - Breshë. In 2009, the Prishtina River - Breshë showed the value of 0.474 mg/l, which is the highest value as the annual average, while the Llap River showed the lowest value 0.156 mg/l.

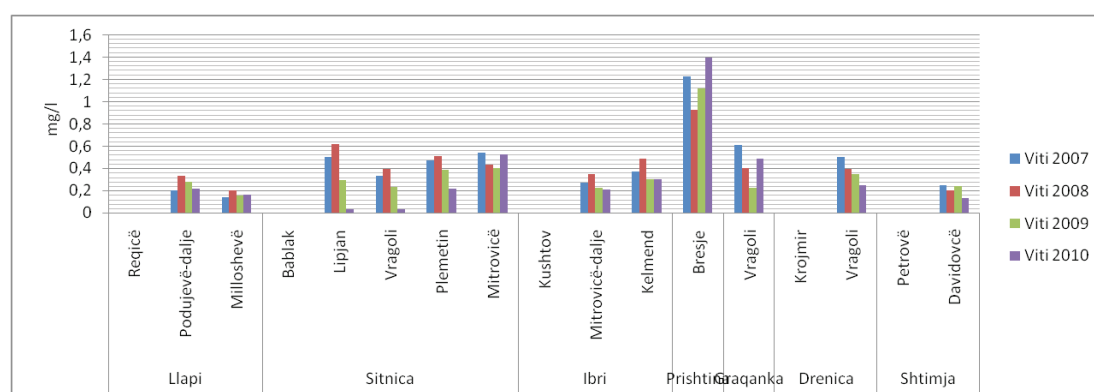


Figure 33: Total phosphorus (poly and ortho) in the Ibri River basin

The situation remain same also for 2010 river Prishtina-Breshë results with highest annual average values 1,398 mg/l of this parameter total phosphorus, while the minimal annual value is in river Llap-Reqicë.

Total hardness – Same as in the Drini i Bardhe river basin, the total water hardness in this river basin is measured at the water springs only. Based on obtained laboratory results, the total hardness values meet the WHO standards for drinking water < 30 dH.

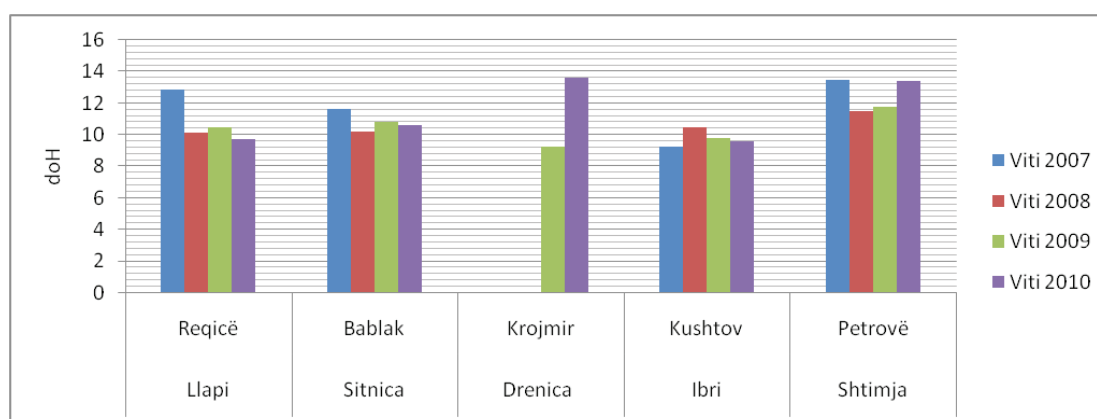


Figure 34: Total hardness in Iber River Basin

LE PENCI AND MORAVA E BINÇËS RIVER BASINS

General comments on the Morava e Binçës River Basin

Lepenci River - This river has two sources, one in the Prevala mountain, and the other in the 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 flow, up to the next station that is located before the contiguity point with the Lepenci River.

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

The River Lakuar- 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.

Interpretation of results

Interpretation of the state of the Morava e Binçës and Lepenci river sub-basins will be presented by graphs with annual average values for each parameter for each of the rivers of these river basins.

The dissolved oxygen (O₂ dissolved) - The chart shows the trend of the reduction of dissolved oxygen values at stations after discharges of urban wastewater collectors. In the rivers' upstream, the waters are clean and rich in oxygen. The decrease of the oxygen downstream the river is as a result of the wastewater discharges that contain organic matters, main sources of which are urban discharges.

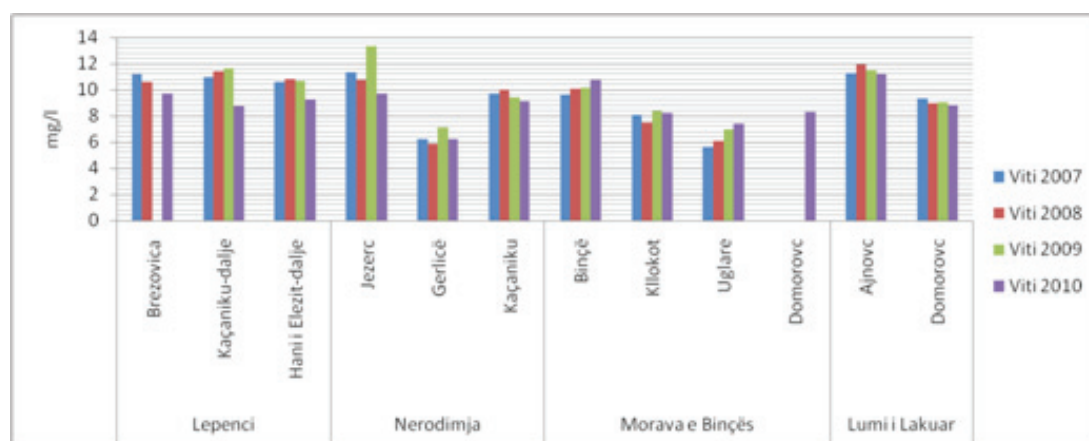


Figure 35: Dissolved oxygen in Lepenci and Morava e Binçës River Basins

The water of Nerodime and Morava e Binçës, in the last three years resulted with small quantity of dissolved oxygen. This is as a consequence of urban and industrial wastewater discharges without any previous treatment. But, still the minimum threshold of 3 mg/l is not exceeded.

River Nerodimje-Gërlicë also for 2010 shows same review as the three previous years, the minimal value 6.237 mg/l, while the maximal value Lakuar- Ajnovc 11.22 mg/l.

Biochemical Oxygen Demand (BOD₅) - In 2007, the lowest BOD₅ value is registered in the Morava e Binçës River - Binçë 1.35 mg/l; and the highest value in the Nerodime River Gërlicë 15.67 mg/l. In 2008, the minimum values are recorded in the Morava e Binçës River - Binçë 1.04 and the maximal annual average values in Nerodime River Gërlicë.

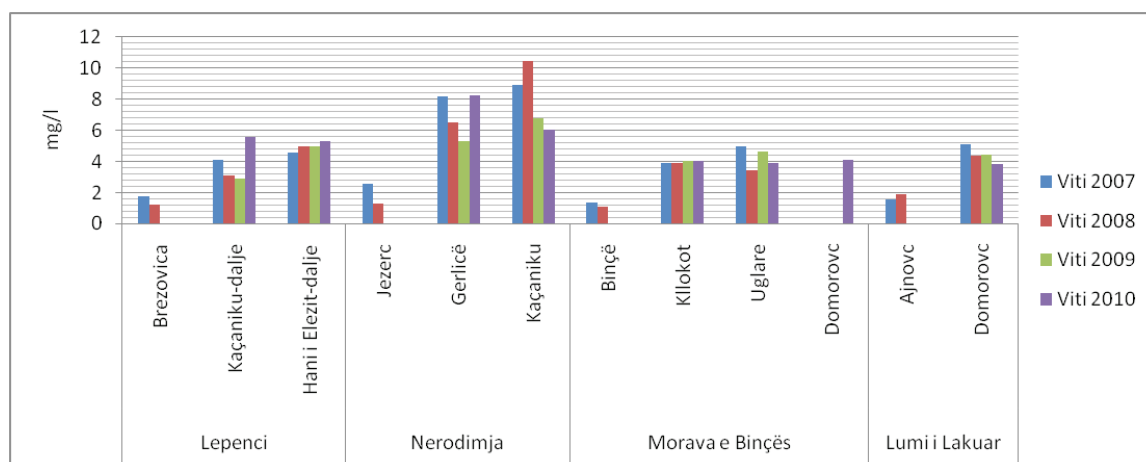


Figure 36: Biochemical Oxygen Demand in Lepenci and Morava e Binçës River Basin

In 2009, the minimal annual average value in the Lepenci River (at kaçanik) was 2.9 mg/l, while the maximal annual value is register in the Nerodime River (at Kacanik) at 6.8mg/l. In 2010 in rivers Lepenci-Brezovicë and Nerodimja-Jezerc is a minimum of annual average values 0,00 mg/l, while the maximum of annual average values is in river Nerodimja- Gërlicë 8.22mg/l.

Electrical Conductivity - In 2007, the lowest value is registered in the Lepenc River - Brezovica 120 $\mu\text{s/cm}$, while the highest value is registered in the Curved" River - Domorovc 685 $\mu\text{s/cm}$. In 2008, the values range from the lowest in the Nerodime River - Jezerc 138 $\mu\text{s/cm}$ to the highest value in the Morava e Binçës River – Ugljare 624 $\mu\text{s/cm}$.

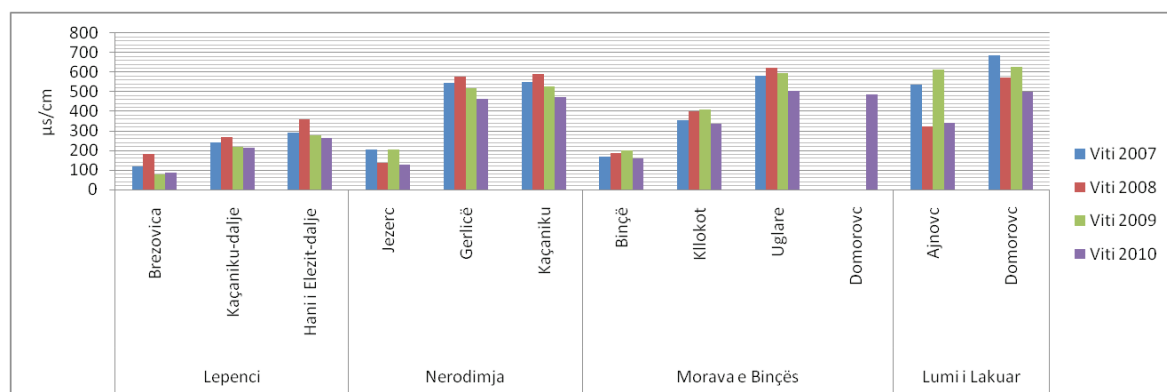


Figure 37: Electrical conductivity in Lepenci and Morava e Binçës basin

In 2009, the lowest value is registered in the Lepenc River- Brezovice, while annual average maximum value is measured in the River Lakuar - Domorovc 628 $\mu\text{s/cm}$.

For 2010 the values ranges from the lowest in river Lepenc- Brezovicë 86 $\mu\text{s/cm}$ while the highest value of conductivity is the river Morava e Binçës- Ugljare 503 $\mu\text{s/cm}$.

Hydrogen ion concentration (pH) – in 2007, the pH values usually ranged between 7.82to 8.63. In 2008 these values were between 7.61-8.14, while in 2009 the pH values ranged from 7.6-8.27. Generally the water in these basins belongs to a poor middle alkaline environment. Also for 2010 pH it is almost the same pH as for the preliminary years by the maximum of annual average level 7.63-8.24.

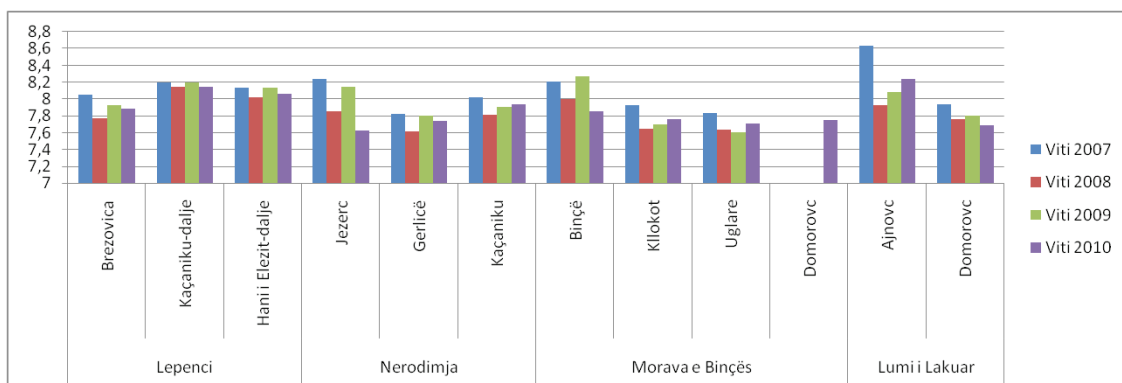


Figure 38: Concentration of hydrogen ion in Lepenci and Morava e Binçës basin

Nitrites (NO_2^-) - For 2007, the parameter indicates its minimum in the Morava e Binçës River (at Binçë) 0.001 mg/l, while the maximum annual average is recorded in the Nerodime River, (at Kaçanik) of 0.774 mg/l. In 2008, at the same sampling point, is indicated the value of 1.085 mg/l, while in 2009 is registered an extreme value of 7.35 mg/l, the same case as in the River Lakuar (at Domorovc) that reaches the highest value of 5.63 mg/l.

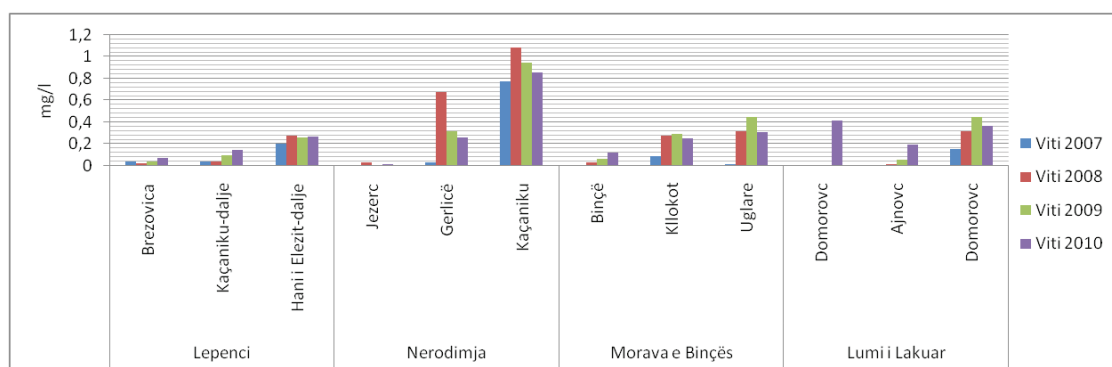


Figure 39: Nitrites in Lepenci and Morava e Binçës River Basins

For 2010 ion nitrite NO_2^- in river Nerodimja-Kaçanik has the maximum of annual average value 0.853 mg/l while the minimum of annual average value in river Nerodimja-Jezerc is represented as measurement with value 0.010 mg/l.

Ammonia (NH_4^+) - As a polluting element, its presence is evidenced in large quantities, especially after the discharge of urban and rural wastewater collectors. The ammonia under alkaline $\text{pH} > 10$ has damaging effects of the environment and the water fauna. Its presence in the water reflects with unpleasant odour.

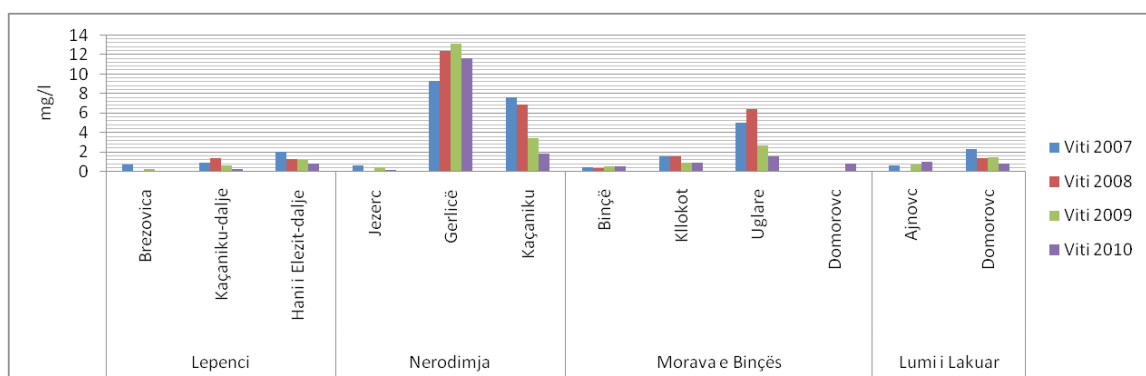


Figure 40: Ammonia in Lepenci and Morava e Binçës River Basins

The lowest values of ammonia in the Morava e Binçës River - Binçë are registered in 2007 with 0.47 mg/l, while the highest values are appeared in the Nerodime River - Gerlicë 9.32 mg/l. The minimal annual average

values in 2008 is recorded in the Nerodime River - Jezerc <0.001 mg/l and the maximum value is reached in the Nerodime River - Gërlicë 24.32 mg/l. In 2009, the minimum annual value has the Lepenci River – Brezovica 0.245 mg/l, while the Nerodime River - Gërlicë reaches the maximum 3.556 mg/l.

In 2010 it is shown this review, annual minimal value has Lepenc-Brezovicë 0.14 mg/l, while river Nerodime-Gërlicë has the maximal value 11.63 mg/l.

Sulphates (SO₄²⁻) - In 2007, the Morava e Binçës River -Binçë shows the lowest value 4.25 mg/l, while the higher value appears in the Curved River - Ajnovc 229.5 mg/l. In 2008, the lowest value of this parameter is listed in the Lepenc River -Brezovica 1.93 mg/l, and the highest value in the Curved River - Domorovc with 147.2 mg/l.

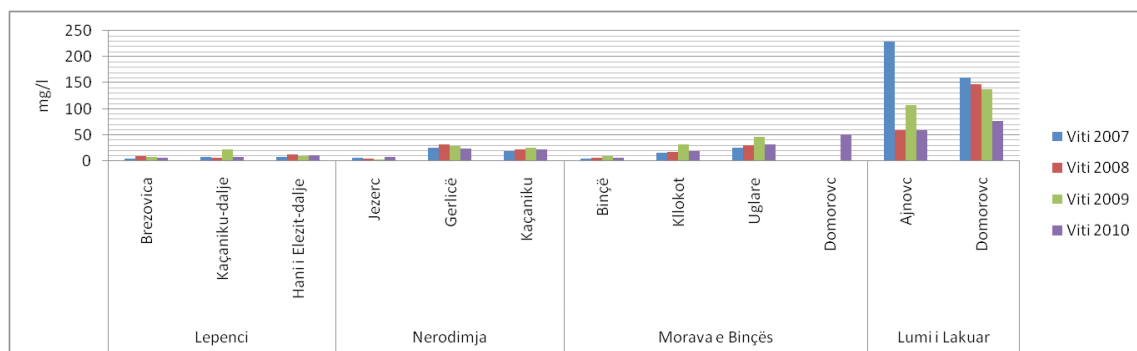


Figure 41: Sulphates in Lepenci and Morava e Binçës River Basins

In the Nerodime River (at Jezerc), the minimum annual average for 2009 was 3.47 mg/l and the maximum value is registered in the Curved River with 137.9 mg/l.

In 2010 River Morava e Binçës-Binçë shows the lowest value 6 mg/l, and the highest value the River Lakuar-Ajnovc 77 mg/l

Phosphates (PO₄³⁻) - In 2007 the minimum value of phosphates is registered in the Curved River with 0.005 mg/l, while the maximum value is recorded in the Nerodime River -Gërlicë with 1.278 mg/l. In 2008 the lowest values were recorded in the Lepenc River - Brezovica 0.015 mg/l and highest values in the Nerodime River - Gërlicë 2.288 mg/l.

In 2009, in the Nerodime River (at Jezerc) the minimum annual values were 0.008 mg/l, and the same river in the sampling point at Gërlicë reached the maximum annual value of 1.79 mg/l.

In 2010 the River Lepenc-Brezovicë has the minimum of annual values 0.020 mg/l, while the river Nerodimja-Gërlicë has the maximum of annual value 1.011 mg/l

By the results we come to the conclusion that the parameter of phosphate in last three years of monitoring has a maximum value at the monitoring station in Nerodime - Gërlicë

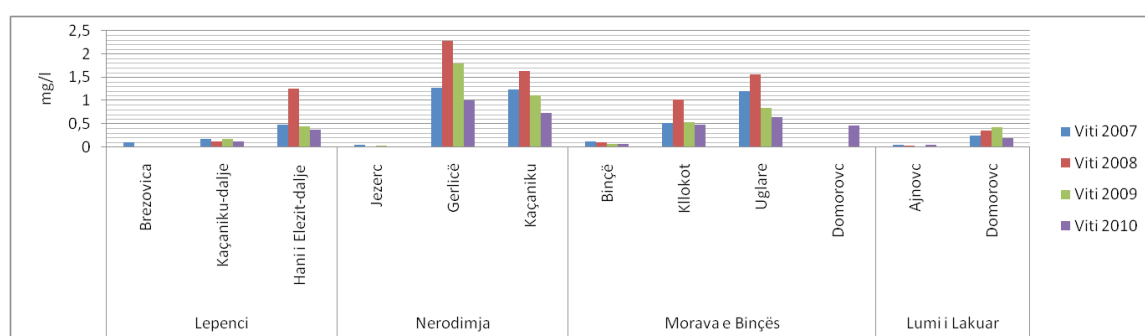


Figure 42: Phosphates in Lepenci and Morava e Binçës River Basins

The increased phosphate ion values are appeared mainly at those monitoring stations located after the urban and industrial wastewater discharges.

Total phosphorus (poly and ortho) – This parameter has also low values at river water springs. In 2007, the lowest value is recorded in the Curved River - Domorovc 0.02 mg/l and the highest value in the Nerodime River - Kaçanik 0.64 mg/l. In 2008, lowest values have been registered in the Lepenci River - Brezovica and Nerodime River - Jezerc with <0.001 mg/l. It means the lowest values were registered at the water springs of these rivers.

In 2009, the lowest annual average values are registered in the Lepenci River – Kaçanik with 0.08 mg/l, while the highest annual average values are registered in the Nerodimja River - Kaçanik 0.607 mg/l.

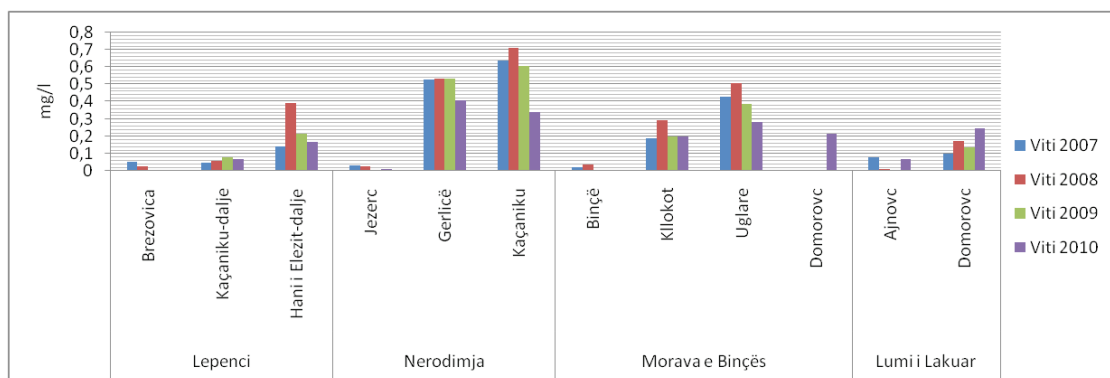


Figure 43: Total phosphor (poli dhe ortoin) in Lepenci and Morava e Binçësbasins River Basins

In 2010 the river Nerodime- Jezerc has the minimum of annual values 0.009 mg/l, also the same river in sampling point Gërlicë notes the maximum of annual value 0.408 mg/l.

Total hardness (TH)- - As in other river basins, the water hardness is measured at the river water springs only.

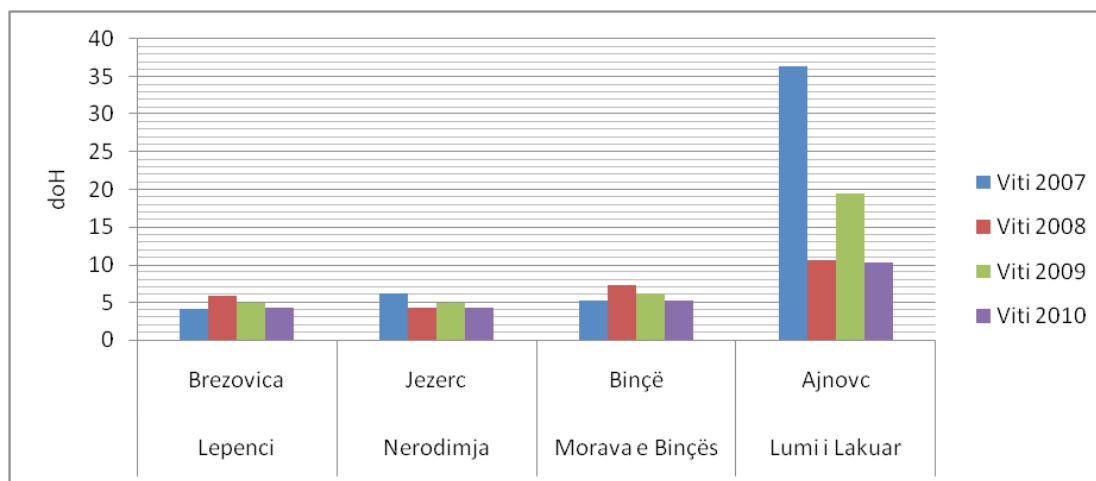


Figure 44: Total hardness in Lepenci and Morava e Binçës River Basins

WATER POLLUTION BY HEAVY METALS

The KHMI have started to monitor the heavy metals in surface waters since 2008. Some of them are toxic elements such as: Pb^{2+} , Cd^{2+} , Cu^{2+} , Cr^{6+} , Ni^{2+} etc. But, among them are included as well the essential elements such as: Fe^{2+} , Zn^{2+} , Mn^{2+} , and Cr^{3+} . The heavy metals such as cadmium and lead are found in water as the result of dumping the remnants from industrial processes.

Table 21: Maximal allowed values for some heavy metals according to Directive BE 152/1999 ³³

No	Heavy Metals	Symbol	Unit	VML
1	Chrome	$Cr^{3+/6+}$	mg/L	0.2
2	Cadmium	Cd^{2+}	mg/L	0.02
3	Nickel	Ni^{2+}	mg/L	2.0
4	Zink	Zn^{2+}	mg/L	0.5
5	Manganese	Mn^{2+}	mg/L	2.0
6	Cooper	Cu^{2+}	mg/L	0.1
7	Iron	Fe^{2+}	mg/L	2.0
8	Lead	Pb^{2+}	mg/L	0.2

³³ "Legislative Decret 11 May 1999, No. 152", Provision on Water Protection from Pollution, Directive 91/271/EEC on Urban waste Water Treatment.

The Drini i Bardhe River basin – Based on the EU Directive 152/1999 the values of Chrome are exceeded in the Rimnik and Erenik rivers as well as in the Lumëbardhi i Prizrenit River at two monitoring stations.

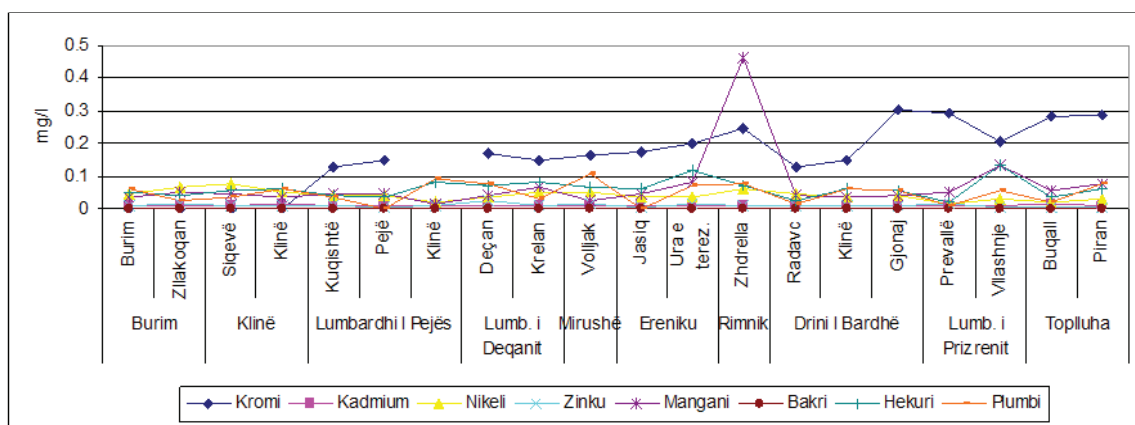


Figure 45: Heavy metals in Drini i Bardhë River Basin

The Ibri River basin – in this river basin is evidenced the presence of heavy metals such as chromium ($\text{Cr}3+$), in both water quality monitoring stations of Shtime River, and in the Sitnica River at Plemetin station. It is indicated as well the influence of cadmium ($\text{Cd}2+$). The graphic shows that in Graçanka River (at its monitoring station in Vragoli) has a difference compared to other monitoring stations. The Zinc ($\text{Zn}2+$) that comes from the pumped waters of Kishnica mine, is within the allowed limit values with respect to the EU directive EU 152/1999

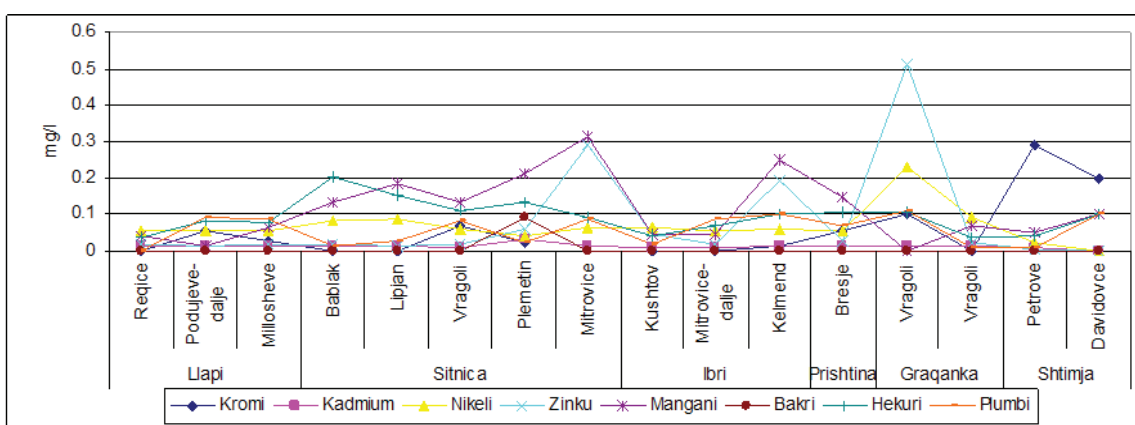


Figure 46: Heavy metals in Ibri River Basin

The Lepenci and Morava e Binçës river basins - In both these two basins it is indicated exceeding of chrome ($\text{Cr}3+/6+$), by the allowed values of based on the EU Directive 152/1999 while the quantity of other metals is found to be within the MAV.

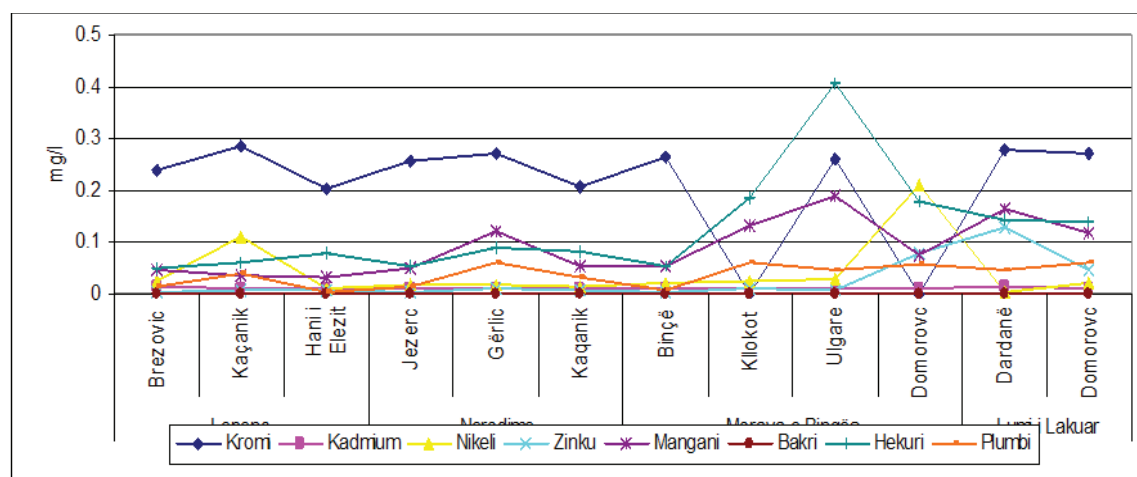


Figure 47: Heavy metals in Lepenci and Morava e Binçës River Basins

Conclusions

- The overall water situation in Kosovo in all its aspects and dimensions is unsatisfactory.
- Kosovo still has not: a water strategic plan, water management plan, river basin management plan and flood management plan.
- Water database is still incomplete and it is an obstacle to adequate planning in the water sector;
- It is evident the inappropriate use of water resources and uncontrolled exploitation of gravel from river beds which is linked with the damage of rivers bed;
- There is a lack of investment for construction of sewerage systems and waste water treatment plants;
- There is a lack of research institutions and consequently lack of scientific researches in the field of water.
- Insufficient cooperation between the responsible institutions in the water sector, and insufficient cooperation between government institutions, non-governmental organizations and public.
- There is no integrated system for surface and ground water monitoring

2.3. Land (soil)

Land use – the continuing impact of human activities brings 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 22 are presented data on land use classes in hectares (ha), while in Table 23 are presented categories of land by municipalities.

Table 22. Total surface of lands according to using class³⁴

Used surface	Surface (ha)
Forest	464800
Forest land	28200
Agriculture land	342400
Pasture and meadow	153200
Westland	23400
Urban areas, buildings	40000
Water surfaces	4600
Unclassified	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 4part 40% (185,920 ha) is private owned. These figures vary both by the old statistical data and the cadastral records.

Table 23: Land categories according to municipalities³⁵

Municipality	Land categories/ ha			
	Wastelands used as pasture	Wastelands not used	Polluted land	Total
Deçan	960			960
Gjakovë	800	420		1220
Glllogoc	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				

³⁴ Ministry of Agriculture, Forestry and Rural Development, 2009

³⁵ Half annual administrative questionnaire/ Agriculture Statistical Office-MBPZHR

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
Shtërpçë		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;
- Uncontrolled gravel exploitation.

One of the most common forms of loss of agricultural lands is 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, about 2,580.50 ha of agricultural land the designation has been changed without permission of the Municipal Assemblies. Whereas around 198.24 hectares of agricultural land surface is changed the destination with permission from the Municipal Assemblies.

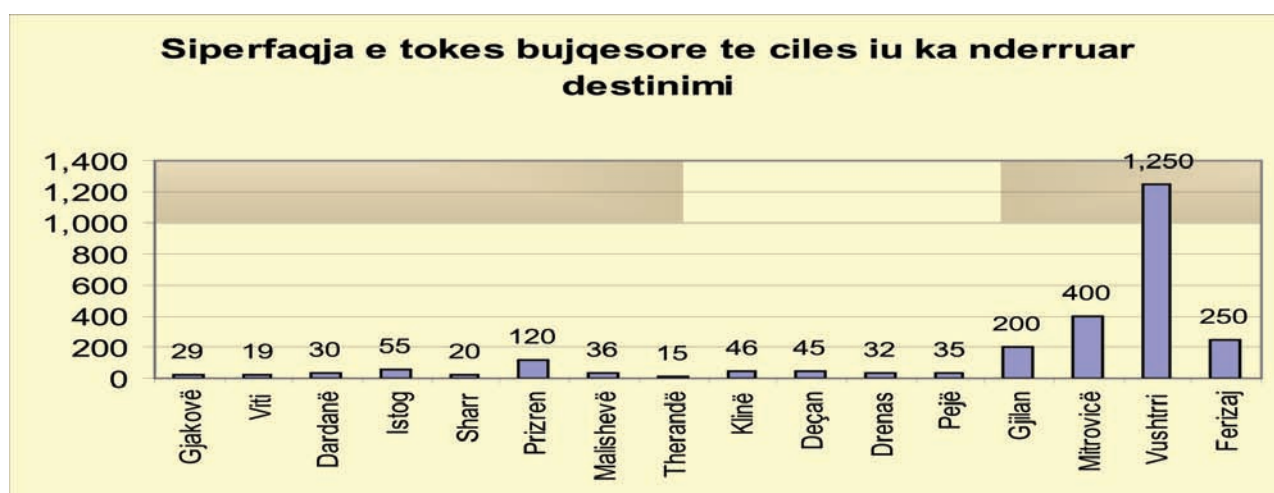


Figure 48: Surface of agriculture land which is changed the destination in non agriculture land without permit of Municipal Assemblies 1999-2008³⁶

36 Ministry of Agriculture, Forestry and Rural Development. 2009

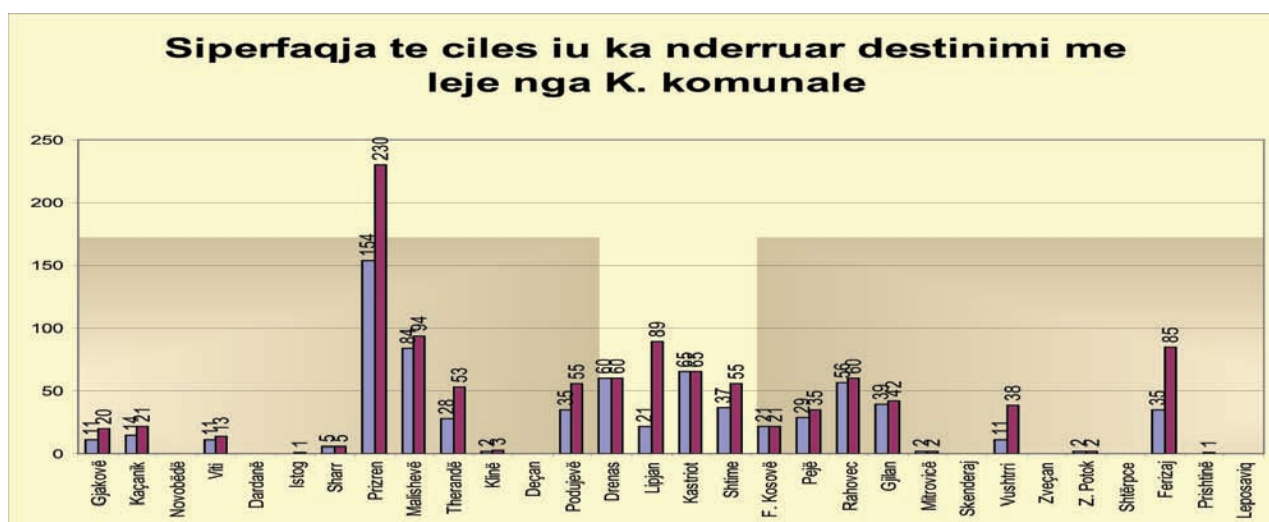


Figure 49: Surface of agriculture land which is changed the destination in non agriculture land with the permit of Municipal Assemblies 1999-2008

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.

Contamination of lands with heavy metals - This category of pollution is produced by industrial processes. Heavy metals and highly toxic which contribute to pollution are: methyl mercury and organic-metric compounds as dimetil-mercury of Hg (CH₃)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 monitoring the land (soil). Currently neither the economic operators with potential environmental pollutants do not regularly monitor the quality of soil (earth), and therefore KEPA has lacks of data for quality of soil in these areas.

In 2008 **NewCo "Ferronikeli Complex"** has made some tests (measurements) of land 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 24: Location and results on soil pollution with heavy metals in the area of NewCo "Ferronikeli Complex"³⁷

Location of sample sites	Heavy metals /unit			
	Iron -Fe %	Nickel-Ni mg/kg	Cobalt-Co mg/kg	Chrome-Cr mg/kg
On the use by the smelter	4.05	628.0	20.0	204
In south-west of smelter	3.50	557.0	3.0	102
Close to the fire brigade station of Drenasi	2.96	136.5	Footmark	40
Tërstenik close to the mill	2.96	72.5	Footmark	13
Çikatovë	2.88	308.5	Footmark	54
Under the skore landfill	2.50	334.0	Footmark	66
Suka	3.81	648.0	Footmark	158
Reservoirs of water factory	2.59	140.0	Footmark	n.d.

Under the Administrative Instruction of the maximum allowed levels for discharge and distribution of pollutants in the land, the MAL by the analysis presented in the table for heavy metals such as Nickel (Ni) and Chromium (Cr), were exceeded once the MAL on the ground for the metals was 50 mg / kg.

37 New Complex Feronikeli, 2009

Some data for the areas identified as hot-spots due to environmental pollution with heavy metals are presented in the report which deals with the identification of environmental hot-spots. For more see Table 54.

Erosion - Erosion in the territory of Kosovo threatens the nature and the social and private assets created and planned by the people. Erosion is manifested in the degradation of agricultural land, forest, road and rail network and the degradation of the construction buildings and settlements. The current status of erosion is presented in Table 25.

Table 25: Categories of Erosion in Kosovo, surface in km² and participation on % according to categories ³⁸

Categories of Erosion	Surface km ²	%
Category I, II and III	5.973 km ²	55.6 %
Category IV (weak erosion)	3.680 km ²	34.2 %
Category V (very weak erosion)	1.097 km ²	10.2 %
Total	10.750 km²	100 %

So erosion of categories I, II, III and IV includes 9,653 km² of surface or 89.8% of the total surface. The more emphatic productivity of the alluvium is the upstream of the Iber River (the state must be improved on measure and the anti-erosive action). Also the surfaces of Lepenc river basin are vulnerable to erosion. Then come the river basins of Drini i Bardhe and Morava e Binçës. The Lowest productivity of erosion is Sitnica River Basin. Assessment of the erosion in the territory is presented in the following map.

Flooding of land-flood- flooding protection and regulation of water regime requires serious and long term approach. Among the key factors that lead to the presence of floods and flooding are:

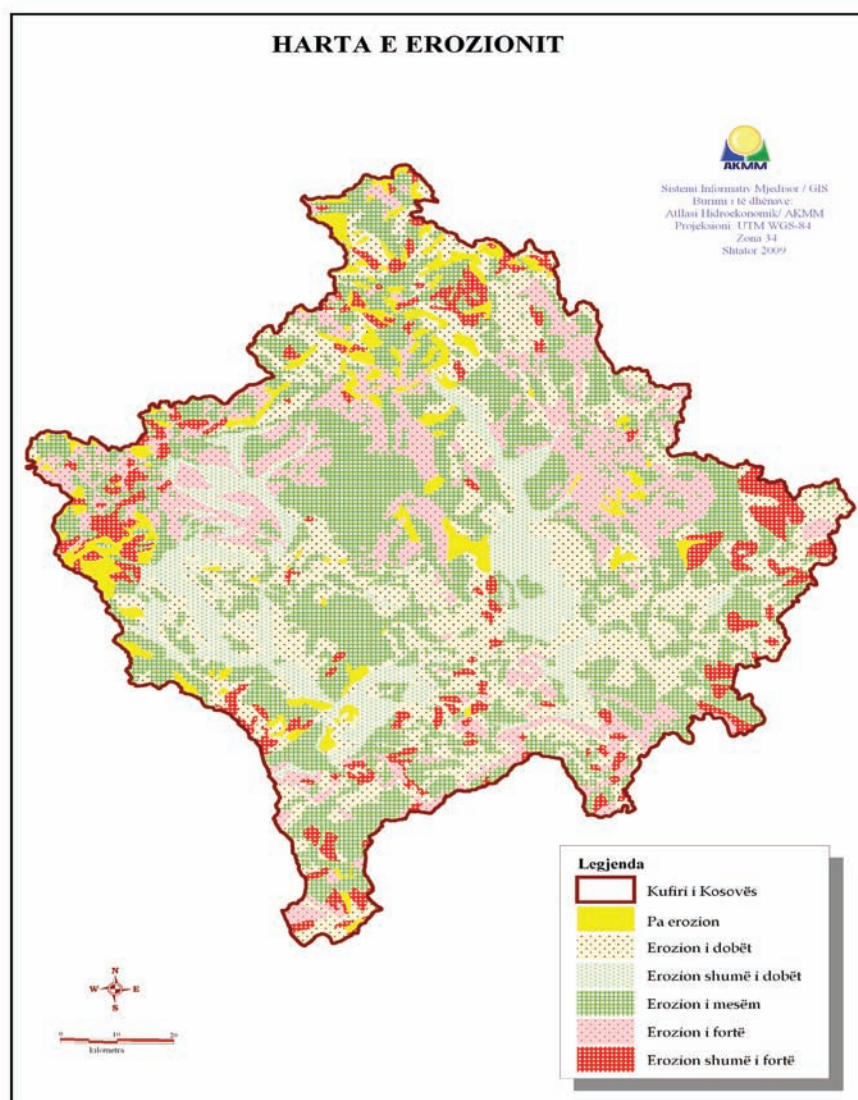
- Unregulated river beds;
- Damage of river beds from uncontrolled extraction of sand and gravel;
- Construction of houses, roads and bridges in the areas that are vulnerable to floods;
- Waste disposal in rivers;
- Cutting of forests closet to the areas with flooding;
- Poor maintenance of protection facilities;
- Lack of funds for construction of new protective buildings.

Based on the assessments conducted (Master Plan of 1983) for floods with eventuality once in 100 years and based on the development which has been accrued at the cast time, it can be noticed even the damages from floods.

According to this calculation of flood damages in the Drini i Bardhe River Basin would be 50%, in Iber River Basin to 24%, in the Lepenc River Basin 20% and 6% in Morava e Binçës River Basin. In order to prevent the flooding, projects are planned for the regulation of river beds. According to previous surveys of river length of Kosovo who are at risk of flooding is about 491 km. So far only 140 km are regulated or 28% of the total length foreseen to be regulated³⁹.

38 Water Department, 2009

39 ³³ Water Department, 2009



Map 5: Erosive Zone

Land irrigation - about 42.226 ha of agricultural land in Kosovo, from total 1,088,000, are suitable for irrigation. Land areas along the major rivers are suitable for irrigation. About 50,000 ha of agricultural lands are very suitable for irrigation and about other 100000 ha could have been favourable, with some slight remedial measures. The largest portion of irrigated land is in the Peja region with about 13.915% of the total area of cultivated agricultural land, while the smallest area is in Gjilan region with 1.781%. Irrigated land surfaces by regions in Kosovo are presented in the following table.

Table 26: Irrigates land surfaces according to regions ⁴⁰

Region	Irrigated surface (ha)	General surface of agriculture cultivated lands (ha)	Total surface (ha)
Kosova	42 226	195 575	237 801
Prishtina	3 741	51 624	55 365
Mitrovica	2 861	37 047	39 908
Peja	13 915	17 848	31 763
Gjakova	3 784	17 313	30 624
Prizren	3 784	22 190	25 947
Ferizaj	2 833	18 680	21 513
Gjilan	1 781	30 873	32 654

⁴⁰ Survey of Agriculture household economies , SOK 2010

Also as regards the Municipalities Peja has the biggest surface of irrigation land. The data for irrigated surfaces according to municipalities are presented in table 27.

Table 27: Agriculture irrigated surface according to municipalities⁴¹

Municipality	Water surface (ha)	Total surface of agriculture cultivated lands (ha)	Total surface (ha)
Kosova	42.226	195.575	237.801
Deçani	5.144	4.423	9.567
Gjakova	3.626	7.333	10.959
Glllogoci	108	4.202	4.310
Gjilani	285	8.953	9.238
Dragashi	496	4.174	4.670
Istogu	3.831	6.849	10.680
Kaçaniku	293	3.019	3.312
Klina	2.418	5.623	8.041
Fushë Kosova	202	5.817	6.019
Kamenica	509	8.779	9.228
Mitrovica	790	4.661	5.451
Leposaviqi	33	369	402
Lipjani	1.170	16.570	17.740
Novobërda	36	1.574	1.610
Kastrioti	416	3.211	3.627
Rahoveci	4.541	5.556	10.097
Peja	7.666	5.376	13.042
Podujeva	1.163	11.743	12.906
Prishtina	647	8.508	9.155
Prizreni	1.739	5.722	7.461
Skenderaj	497	20.433	20.930
Shtimja	576	3.847	4.423
Shtërpca	1.274	471	1.745
Suhareka	1.167	5.592	6.759
Ferizaj	688	11.343	12.031
Vitia	987	13.141	14.128
Vushtrria	1.210	9.880	11.090
Z.Potoku	202	1.261	1.463
Zveçani	129	444	573
Malisheva	383	6.701	7.084

Currently, the irrigation system in Kosovo is administered by the central public enterprises: The Public Enterprise “Hidrosistemi Iber Lepenc” and two companies for Regional Irrigation: “Drini i Bardhe” and “Radoniqi-Dukagjini”⁴².

The main characteristics of the irrigation schemes by the Irrigation Companies are presented in the table below.

⁴¹

⁴² Law on Public Enterprises

Table 28: Characteristics of the official irrigation schemes⁴³

Scheme	Irrigation type	Equipped surface (ha)	Irrigated surface in (ha)	Irrigated surface by the current scheme and water sources during the season peak (ha)
Ibër Lepenc	Sprinkler irrigation	20.000	515	14.500 ¹
Radoniqi	Sprinkler irrigation	8.600	4.700	5.000
Dukagjini	Surface irrigation with Sprinkler	5.000	800	2.500
Drini Bardhë Pejë	Surface irrigation	6.500	1.300	2.500
Istog	Surface irrigation	8.500	1.350	2.000
Lumi i Bardhë	Surface irrigation	8.500	1650	3.000
Total		57.100	10.315	29.500

The table 29 shows irrigated areas by Public Companies for the period 2008-2009, while the following figure shows the chronology of irrigated areas for the period 2000-2008.

Table 29: Irrigated surfaces by Public Irrigation Companies 2008-2009⁴⁴

Irrigation Company	Irrigated surface /ha 2008	Irrigated surfaces /ha 2009
Iber-Lepenci	1424	1132
Radoniqi and Dukagjini	5248	5234
Drini i Bardhë	1650	1050
Total	8322	7416

Based on a survey conducted by the Department of Irrigation in MAFRD, it is proved that in 2005 the area under informal irrigation (out of Irrigation Company) was about equal to the area irrigated by the Irrigation Companies.

Table 30: Different informal irrigations for 2005⁴⁵

Types of irrigations	Surface (ha)
Modern/improved schemes of irrigation under KU	7,063
Traditional irrigation schemes under KU	1,581
Total of unofficial irrigation	8,644
Unofficial irrigation with the water of river with gravity	5,208
Unofficial with pump sprinkle	641
Unofficial irrigation of surfaces with the water of river with pumps	542
Irrigation with sources	1,700
Irrigation with ground water with well	984
Total of unofficial irrigation	8,225

43 Ministry of Agriculture, Forestry and Rural Development

44 Ministry of Agriculture, Forestry and Rural Development

45 Ministry of Agriculture, Forestry and Rural Development , 2009

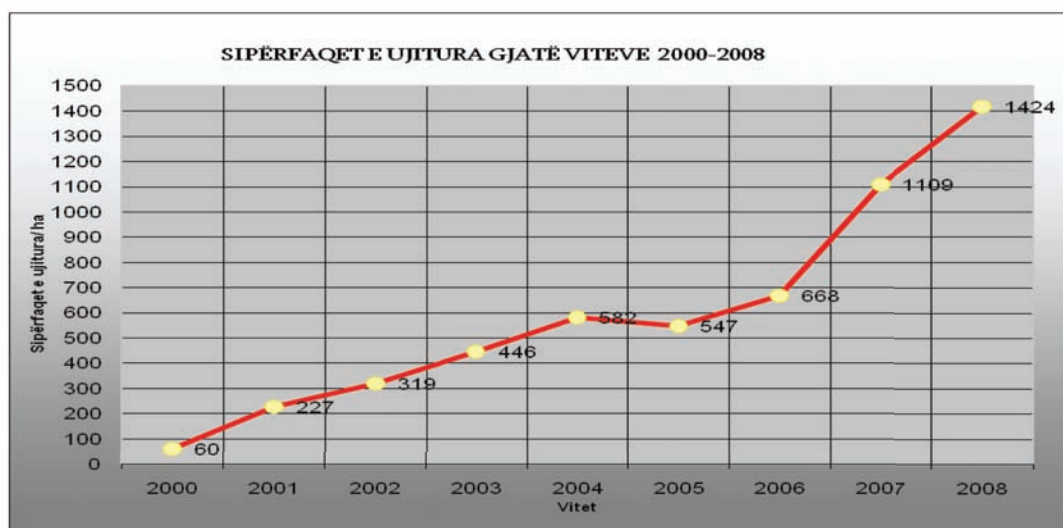


Figure 50: Irrigated surfaces (ha) by NPH Ibër Lepenc for 2000-2008

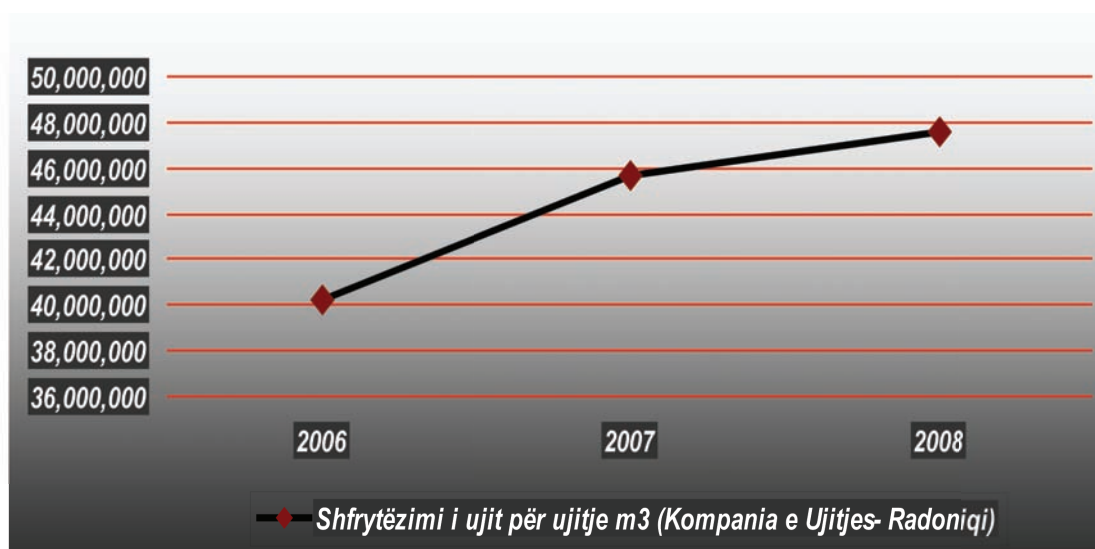
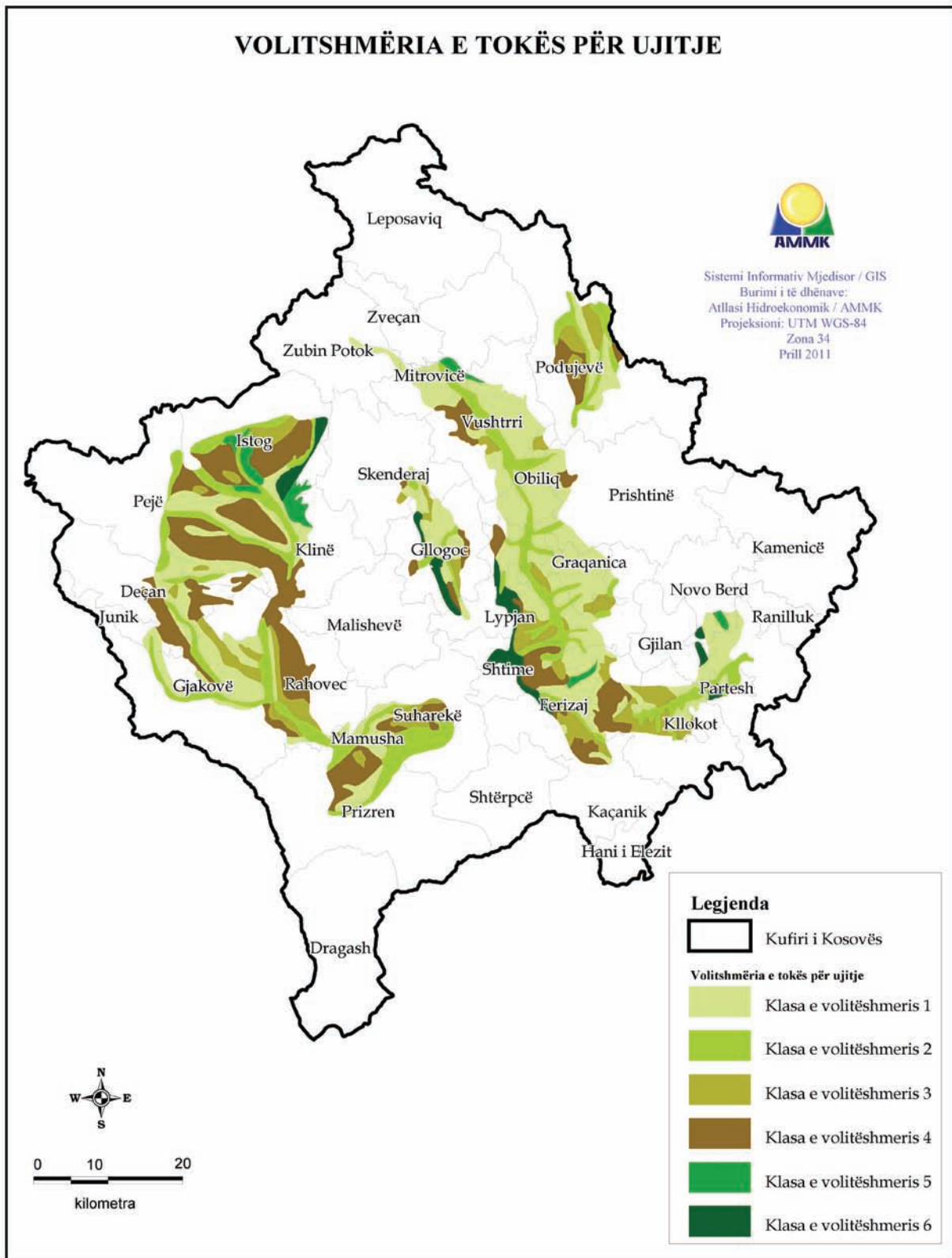


Figure 51: Water used for irrigation by irrigation company Radoniqi

In the figure 51, is presented the water amount used for irrigation from the Irrigation Company “Radoniqi” for the period 2006-2008, where is indicated an increase of water consumption in this sector.



Map 6: Lands with favourable position for irrigation

2.3 Biodiversity

Natural Protected Areas

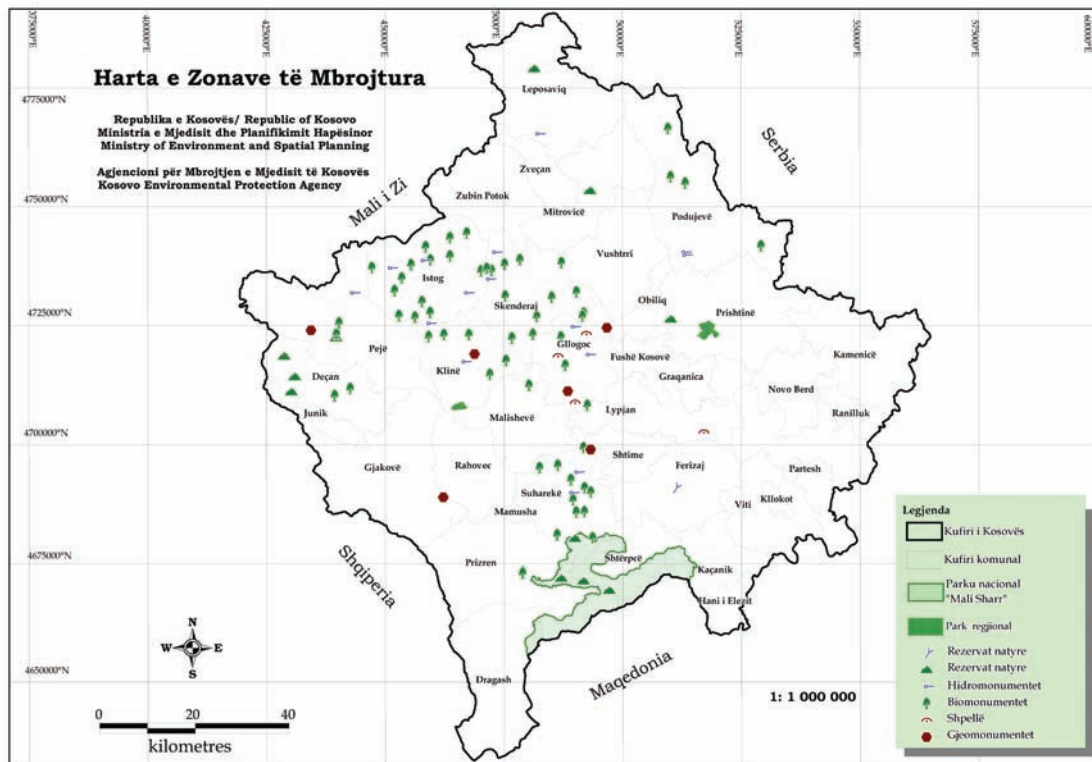
Currently the number of nature protected areas is 97 and includes a territory of 47,842.34 ha (4:39% of the territory of Kosovo). These areas include: 11 Nature Reserves ("Nerodime River Bifurcation", "Arnen's Reserve", "Maja e Ropsit", "Rusenica", etc.), 1 National Park ("Sharr Mountain"), 83 Nature Monuments ("The spring of Drini i Bardhe", "Gadime Cave", "Rugova Gorge", "Fshajtë's Bridge" many bio-monuments", etc.), 2 Regional Nature Parks ("Germia" and "Mirusha") and 1 Forest Park ("Deçani Pines").

Greatest territory of protected area is taken up by the "Sharr Mountain" National Park with 84% of the total territory of protected areas.

During the post-war period have been taken under the legal protection 54 new natural areas and are proposed around 159 others. Among the protected areas most of them are nature monuments with botanical character, hydrologic, geomorphologic, speleological etc.. Within the proposed area is processed also the second National Park, "Bjeshket e Nemuna" and many monuments of nature.

Table 31: Natural Protected Areas

Category	Designation	No	Surface /ha
I	Natural reservoirs	11	846.92
	R.N. Flora	6	
	R.N. Fauna	2	
	R.N. Special	3	
II	National Park	1	39.000
III	Natural Monument	83	6.296,93
	M.N. Speleological	4	
	M.N. Hydrologic	15	
	M.N. Geo-morphologic	6	
	M.N. Botanic	55	
	M.N. Memorial	1	
	Museum of crystals in Stantërg	1	
V	Protected landscape	2	1. 683,49
	Forest Park	1	15
	Total	97	47.842,34



Map 7: Protected areas

Management of Protected Areas

The management of nature protected areas is made for the following purposes:

- Scientific research and surveys;
- Protection of wild species, habitats and ecosystems;
- Conservation of genetic diversity and species;
- Taking care of environmental services;
- Protection of specific features of natural and cultural heritage;
- Tourism and recreation;
- Education and assuring public access to information;
- Sustainable use of resources from nature ecosystems;
- Maintenance of cultural and traditional features.
- Conservation of representative space with natural values with national and international importance

Status of nature protected areas is defined by bylaws in accordance with the laws that will determine the degree of protection and management principles under each category. According to the Law on Nature Protection, for every nature protected area, protection level I, II and III are defined.

The act for declaring the nature protected area sets the management goals and specific measures for the protection of nature and techniques that will apply to the nature protected area. After issuing the act for declaring the nature protected area, management plan is issued by the body that puts it under protection and which is approved by the Ministry.

Only 3 areas have management bodies so far. The Park Directorate based in Prizren which operates within the MESP manages the "Sharr Mountain" National Park. The Directorate currently manages the National Park territory with an area of 22,230 ha, located in Prizren Municipality (19,500 ha) and Suhareka (2730 ha).

Reserves situated within the territory of the National Parks: Maja e Arnenit, Pisha e Madhe \, Oshlak and Rusenica are managed by the Directorate of "Sharr Mountain" NP, while other reserves ("Pika e Ropsit", "Gubavci", "Gazimestan", "Kozhnjeri", "Mountains of Prilep", "Nerodime River Bifurcation", "Kamilja" have no management bodies.

Gërmia''' Regional Park is managed by the public enterprise "Hortikultura", while the Regional Park "Mirusha"

has no management body. "Gadime Cave" is managed by a body that is not under government's supervision, while other nature monuments are managed by the respective municipal authorities.

State of Protected Areas

Nature Protection Areas and biodiversity have changed mainly due to the negative impacts of anthropogenic factors such as: illegal construction and interventions, uncontrolled forest cutting, but also other non-anthropogenic factors such as disease, fires, etc. that are inconsistent with the purposes of protection, applicable legislation and international norms. Such impacts and lack of institutional care are causing these areas to permanently lose their natural characteristics for which they are under protection. Areas in which there were influences during these two years are: "Cave of Gadime", "Gryka e Rugoves," The source of Drini i Bardhe with the Cave and Waterfall in Radavc, Mirusha River Flow, etc..

During the years 2008 - 2009 several important activities were conducted for protected areas and biodiversity.

- 54 new nature areas have been taken under protection, whereby their number has increased to a total of 97.
- Due to loss of natural values, 12 nature monuments have been deleted from the central register of protected areas.
- Three draft laws are being prepared: Amendment to the draft law on Nature Protection, the draft law on the "Sharr Mountain" National Park and draft law on "Bjeshket e Nemuna" National Park.
- During 2009, has started the drafting of the Strategy and Action Plan on Biodiversity for 2010-2020.
- "Sharr Mountain" National Park zoning took place and 14 other natural reserves have been proposed for protection.
- Draft Spatial Plan of "Sharr Mountain" NP was prepared which is being considered by relevant municipalities that fall within it.
- Exploration continued in the "Gryka e Madhe" cave in Rugova Gorge and Radavc cave by Slovak speleologists, in collaboration with the Association of Speleologists "Aragoniti" from Peja and KEPA experts.
- Due to the use of nature without a sustainable criterion, ecosystems and biological diversity of protected areas have been significantly damaged,
- Biggest consequences of this development were suffered by the "Sharr Mountain" National Park in which in addition to problems in its management, many other problems have also been identified such as: house construction continued at Prevala area, illegal forest logging, forest and scenery damaging areas result of the use of stone, natural disasters' damage from the wind and snow, damages from harmful insects, the dumping of waste, etc.

These impacts have not put aside also the other protected areas. The most emphatic negative impact where at:

- At the middle of Mirusha river flow (GZK protected area no. 44/76, 1982), a dam was built with the length of 20 m and width of 10 m. Construction of the dam has led to the degradation of the bed and the normal flow of water. This reservoir represents a concern for local residents as well, because it represents the risk of flooding during the spring and winter season, while during the summer season it contributes to the drying of Mirusha river bed. Consequently, massive death of fish and other living creatures have been ascertained in Mirusha river; this has also affected Mirusha river waterfalls, disrupting the normal flow of water.
- There was human interference at the spring of Drini i Bardhe, a water reservoir was built for Radavc hydropower plant located beneath the Drini i Bardhe Spring. This intervention is made with concrete and iron, which damages the natural authenticity of this monument.
- In the vicinity of about 100 meters from the Drini i Bardhe spring, there are considerable damages to the vegetation, cutting of hornbeam trees (*Caprinus betulus*), cerri trees (*Quereous pubescens*). This massive tree cutting directly impacts the demolition of landscape and the appearance of erosion.
- During these two years, construction of new hotel facilities has continued, whereby three restaurants have been built. These interventions and vegetation damages are identified problems affecting the natural values and biodiversity of the area. But worrying is the lack of a management body for Mirusha Regional Park.
- Despite the good maintenance of recreational area by the managing organization, problems are identified regarding the conservation of values in other areas. Are visible the damage to various ecosystems through forest exploitation. Also significant damages of trees in 2008 are caused by insects, interventions through the fountain construction and installation of antennas on the highest peaks and inland recreational area. The presence of dry trees and mined areas, waste in the deep parts, lack of the management plan and spatial planning of the park and the zoning and park marking etc..

Due to the loss of natural values, 12 monuments of nature are removed from the central register of protected areas.

Table 32: Natural monuments that are removed by the register of protected areas

Nr.	Name	Municipality	Year	Category
1	Arneni in Nerodime (Pinus Heldreichi)	Ferizaj	1959	Natural Monument
2	Lime-tree in Strelc të Epërm (Tilia argentea)	Deçan	1961	Natural Monument
3	Field elm-tree in Lukinaj (Ulmus Campestris)	Prizren	1981	Natural Monument
4	Qarri Trunk in Potërç të ulët (Quercus sp.)	Klinë	1985	Natural Monument
5	Elm tree trunk in Çabiq (Ulmus minor Miller)	Klinë	1985	Natural Monument
6	Qarri Trunk in Bërkovë (Quercus sp)	Klinë	1985	Natural Monument
7	Qarri Trunk in Dumnicë të P. (Quercus sp)	Podujevë	1988	Natural Monument
8	Poplar trunk in Orllan (Populus tremula)	Podujevë	1988	Natural Monument
9	Çabrati	Gjakovë	1984	Natural Monument
10	Rahavane	Therandë	1980	Boles complex
11	Ramjani	Viti	1982	Memorial Monument
12	Water Source in Revuq	Podujevë	1988	Natural Monument

The state of flora and vegetation

The most important areas for Kosovo flora are considered Sharr Mountains, Bjeshket e Nemuna, Pashtrik, Koritnik, etc.

Based on up-to-date floristic research, over 1800 species of vascular plant flora have been identified, although it is assumed that their number is higher (around 2500). Within explored species, about 200 of them are endemic, endemic-relict and sub-endemic. Especially important is the local endemic group, whose number is still not fully defined, some of which have quite limited spread. Although Kosovo's phyto-diversity is used for centuries, worrying is the fact that recently this use is not rational and without planning, which in future may result with unpredictable consequences. Great damages are caused to the curative, aromatic and industrial plants flora, by their collector.

The state of fauna

In terms of fauna Kosovo is characterized by a large variety of species, although research in this aspect has not been completed. The richest areas of fauna in Kosovo are all Kosovo mountain's massif, but it is worth emphasizing: Sharr Mountains and Bjeshket e Nemuna. It is estimated that 250 vertebrate species live in Kosovo, 200 species of butterflies and over 500 macro-zoo-benthos water taxon. Despite the rich network of rivers, Kosovo still has no full inventory of fish species, due to lack of ihtio-faunistic exploration. Until today some of Kosovo's rivers are explored and in total 30 species of fish are identified. Out of these, 18 species are known in Drini i Bardhe, 12 species in Llapi river and 17 fish species in Drenica river.

The state of Natural Resources in National Park "Mali Sharr"

The state of National Park forests, in particular of the pine is difficult, due to the negative influence of biotic and abiotic factors. These factors have led to the deterioration of health condition of forests, causing considerable damage to the forest. In some forests, especially the Bosnian Pine, the impact of these factors threatens their existence. The overall forest damage by illegal logging in the NP in 2008 was 1608.04 m³.

Illegal cutting in the territory of Prizren Municipality compared to that of Suhareka is considerably lesser and mainly occurs in the regions of Manastrec, Ljubinjë and Prevalla.

Sporadic damage in beech forests in 2008 were verified by the natural disaster (wind and snow), but their intensity has no significant negative impact on the development of forests. It should be mentioned that within the

damaged forests are the natural strict reserves of lynx as: Maja e Arnenit, Oshlaku and Pisha e Madhe which have had also considerable consequences of damage.

State of rare grass plants, which give special value to the National Park's flora, is good and stable. Types that have special value for the National Park have been verified in a good state the following steno-endemic plants: barpezmi of King Alexander (*Achillea alexandris regis*) in Oshlak, bormylera of Diecki (*Brunmullera dieckii*) in Pashallar, Sharr Crocus (*Crocus scardicus*), Sharr clove (*Dianthus scardicus*) Albanian lily (*Lilium albanicum*) etc.

Some rare species of curative plants are subject to illegal use by irresponsible people. The most endangered plant is gentian (*Gentiana lutea*), which is picked by the local residents and different people who use it for trade (personal gain) since it has special curative value.

During 2008, attempts for illegal collection of this plant have been limited due to the increased control of terrains from the Directorate of National Park, in locations where it is present.

The State of the fauna in the National Park can be assessed to be good. As the result of management from the Directorate of National Park, whereby these natural resources have received institutional protection. That has led to the development and continuous growth of the number of wild animals, especially for brown bear, deer and chamois. From the investigations made in the field most wild animals are verified that have been recorded by previous surveys, while data for some of the most important species that are present in the territory of the National Park are presented in the following table:

Table 33: The state of wild animals in NP Sharr for 2008⁴⁶

Type of animal	State of fund at the beginning of the year	Annual reproduction	Natural losses	State at the end of the year
Greyish bear	22	7	1	28
Deer	40	10	3	47
Lynx	4	-	-	5
Wild goat	170	38	10	198
Wild pig	50	25	15	60
Rabbit	130	60	40	150
Wolf	9	6	4	11
Greyish eagle	4	-	-	4
Stone Partridge	150	50	30	170

Health situation of wild animals is good, while continuing danger to wild animals comes from illegal hunting by irresponsible people. The most endangered species from illegal hunting are dears and chamois.

State of Fauna in Special Hunting Reserves

In table 34, are presented some data for the number of fauna in the special hunting reserves.

Table 34: Number of animals within the special reserves of hunting in Blinajë and Dubočak according to the inventory of 2007 and data by the staff for 2008-2009⁴⁷

	Blinaja		Duboçaku
	Inventory mi 2007	Normal state	Current state
Wild Pig (<i>Sus scrofa</i>)	364	504	220
Red Pig (<i>Cervus elaphus</i>)	131	148	
Greyish pig (<i>Dama dama</i>)	88	97	
Roe (<i>Capreolous capreolus</i>)	48	65	20
Greyish Bear (<i>Ursus arctos</i>)			8

⁴⁶ Directorate of National Park "Mali Sharr", 2008

⁴⁷ Kosovo Forest Agency.

Activities within the Bird Flu project

During 2008-2009 within the Bird Flu project, in cooperation with the officials of the Food and Veterinary Agency and those of FAO, monitoring was carried out in several areas (habitats) with wild migrating and domestic birds such as: wetlands in Henc, Batllava lake, Badovc lake and Radoniqi lake, and some major rivers such as: Drini I Bardh, Sitnica etc.

During that time it is done the evidence of the doubt cases of sicken birds, by presenting the role of wild birds on the expansion of bird flu.

Exploration of Radavc and “Gryka e Madhe” caves

During 2008, 2009 in the Cave of “Gryka e Madhe” at Rugova Gorge and Radavc Cave, exploration continued by the Slovak speleologist, in cooperation with the Association of Speleologists “Aragonit” from Peja and the Kosovo Environmental Protection Agency .

The researches have been concentrated mainly in the tops and discovery of new corridors. During these expeditions to the digital previous map are added 2000 more meters and new caw galleries. The overall length of canals and galleries in the “Gryka e Madhe” cave is about 13 km.

Survey of galleries and corridors in the Grand Gorge and Radavc caves will continue in next years.

Problems:

- Unsatisfactorily implementation of the existing laws;
- Unsatisfactorily reflection of Birds and Habitats Directive in the Law on Nature;
- Lack of the Strategy and Action Plan on Nature and Biodiversity;
- Lack of sufficient institution for nature protection
- Lack of management bodies for protected areas;
- Lack of spatial and management plans for protected areas;
- Uncontrolled use of natural resources in protected areas;
- Lack of scientific research on biodiversity;
- Lack of full inventory for flora, fauna and habitats;
- Insufficient budget for nature protection;

Recommendations:

- Approval of 3 new Laws: on Nature Protection, for National Park; Sharr Mountain,
- and National Park Bjeshket e Nemuna;
- Exploration and inventory of species and habitats;
- Drafting the Red List of flora and fauna in Kosovo;
- Promulgation of “Bjeshket e Nemuna” National Park Support
- Support of cross border project for nature protection;
- Preparation of spatial and management plans for nature protected areas;
- Drafting programs and projects on awareness raising and sensibilisation on nature protection;
- Establishment of the coordination office for identification, ratification and implementation
- of conventions and other international agreements on nature protection.

2.4. Waste and Chemicals

The waste management system in Kosovo does not offer reliable data on waste generation, collection, treatment and disposal. In average, In Kosovo the service of waste collection is provided to 42 % of Kosovo population (in 2007) respectively 39 % (in 2008) and 42% (in 2009). The Prishtina region covers the highest percentage of population with the waste collection service with 64% (in 2007), Respectively 52% (in 2008), and 53 % (in 2009) , while the Mitrovica region has the lowest percentage with 29% (2007-2008), respectively 30% (in 2009). In urban areas (cities) the waste collection service is provided to 90% of population, while in rural areas are covered only 10% of population. Detailed data on the ratio of provided service for waste collection according to companies and regions are showed in table 35.

Table 35 : The population that receives waste collection services according to companies and regions for 2007-2009, expressed in %⁴⁸

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

In the following figure are presented the participation of different types of waste in general structure of waste in Kosovo. From the figure it is shown that municipal wastes represent 18% of total amount of waste generated in Kosovo.

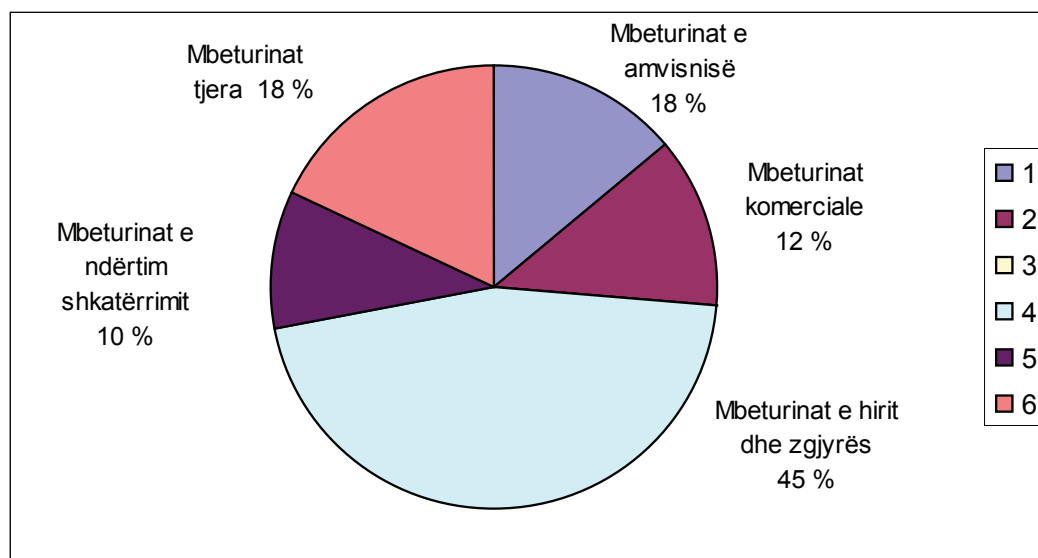


Figure 52: Waste according to types in Kosovo (%)⁴⁹

Data from the figures 53 and 54 is shown that the highest amount of waste is collected by the service “door to door”, while the lowest amount of waste is collected through waste collection through collective dwellings. This difference on waste collection between (“door to door” and Collective dwellings) is more expressed in other regions comparing to Prishtina region.

48 Waste and water regulatory office, WWRO 2009.

49 Report State of Waste in Kosovo 2008, KEPA

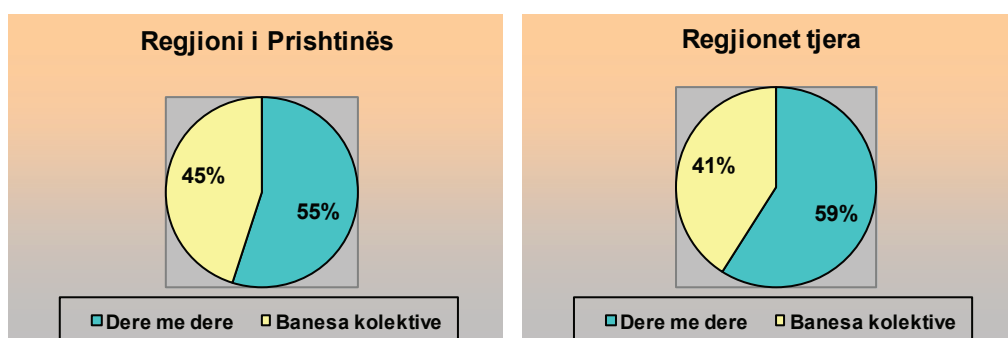


Figure 53 and 54: Percentage of waste collection according to the place for Prishtina Region and other regions in Kosovo ⁵⁰

Meantime if we compare the average for waste collection based on the service “door to door” also for collective housing at Kosovo Level for 2007 and 2008 it might be noted that during 2008 it was effective increase for waste collection from collective housing. (Figure 55 and 56).

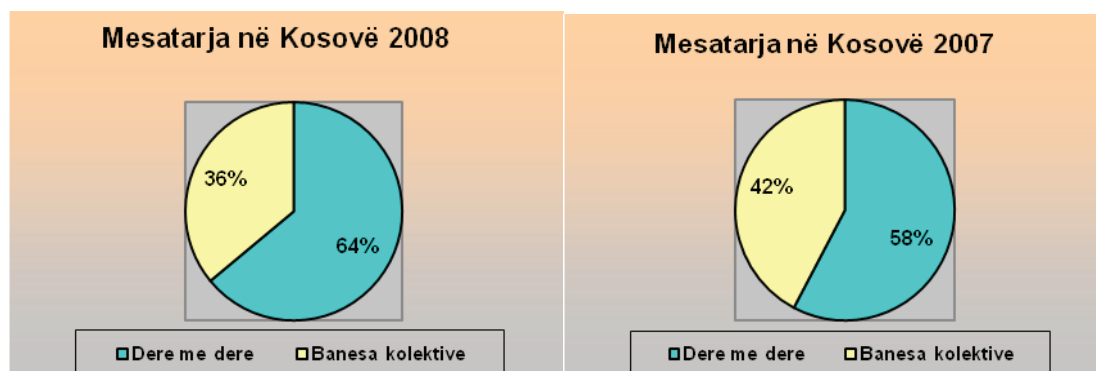


Figure 55 and 56: Percentage of waste collection according to the place for the whole territory of Kosovo for 2008 and 2007 ⁵¹

By a survey realized by WWRO, resulted that 61.2% of respondents declared that they are very satisfied or satisfied with waste collection services, meanwhile 14.3% resulted to be unsatisfied or very unsatisfied (figure 57). The survey results show that the ration of waste collection services is in better situation comparing to other services such as telephone services and central heating, but evaluated less than water supply and canalization wastewater collection system (figure 58).

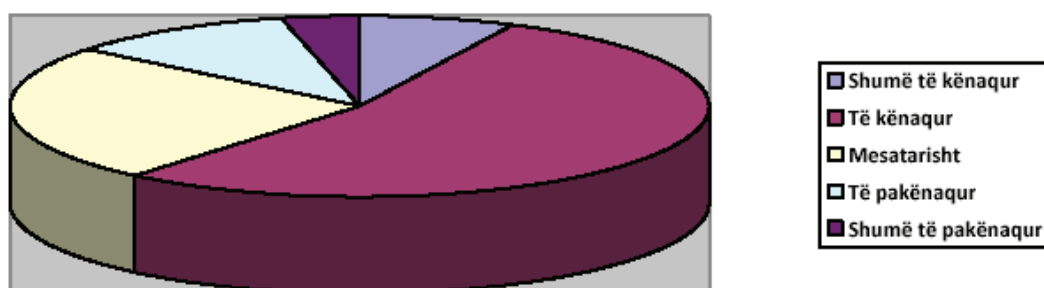


Figure 57. Ratio of satisfaction of costumers with waste collection services⁵²

⁵⁰ Survey of municipal waste, Statistical Office of Kosovo, 2009

⁵¹ Survey of Municipal Waste, Statistical Office of Kosovo 2008 and 2009

⁵² Researches about the consumer opinions for the public services for waste and water in Kosovo - WWRO, 2008

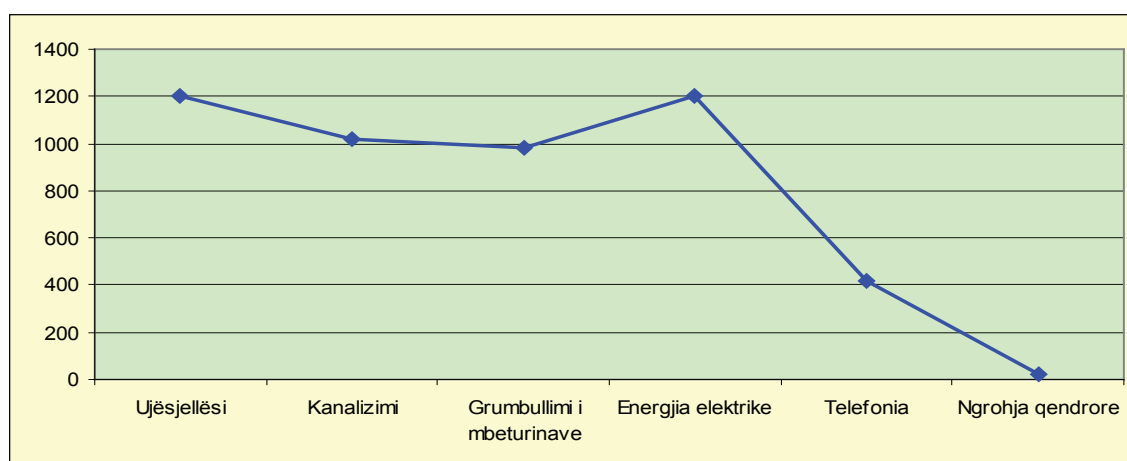


Figure 58: Ratio of services for waste collection in relation with other public services⁵³

The data presented in Table 36, show that the largest amount of waste in 2008, is disposed in landfill of Pristina (80,185.06 tons), while the smaller amount is accumulated in the landfill of Podujeva (3,862.64 tons). The data presented in Table 37, show that the largest amount of waste in 2009, is disposed in landfill of Pristina (84,660.59 tons), while the smaller amount is accumulated in the landfill of Sharr (4807.00 tons). This applies for 2010 also where the largest quantity of waste is disposed in landfill of Pristina (83,742.23 tons), while the smaller amount is deposited in landfill of Sharr (5081.7 tons).

If we compare the data on waste disposal at sanitary landfills for 2007, 2008, 2009 and 2010 it is noted that all regional and municipal landfills had larger amount of waste disposal. The amount of waste generation has been the biggest in 2010, this has resulted in increasing the amount of waste collected and storage. From these data we can conclude that public companies for waste collection have been more efficient in performing their services

Table 36. Quantity of waste in sanitary regional and municipal landfills of Kosovo for 2008, expresses in tonnes⁵⁴

No.	Sanitary landfill	January	February	March	April	May	June	July	August	September	October	November	December	Total in TON
1	Prishtinë*	5,904.90	5,826.06	6,250.23	6,665.96	6,377.97	7,032.28	7,712.59	7,247.91	6,114.45	7,423.37	6,351.12	7,278.22	80,185.06
2	Gjilan*	3,761.95	3,458.24	3,921.32	4,292.87	4,193.99	4,193.99	5,019.77	5,409.19	5,260.02	5,334.07	4,060.22	3,818.44	52,120.75
3	Prizren*	2,745.79	2,668.20	2,797.85	3,390.01	3,370.20	3,180.02	3,950.10	4,153.40	4,097.90	3,762.70	3,113.40	3,344.56	40,574.13
4	Podujevë*	340.89	50.79	213.37	375.06	227.33	299.00	318.23	398.64	372.74	422.58	406.79	437.22	3,862.64
6	Pejë**	1,664	1,415	1,464	1,544	1,590	1,685	2,237	2,225	2,225	2,227	1,601	1,800	21,677
8	Mitrovicë**	2,461	2,587	2,171	2,447	2,719	2,477	2,823	3,118	2,836	2,740	2,677	2,672	31,727
9	Ferizaj*	1,531.20	1,447.00	1,368.75	1,605.40	1,656.81	1,638.00	1,852.62	1,938.12	1,958.13	1,969.26	1,478.60	1,507.23	19,951.12
	Total	18,409.73	17,452.29	18,186.52	20,320.30	20,135.30	20,505.29	23,913.31	24,490.26	22,864.24	23,878.98	19,688.13	20,857.67	218,402.43

Table 37. Quantity of waste in sanitary regional and municipal landfills of Kosovo for 2009, expresses in tonnes⁵⁵

No.	Sanitary landfill	January	February	March	April	May	June	July	August	September	October	November	December	Total in TON
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	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	23,177
7	Sharr	314	296	331	415	426	366	534	573	450	419	359	324	4,807.00
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	2,741.01	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
	Total	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

⁵³ Researches about the consumer opinions for the public services for waste and water in Kosovo - WWRO, 2008

⁵⁴ KLMC and WWRO, 2008

⁵⁵ KLMC and WWRO, 2009

Table 38. Quantity of waste in sanitary regional and municipal landfills of Kosovo for 2010, expresses in tonnes⁵⁶

No.	Sanitary landfill	January	February	March	April	May	June	July	August	September	October	November	December	Total in TON
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
	Total	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

* KLMC

**WWRO

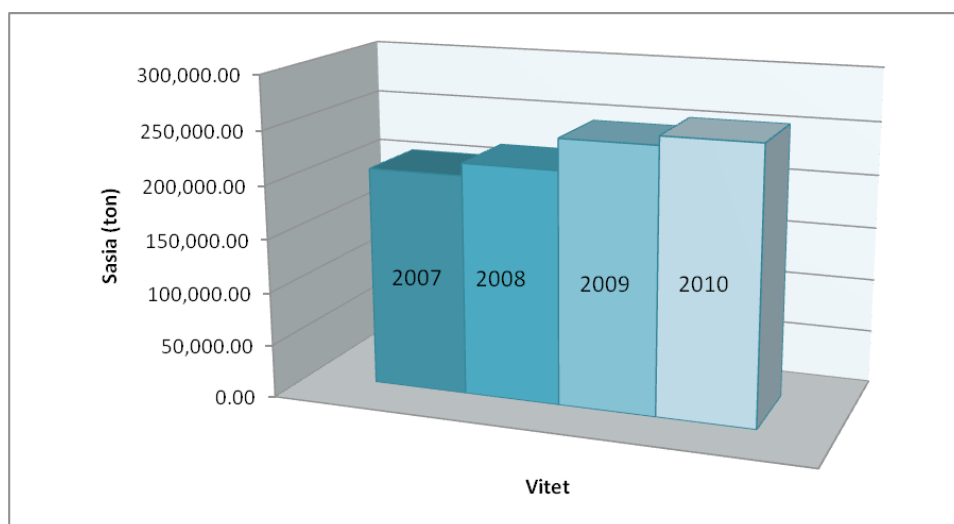


Figure 59: Quantity of waste disposal in sanitary landfill according to years

The amount of waste generated per person in Kosovo in 2008 was 393.8 kg, while for 2009 is 454.4 kg, showing a significant increase in the amount of waste per capita. Compared with other regions largest annual amount of waste generated per person is in the Pristina region. Daily average of waste generated per person in Kosovo in 2008 is 1.1 kg and for 2009 is 1.2 kg, which also shows a significant increase in the amount of waste, per capita.

Table 39: Quantity of waste disposal per capita (kg/year and kg/day) for 2008 and 2009⁵⁷

Collection site	Population	Population with access to collection services	2008			2009		
			Collection quantity	Waste person/year	Waste person/day	Collection quantity	Waste person/year	Waste person/day
Unit	No. of inhabitants	No. of inhabitants	1000 ton	kg/inhabitant	kg/ inhabitant	1000 ton	kg/ inhabitant	kg/ inhabitant
Prishtina Region	469.472	288849	198	685.5	0.2	218	754.7	2.1
Other regions	1.264.400	606396	153	252.3	0.7	187	308.4	0.8
Kosovo	1.733.872	891315	351	393.8	1.1	405	454.4	1.2

⁵⁶ KLMC and WWRO, 2009

⁵⁷ The data are calculated by taking as a base preliminary census of population for 2011. The number of inhabitants provided with services is accounted by multiplication of the number of consumers with the average size of households in Kosovo (5.88). The quantity of waste per capital is accounted by dividing the quantity of collected waste with the number of population in the area of service.

Industrial Waste Many substances in different aggregate forms remained for a long period of time through different equipments, machineries, depots etc. Overtime, many of these substances expired for the use, by being degraded, changing their chemical structure and became substances with high dangerous potential.

Many activities are undertaken so far to avoid the risk from these substances, mainly activities based on donations from KFOR and KSF.

The industrial hazardous waste results from industrial production activities and other industrial activities. The following table show some data about the types of these wastes, locations of disposal and their amount.

Table 40: Type and amount of hazardous waste according to location and municipalities⁵⁸

TYPE OF WASTE	AMOUNT/UNIT	LOCATION	MUNICIPALITY
Waste and solid chemical substances	49045 m ³	Kosova A	Obiliq
Waste and solid chemical substances	186 ton	Kosova A	Obiliq
Radioactive sources	34 unit	Kosova A	Obiliq
Waste and solid chemical substances	25505 m ³	Trepça Foundry	Mitrovicë
Calcium hypochlorite	6.5 ton	Shipol	Mitrovicë
Waste and solid chemical substances	6300 ton and 165 barrel	Metallurgy	Mitrovicë
Waste and solid chemical substances	600 litre	Metallurgy	Mitrovicë
Waste and solid chemical substances	2000 litre	Chemical Industry	Mitrovicë
Waste and solid chemical substances	10 ton	First tunnel	Mitrovicë
Radioactive Sources	3 barrel	First tunnel	Mitrovicë
Waste and solid chemical substances	8500 kg	Industrial Park	Mitrovicë
Waste and solid chemical substances	42900 litre	Industrial Park	Mitrovicë
Oils, PCB	4 trafo	Lead Plant	Zveçan
Waste and solid chemical substances	136 ton	Lead Plant	Zveçan
Different dissolutions	2 ton	Metalac Janjevë	Lipjan
Waste and solid chemical substances	7.0 m ³	Metalac Janjevë	Lipjan
Photo film waste	3000 kg	IMK-Factory	Ferizaj
X ray	3 piece	IMK-Factory	Ferizaj
Waste and solid chemical substances	20 ton	Plant of transformers	Ferizaj
Photo film waste	2.5 ton	Plant of tools	Ferizaj
Textile paints, chemical substances	9100 kg	Sharr-Tex	Sharr
Waste and solid chemical substances	4370 kg	Sharr-Tex	Sharr
Used oils	1200 litre	"Adi"	Lipjan
Radioactive waste	184 americium rings	Youth Palace	Prishtinë
Waste and solid chemical substances	85 ton	Mine-Trepçë	Leposavic
Solid chemical waste	22.2 ton	Shoe and leather factory	Pejë
Waste and liquid chemical substances	17340 litre	Factory of vehicles spare	Pejë
Waste and solid chemical substances	200 kg	parts	Pejë
Waste and solid chemical substances	6180 kg	Sharr-Tex	Sharr
Waste and liquid chemical substances	3265 litre	Sharr-Tex	Sharr
Solid chemical substances	231.8 kg	Laboratory in Kishnicë	Prishtinë
Plastic barrels with acid	9 barrel	Laboratory in Kishnicë	Prishtinë
Unknown plastic boxes	9 barrel	Laboratory in Kishnicë	Prishtinë
Bottled substances without label	15 piece	Laboratory in Kishnica	Prishtinë
Waste and solid chemical substances	5 ton	Textile factory	Gjakovë

⁵⁸ Report – State of Environment 2008

Construction waste - After the war, Kosovo faced with increase of construction waste, resulted by housing and other objects demolition. Disposal and collection of construction waste in inadequate places have deteriorated the waste management sector. In particular it is worrying the agricultural land loss and placement of this waste along rivers.

Except landscape degradation, the construction wastes have negative impact into the environment, in particular in ecosystems. The problem becomes more significant if these wastes are mixed with other types of urban wastes. No exact data about the quantity and the land covered by construction waste so far exist, but by the field visits is noticed that these wastes are evident in many locations in Kosovo.



Construction Waste in Suhareka

End of life vehicles – includes all those types of vehicles out of use. Collection of the end of life vehicles is made by some of the private companies. These companies treat the end of life vehicles in two manners: collecting them a scrap metal for further sale, which are mainly exported in the countries in region, or dismantling them to reuse for the spare parts. Aiming the pollution prevention and pollution reduction by the end of life vehicles and their wastes, MESP has issued the Administrative Instruction nr. 02 / 2009 for management of the end of life vehicles and their wastes. Except prevention and reduction of environment pollution, this administrative Instruction aims to:

- Achieving high level for reusing, recycling and other forms of recovery of end of life vehicles and their components.
- Establishing a system for collection, transportation and treatment of End of Life Vehicles and their components.
- Determination of conditions for storage of End of Life Vehicles and their components.

Another legal measure for prevention and reduction of environmental pollution from the end of life vehicles is the Governmental Decision dated 19 June 2009, which obliges all companies that collects the end of life vehicles and other metals to move at least one km away from motorways, and that all businesses that deals with trade of spare parts from end of life vehicles; with collection, treatment and storage from end of life vehicles demolition to emplace these materials in inside buildings and to meet all environmental criteria, including the aesthetic aspects.



Collection of End of Life Vehicles

Pesticides and chemical fertilizers - chemical products for plant protection (pesticides and chemical fertilizers), have widely use both in small farms, as well as specialized ones. Households and specialized farms use different types of mineral fertilizers. Thus chemical fertilizers NPK are used by 60.6% of small farmers and 74.1% of large farmers. More detailed data are presented in the following table

Table 41: Use of mineral and organic fertilizers by households in percentage (%)⁵⁹

Type of fertilizer	Small farms	Large specialized farms
%	%	%
NPK	60,6	74,1
NAG	11,3	31,5
UREA	27,6	9,3
others	1,5	7,4

According to the Ministry of Agriculture, Forestry and Rural Development, in 2009, Kosovo imported 705,542.96 kg of chemical products for plant protection- PMB and 38,369,370.37 kg chemical fertilizers. The data for other chemical products and imported fertilizers for 2007 and 2008 are presented in Table 42.

⁵⁹ Survey of agriculture household economies, SOK

Table 42: The amount of chemical substances and chemical fertilizers imported during 2007-2008⁶⁰

Type of chemical	Unit	2007	2008
• Petroleum oils and oils obtained from bituminous minerals	Litter	1.397.440	1.588.620
• Fuel with a number Octane (RON)	Litter	4.040.761	961.092
• Petroleum, paraffin wax, polish microcrystalline oil, slack wax, ozocerite, lignite wax, peat wax and other chemical substances (colour or colourless) obtained by chemical synthesis or other processes	Litter	120.003	96.312
• Chemical products for the protection of animals and plants (mixed, combined or chemically treated) • Chemical compounds produced by mixing or chemical treatment of animal products or plants	Litter	196.848	59.645
• Other chemical substance similar to the first four groups	Litter	753.580	204.580
• Ammonium Nitrate	Kg	258.170	854.896
• Mixtures of Nitrate Ammonium with calcium carbonate or other inorganic substances	Kg	26.892.380	5.600.522
• other chemical or mineral fertilizers containing Nitrogen, Phosphorus or Potassium.	Kg	32.406.342	24.121.055

Conclusions

- Waste management system is not sufficient and there is lacking in many issues.
- The collection of municipal waste at national level is about 50 %;
- The state of Landfills in Kosovo is out of desirable standards, and number of wild landfills (dumping sites) is evident;
- Lack of monitoring system of waste state and lack of effective mechanisms for encouraging waste separation, and recycling;
- Lack of projects for waste recycling and needs for investments in waste sector;
- Low collection of payment for waste collection services;
- Insufficient cooperation between relevant institutions;

Recommendations

- Strengthen the waste management institutions, and strengthen of local institutions regarding waste management
- Complete and implement the legal base for waste management;
- Promote waste recycling
- Awareness raising about putting wastes in the right places (containers) and about paying for waste collection services;
- Strengthen local institutions on waste management;
- Forbid waste dumping in illegal landfills (dumping sites);
- Compile programmes for reducing the risk from hazardous wastes;
- Mapping of data for waste administration

3. Environment and Public Health

3.1. Impact of Environment on Public Health

In the human's daily life are many factors having an impact, as are, food, working conditions and environment pollution. Humans are exposed to air, water, and soil pollution, among others through food, waste, chemicals and different products which he uses at home, or at work. Physical impact of the environment in humans may bring different disease, as are: heart disease, breathing disease, skin cancer, etc. Different chemical impacts may bring hormonal disorders, disorders in growth and development, cancer, allergies etc. The importance of healthy environment is irreplaceable factor to human health. Even if, there are details about the possible impacts of the environment in human health, nevertheless, there are insufficient details through which can be witnessed its specific impact in human health. A special problem in this direction is collection of such details to argue this.

Health status of Kosovo's population is not such good. Cases of infective and parasitical disease have been decreased, since the post conflict period, until nowadays. Disease as Hepatitis A, meningitis, diabetic and infective disease of intestinal are in a high rate.

Of the total number of patients registered in primary health care in 2007, within the group of diseases related to environment and environmental factors, the largest number of registered patients is with respiratory disease with 663,353 cases per year or 31.5% of the total number of patients. The large number of patients was registered in disease of the digestive system (293,702 cases) and the blood circulatory system (173 688 cases) or 14% respectively 8.3% of the total number of patients. Whereas it is registered a relatively small number of cases of morbidity and mortality from external factors. For more details see the following table.

Table 43: Cases of illness associated with the state of environment and its factors within the total number of recorded cases of disease⁶¹

Nr.	Type of disease	No. of cases	% based on the total number of disease
	Disease of the expiratory system	663353	31.5
	Disease of cardio-vascular system	173688	8.3
	Dermatological disease	74273	3.5
	Tumors	6586	0.3
	Disease of uro-genital system	119140	3.5
	Infective and parasitical disease	65988	3.1
	Digestion system disease	293702	14
	Injuries, poisoning and other consequences caused by external factors	50892	2.4
	External causes of morbidity and mortality	9408	0.5

61 Health Statistic 2007, SOK 2008

Table 44: Performance of infective diseases and their incidence in Kosovo
2008 and 2009⁶²

Disease	2008		2009	
ITPR – Pneumonia	13136	624	14537	690.6
Acute diarrhoea	52515	2494.7	47111	2238.05
Varicela	5140	244.2	5354	254.3
Diarrhoea syndrome In blood	64	3.04	130	6.2
Meningitis syndrome	397	18.8	378	17.9
Acute paralysis flaccid	1	0.05		
Syndrome of hemorrhagic fever	7	0.33	14	0.7
* Syndrome of egzantemic fever	5	0.24	27	1.3
Epidemical parotidis	797	37.8	909	43.2
Acute hepatitis A	1271	60.3	1193	56.7
Acute hepatitis B, HBs	95	4.5	159	7.6
Pertussis	37	1.7	20	0.9
Tularemia	46	2.2	88	4.2
Brucellosis	73	3.5	64	3.04
TBC	948	45.04	901	42.8
*Intoxication alimentary	460	21.8	466	22.1
*Typhus abdominals	29	1.4	6	0.3
Doubt in Influenza	26684	1267.6	41959	1993.3
Influenza A (H1N1)			308	14.6
Other infective disease	1817	86.3	2375	112.8
Total	103522	4917.9	115999	5510.64

62 Kosovo National Institute of Public Health , 2010

3.2. Drinking water quality and public health

The surface and ground waters are not protected from contamination and the designed sanitary zones are not followed. The water quality of supply systems differs by a region to another. The content of surface waters depends on the soil mineral composition where the water flows, and from the structure of aquifers. This is a serious problem, given that standards are not respected for sanitary areas. It is a absolute priority to be established the mechanisms for monitoring with the aim of providing secure data about the water quality and quantity in Kosovo.

Water quality monitoring in public water supply systems is the responsibility of NPHIK, which follows on, performs analysis and makes reports on the adequacy of water quality.

Most of bacteria are located in water supply systems of small cities / rural areas (usually wells or springs), but there are reported cases for non-suitability of drinking water quality (mainly bacteriological residues) in public water supply systems.

Only about 60%-70% of the population is connected to the water supply system, about 65% of rural population drink the water from wells, where most of them are not hygienic. About 50% of the population has access to the sewerage network. Since the post-war period until today, the cases of infectious and parasitic diseases have been decreased significantly

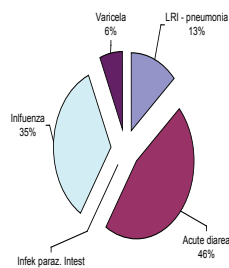
The NPHIK regularly undertakes activities aimed at establishing control over the drinking water quality.

According to the data from the monitoring of drinking water sources from this institution, it is found that pollution of drinking water is highly characterized with bacteriological contamination than from chemical contamination. According to NPHIK, 74% -90% of wells are contaminated with faeces⁴⁵.

Table 45 : The ratio of infectious diseases in Kosovo by municipalities for the 2009¹

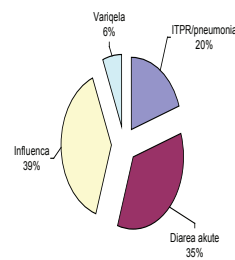
MUNICIPALITY	ITPR- Pneumonia	Acute Diarrheal	Varicela	Doubt in Influence	Total
DEÇAN	31	2	1021	673	16
SHARR	130	1	163	472	92
FERIZAJI	1730	18	3926	2671	521
FUSHË KOSOVË	281	14	772	1242	128
GJAKOVË	37	8	260	1165	142
GJILANI	791	6	2188	2535	330
DRENAS	175	23	1304	1339	250
BURIM	75	1	452	766	13
KAÇANIK	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

Përqindja e rasteve të disa sëmundjeve ngjyeshme në Kosovë, 2007
(të dhënat e agreguara)



A)

Përqindja e rasteve të disa sëmundjeve ngjyeshme në Kosovë, janar - qershor, 2009
(të dhënat e agreguara)



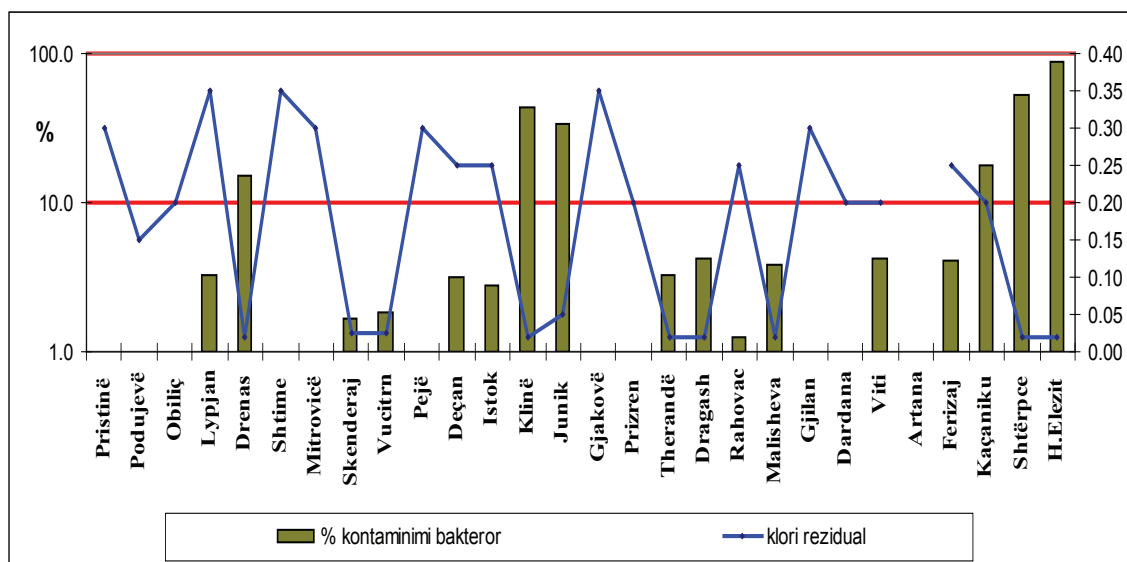
B)

Figure 60: Percentage of infectious diseases in Kosovo, A) for 2007 and B) January –June 2009

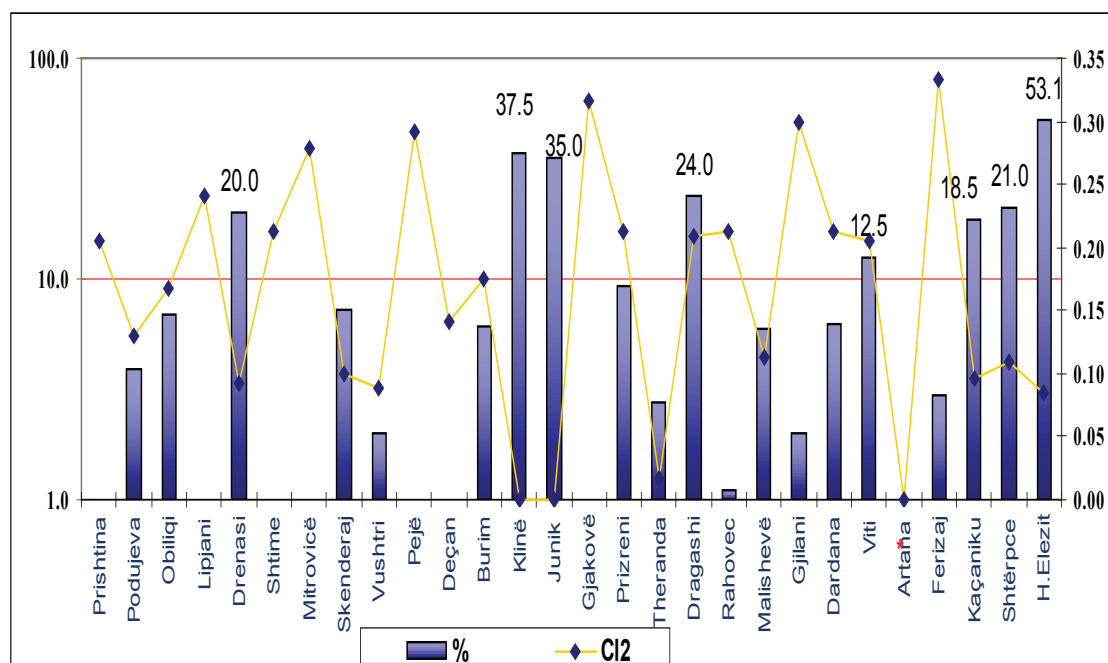
Table 46: Percentage of contaminated samples and quantity of residual chlorine⁶³

Bacterial 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 data in table 46, show that from 9.577 samples analyzed by KNIPH, 522 of them, or (5.50 %) are with bacteriologic contamination, whereas from 3.454 of analyzed samples 165 of them, or (4.7 %) are with chemical contamination.



A)



B)

Figure 61: Bacterial inadequacy and values of residual Chlorine for drinking water from the central water supply systems in Kosovo: A) 2007 and B) January-June 2009

Meantime the values of residual colour are around 0.1-0.2 mg/l that is within the allowed values by the World Health Organization (MLV 0.2 mg/l).

Conclusions

The KNIPH report for the period January - December 2009 for drinking water quality, determines that:

- In the first half of 2009 total 41,039 cases of infectious diseases are reported.
- The number of diseases is lower compared with the same period of 2008 (69,460).
- The water Diarrhoea with 14493 cases (about 688.5 / 100.000 inhabitants), reported in fairly large numbers. This number can be related to poor economic and hygiene conditions, water supply, lack of sewerage, mismanagement of waste etc.
- The aggregated group of diseases such as acute diarrhoea is reported with 35% of the total.
- Still large number of cases of Hepatitis A, is an indicator that show for the low level of personal and family hygiene, and use of drinking water from contaminated wells,
- The drinking water quality is still not reliable.
- Disinfection of drinking water is not sustainable.
- The protection areas of water sources are missing in many cases.

4.

Use of Natural Resources

4.1. Use of Water Resources

The use of water for drinking and household - Water services in Kosovo are provided by seven licensed Regional Water Companies (RWC). The RWCs offer services in 25 municipalities of Kosovo. Serb majority municipalities

(Strpce, Novobërdë, Leposavic, Zubin Potok, Zvecan) and the northern part of Mitrovica are not provided with services by the RWCs. Apart from major cities, these companies provide their services in some of the villages located within their service areas.

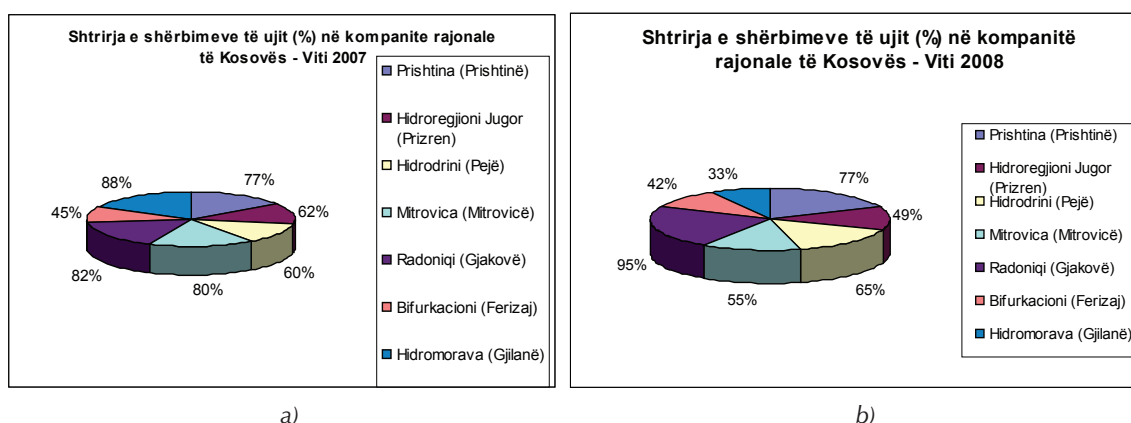


Figure 62: Extension of water services (%) on regional water supply companies⁶⁴
Fort a) 2007 and) 2008

Table 47: Performance of regional water companies for 2008²³

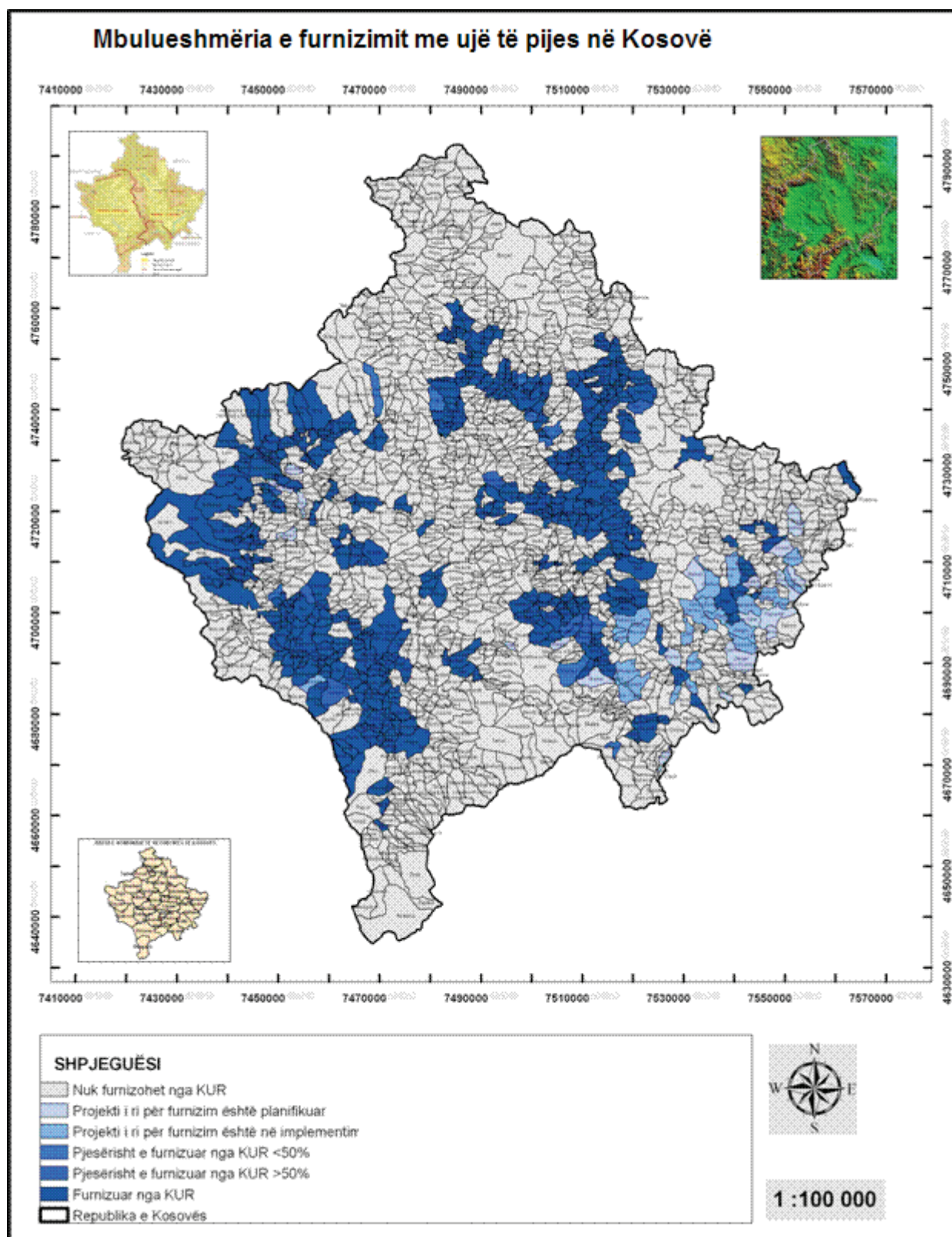
Regional Water Company	Number of services provided Municipalities	Number of Service provided consumers	Number of service provided population	Extension of water services %	Extension of sewerage services %
Prishtina	7	82,443	445,432	77	66
South hydro region	4	28,464	189,069	49	44
Hydro-drini	4	28,996	157,120	65	34
Mitrovica	3	20,780	116,440	55	47
Radoniqi	3	26,667	158,394	95	62
Hydro-Morava	3	15,901	86,413	33	36
Bifurcation	2	14,947	79,816	42	29
Total	25	219,198	1,232,683	60	48

Based on the number of household customers that are billed by RWCs, the WWRO has estimated that the number of people who were offered with water services is 1,232,683 people (or 60% of total population), while with sewerage services are covered 987.130 inhabitants (or 48% of total population)⁶⁵.

Also, there is a considerable number (about 200) of rural water supply systems that are not operated by RWC's, but from communities such as villages and are not included in this assessment. These figures must be added to water systems in municipalities with a Serb majority, which are not managed by RWC's. Having taken into account the factors above, it is estimated that the coverage of water supply services in Kosovo is about: 70% -75%, while the sewerage services: 50% - 55%

⁶⁴ WWRO, 2008

⁶⁵ Report of performance of RWC, WWRO 2008



Map 8: Service coverage of water supply from public water supply systems

Total production of water distributed by regional companies in 2008 was 127.3 million m³. More than half of the water amount (55%), is obtained from surface sources (accumulations), while the rest (45%) from underground natural sources. The following table reflects the sources of water supply and quantity in m³ / day.

Table 48: Sources of water supply, annual and daily amount (m³)⁶⁶

No.	Place of water abstraction	Amount of used water [m ³ / day]	Amount of used water[m ³ / day]	Percentage
1	Natural sources	153.264	55.941.360	32.10
2	Reserved	7.749	2.828.385	1.62
3	River	11.191	4.084.715	2.34
4	Lake (Surface accumulation)	279.260	101.929.900	58.44
5	Wells	26.340	9.614.100	5.51
Total		477.804	174.398.460	100

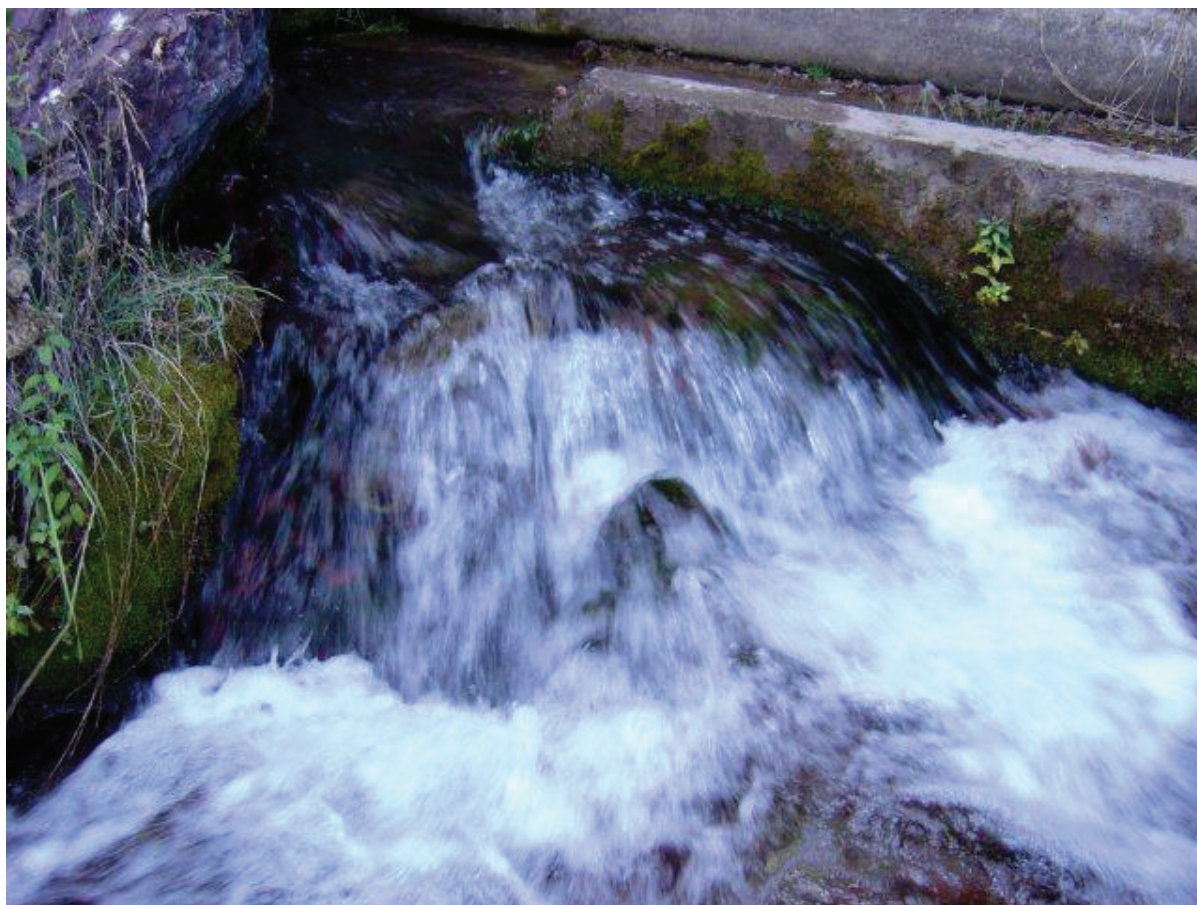
The table shows that the largest amount of drinking water is used by surface accumulations.

Of the total amount of water produced by regional companies, 55.7 million m³/year is billed to customers, while another amount of 71.6 million m³ (or 56%) is (lost) water that is not billed because of technical and administrative losses. The overall length of water supply network that is operated and maintained by RWCs is 3.357 km, while the sewerage system of wastewater is 938 km. As a result of high losses from the system of water supply and because of insufficient production capacity, most of the Regional

Water Companies are unable to provide uninterrupted water supply to consumers. Thus, customers of the region of Mitrovica, Pristina, Gjilan and Ferizaj, face regular water supply cuts, which cuts are more prevalent during summer months, when water consumption increases significantly.

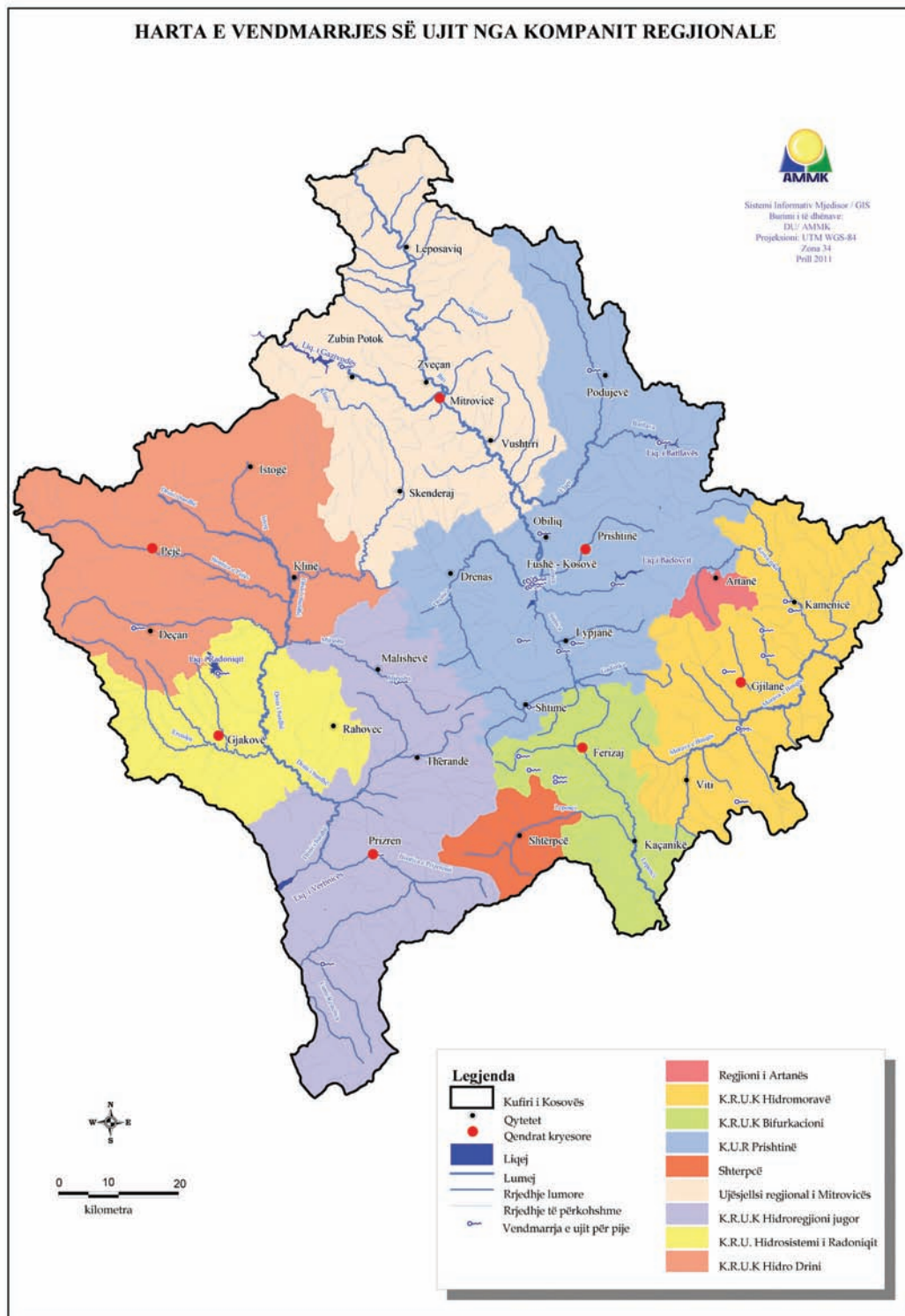
Commercial losses are also high, as a result of illegal connections, which are often due to technically inappropriate connection problems. It also decreases the drinking water quality.

Other problems include: inadequate capacity to retrieve the water resources, irrational consumption and large amount of losses in the network, old filtering and limited capacity stations, lack of adequate urbanisation in the settlements, expansion of water supply system even if the water capacity is limited, lack of stimulating actions for drinking water saving, lack of professional human resources for water management, etc.



The spring of Drini i Bardhë, one of drinking water sources

⁶⁶ Water Supply and Sewerage Association-WSSA, 2009



Map 9: The places of water abstraction by the RWC s

Use of Water for industrial needs - Industry is considered as the largest sector of water consumption. The largest industrial water consumers in Kosovo are large industrial enterprises as KEK, New Co Ferronikeli, Sharrcem etc. Most industrial enterprises are supplied with surface water from accumulative lakes. Data indicate that the large industrial enterprises (for technological, processes, cooling, and sanitary needs, etc.) consume more than 30% of the total water amount consumption.

Table 49: Water used for 2007/2008 by large industrial enterprises

User	Years	Water use			
KEK		TCA		TCB	
		Monthly consumption (m ³)	Specific consumption (m ³ /MWh)	Monthly consumption (m ³)	Specific Consumption (m ³ /MWh)
	2007	6955000	5.23	871300	2.987
	2008	8274000	mes = 6.12	9330057	mes = 2.60
Sharrcem	Σ annual (m ³)	Conditioning of furnace's gasses (m ³)	Cooling of equipments (m ³)	Sanitary needs (m ³)	Special Cases (m ³)
	113,661	29,565	43,800	18,396	21,900
NewCO Feronikeli		Data according billing system from the hydro system Ibër- Lepenc (m ³)			
	2007	1232466			
	2008	3604560			

The majority of small industrial enterprises use the water from public water supply networks, while very few of them have their own water supply system (wells). The following table show data on industrial water consumption in some of Kosovo municipalities.

Table 50: Water amount consumption by industrial enterprises in several municipalities of Kosovo and their sources of supply⁶⁷

Municipalities	Water use amount m ³ /year	
	Underground Self sources and water supply	Water supply
Deçan	-	1000
Gjakova	-	158000
Burim	190000	-
Klina	22000	-
Rahovec	-	54000
Pejë	10000	122000
Prizren	4000	163000
Theranda	-	809000
Total:	226000	1307000

Having into consideration that Kosovo is a developing country, it is expected that in the future the water use demands will be increased, which could further worsen the supply situation of the population with drinking water, especially in accumulative basins that are used for both drinking and industrial purposes.

The use of water for hydro-energy- The greatest benefit from the use of water power may be realized through construction of small hydropower stations. At first, the construction of these hydropower stations has been designed for electricity supply to remote areas, but later on, all hydro power plants were connected to the integrated electricity networks. These plants belong mostly to the derivation type and use the water resources near the areas where located. Lifespan of these hydropower plants is 25 years.

Development of the programme for activation of these hydropower plants is part of the energy policy in the Kosovo Energy Strategy and it is expected these power plants to start function as soon as possible.

In Kosovo currently is operating the Ujmani Hydro-power plant, which has the power production capacity

67 Water Department, 2008

of 2 x 17 MW, and five other small hydropower plants in the distribution network with a capacity of 11.82 MW. Other small hydropower plants are: Dikanci, Burimi and Prizreni. In Kosovo operates also the Kozhnjeri hydropower plant, which is given by concession, and generates a very small amount of electricity.

Table 51: Production of energy by existing Hydro-Power Plants ⁶⁸

Hydro Power Plant	Power Mw	Energy Gwh
Existing Hydro Power Plans in the distribution network	11.82	38
HP Ujmanit	35.0	101
Total	36.82	139

Kosovo is characterized by rivers and water streams with a hydro-energetic potential, which can be considered to be used for electricity production. The Drini i Bardhe River in the western part of Kosovo, represent almost the half of the total hydro energetic potential in Kosovo. The total usable hydropower potential in Kosovo is about 0.7 TWh/ year. The most important hydropower plant that can be built in Kosovo is the Hydropower plant in Zhur, in the course of the Drini i Bardhe, with a potential of 0.377 TWh/year. The water flows of rivers Drini i Bardhe, Ibri, Morava, Lepenci, Llapi, are characterized by a significant potential for electricity production.

In table 52 is presented the hydropower potential of rivers in Kosovo, whereas in table 53 are presented for new planned hydro-powers for construction.

Table 52: Hydro energy potential of Kosovo Rivers ⁶⁹

	River	Hydro Power potential technically used	Hydro Power potential, economically used
No.		GWh/year	GWh/year
1	Drini i Bardhë	554.00	554.00
2	Ibri	103.27	102.17
3	Morava e Binçës	8.75	8.75
4	Lepenci	23.80	16.53
Total		689.64	681.27

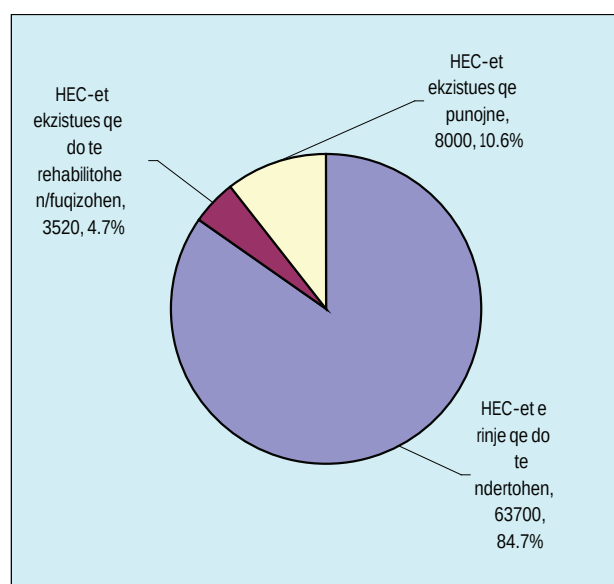


Figure 63: Potential of Hydro Power Plants according to categories [kW]

⁶⁸ Ministry of Energy and Mining, 2009

⁶⁹ Report of pre-feasibility study for identification of water sources for small hydro power plants in Kosovo, MEM & AAEESD, 2006

Table 53: Planned Hydro Power Plants ⁷⁰

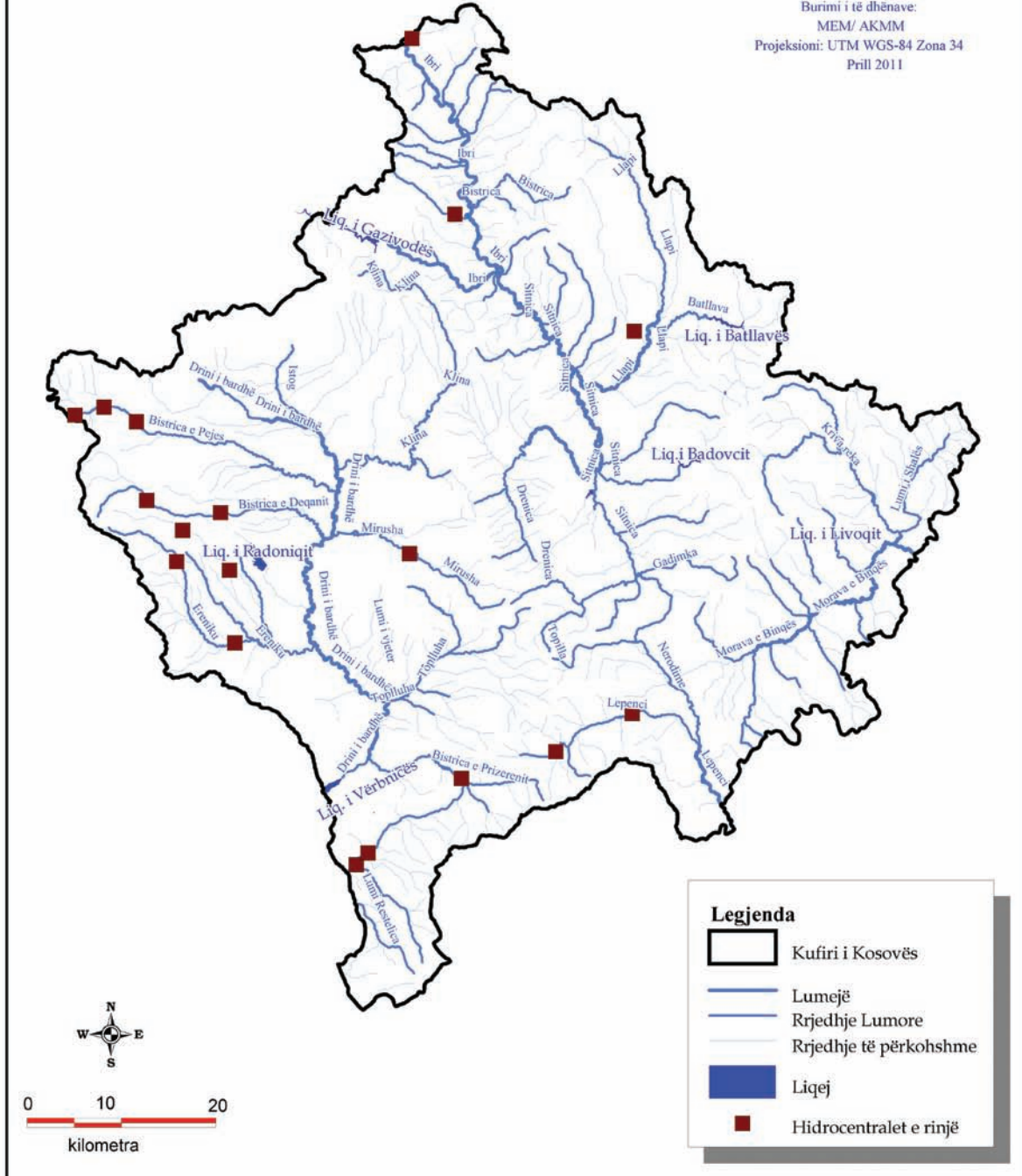
Name	Power [k]	Energy [Million kWh]	Water Flow m ³ /sec	Dropping [m]	River
1: HEC-i Kuqishta	3900	17	6	80	Lumëbardhi i Pejës
2: HEC-i Drelaj	6200	27	6.5	120	
3: HEC-i Shtupeq	7600	35	8	120	
4: HEC-i Bellajë	5200	25	5	130	Lumëbardhi i Deçanit
5: HEC-i Deçan	8300	39	6.5	160	
6: HEC-i Lloçan	3100	14	1.5	250	Lumëbardhi i Lloçanit
7: HEC-i Mal	4000	18	2.4	200	Erenik
8: HEC-i Erenik	2000	9	2.4	100	
9: HEC-i Jasiq	1900	9.7	2.6	90	
10: HEC-i Dragash	2200	10	5	55	Plavë
11: HEC-i Orçush	5600	25.6	7	100	
12: HEC-i Reçan	1500	6.7	2.6	70	Lumëbardhi i Prizrenit
13: HEC-i Brezovicë	2100	10	4.5	60	Lepenc
14: HEC-i Lepenci	3500	16	7.6	60	
15: HEC-i Banjska	300	1.4	0.5	85	Banjskë
16: HEC-i Batare	1100	5.8	2.3	60	Bistrica (Batare)
17: HEC-i Majanc	600	2.9	1.5	50	Kaçandoll
18: HEC-i Mirusha	4600	22	45	15	Drini i Bardhë and L. Deçanit
Total New HEC-	63700	294.1			

⁷⁰ Report of pre-feasibility study for identification of water sources for small hydro power plants in Kosovo, MEM & AAEESD, 2006

HARTA E SHPËRNDARJES SË HIDROCENTRALEVE TË PLANIFIKUARA



Sistemi Informativ Mjedisor / GIS
Burimi i të dhënave:
MEM/ AKMM
Projeksioni: UTM WGS-84 Zona 34
Prill 2011



Map 10: Planed Hydro Powers Plants

4.3. The Use of Inters from Rivers Bad

The Kosovo's rivers are degraded mainly by uncontrolled use of inert from river beds by the activities of operators that extract the gravel in and around the rivers. The most damaged rivers are those in the Drini i Bardhe river basin area. Including the River Drini i Bardhe itself along the areas from Kramovik to Gjonaj. The River Erenik is also damaged, in particular along the area between Korenice and Ura e Tabakut (at the entrance of Gjakova)⁷¹. Among damaged rivers due to uncontrolled use of inert is the Lumbardhi i Pejes River.

In all the above mentioned sectors the use of inert is inappropriate either in terms of saving water regime, either in terms of exploitation of mineral raw materials. Changing the water regime, affects the surrounding agricultural lands and agriculture activities as this area is well known for agriculture production.

4.4. Use of Forestry Resources

According to the Forestry Agency data, during 2009 in the public sector have been cutting in total 51.617.25 m³ wood. The most part of this amount is used for burning (Table 54). Cutting on private sector are 109.130. 20 m³, while there are no detailed data on illegal cutting.

Table 54: The amount of cutting wood for 2009⁷²

Type of wood	Public Sector	Private Sector
Beech wood	2,095.00 m ³	-
Technical wood	1,920.78m ³	-
Brining wood	40,274.88 m ³	-
Wood waste	7,326.56 m ³	-
Total	51,617.25 m ³	109,130. 20 m ³

According to data from the Statistical Office of Kosovo, the amount of wood used for burning in Kosovo is 451,735 m³, while the amount of technical-industrial wood is 6248 m³. As for the regions largest amount of wood is used in the Mitrovica region while the smallest in the Gjakova region (Table 55).

Table 55: Using wood (m³) according to regions⁷³:

Region	Burning wood (m ³)	Technical-industrial wood (m ³)	Total used wood (m ³)
Kosova	451.735	6.248	457.983
Prishtina	86.618	-	86.618
Mitrovica	120.323	230	120.553
Peja	42.797	1.792	44.589
Gjakova	34.428	1.266	35.694
Prizreni	54.762	208	54.970
Ferizaj	51.394	2.703	54.097
Gjilani	61 413	49	61.462

71 Water Department, 2008

72 Kosovo Forestry Agency

73 Survey of Agriculture Household economies, SOK 2010

5. Implementation of Strategy, Action Plan, and other Environment Plans

5.1. Implementation of Kosovo Environmental Strategy and Action Plan

Kosovo Environmental Strategy was approved by the Government of Kosovo in July 2004. This document has identified key environmental problems and has determined the strategic orientations, based on the Report of State of Environment 2003. In order to implement the Kosovo Environmental Strategy and obligations arising from the Law on Environmental Protection, in 2005 MESPA drafted the Kosovo Environmental Action Plan for 2006-2010. The project is funded by the Swedish Government through the Swedish International Development and Cooperation Agency (SIDA) whereas the Regional Environmental Centre (REC) has been implementer for developing the KEAP in close cooperation with the Ministry of Environment and Spatial Planning. The role of KEAP is an instrument for improving the environment through concrete projects and measures. During the process of prioritizing activities, special attention is paid to solving major environmental problems and ensuring sustainable development.

The division of priorities and projects is done according to the relevant environmental sectors. The projects from Environmental Action Plan are mainly implemented or funded by Kosovo budget, while some of the projects are supported by various donors. There are mainly carried out the planned project by the field of legislative, education and awareness. From 52 projects planned by the Environmental Action Plan are implemented 10 capital projects, and in the process of implementation are 11 other projects. In the context of realized projects by the importance should be highlighted:

- Construction of the facility for temporary storage of waste and hazardous materials;
- Establishing the air quality monitoring network;
- Construction of plants for the sterilization of hospital waste;
- Rehabilitation of municipal landfills;
- Cleaning of the river Lepenc from asbestos waste;
- Rehabilitation of old municipal landfills
- Identification and elimination of all "hot spots" in Kosovo.

During 2009, the Ministry of Environment and Spatial Planning through a consultancy offered by SIDA has reviewed the need to review the Strategy and Action Plan. It is established the Working Group to review the new Strategy and Action Plan. This working group during 2010 has started to review the Environmental Strategy and its amendment and completion of the Environmental Action Plan.

5.2. Sectoral Strategies and Action Plans

In the environmental legislation of Kosovo beside drafting the Kosovo Environmental Strategy and Kosovo Environmental Action Plan it is also foreseen the drafting 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 2008-2010, has begun drafting for some of these sectoral strategies. The strategies that have been prepared and it is expected to be approved in the Assembly during 2011, are the following:

- Strategy and Action Plan for Waste
- Strategy and Action Plan for Air Quality,
- Strategy and Action for Plan Biodiversity 2010-2020.

While still has not started the preparation of: Kosovo Strategic Plan for Water, Climate Change Strategy and several other strategies provided by the environmental legislation that are necessary for more effective environmental management.

5.3. Drafting Environmental Plans at local level

By the Law on Environmental Protection and Spatial Planning Law, municipalities are required to develop the environment local action plans, municipal development plans, urban development plans, urban regulatory plans and environmental programs for environmental protection. So far 27 municipalities have drafted the Local Environmental Action Plans. In some municipalities these plans are approved, while in others they are in the process of adoption. Some of the LEAPs are drafted with financial support from SIDA with the implementation of Regional Environmental Office REC, while others are drafted as part of a European Commission project, implemented by EPTISA. In most of Kosovo municipalities are prepared and adopted (or are in process of approval) also the Municipal Development Plans and Urban Development Plans. A detailed overview of LEAPs, MDP and UDP set forth in the environmental legislation are presented in the following table.

Table 56: Environmental Local Action Plans, Municipal Development Plans and Urban development Plans according to Municipalities ⁷⁴

Nr.	Municipality	ELAP	MDP	UDP
	Deçani	Ongoing	+	+
	Dragash	Ongoing	Ongoing	Ongoing
	Ferizaj	+	+	+
	Fushë Kosovë	Ongoing	Ongoing	+
	Gjakovë	Ongoing	+	+
	Gjilan	+	+	+
	Glllogoc	Ongoing	+	+
	Istog	Ongoing	+	+
	Kaçanik	Ongoing	Ongoing	Ongoing
	Kamenicë	Ongoing	Ongoing	Ongoing
	Klinë	+	-	-
	Leposaviq	-	-	-
	Lipjan	Ongoing	+	+
	Malishevë	Ongoing	Ongoing	Ongoing
	Mitrovicë	+	+	+
	Novo Bërdë	Ongoing	-	-
	Obiliq	Ongoing	+	+
	Pejë	+	+	+
	Podujevë	Ongoing	Ongoing	Ongoing
	Prishtinë	Ongoing	-	-
	Prizren	Ongoing	Ongoing	Ongoing
	Rahovec	Ongoing	-	-
	Shtërpçë	Ongoing	+	+
	Shtime	Ongoing	+	+
	Skenderaj	Ongoing	Ongoing	Ongoing
	Suharekë	Ongoing	+	+
	Viti	Ongoing	Ongoing	Ongoing
	Vushtrri	Ongoing	+	+
	Zubin Potok	Ongoing	-	-
	Zvečan	-	-	-

⁷⁴ Ministry of Environment and Spatial Planning, 2010

Municipal Development Plans and Development Plans approved with the consent by MESP are the following municipalities: Peja, Gjakova, Gjiilan, Deçan, Istog, Mitrovica, Vushtrri, Ferizaj, Drenas and Shtime, whereas approved without the consent of MESP are the following: Lipjan, Suharekë and Shtërpce.

6.

Undertaken Measures on Environment Protection

6.1. Drafting of Legislation and Approximation with EU Directives

The Kosovo's national policy includes the process of European Integration. One of main challenges in this process is environment, and fulfilment of European environmental standards and approximation of national legislation with European legislation. In a period 2008-2009, European Commission has monitored the progress, made in harmonization of the Kosovo's environmental legislation, with EU and its implementation.

Table 57: Results of progress monitoring of harmonization of Environmental legislation with EU ⁷⁵

Field	EU Directives	The level of harmonization (%)	
		2008	2009
Horizontal Legislation	Directive on EIS (85/337/EEC)	90	62
	Directive on ESA (2001/42/EC)	80	100
	Directive on Public Information (2003/4/EC)	38	26
	Directive on Public Participation (2003/35/EC)	48	60
Air quality	Directive Framework for Air Quality (96/62/EC)	75	75
	Directive on limit values of SO ₂ , NO ₂ , NO _x , particulate matter and lead in ambient air (99/30/EC)	47	47
	Directive for Benzene and Carbone Monoxide (2000/69/EC)	50	50
	Directive on Ozone (2002/3/EC)	55	57
	Directive relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (2004/107/EC)	20	20
Waste Management	Waste Directive (2006/12/EC)	95	95
	Hazardous Waste Directive (91/689/EC)	85	100
	Directive on waste packaging (94/62/EC)	88	88
	Landfill Directive (99/31/EC)	77	90
	Waste Incineration Directive (2000/76/EC)	69	69
Water quality	Water Framework Directive (2000/60/EC)	3	16
	Directive on Urban Waste Water (91/271/EEC)	27	25
	Directive on Drinking Water (98/83/EC)	48	68
	Directive on Nitrates (91/676/EEC)	7	7
Nature Protection	Wild Bird Directive (79/409/EEC)	64	83
	Directive on Habitats (92/43/EC)	78	73
Industrial Pollution Control	Directive on Integrated Pollution Prevention and Control (96/61/EC)	80	97
	Directive on Large Combustion Plants (2001/80/EC)	61	64
Chemical	Directive on Dangerous Substances (67/548/EEC)	53	xx
	Directive on the Control of GMOs (2001/18/EC)	78	79

6.2. Inventory of environmental hot-spots

As regards the hot-spots there exists various definitions about the environmental terminology depending in which environmental field is perceived the hot-spot. The most acceptable definition is one that represents the hot-spots as locations with high concentration of pollutants. Hot-spots can also be chemically contaminated lands from the mining industries, waste activities and other pollutants that affect groundwater, soil and air. In Kosovo KEPA during 2008 and 2009 has identified about 30 hot-spots, as locations that are contaminated by heavy metals, chemical products, used oils and other pollutants. As environmental hot-spots are identified waste sanitary landfills, municipal rehabilitated landfills and wild landfills. Within the environmental hot-spots are also included mining landfills, different farms, agricultural pesticides landfills, agricultural cooperatives, industrial landfills and landfills with hazardous materials or chemical residues. These environmental hot-spots are considered as potential source of contamination with heavy metals, chemicals, used oils, organic chemicals etc.. The detailed data on the location of these hot-spots, their surfaces and potential sources of contamination are presented in Table 58.

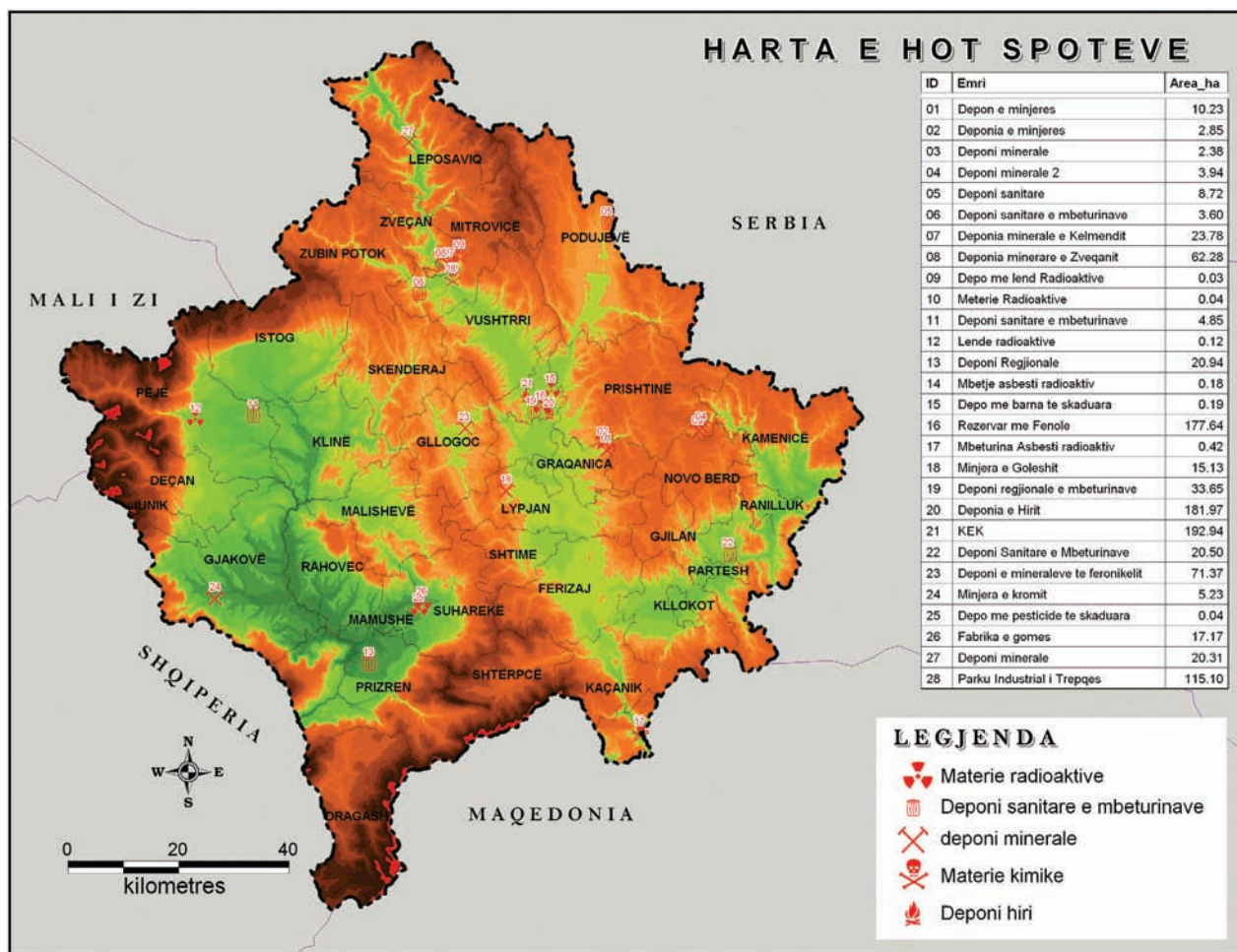
Table 58: Environmental Hot-Spots according to locations, activities, and surface and potential pollution sources

Nr.	Location	Activities in the past	Surface	Potential Pollution Sources				
				Heavy metals	Chemical	Oils	Organic matters	Others
1.	Ex building of Agro-Culture building in Shirokë-Municipality of Therand	Storage for waste pesticide and fertilizers	300m ²	-	+	-	-	-
2.	Ex Vehicle factory building in Peje	Storage for hazardous and industrial chemicals	0.12 ha	-	+	+	-	-
3.	Building in Mazgit	Storage for expired medicaments	0.19 ha-	-	+	-	-	-
5	Municipal sanitary landfill in Podujeve	Waste Landfill	5 ha	-	+	+	+	+
6	Municipal sanitary landfill in Peje	Waste Landfill	2 ha	-	+	+	+	+
7	Regional sanitary landfill in Gjilan	Waste Landfill	20.5 ha	-	+	+	+	+
8	Regional sanitary landfill in Prizren	Waste Landfill	14 ha	-	+	+	+	+
9	Regional sanitary landfill in Mirash-Obiliq	Waste Landfill	40 ha	-	+	+	+	+
10	Municipal sanitary landfill in Mitrovica	Waste Landfill	7 ha	-	+	+	+	+
11	Factory for production of tire and tracks in -Suhareka	Oil residues and land contamination	14 ha	-	+	+	-	-
12	Industrial Park -Trepça	Industrial landfills	34.62 ha	+	+	-	-	-
13	South east part of village - Çikatovë-Municipality of Drenasit	Sinter waste in Feronikel	4 ha	+	-	-	-	-
14	Industrial Landfill Feronikelit-Cikatove-Drenas	Landfill of industrial sinter in Feronikel	24 ha	+	-	-	-	-
15	Mining landfill close to accumulation (branes), Badovce	Heavy metals landfill	2.85 ha	+	-	-	-	-

16	Landfill of steril material in Kishnice	Heavy metals landfill	10.23 ha	+	-	-	-	-
17	Landfill of Marec 1, prroj i djaloshit, Miniera Artane	Heavy metals landfill	2.38 ha	+	-	-	-	-
18	Landfill of Marec 2, prroj i djaloshit, Miniera Artane	Heavy metals landfill		+	-	-	-	-
19	Landfill in Kelmend-Mitrovica	Heavy metals landfill	23.78 ha	+	-	-	-	-
20	Radioactive matters in industrial complex in Trepce -Mitrovica	Landfill of radioactive waste of thorium nitrate	-	-	-	-	-	+
21	Radioactive matters to Tuneli i Pare, Mitrovica	Landfill of radioactive waste, Strontium, Thorium and Americium	-	-	-	-	-	+
22	Industrial landfill in Zvecan	Heavy metals landfill	62.28 ha	+	-	-	-	-
23	Industrial landfill in Leposaviq	Heavy metals landfill	-	+	-	-	-	-
24	Ash landfill of PP A	Industrial, thermo-energetic landfill	181.97 ha	+	+	+	-	+
25	Ash landfill of PP B	Industrial, thermo-energetic landfill and impact areal	192.94 ha	+	+	+	-	+
26	Phenol reservoirs	Phenol Reservoir	177.64 ha	+	x	x	-	x
27	Mining landfill in Deve-Gjakove	Heavy metals landfill	1 ha	+	-	-	-	-
28	Mining in Golesh-Municipality of Lipjan	Exploitation and processing of heavy metals and	Approximately 5 ha	+	-	+	-	-
29	Two asbestos landfills in Hani i Elezit	Landfill of asbestos matters t	1.50 ha	+	+	-	-	+



Wastes of Ferronikelit Sinter in Çikatovë e Drenasit



Map 11: Environmental hot-spots locations

6.3. Spatial identification of potential pollutant

In order to create the database and the review of environmental state on the ground, KEPA during 2008-2009 has taken an initiative for spatial inventory of potential pollutants. Initially this initiative of KEPA started as a pilot project for the inventory of potential pollution in the municipalities of Fushe Kosova, Obilic and Pristina with a tendency to continue the project throughout the territory of Kosovo. The spatial identification of potential pollutants is based on the work of professional teams, which have collected the necessary data from companies which are estimated to be potential environmental pollutants in the investigated municipalities. The collection of data from the aforementioned companies is done by visiting the facilities which are estimated to be potential polluters and by filling the forms prepared in advance. From the data obtained through these forms it is creating a solid base of data about the location of pollutant, location, municipality, name, leader, the way of pollution, discharge of pollution in water, air and land, address and other necessary data. According to business registration codes as economic operators with potential impact on the environment, within the investigated agglomeration are totally 4548 economic operators. In the municipality of Prishtina according to the codes recorded on MTI activities, performing their activities 4598 economic operators, in Fushe Kosovo 163 and Obilic 87 operators. KEPA's teams, while working in the investigated agglomeration have identified as potentially polluting facilities totally 191 economic operators, 129 of them in Pristina, 43 in Fush Kosova and 20 in Obiliq⁷⁶.

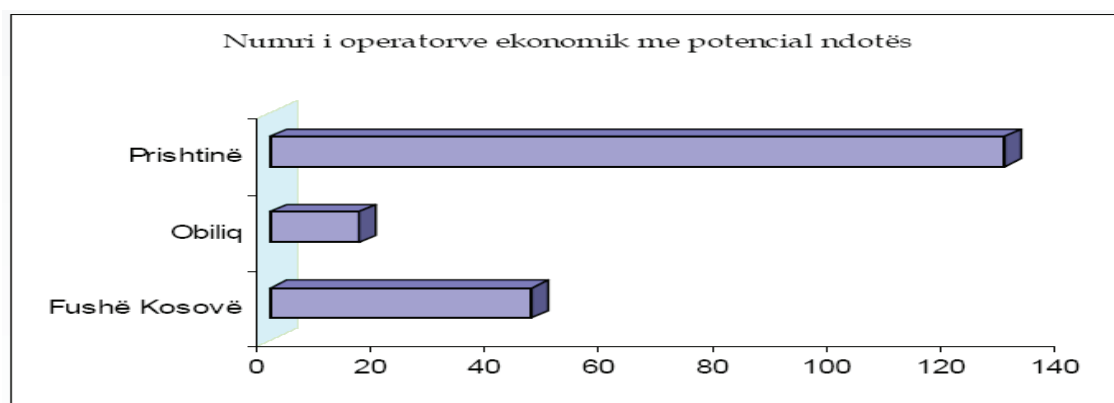


Figure 64: Number of operators with pollution potential

The visited facilities have developed various economic activities that present opportunities to potential environmental pollution as : power plants for energy production, hotels, facilities for generating heat, auto washing, fuel storages and gas stations, repair facilities vehicles, storage of materials prepared for recycling, factories for the production of agricultural products processing factory colours, paper, etc..

76 Report on Spatial Identification of Potential Polluters, KEPA 2009

6.4. Preparation of water polluters' cadastre

This project is financed by the Ministry of Foreign Affairs of Norway, and implemented by REC (Regional Environmental Centre) in cooperation with MESP, (Ministry of Environment and Spatial Planning). The primary goal of this project is to create a Database which will assist all relevant institutions in Kosovo in the field of integrated management of Kosovo water resources. The development of water polluters' cadastre is integral part of the information system for water resources management in Kosovo.

Main objectives of this project are:

- Gathering and processing of historic and existing data for potential water polluters;
- Development, organizing and archiving of the database;
- Information exchange between interest groups;
- To assist the water department in the development of the strategic plan through reports and information for the future monitoring network;
- To contribute in the decrease of water polluters, both industrial and household polluters, through a public information/ awareness campaign.

Criteria for Classification of Polluters- Based on the provisions of the AI on the Cadastre for Environment Polluter Emissions, the polluters are initially categorized in individual and collective polluters.

Collective Polluters - This project targets all those collective polluters or habitations which consist of more than 50 households and have organized sewerage or joint septic tanks.

Individual Polluters – or the Economic Operators – EO targeted by this project, are mainly those operators with a heavy potential for pollution such as the industrial ones, agricultural, car dumpsites/ironmongeries, or large chemical cleaners.

Special polluters or targeted by this project are:

- Foundries, Iron Manufacturers, Scrap Iron and car dumpsites;
- Asphalt manufacturers;
- Laundry detergent and soap manufacturers;
- Textile manufacturers ;
- Large chemical cleaners;
- Production and processing plants for food and beverages
- Milk factories and milk dairy products
- Livestock and wildfowl farms;
- Meat slaughterhouses

So far in the project of the inventory of water pollutants are identified the polluters in most municipalities of Kosovo. In the following table are presented only few data on the region of Prizren and Peja.

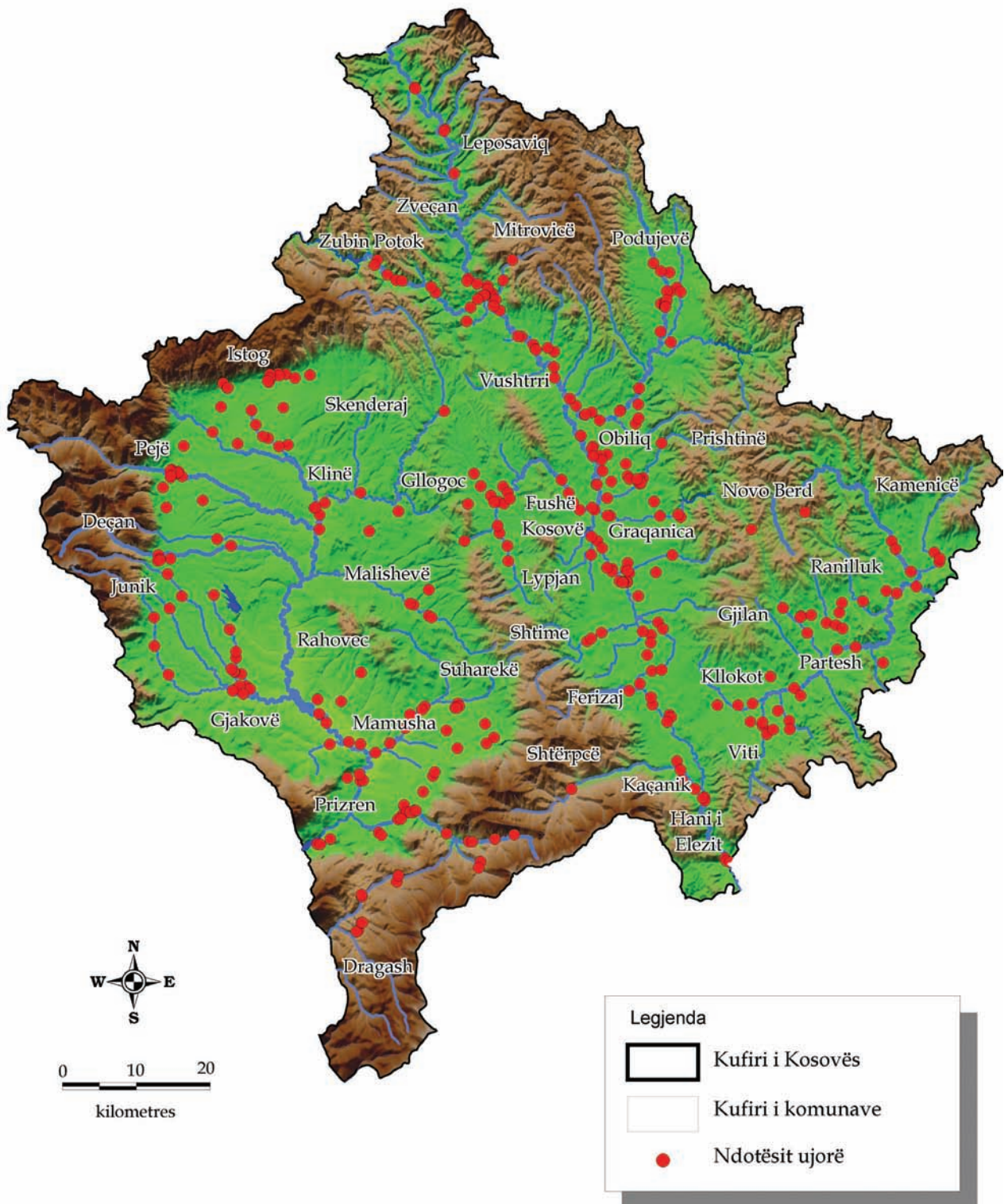
Table 59: Number of collective and individual polluters of rivers ⁷⁷

River	Collective Polluter	Individual Polluter	Total
Lumbardhi i Prizrenit	3	5	8
Drini i Bardhë	8	3	11
Toplluha	6	2	8
Plava	3	2	5
Mirusha	2	0	2
Prishtevka	1	6	7
Llapi	15	7	22
Gracanka	3	1	4
Drenica	17	1	18
Shtimjanja	2	0	2
Sitnica	24	7	31
Lumbardhi i Pejës	1	7	8
Lumbardhi i Deçanit	1	0	1
Ereniku	4	3	7
Trakaniqi	3	0	3
Istogu	4	8	12
Klina	3	0	3
Ibër	13	1	14
Trepca	2	0	2
Mirusha e Gjilanit	6	2	8
Stanishor	2	1	3
Morava	14	1	15
Nerodime	3	3	6
Matica	2	0	2
Sazlia	4	0	4
Lepenc	4	1	5
Krivareka	6	0	6
Total	156	61	217

From the data collected in field, based on this project it is prepared the data base of water polluters which will be integrated in the Environmental Information System of KEPA. This will be a good base for planning of investments and environmental policies for reduction of water polluters.

⁷⁷ Water Polluters Cadastre REC&AMMK, 2010

Shperndarja Hapësinore e Ndotësve Ujorë



6.5. Rehabilitation of Landfills

During years 2007, 2008 and 2009 investments are oriented in rehabilitation of several landfills and final closure of old landfills of municipal and industrial wastes. Following the Kosovo Environmental Action Plan 2006-2010, the Ministry of Environment and Spatial Planning, during 2007 has invested in rehabilitation of three municipal landfills in Kaçanik, Prizren and Gjakovë, while during 2008 the landfills in Lipjan, Prizren and Gjilan are rehabilitated. For 2009, the European Commission in cooperation with the Ministry of Environment and Spatial Planning planned to rehabilitate and close 8 old landfills of municipal wastes. Data for implemented and planned projects for rehabilitation of old landfills are presented in the following table. Other investments by MESP are planned that in near future to establish seven centres for sterilisation of infective hospital wastes; to implement project for the hazardous waste, construct magazine for temporary storage of hazardous waste.

Table 60: Projects for rehabilitation of old landfills of municipal waste 2007-2009⁷⁸

Project title	Project status	Donor	Year of project realization
Rehabilitation of landfill in Prizren	Completed	MESP	2007
Rehabilitation of landfill in Gjakovës	Completed	MESP	2007
Rehabilitation of landfill in Kaçanikut	Completed	MESP	2007
Rehabilitation of landfill in Ferizajt	Completed	MESP	2008
Rehabilitation of landfill in Gjilanit	Completed	MESP	2008-2009
Rehabilitation of landfill in Lipjanit	Completed	MESP	2008

Project on Cleanup and Land Reclamation-This project is being implemented as a measure of support for social and environmental aspects within the initiative of the Lignite Energy in Kosovo.

Funding for this project is provided by World Bank (10.500.000 dollars), the Kingdom of the Netherlands (3.000.000 Euro), KEK (operational expenses in the amount of 3.500.00 Euro) and the Kosovo Consolidated Budget (transportation of ash 4.000.000).

The main project components are:

- Preparation of the mine in Mirash to accept ash from power plants;
- Reformation and recultivation of ash dumpsite in Power Plant "Kosova A", including here as well the partial displacement of the landfill to ensure the stability of integral measures of this landfill;
- Adoption of the ash conveyor system from Power Plant "Kosovo A" in order that the ash with hydraulic transport be stored directly in the Mirash exploited landfill.
- Removal of waste materials and hazardous waste in chemicals separators from industrial areas of PP "Kosova A".
- Reshaping, reclamation and regulation of landfill slope in southern and western wastland.

As part of so far activities it has been done the rehabilitation of some areas around the ash landfill (flattening and coverage of the valleys, holes and gaps), the improvement of the infrastructure for better access and other needs of project operations for the removal (excavation, transmission pushing and ash) of the massif of the ash landfill, levelling and regulation of the landfill area in the north-east and is prepared the report of Environmental Impact Assessment (EIA), for which the public debate was organized at the Municipality Obilic.

In the meantime it is opened the tender for carrying out the work for hydraulic system installation for the transport of ash and for the treatment and disposal of hazardous materials and waste. It is planned that during the summer to start the rehabilitation of the overburden landfill of Vasileva. According to the dynamic plan at this landfill the work will be completed during 2011.

⁷⁸ Ministry of Environment and Spatial Planning, 2009

6.6. Regularization of river beds and sewerage system

The Ministry of Environment and Spatial Planning in the support of various donors during 2008/2009, has implemented several capital projects in water sector. A number of these projects have been oriented in the regulation of riverbeds.

Table 61: Implemented projects by MESP for regulation of river beds during 2008-2009⁷⁹

Project Title	Beneficiary Municipality	Project Donor	Amount of the project €	Implementing year
Regulation of River bed of Shushica	Istog	MESP	289,000	2008
Regulation of River bed of Klina	Skenderaj	MESP	459,000	2009
Regulation of River bed of Tërstena	Vushtrri	MESP	1,500,000	2009
Regulation of River bed of Mirusha	Gjilan	MESP	1,000,000	2009

The Ministry of Environment and Spatial Planning for the period 2010-2012, the planned implementation of several other projects in the water sector. The data for these proposed projects, their amount and the beneficiary municipalities are presented in the following table.

Table 62: Implemented projects by MESP for regulation of river beds for 2010-2012⁸⁰

Project Title	Amount of the project €	Implementing year
Rehabilitation and construction of embankments along the river Sitnica	9,400,000.00	2010 – 2012
Regulation of River bed in River Lumëbardhi i Prizrenit	1,000,000.00	2010 – 2012
Realization of the first phase of socio-economic project for the treatment of wastewater for Prizren	3,000,000.00	2010 – 2012
Feasibility Study and the project for the treatment of waste water for Pejë	70,000.00	2010 – 2012
Feasibility Study and the project for the treatment of waste water for Prishtinë	150,000.00	2010 – 2012
Study of the segments where can be used the sand and gravel in the Drini i Bardhë River	1,700,000.00	2010 – 2012
Construction of embankments along the Drini i Bardhë River	1,105,000.00	2010 – 2012
Assessment of the dams safety and equipment with monitoring instrument	505,000.00	2010 – 2012
Construction of the sewage of the city and several villages in the municipality of Decani	1,800,074.00	2010 – 2012
Regulation of river Bed Drenica	1,200,000.00	2010 – 2012
Regulation of river bed Toplluha in Suharekë	1,500,000.00	2010 – 2012
Regulation of river bed Mamushë	1,000,000.00	2010 – 2012
Regulation of sewerage for villages Runik and Banjë of Skenderajt	550,000.00	2010 – 2012

⁷⁹ Water Department, 2009

⁸⁰ Water Department, 2009

6.7. Forestation of bare surfaces and recovery of forest

As regards the sustainable management of public forests are undertaken various activities to improve their situation. Within the KFA activities besides establishing new forests in 2009 were developed in meliorate activities and cultivation of forests (Table 63).

Table 63: Activities for improving the forest state during 2009⁸¹

Type of Activity	Surface in ha
Development of new forests –Forestation	129.00 ha
Regeneration of forests- meliorim	40.00 ha
Cultivation of forest	30,326.00 ha
Use of forest	22,523.00 ha

According to the data of KFA in private sector during 2009 is forestation 11.40 ha. However the most important activity for the Forestation of bare surfaces was the project “one young plant one inhabitant”, based on which are afforested bare and degraded forestry lands with a surface of about 800 ha. Compared to previous years the afforested surfaces during 2009 are sensible increased.

Table 64: Forestation surfaces according to the years for the period 2004-2009⁸²

Years	2004	2005	2006	2007	2008	2009
Forestation Surfaces in ha	18	390	196	67	512	830

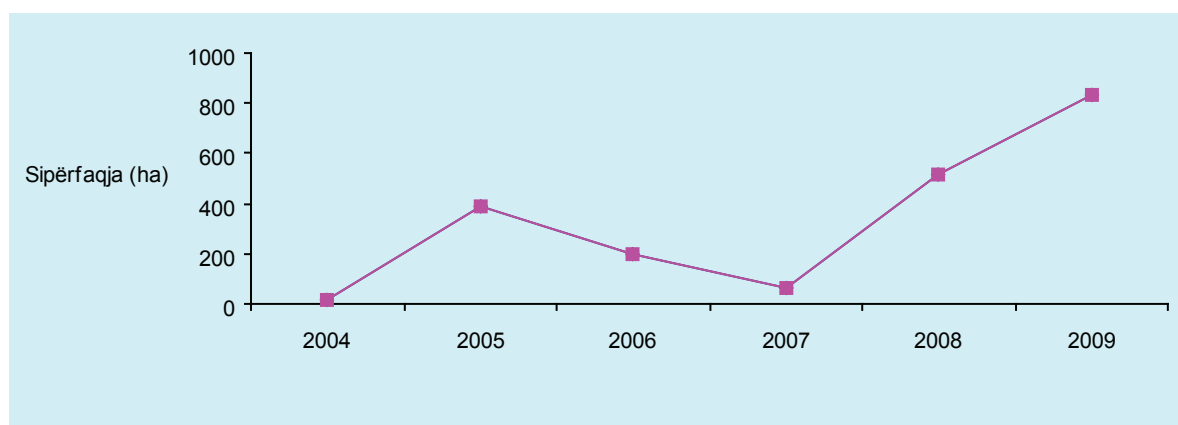


Figure 65: Forestation Surfaces (ha) according to years

81 Kosovo Forest Agency, 2010

82 Kosovo Forest Agency, 2010

6.8. Developments and delays on strengthening of environmental institution

Among the main developments in strengthening, promotion and technical capacity of environmental institutions during the period 2008-2009 should be highlighted:

- KEPA has started cooperation with the EEA - EIONET and has started to adapt its activities according to the needs and requirements of the EEA
- The initiative of MESP for the establishment of the Agency for ionizing and non-ionizing radiation;
- The initiative of MESP for the Establishment of Environmental Fund ,
- Development of Air Quality Monitoring Network within KHMI. Installation of two air quality analyzers in Prishtina within the KNIPH;
- Starting of the process for accreditation of laboratories and staff of Hydro-meteorological Institute;
- Starting of the process for accreditation of the laboratory and the KNIPH's staff,
- The initiative to establish the Agency for Energy Efficiency and Renewable Sources by MEM;
- Starting the process for licensing of auditors for energy efficiency;
- Starting the process of decentralization of powers in the management of waste from central to the local level;
- Starting the process of decentralization of competences for forest management from central to the local level.
- Establishment of Advisory Board for Environmental Protection;

Whereas, under the obstacles and delays on strengthening environmental institutions during this period are highlighted:

- Malfunction of the work of Kosovo Institute for Nature Protection;
- Lack of management body for Mirusha Regional Park;
- Malfunction of National Water Council.

7.

Investments on environment protection

Water sector belongs to sectors in which are oriented a number of projects and capital investments. Especially in the post-war years many donors have given donations for the rehabilitation and establishment of water infrastructure in general.

According to existing data the major investments by foreign donors are made in the rehabilitation and construction of water supply and sewerage system. In Table 65 are presented data on investments made in this area according to water supply companies and sewerage system.

Table 65: The review of capital investments implemented during 2008 by donations in water supply and sewerage companies in Kosovo⁸³

Name of Company	Region	Donation €/ CHF	Source of donation
RWC "Prishtina" Sh. A.	Prishtinë	608,211.00 €	62,790 - MEF 545,421- Norwegian Government
RWC "Mitrovica" Sh. A.	Mitrovicë	470,000.00 €	270,000 - AKM 200,000 - MEF
RWC "Hidrodrini" Sh. A.	Pejë	275,443.71 €	275,443 – KFW
RWC "Radoniqi" Sh. A.	Gjakovë		
RWC "South Hidroregjioni " Sh.A.	Prizren	173,919.00 €	173,919.00 € KFW
KUR "Bifurkacioni" Sh. A.	Ferizaj	45,000 € 4,740,000 CHF	45,000 € - AKM 4,740,000 CHF-Norwegian Government
RWC "Hidromorava" Sh. A.	Gjilan	100,000 € 4,350,000 CHF	60,000 € - AKM 40,000 € - MEF 4,350,000 CHF – Swiss Government
Total investment by donors	1,672,573.71 € 9,090,000.00 CHF		375.000.000 € AKM 302.790.000 € MEF 449.362.000 € KFW 545.421.000 € Norwegian Government 9.090.000.00 CHF Swiss Government

The Ministry of Environment and Spatial Planning in 2008, has implemented several capital projects in water sector, that exceed the amount of 600,000 € (Table 66). Data on investments made and planned by MESP in the regulation of riverbeds are presented in Tables 61 and 62, under the Chapter on measures undertaken to improve the environmental situation.

Table 66: Implemented projects in water sector by MESP during 2008⁸⁴

Project title	Beneficiary Municipality	Project donor	Project amount €	Implementation year
Regulation of Shushica River bad	Istog	MESP	289,000	2008
Execution of works in water supply Banja e Pejes	Pejë	MESP	240,861	2008
Construction of water supply in village Vinarc i ulët	Mitrovicë	MESP	130,000	2008

Waste-After the war, waste management state in Kosovo was in a very bad situation. Taking into consideration this situation in waste management infrastructure was considered the need for investments. The major investor was the EAR, which in waste management infrastructure has invested more than 20,000,000 EUR. Sanitary landfills in Kosovo are mainly constructed from EAR donations, DANIDA and the Kosovo Budget. More detailed data for these investments are presented in Table 65.

⁸³ Waste and Water Regulatory Office-WWRO, 2009

⁸⁴ Water Department, 2009

Table 67 : Investments in construction of sanitary landfills in Kosovo⁸⁵

Sanitary landfill	Type of landfill	Donor	Construction cos
Prishtinë	Regional	AER	3.6 mil. €
Gjilan	Regional	AER	2.6 mil. €
Prizren	Regional	AER	2.6 mil. €
Podujevë	Regional	AER	---
Mitrovicë	Regional	DANIDA	---
Pejë	Regional	COOP	---
Sharr	Municipal	AER	---
Ferizaj	Transfer Station	AER	900.000€
Zvečan	Municipal	AER	---

More significant investments from the Kosovo budget allocated to MESP for rehabilitation and closing the illegal landfills are presented in the chapter measures undertaken to improve environmental conditions, in Table 60.

As regards the investment of economic operators in improving the operating technologies, should be highlighted the investment made by NewCoFeronikeli Complex in setting installation of the system for purification of gasses (venturi - skruberi), which investment according to the operator is around 4 million €.

IPA Projects -IPA is a financial instrument of the European Commission under the pre-accession assistance and exists since 1 January 2007. This assistance is available to candidate countries and potential candidate countries and the purpose of this instrument is that through its basic components to help these two categories of beneficiaries in the process of European Integration.

The main objectives of this instrument are: strengthening democratic institutions, intensification of economic and administrative reforms, the promotion and protection of human rights and civil society development. For the period 2007-2013 Kosovo will benefit from IPA 565 million€. While in 2010 only by the IPA projects, Kosovo will benefit over 64 million €⁸⁶.

During the period 2008-2010, a very important part of IPA investments were oriented to environmental protection projects. As part of these investments has been the establishment of air quality monitoring system. See Table 66.

Table 68: The amount of IPA Projects in environmental sector 2008- 2010⁸⁷

Project title	Amount million Euro	Implementation period
Environmental sector projects	18.0	2008
Institutional support to environmental sector (KEPA)	1.0	2010-2012
Development of Air Quality Monitoring System	2.0	2009-2010
Institutional support on strengthening the Waste and Water Regulatory Office – WWRO	1.8	2009-2010
IPA – Total Investments	22.8 million Euro	

Other investments- within the frame of other investments in the environmental sector in 2008-2009 , it should be noted the investment of GTZ for improving municipal services and energy efficiency, investment by the Dutch Government to support the development of civil society organizations, and the Swedish Government in developing strategic plans and environmental documents, at national and local level.

85 Kosovo Landfill Management Company (KLMC), 2009

86 Guideline about the Instrument for Pre-Accession Assistance in Kosovo, MIE 2010

87 Agency for Coordination of Development and European Integration

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- *Kosovo Forest Agency*
- *Kosovo Cadastral Agency*
- *Directorate of National Park "Mali Sharr"*
- *Statistical Office of Kosovo*
- *Cement Factory -Sharrcem*
- *Kosovo Hydro-Meteorological Institute*
- *Institute INKOS*
- *Kosovo National Institute of Public Health - KNIPH*
- *Kosovo Landfill Management Company – KLMC*
- *Regional Water Supply Company - Prishtina*
- *Kosovo Energetic Corporation –KEC*
- *Ministry of European Integration*
- *Ministry of Agriculture, Forestry and Rural Development*
- *Ministry of Energy and Mining*
- *Ministry of Environment and Spatial Planning*
- *Ministry of Internal Affairs*
- *Ministry of Transport and Post Telecommunication*
- *Ministry of Trade and Industry*
- *Ministry of Health*
- *Public Company - Hidrosistemi Ibër Lepenc sh.a*
- *Trepça Company (under KPA administration)*
- *NewComplex Feronikeli*
- *District Heating -Termokos sh.a*
- *Regional Environmental Centre, REC*
- *Kosovo Water Supply and Sewerage Association -KWSSA*
- *Waste and Water Regulatory Office -WWRO*

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