Report
State of the Environment
2015

Ministry of Environment and Spatial Planing
Kosovo Environmenta i Protection Agency

AMMK

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

MINISTRY OF ENVIRONMENT
AND SPATIAL PLANNING

KOSOVO ENVIRONMENTAL
PROTECTION AGENCY

State of Environment in Kosovo 2015

Report

Prishtina, 2015

Approval Procedures

On the 25th of June 2015, the Directory for Monitoring. Assessment and Environmental Reporting completed the Report and submitted it to the Office of the CEO of KEPA, asking him to proceed for the approval in the Assembly of Kosovo, as required under Article 25 of the Law on Environment Protection.

On the 2nd of July 2015, the CEO of KEPA, through the Minister of MESP, submitted the following proposed agenda item to the Government of Kosovo: the Submission of the State of the Environment Report in Kosovo 2015 for approval to the Assembly of Kosovo.

The Government of Kosovo, at the meeting held on the 29th of August 2015, has reviewed "The State of the Environment Report in Kosovo 2015" and has endorsed the Report under the Decision No. 01/86, calling for its submission for approval to the Assembly of Kosovo.

On the 29th of September 2015, the Parliamentary Commission on Agriculture, Forestry, Environment and Spatial Planning, has reviewed The State of the Environment Report 2015 at its 22nd session, and forwarded it for approval to the Assembly of Kosovo.

At the plenary session, on the 30th of November 2015, the Assembly of Kosovo, after discussion, has reached the Decision no. 05-V-183 on the approval of the Report.

Republika e Kosovës
Republika Kosova - Republic of Kosovo
Qeveria - Vlada - Government

Nr. 01/86
Datë: 28.08.2015

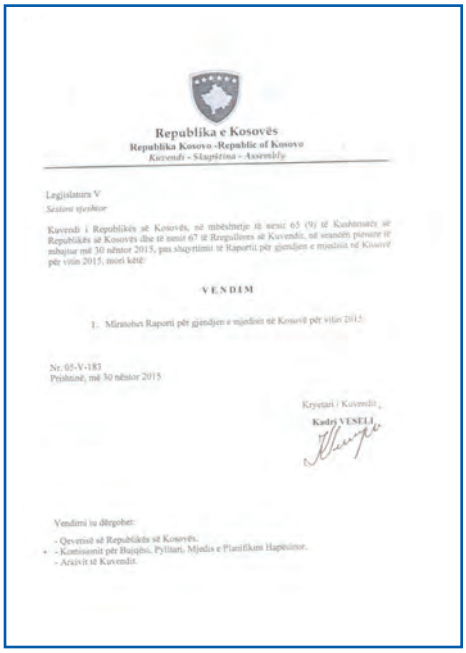
Qeveria e Republikës së Kosovës, në mbështetje të nenit 92 paragrafi 4. dhe 93 paragrafi (4) të Kushtetutës së Republikës së Kosovës, nenit 25 të Ligjit 03/L-025 për Mbrojtjen e Mjedisit, duke u bazuar në nenin 4 të Rregullores nr. 02/2011 për fushat e përgjegjësisë administrative të Zyrës së Kryeministrit dhe Ministrive, e ndryshuar dhe plotësuar me Rregulloren nr. 07/2011 dhe nenit 19 të Rregullores së Punës së Qeverisë së Republikës së Kosovës nr. 09/2011, në mbledhjen e mbajtur më 28 gusht 2015, miratoi këtë:

VENDIM

1. Aprovohet Raporti për gjendjen e Mjedisit në Kosovë për vitin 2015.
2. Obligohen Sekretari i Përgjithshëm i Zyrës së Kryeministrit që Raportin nga pika 1. e këtij vendimi t'a procedojë Kuvendit të Kosovës.
3. Vendimi hyn në fuqi ditën e miratimit.

Isa MUSTAFA
Kryeministër i Republikës së Kosovës

Iu dërgohet:
- Zëvendëskryeministrave
- të gjitha ministrive (ministrave)
- Sekretarit të Përgjithshëm të ZKM-ës
- Arkivit të Qeverisë



Republika e Kosovës
Republika Kosova -Republic of Kosovo
Kuvendi - Skupština - Assembly

Legjislatura V
Sesioni njëzetë

Kuvendi i Republikës së Kosovës, në mbështetje të nenit 65 (9) të Kushtetutës së Republikës së Kosovës dhe të nenit 67 të Rregullores së Kuvendit, në seancën pleniare të mbajtur më 30 nëntor 2015, pas shqyrtimit të Raportit për gjendjen e mjedisit në Kosovë për vitin 2015, miratoi këtë:

VENDIM

1. Miratohet Raporti për gjendjen e mjedisit në Kosovë për vitin 2015.

Nr. 05-V-183
Prishtinë, më 30 nëntor 2015

Kryetari i Kuvendit,
Kadri VESELI

Vendimi iu dërgohet:
- Qeverisë së Republikës së Kosovës.
- Komisionit për Bujqësi, Pyllari, Mjedis e Planifikim Hapësinor.
- Arkivit të Kuvendit.

Foreword

Dear readers,

The environmental protection and sustainable use of natural resources remain one of the major challenges of our society.

The economic development needs and growing social demands have been creating mounting requirements on the usage of natural resources, yet they also exercise a direct impact on the environment through the discharge of the pollutants.

The generation of energy, development of transport, production industry, development of agriculture sector are some of the direct pressures exercising the increased demands upon our environment.

Notwithstanding, the Ministry of Environment and Spatial Planning remains committed in meeting the environment protection requirements in the spirit of sustainable development. The development and implementation of primary legislation, environmental strategies, plans and programmes are but few of our daily commitments in the pursuit of environmental protection objectives.

Strengthening the environmental protection monitoring system, increasing control over the implementation of primary legislation and applying environmental standards and procedures in relation to the applications for the usage of natural resources, as well as, projects generating environmental impact represent challenges, but have also produced satisfactory results.

The investments in environment, either through the budget of Kosovo or through the donor assistance aims at improving the state of environment and its infrastructure, along with building and strengthening the environmental institutional capacities at all levels, which makes us confident and gives the right track towards achieving our goals.

Undeniable results have been achieved in all environmental aspects, including waste management, protection of nature and biodiversity, water management, climate change adaptation and mitigation, rehabilitation of polluted areas, control of industrial pollution, spatial planning, as well as, regional and international cooperation.

We strongly believe that through the cooperation with our citizens, governmental institutions, municipalities, donors and civil society organizations, we will achieve our goal of ensuring that Kosovo is a well-developed country, with a clean and healthy environment.

***Ferid Agani,** Minister of MESP*

Acknowledgments

Dear readers and associates,

The Kosovo Environmental Protection Agency has the pleasure of sharing with you the Report on the State of the Environment in Kosovo 2015. The report is prepared in response to the legal duties and responsibilities of KEPA to produce regular reporting on the state of the environment. The Report mainly contains data from monitoring the environment situation, but also data from projects, publications and other relevant environmental documentations.

Part of the report are also the data from central government and non-government institutions holding specific responsibilities in the area of the environment, with data available for the sector. The preparation of the report is also supported by other sectors of the Ministry of Environment and Spatial Planning. KEPA, therefore, wishes to express its gratitude to and acknowledge the contribution of all who contributed in the finalization of this document, either through making the data available or through their suggestions and input.

We value, appreciate and welcome the engagement, input and suggestion of all of the institutions, experts, environmental NGOs and other friends of environment that have helped in the preparation of the publications and worked to improve their quality and reliability.

We hope that this report will provide a humble contribution, not only for accurate information on the state of the environment in Kosovo, but also serve as a document for policy-makers to ensure the implementation of sustainable environmental policies but also guide future donor projects.

***Dr.sc. Ilir Morina,** CEO of KEPA*

Abbreviations

ADC	Austrian Development Cooperation
ALPS	Agriculture Land Pollution Survey
KEPA	Kosovo Environmental Protection Agency
APRNS	Agency on Protection from Radiation and Nuclear Safety
KFA	Kosovo Forestry Agency
PIA	Prishtina International Airport
KAS	Kosovo Agency of Statistics
EU	European Union
GDP	Gross Domestic Product
CLC	Corine Land Coverage
LD	Legal Decree
WD	Water Department
ECRAN	Environmental and Climate Regional Accession Network
EEA	European Environment Agency
EFAS	European Flood Awareness System
EIONET	European Information and Observation Network
EPA Network	European Network of Heads of Environment Agencies
EUROSTAT	European Statistics
GHG	Greenhouse Gases
GIZ	German Technical Cooperation
KHMI	Hydro-meteorology Institute of Kosovo
IKMN	Kosovo Nature Protection Institute
NIPHK	National Institute of Public Health of Kosovo
IPA	Instrument of Pre-Accession
IUCN	International Union for Conservation of Nature
JICA	Japanese International Cooperation Agency
EC	European Commission
KEK	Kosovo Power Corporation
KfW	German Development Bank
KLMC	Kosovo Landfill Management Company
RWC	Regional Waste Company
KTOE	Kilo Ton Oil Equivalent
RWCs	Regional Water Supply Companies

MAFRD	Ministry of Agriculture, Forestry and Rural Development
MoF	Ministry of Finance
MEI	Ministry of European Integrations
MESP	Ministry of Environment and Spatial Planning
NM	Nature Monument
MTI	Ministry of Trade and Industry
MED	Ministry of Economic Development
WHO	World Health Organization
EO	Economic Operators
OECD	Organization for Economic Cooperation and Development
NGO	Non-governmental organization
OSCE	Organization For Security and Cooperation in Europe
KIP	Kosovo Industrial Policy Framework
NP	National Park
KEAP	Kosovo Environment Action Plan
LEAP	Local Environment Action Plan
REC	Regional Environment Centre
NR	Nature Reserves
SIDA	Swedish International Development Agency
NDS	National Development Strategy
CCS	Climate Change Strategy
SOER	European State of Environment Report
SHBO	Biochemical Oxygen Consumption
PP	Power plant
PP A	Power plant A
PP B	Power plant B
AI	Administrative Instruction
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
EIA	Environmental Impact Assessment
SEA	Strategic Environmental Assessment
WWRO	Water and Waste Regulatory Office

Contents

1. Introductory Section

1.1. Introduction

The Law on Environment Protection provides for production of the Report on the State of the Environment in Kosovo[1]. According to Article 25 of this Law, the Government of Kosovo, at the proposal of the Ministry of Environment and Spatial Planning shall submit the Report on the State of the Environment before the Assembly of Kosovo.

The report shall contain data on: The state of the environment and any changes thereto relative to the previous report, environmental impact on the health of the population, the implementation of the Environmental Strategy and the Action Plan, environmental protection measurement, use of natural resources, development of environmental institutions, as well as, finances of the environmental protection system.

The Kosovo Environmental Protection Agency is the institution that develops the Report, In line with the duties and responsibilities of the governmental institutions.

1.2. Methodology

Based on the acceptable reporting models and the environmental circumstances prevalent in Kosovo, KEPA has collected environmental data from monitoring institutions, companies, operators, various enterprises, publications, reports and other sources. To meet the reporting requirements, the data collected has been processed into qualitative environmental data, as presented in this Report. The data are provided in form of narrative, tables, maps and graphs.

The Report provides data on driving forces and environmental pressures, describes the current situation of the environmental media and the impact of such situations. It reviews the environmental protection and preservation policies, as well as, the efforts of governmental and non-governmental institutions and society, at large, in terms of remedial action. Such an approach to reporting, known as DPSIR[2], which portrays issues related to all environmental concerns of a country, represents a very appropriate approach in assessing the state of the environment.

The DPSIR model was initially deployed by OECD (Organization for Economic Cooperation and Development) and further adopted by the European Environment Agency (EEA), which is also used by EUROSTAT for the production of environmental statistics. This analytical model allows for sorting information and integration of socio-economic and environmental elements, addressing relationships between five categories of indicators: Driving forces (such as: production power,

1 Law No. 03/L-025, on Environment Protection
2 D-Driving Forces. P-Pressures, S-State of the Environment , I-Impacts, R-Responses

population growth, etc.), Pressures on the environment (such as: water, air and soil emissions), which has an impact on the state of the environment (e.g. the concentration of heavy metals on the ground, rise in average global temperatures), which subsequently affects the living beings and human health, thus triggering a response of necessary institutions through adequate measures (legislative, taxes, environment programmes, research, investment, etc.). (Figure 1).

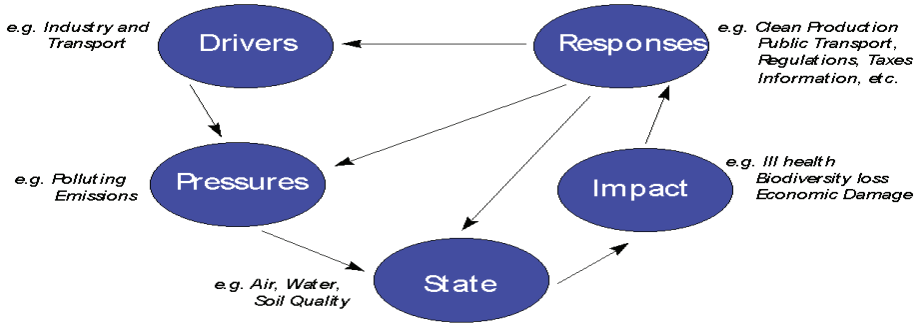


Figure 1: DPSIR analytical framework

To a large degree, the drafting of this report is also guided by the selection of indicators, which were deemed most appropriately for assessing the state of the environment. We tried to ensure that the indicators have scientific basis and are equally tangible to all people to be served by the report. Of course, the choice and presentation of the environment indicators, by chapters and sub-chapters of the report, was influenced to a certain degree by the quality of data available and the timeframe covered by these data.

The lack of data on many important issues and lack of integrated environmental monitoring are some of the issues, which KEPA had to contend with in the course of drafting this report.

It is worth acknowledging that the quality of the report is dependent on the quality of monitoring conducted at national level and the level of organization of the environment information system. As these two fledgling environmental systems are in early stages of development and strengthening, there is a lack of complete and reliable data on some sectors treated by the report.

1.3. Purpose of the Report

The main purpose of this report is to meet the legal requirement of the Regular reporting on the state of the environment to the central institutions of the country (the Government of Kosovo and the Assembly of the Republic of Kosovo), as well as, provide relevant and actual information, which will serve as a basis for developing adequate environmental policies.

The Report represents a good basis for guiding the development, planning, investment, industry, energy, transport, agriculture, etc., but also undertaking the necessary action and developing projects to improve the state of the environment and constituting elements.

No less important is its intention to provide information on the state of the environment in Kosovo to the public at large, donors, scholars and other stakeholders.

1.4. General data on the Republic of Kosovo

Area	10.908 km^2
Total population	1.84 million inhabitants (2013)
Population density by km^2	167 (2013)
Average age	Approximately 25 years
Average life expectancy	76.7 years
Declaration of independence	17 February 2008
Political System	Parliamentary Democracy
Status of EU integration process	Potential candidate country
Official languages	Albanian, Serbian
Capitol	Prishtina
Number of municipalities	38
Number of settlements	1469
Currency	Euro
GDP per capita	2.721 Euro
Average monthly pay	170 Euro
Climate	Medium continental
Average annual temperature	11 ^{0} Celsius
Average annual precipitations	790 mm
Largest rivers	Drini i Bardhë (111.5 km), Sitnica (110 km)
The highest peak	Gjeravica, 2.656 m
The lowest point	Drini i Bardhë valley (border to Albania), 297 m

1.5. Executive Summary

The Report on the State of the Environment in Kosovo 2015 contains 6 chapters. In addition to the preface, the **introductory section** of the report also contains the report methodology, the purpose, as well as, tabular overview of the general data in Kosovo.

The second section of the report, specifically the **driving forces**, treats some of the forces deemed to be the main environmental drivers. The **trend of the population growth** in Kosovo continues to be progressive, just as the birth rate, albeit at a lower rate relative to 80s and 90s. The population density in Kosovo is one of the largest in Europe, while Kosovo remains one of the countries with the lowest habitation areas. The report finds that an increasing trend of **urban zones**, along with an increase of urban population.

Although Kosovo saw a positive **economic growth** in the last decade, it also maintained the lowest per-capita income of any country in the Balkans and Europe. The unemployment rate is at 30%, while the amount of per-capita income is 2.935 Euro. The economic development needs drove an increased **use of natural resources.** The largest consumption of water comes from both households and agriculture consumptions, while gravel and minerals extraction from riverbeds remain excessively high. In terms of use of timber, the estimates indicate that both legal and illegal logging (1.6 m^3) exceed the annual forest production capacities. The forest and forest land represent the main **land use** category at around 47%, followed by agriculture land use at 29%, grassland and pasturage at 15%, settlements at 4.5%.

The **third part** of the report treats **pressures** upon the environment by the various development sectors, such as: energy, industry, transport, agriculture, forestry and tourism. Each of these sectors exerts pressures on the environment through specific forms, which are reflected in the report through various indicators. Report finds that the coal accounts for 65%, which is the highest of any primary **energy** sources available, with the share of renewable sources, while increasing, remains at a very low level.

Compared to the previous years, a decrease in dust emissions from KEK has been noted, specifically of NOx, SO_2, along with an increase on air quality in the operator's immediate surroundings. The metal's **industry** (NewCo Ferronikeli) and cement factor (SharrCem) are considered industries with major environmental impact, although emissions attributed to their operations have decreased. The increased number of vehicles in **transport** and new roads are seen as the main pressures of the transport sector, while the usage of fertilizers is one of the main pressures of **agriculture,** along with the use of timber in **forestry** and increased number of tourists in **tourism** sector. All of these indicators have seen progressive rise, indicating commensurate increased pressure on the environment.

The fourth section of this report deals with the **status of the environmental media** and thematic aspects of these media, such as: air, water, land (soil), biodiversity, protected areas and waste. On air, data on **air quality** have been collected through the air quality monitoring, indicating that the limit values have been exceeded for PM10 and PM2.5 particles, in some of the monitoring stations, for the entire monitoring period 2012-2014. For the **water sector,** some of the data on the quality of surface water and water volumes in rivers have been presented. The water quality is presented through three main indicators: The ion nitrate nitrogen (N-NO_3), phosphorus from phosphate ions (P-PO_4) and biochemical oxygen consumed in 5 days ($SHBO_5$) for the period 2008-2014. The data analysis indicate that, in spite of the increased values of indicators, no excessive pollution had been found and that Kosovo surface water are not threatened by the eutrophication. As part of the **soil** data, the report contains data on the agriculture land study project in Kosovo, which covered: 2840 soil samples on 17 heavy metals and fertility indicators, 200 samples on content of organic polluters and 150 plant samples for heavy metal content.

The results indicated that the samples were within the soil contamination samples and that cases of heavy metal contamination are not within the areas used as agriculture land, but rather in industrial zones. The waste sector speaks to a continued increase of waste generated and disposed in landfills. The data on the generation of industrial and medical waste are presented as part of the **waste** management status. The state of **biodiversity** has been presented through data on the state of plant and animal species, while the status of the **protected areas** through data on number of natural protected areas and expansion of their area.

The report finds that as part of its efforts to preserve biodiversity and assess the status of species, Kosovo developed the Red Book of Vascular Flora. This assessment, the first of its kind in Kosovo, found the following about the species of vascular flora: 61 species categorized as Critically Endangered (CR), 86 as Endangered species (EN), 19 in the category of Vulnerable (VU), 34 in the category of Near Threatened (NT) and 35 species in the category of Least Concern (LC). It was also found that owing to proclamation of the Second National Park "Bjeshket e Nemuna" (62,488.00 ha) and expansion of protected areas of the National Park "Sharri", the total protected area has expanded from 4.4% to 10.9% of the Kosovo's territory. The total number of the protected areas has also increased, totalling to 116 areas natural protected areas, including: 11 nature reserves, 2 national parks, 99 natural monuments, 1 regional natural park, 2 protected landscapes and 1 special protected bird habitat.

The chapter on environmental impacts, which is the fifth section of the report, deals with climate changes and climate impact on the population health. The report finds that in terms of green gas emissions, the total greenhouse gas emissions in Kosovo in 2012 reached 9.5 Mt (million ton) CO_2 equivalent (9526.74 ton). The energy sector is the largest contributor of the greenhouse gas emissions, with a total participation of 87%. In the energy sector, the power industry accounts for most

emissions at 75%, with road transportation accounting for 12% of total emissions of the energy sector. The agriculture, forestry and land use sector accounts for 8% of the total greenhouse gas emissions, waste sector at 4%, while the industrial processes and use of products is the sector with the lowest share at only 1% of total emissions. Compared to other European countries, Kosovo has the lowest level of emissions per capita (5.4 t CO_2 equivalent per capita as of 2012).

The impact on public health has been presented through several indicators, such as, diseases caused due to the quality of potable water, but also improved the sanitary infrastructure. The report finds that the number of diarrheic diseases remains high, regardless of the increased coverage of water supply and sewerage systems. It has also found that the life expectancy at birth in spite of noted increase (70 years in 2013 compared to 67 in 1999), remains lower relative to other countries in the region (Serbia 74.5, Montenegro 74.6, Macedonia 74.8, Albania 76.9 and Croatia 76.6).

As part of chapters on **response and action taken** to improve the condition of the environment, the main measures undertaken by the institutions have been treated, such as the **development of legislation** and **transposition** of the EU directives, development of environmental strategies and plans, environmental monitoring system, environmental interventions, as well as, regional and international environmental initiatives.

The main findings of the chapter indicate that Kosovo has a good legal environmental basis and that, generally, the transposition of the EU directives into the national legislation is estimated at 60%. In addition to the legal measures, in order of ensuring the protection of the environment and relevant environmental sectors and with the view of more effective implementation of long-term environmental policies, appropriate **strategies, plans** and **programmes** have also been developed. In order of ensuring continues monitoring conditions on the environment and environmental media, Kosovo has an **environmental monitoring system**, which is made of specific monitoring networks and other forms of monitoring based on standard methodologies, surveillance and regular monitoring visits. Special monitoring networks include air quality monitoring, hydrometric network and river water monitoring network.

The i**nvestments in environment** lists some of the main environmental projects, with funding from either Kosovo or donor budget. The section on **regional and international cooperation** presents some of the activities, initiatives and programmes to which the environmental institutions of Kosovo have participated.

2. Driving Forces (D)

Driving Forces – in the environmental protection concept, social, demographic and economic developments are described, including the overall consumption and production levels. The main driving forces are the population growth and evolution of their needs and activities. In fact, they represent major forces that drive changes to overall production and consumption levels. The driving forces exercise pressure on environment through changes in production and consumption.

2.1. Demographic trend

Changes in the total population number and forecast - after the Second World War, with improved socio-economic and sanitary conditions, the population number grew steadily (until the early XXI century), although the immigration persisted at varying levels during the period, culminating in the last decade of XX century, whereby 30% of the overall population of Kosovo is believed to have migrated. As a result of a massive immigration and losses in the 1999 war, for the first time in the period 1991-2011, Kosovo's population saw a decline of the overall population figure by -9.1%. During the 63 year period (1948-2011), Kosovo's population grew by 138.2%.

Population density – the increased population in Kosovo brought about increased average density levels per area unit from 62.7 (1948) to 167 (2013) inhabitants per km^2. This increase also represents an increased impact of the population in the environment. The highest population density is in lower altitude areas (over 600 inhabitants/km^2 – Fushe Kosove), in the lower hilly plains it generally revolves around Kosovo average, with higher hilly-mountains areas experiencing lower population density relative to Kosovo average. There are higher concentrations of the population in lower altitude areas, industrial facilities and urbanisation, factors exerting the largest impact on the environment.

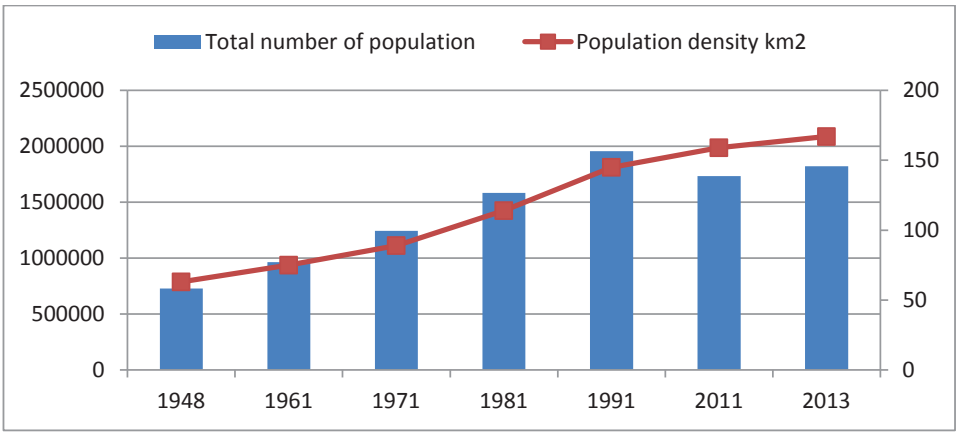


Figure 2: Total population number and density in Kosovo, 1948-2013

Based on the population projects for Kosovo, the total population number will continue to increase until the first half of the 30s of this century, although clearly at much slower rates relative to 60s, 70s, 80s of the last century.

The increased number of the total population produces multiple impacts on the environment, key of which are: the impact on the production level, use of resources, land use patterns, generation of waste and environmental pollution.

Natural population increase – Kosovo's population saw its fastest increase rates during the 60s, when the rate of natural population increase was the highest in the post Second World War period at 29.9% (birth rate 44.1%, mortality rate 14.2%).

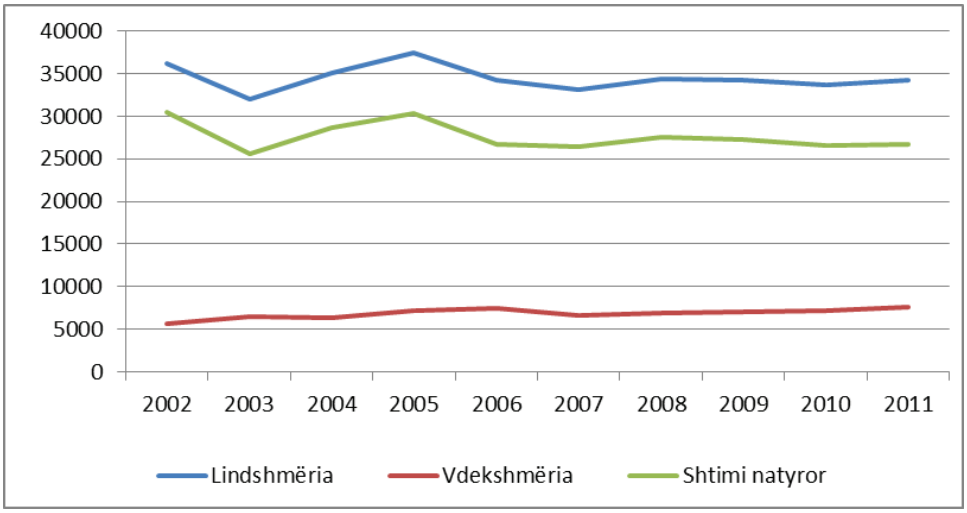


Figure 3: Birth, death and natural population increase rates in Kosovo 2002-2011

Based on the data of the Kosovo Agency of Statistics, in 2013, Kosovo registered its lowest birth rate and natural increase levels per 1000 inhabitants, since the end of World War II until the present date.

Structure of population by age – Kosovo's population is young. In 2006, age group 0 – 19 makes 38% of population, age 20-64 makes 56%, while old age group of over 65 years makes 6% of the total population.

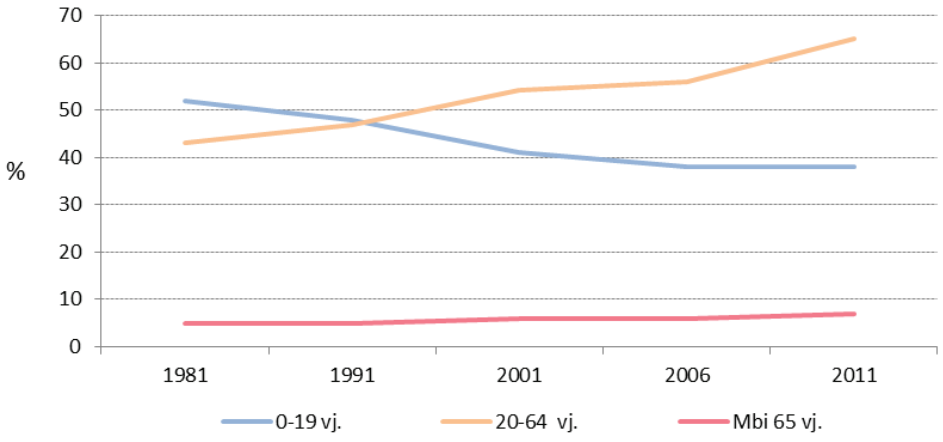


Figure 4: Population Structure by age in Kosovo 1981-2006

The structure of the population by age affects the environment through the production and consumption, as the structure helps shape the labour force, with the population represented as a consumer.

Additional references and sources:	***Internet sources:***
• *Population Census 2011, KAS*	*www.ask.rks-gov.net*
• *Population Survey 2013, KAS*	*www.worldbank.org/country/kosovo*
• *Human Development Report 2012, UNDP*	*www.ks-undp.org*

2.2. Urbanization

Although the urban areas in some respects offer advantages compared to rural areas (they are more compact, occupy smaller areas per capita, efficient in the delivery of water, electricity, roads and better services for waste, etc.) their negative impact on the environment is far greater compared to rural areas. Their negative impact on the environment is especially increased by uncontrolled migrations that occur through: density increase (overpopulation) of the urban areas and depopulation of rural areas, constructions in the suburbs with no urban criteria, lack of infrastructure, difficulties in housing, services of waste collection, uncontrolled disposal of waste from construction, increase in the quantity of wastewater which untreated end up into the natural environment. Then there are also the socio-economic problems, such as: increase in unemployment, lack of quality health services, sanitation,

overcrowding of schools in towns and abandoning of schools in villages as in the case of mountainous areas of Kosovo.

Traffic in urban areas is much more dense and is a major source of the environmental pollution, due to the rapid development of the transport sector, use of old vehicles in a large scale, limited water supply, reduce of green areas in cities, etc. All of these factors exert their influence on the air and water quality, which are very important indicators of the environmental pollution.

The population movements have affected the urban and rural population reports. During 1948-1991 there was an increase in the urban and the rural population in Kosovo, but the urban population growth is much faster. As a result of mass emigrations and losses in the 1999 war, for the first time during the period 1991-2011, Kosovo's population is characterized by decreasing its tendency of the total number of population by 13.8%, of which 9.8% is urban population, and 16.1%[3] rural population. Throughout the period observed, the rural population dominated the population totals.

In 2011 the urban population accounted for 38% of the population and the rural one accounted for 61.9% (1981-32.5%), while in 1948 the urban population accounted for only 9.7% of the total population.

Compared to 1948, the total population in 2011 shows an increase of 137.3%, where the rural population shows an increase of 62.9%, while the urban population shows an increase of 827.4%. So, growth trends of urban population have been much faster than the total and rural population.

Regarding the share in the total population, the urban population reached its peak growth in the period 1961-71 and 1971-'81, when the percentage of urban population increased from 19.5% to 26.9%, , and from 26.9% to 32.5%, respectively.

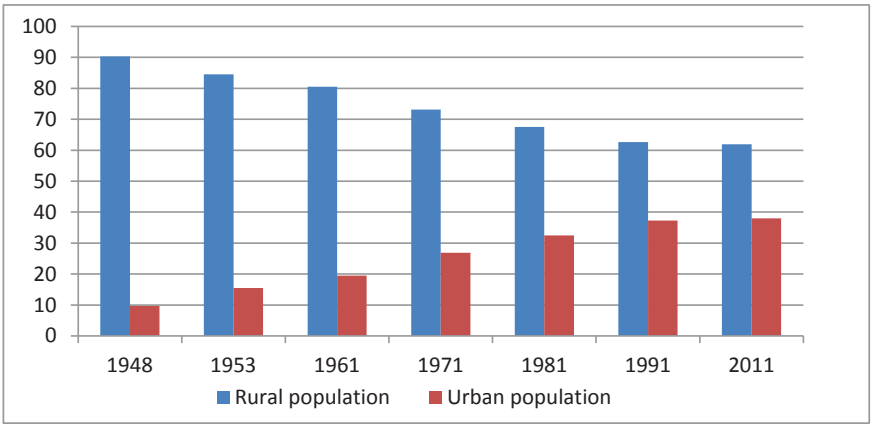


Figure 5: % of rural and urban population in Kosovo 1948-2011

3 *In addition to demographic components, the change of the concept of population census in census 2011 has also affected the decrease in the number of population.*

Besides the urban population growth, the total area of settlements has also increased. Only from 2002 to 2012, it is estimated that the settlement areas in Kosovo have increased to about 8,000 ha (Figure 6). Compared to the other European countries, Kosovo has significantly less surface habitable (settlements), which account for only about 4% of the total area, while the density of inhabitants per square kilometre is estimated to be among the highest in Europe with around 170 people per km². (Figure 7).

Figure 6: Areas of settlements (ha) 2002-2012[4]

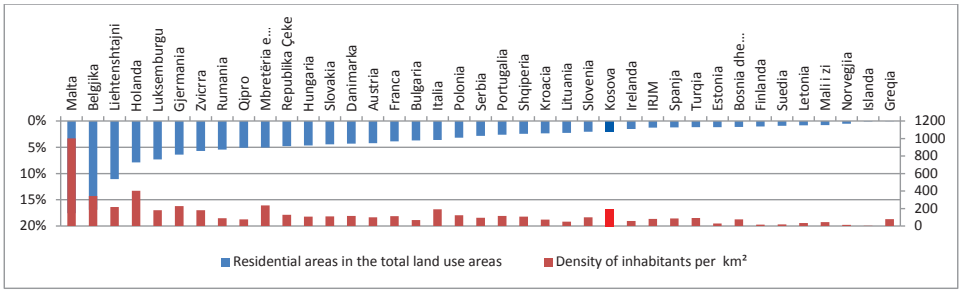


Figure 7: Relation between residential areas and population density in Kosovo and Europe[5]

References and additional resources:	***Online resources:***
• *Population census 2011, ASK*	*www.ask.rks-gov.net*
• *Assessment-Population 2013*	*www.fiskos.org*
• *Kosovo Forest Inventory 2012, APK 2013*	*www.eea.europa.eu/data-and-maps*

4 *Source: Kosovo Forest Inventory 2002 and 2012 / KPA*
5 *http://www.eea.europa.eu/data-and-maps/indicators/land-take-2/assessment*

2.3. Socio-economic development

Kosovo is characterized as a developing country. Since 2000, both per capita income and overall economic development have increased progressively. This is more due to the various donations and also due to the recovery of the local economy.

However, Kosovo has the lowest income per capita in the Balkans and Europe. Also, it is among the countries with the lowest income, globally.

The World Bank data estimated that in 2013, Kosovo had a significant decrease in the overall growth of the Gross Domestic Product-GDP by 3%, which is 0.4% less than in the previous year, while compared to the previous year, the GDP per capita increased from 3,506 dollars in 2012 to 3,877 in 2013.

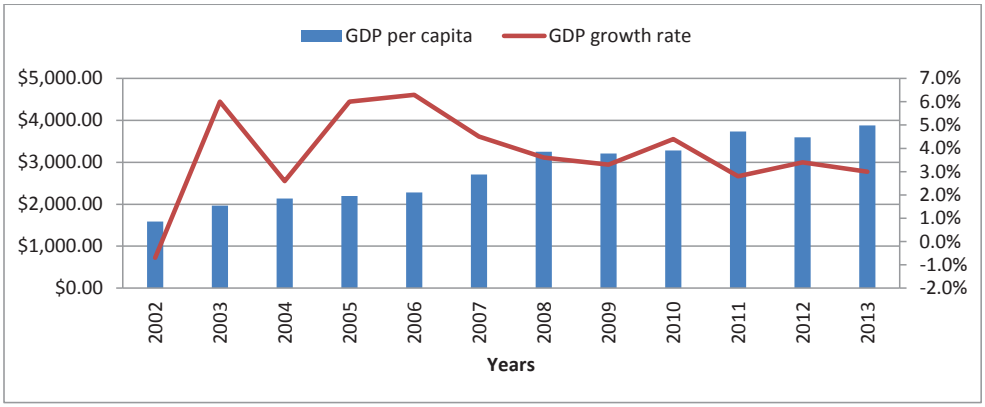


Figure 8: Gross Domestic Product-GDP per capita and overall GDP growth in Kosovo 2002-2013[6]

According to the Kosovo Agency of Statistics, the overall unemployment rate in Kosovo is 30%. 10.2% of the population live in extreme poverty while the overall poverty is 29.7%. Per capita income, in 2013, was 2,935 Euro.

Table 1: Some socio-economic indicators of the population of Kosovo

Unemployment				Poverty		Income
The participation rate in the workforce	The overall unemployment rate	The unemployment rate for men	The unemployment rate for women	The overall poverty	Extreme poverty	Annual per capita income
40.5 %	30.0 %	26.9 %	38.8 %	29.7%	10.2%	2.935 Euro

6 www.worldbank.org/country/kosovo

References and additional resources:	Online resources:
• *Social Welfare Statistics 2014, KAS*	*www.ask.rks-gov.net*
• *Kosovo Labour Force Survey 2013, KAS*	*www.worldbank.org/country/kosovo*
• *Human Development Report, UNDP 2010*	*www.ks-undp.org*

2.4. Exploitation of natural resources

One of the forms of the direct impact on the environment is the exploitation of natural resources. The most common forms of exploitation of natural resources are related to the use of wood mass, water use and also the use of gravel and minerals.

The data shows that the biggest amount of water is used by public water supply companies for drinking the water supply, for household and other consumer needs of public water supply companies and sanitation. The agriculture is considered as another developing sector where the water is mainly used for irrigation of agricultural lands. In the energy sector, the water is used for refrigeration, while in industry, it is used for the production and cooling the equipment. (Figure 9).

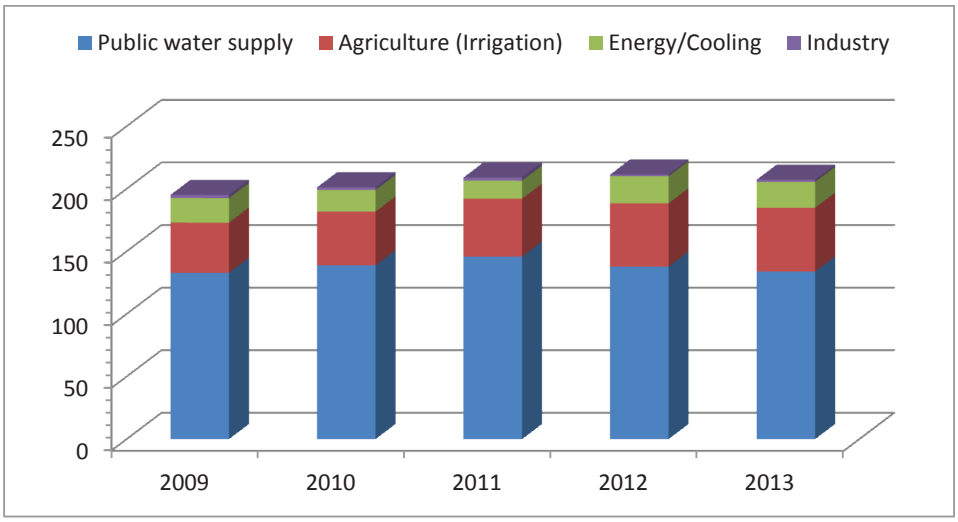


Figure 9: The amount of water spent million m³/year by sector[7]

7 *Data on the use of water from public water supply companies are taken by the RWC performance reports, data for irrigation by the Kosovo Agency of Statistics, and data on water use in Energy and Industry by operators' annual reports: KEK, SharCem and NewCoFeronikel.*

Another common form of exploitation of natural resources is the use of stone and other mineral resources through separations. According to the data from the Independent Commission for Mines and Minerals in Kosovo, 107 economic operators have a license for specific activities of the separation. It is dominated by operators classified as separators with 69% or 74 of them and those classified as concrete base with about 24% or 23 of them, while the type of asphalt base with about 8% or 9 of them. (Figure 10).

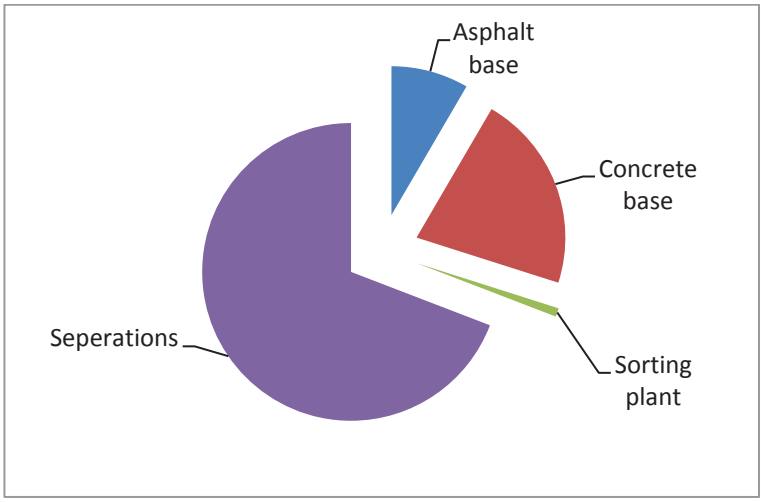


Figure 10: The number of economic operators with mining separation activities[8]

In terms of spatial extension, it is noted that the Municipality of Prizren and Peja have the highest number of economic operators whose main activity is the separation of stone or other minerals.

8 *The Independent Commission for Mines and Minerals (www.kosovo-mining.org)*

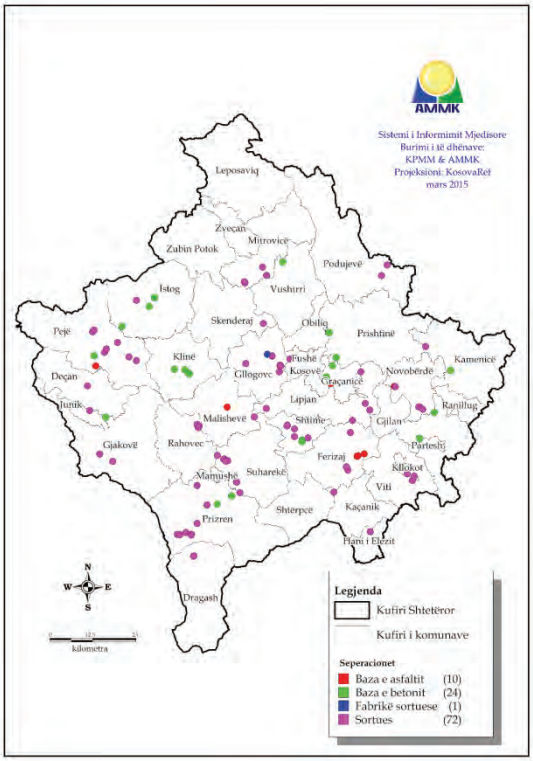


Figure 11: The spatial distribution of economic operators with mineral separation activities

Another form of exploitation of natural resources is the use of gravel/sand from the river. This exploitation is the result of demand and the need for construction and economic development. But in many rivers in the country, the exploitation of gravel was inappropriate and has exceeded the capacity of riverbeds. This exceeded exploitation was followed by consequences not only on the ecosystem of the river and its bed, but also in appearance of floods and river flooding. Based on the data from the environmental inspectorate and field visits carried out by KEPA, it is estimated that the environmental state of rivers continues to be deteriorated by sand exploiters. The degraded rivers and still continue to be degraded are: Drini i Bardhë, Lumëbardhi i Pejës, Ereniku, Lumi Desivojcë, Lumi Krivareke and Ibri. (Table 2).

Table 2: Areas degraded by rivers[9]

River	Area ha 2009	Area ha 2012
Drini i Bardhë	861.1	1011.75
Ibri	2.64	4.5
Morava e Binçës	4.29	4.79
Lumëbardhi i Pejës	93.36	134.5
Ereniku	16.28	19.48
Desivojca	7.76	18.95
Total	**1004.77**	**1219.23**

In order to prevent this degradation, during 2011, the Government of the Republic of Kosovo has issued a decision[10] prohibiting the use and exploitation of inert materials from riverbeds, shores and surrounding areas of rivers in the whole country. This decision has been implemented by MESP and other relevant institutions in 2012. However, despite the implementation of measures in implementing this decision and other activities that have been implemented in order to stop the degradation of rivers and exploitation of gravel, it can be estimated that, so far, the intended results are not achieved.

The exploitation of wood mass from forests either for burning or for other purposes is one of the forms of exploitation of natural resources that has a direct impact on the state of the environment, knowing the role and importance of the forests in the quality of air, regulation of water regime and also the climate.

According to the national forest inventory (table 3), about 1.6 million m^3 of wood per year are cut in Kosovo in average, which are used as fuel or for other purposes. Out of this, approximately 1.0 million m^3 are cut in public forests and 560,000 m^3 in private forests.

Table 3: Average annual forest cut by tree type and ownership (1,000 m^3) according to the test measures in 60% of the territory of Kosovo.

Tree types	Ownership			Total
	Unknown	Public	Private	
Coniferous	0	123	12	135
Timber	2	496	326	823
Total	2	619	338	959

9 *GFO2014, Degradation of rivers in Kosovo; Integrating ecological knowledge into nature preservation and ecosystem management, 44th annual meeting, September 8-12th, 2014, Hildesheim, Germany*
10 *Decision no.02/46 of the Government of Kosovo*

References and additional resources:	Online resources:
• *Report on the state of water 2015, KEPA*	www.ammrk-rks.net
• *National Forest Inventory 2012, APK*	www.fiskos.org
• *Independent Commission for Mines and Minerals*	www.kosovo-mining.org

2.5. Land use and its coverage

Land use - Based on the main results of the National Forest Inventory in 2012, it was concluded that the forests and forest lands represent the main category of land use with about 47%, arable land about 29%, meadows and pastures 15%, settlements with about 4.5 %, water and wet lands about 0.6% and other lands with about 3.9%. Compared to the inventory conducted in 2002, it is concluded that there has been an increase in land area used as: forests, meadows and pastures and settlements. On the other hand, there has been a decrease in land areas used as agricultural land and other land areas.

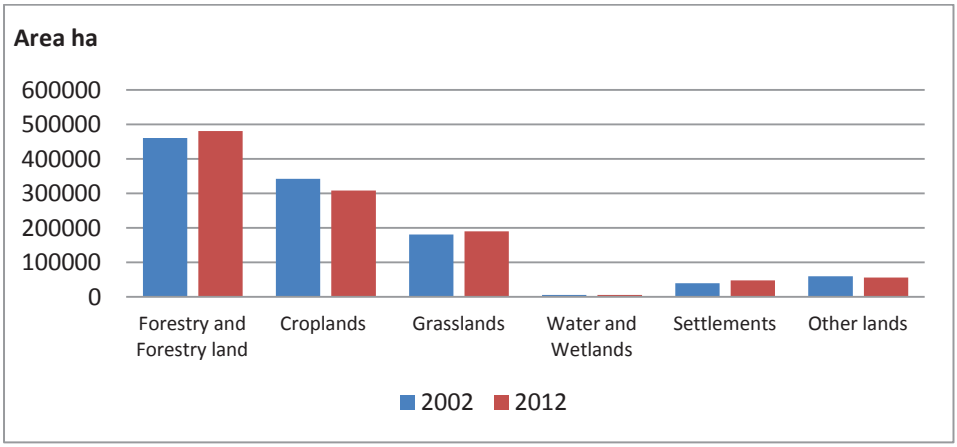


Figure 12: Land use (ha) by category in 2002 and 2012[11]

Coverage of land - According to the data from the satellite images 2012, the process by the Environmental Protection Agency of Kosovo in the framework of the project CLC[12] Implementation 2012 in Western Balkan countries, supported by the European Environment Agency, out of the total of 44 as per CORINE[13] nomenclature, 28 classes of land coverage were identified in Kosovo.

11 *Kosovo Forest Inventory 2012/APK*
12 *CLC- Corine Land Cover (Coverage of land according to the CORINE methodology)*
13 *Coordination of information on the environment*

These classes are grouped into four main classes, dominated by forests and semi-natural areas by about 57% and agricultural lands by about 40%, while the artificial lands represent over 3.0%. About 0.3% of the covered lands are classified in the class of water bodies and wetlands[14].

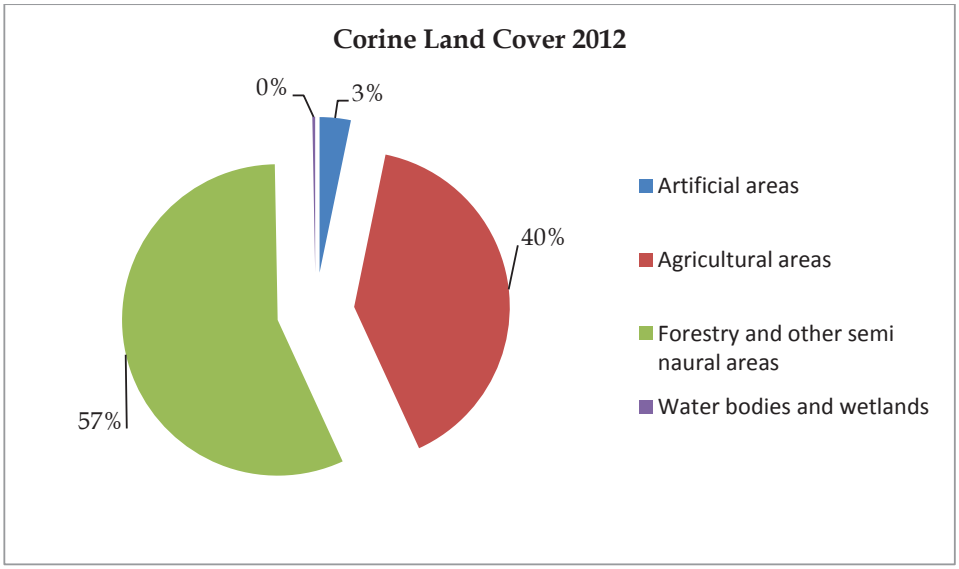


Figure 13: Corinne Land Cover CLC (%) by categories for 2012[15]

14 *Implementation of CLC2012 in the West Balkan Countries/EEA 2014*
15 *AMMK, CLC Implementation project for 2012*

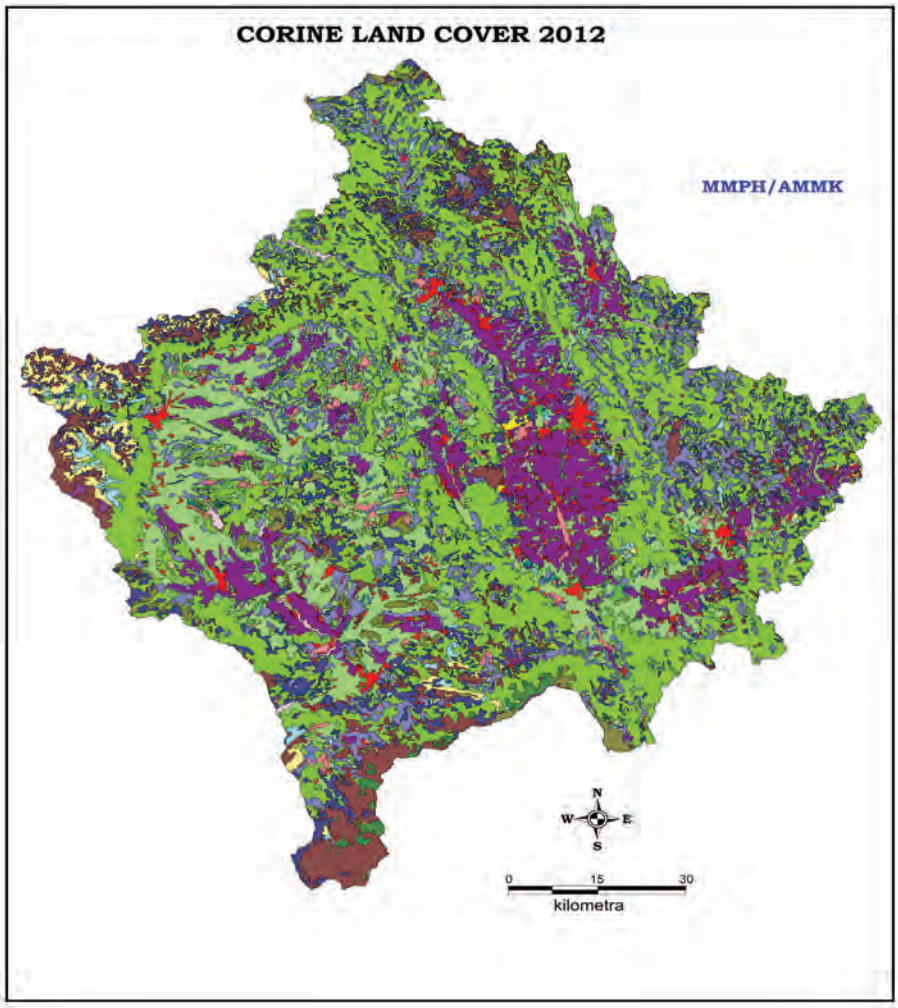


Figure 14: The map of the coverage of lands, according to the CORINE methodology (CLC) in Kosovo for 2012 (Source: KEPA)

References and additional resources:	Online resources:
• National Forest Inventory 2012, APK	www.ammrk-rks.net
• Environmental Quick Factsheet 2015, ASK	www.fiskos.org
• Agriculture Census 2014, ASK	www.esk-rks-gov.net
	www.eea.europa.eu/data-and-maps

3. Pressures (P)

Pressures on the environment describe the development in the environment resulting from the release of substances (emissions), physical and biological, resource exploitation and land use in human activities. The pressures exerted by society represent a variety of processes that are manifested in changing the environmental conditions. The examples of pressure on the environment are emissions of CO2 in the atmosphere, the use of gravel and sand for construction or use of land for construction of roads.

The pressures on the environment can also be treated by certain development sectors. The sectoral pressures represent pressures on the environment by certain economic and other sectors, through which, in order of satisfying their socio-economic needs, people cause significant environmental impacts. The use of space, natural resources and various types of services that have an impact on the environment, also reflect in changing the natural balance, consumption of natural resources and human health. The dimensions of these impacts, mechanisms of action and effects on the environment are dependent on many factors. Failure to take adequate measures in preventing and eliminating them, in most cases cause irreparable environmental effects.

In order of assessing the environmental impacts more easily, it is practiced to group the sectoral effects by economic activity, which in reality are treated as a separate sector.

Some economic activities, such as: energy, industry, transport, etc., are obviously sources of significant impact on the environment, while agriculture, forestry, etc., remain in other relation to the environment and, as such, rely heavily on the state of the environment. The observation of their effects on the environment should never be ignored. Tourism is an economic sector, whose effects on the environment have been recently identified.

The observation of the effects of sectors on the environment has an advantage, particularly in planning and drafting development strategies. In addition to observation of the sectoral effects separately, the observation of the areas in which it comes to the impact of the joint actions of several other sectors is also of interest. Chemicals belong to this group, the production and use of which is nowadays increasing by several sectors.

3.1. Energy

The energy plays an important and irreplaceable role in the modern human life. But its impact on the environment is quite significant. Regardless of the way of the energy production, it has a significant impact on the environment, due to the operations that accompany it, from providing raw materials and its transport to the manufacturing processes and the use of energy itself. Achieving a balance between the demand for energy and preservation of environmental state is a great challenge. By choosing the types of energy sources and appropriate technologies, the impact on the environment will be reduced.

The Energy Strategy of the Republic of Kosovo 2013-2022 is the basic document that defines energy policies and the development goals in the sector, in accordance with international standards for sustainable development, environmental preservation and social welfare, increasing the viability of domestic use of the energy resources[16].

It is estimated that the energy sector in Kosovo is the sector that has the greatest impact on the environment. Coal with 65% has the highest share within the primary energy resources available for 2013. Lignite represents about 97% of the total of coal that is used as the primary energy source. Renewable energy sources (wind, solar and hydro) represent only about 10% of the primary energy sources available.[17]

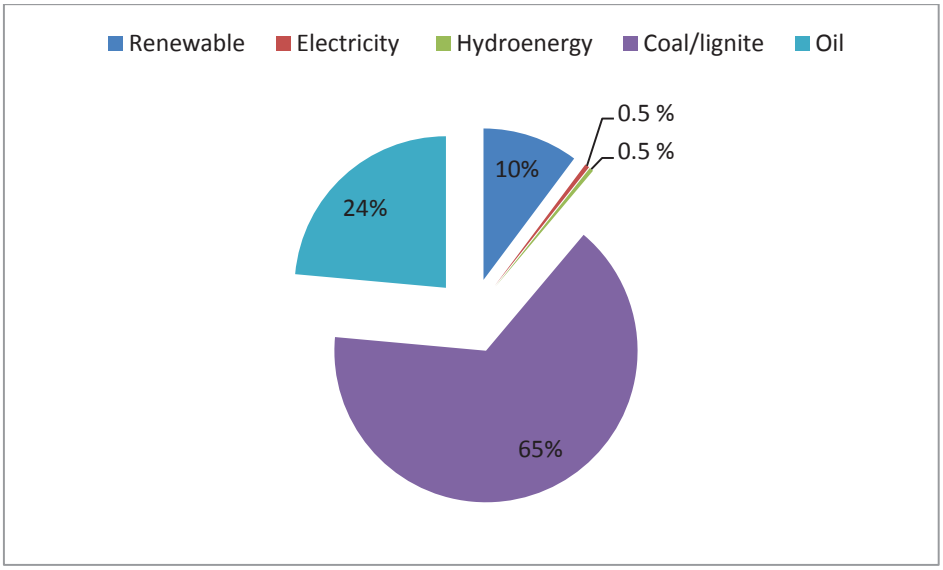


Figure 15: Primary energy sources available 2013[18]

16 *The Energy Strategy of the Republic of Kosovo 2013-2022*
17 *Energy balance 2013 , MED*

18

Also, analysing the trend of the primary energy sources available, it is noted that coal continues to have a rising trend, while despite growth, the renewable energy sources remain at a low level (figure 16).

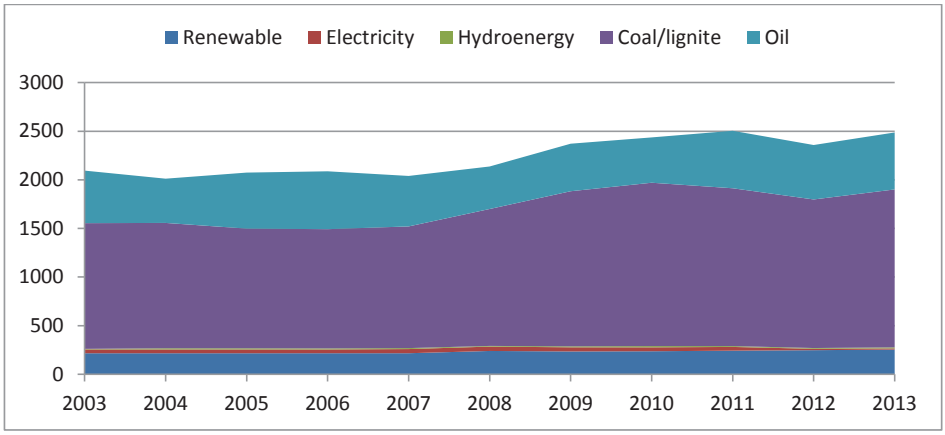


Figure 16: Primary energy consumption (ktoe) by fuel type (fuel) 2003-2013[19]

The same happens in the participation of renewable energy in total energy production, where the renewable energy production represents only about 10 ktoe, compared to the total energy production of 2,500 ktoe (Figure 17).

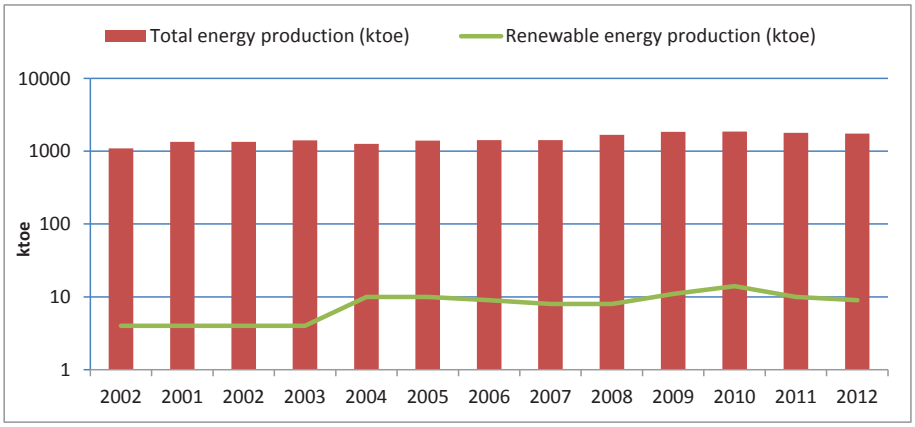


Figure 17: The ratio between the total electricity production and renewable energy 2000-2013[20]

In order to analyse the impact of the energy sector on the environment, the overall emissions from the energy production process should be analysed in the first place, including: the pollution of water, air, soil, waste management, noise and radioactivity.

19 *Energy balances 2002-2013, MED*
20 *Ibid*

The Kosovo Energy Corporation, as the main operator in the production of energy through PPA and PPB, prepares monthly reports on the state of the environment through which the environmental impacts are presented. By analysing the data on dust emissions from PPA and PPB for the period 2007-2014, we can see that PPA had a continuous decrease of dust emissions, while PPB had an increase of dust emissions (Figure 18). This decrease of dust emissions by PPA can be justified by the investments in the deployment of electro-filters that were made in this plant, while the increase of emissions in the PPB is the result of the aging of electro-filters of this plant.

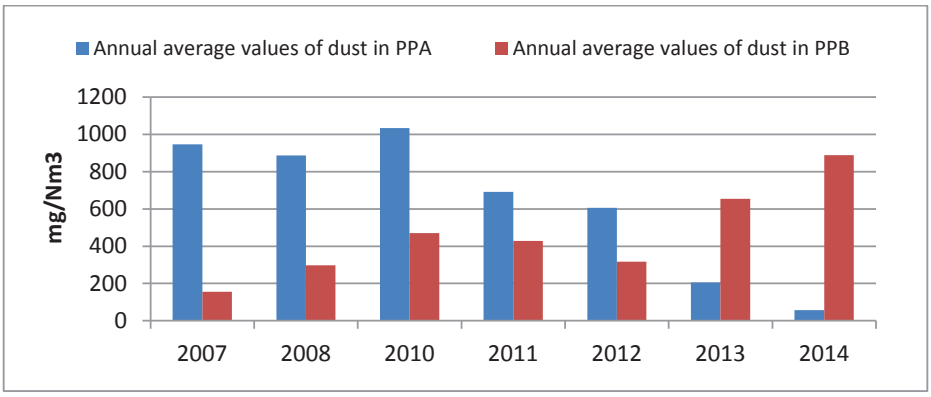


Figure 18. Annual average values of dust in PPA and PPB during 2007 – 2014[21]

Figure 18 shows emissions of SO_2, in both power plants: PPA and PPB for the period 2007-2014. Compared to 2010, it is noticed that emissions of SO_2 have been lower in both PP-s, although a bigger reduce of SO_2 emissions is noticed in PPA. While in NOx emissions, no change in reduce of emissions is noticed (figure 20).

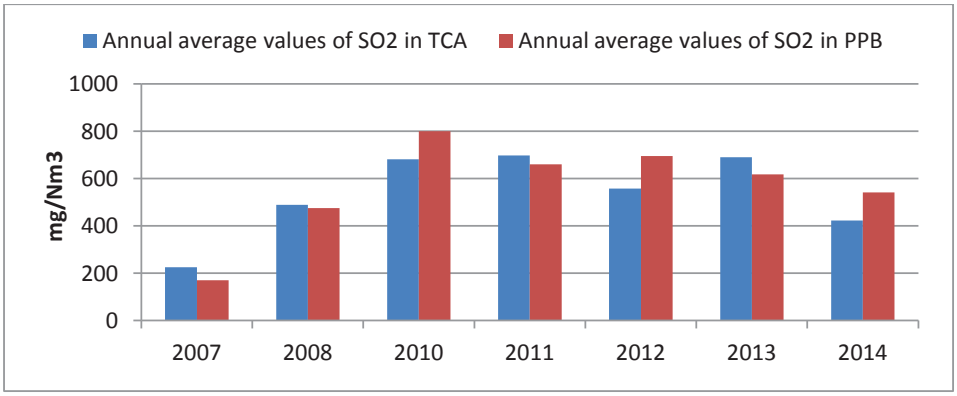


Figure 19. The annual average values of SO_2 in PPA and PPB during 2007 – 2014[22]

21 *Monthly and annual environmental reports of the KEK's Department of Environment*
22 *Ibid*

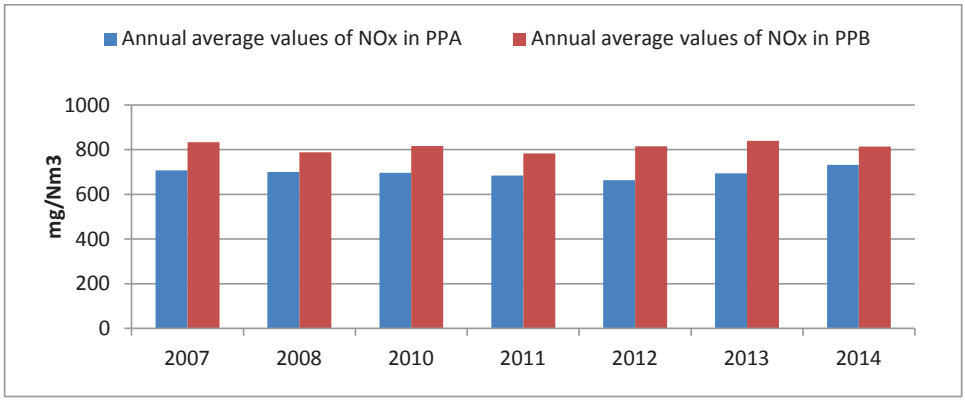


Figure 20. The annual average values NO_x in PPA and PPB during 2007 – 2014[23]

In the Obilic area, due to the impact of energy production, the continuous monitoring of air quality is performed by three stations that are located in Obilic, Dardhishte and Palaj. These stations are of industrial background and managed by IHMK. The values of monitored parameters (SO_2, NOx, O_3, PM10 and CO) for 2003 and 2004 are presented in table 4.

Table 4: Data on air quality in the area of KEK by IHMK[24] *monitoring*

Monitoring stations	2013					2014				
	SO_2 (ug/m³)	NO_x (ug/m³)	O_3 (ug/m³)	CO (mg/m³)	PM10 (ug/m³)	SO_2 (ug/m³)	NOx (ug/m³)	O_3 (ug/m³)	CO (mg/m³)	PM10 (ug/m³)
Obilic	7.89	13.92	48.3	0.630	53.1	19.59	29.57	64.7	0.92	48.6
Dardhishte	8.3	12.31	56.3	0.700	52.8	11.63	12.47	22.70	0.63	44.24
Palaj	5.4	6.7	54.4	0.480	48.3	18.97	9.32	30.8	0.79	37.99
Allowed annual values	125	200	120	10	40	125	200	120	10	40

The table shows that within the year, the exceedances of allowed values (40 ug/m³) for PM10 in 2013 were recorded in three stations, while in 2014 in stations of Obilic and Dardhishte. Other parameters were within the allowed limit values. (For more see the air chapter).

Based on the data presented on air quality and emissions into the air, it can be concluded that the environmental conditions in Obilic are improved. This is mostly due to the fact that the electro-filters are installed in Kosova A, in PP A3, PP A4 and PP A5. This is also proved by the data of dust emission measurements, whose values have reached the allowed values for dust emission, as provided by the

23 *Monthly and annual environmental reports of the KEK's Department of Environment*
24 *Hydrometeorology Institute of Kosovo*

Administrative Instruction No.06/2007 on emissions from stationary sources. Also the continuous emission monitoring system is installed in Power plant Kosova B (Dust, SO_2 and NO_x). There are also improvements in the management of waste ash, since the project for its hydraulic transport from landfill of Kosova A is completed, and now the whole quantity of ash from all power plants of KEK are disposed in empty spaces of Surface Mining of Mirash. While within the project for cleaning and removal of hazardous waste (phenolic water, tar, di-isopropyl, middle oil etc.) by Gasification Unit, according to the annual reports of KEK's Department of Environment, there is only a small amount of these matters, since most of them are sent abroad for treatment.

In order to continue to improve the environmental state of the area of Obilic, it is necessary to continue to further improve the technology in a series of process of energy production, better management of waste and their treatment, such as, industrial waste oils.

In terms of the energy sector at the national level, it is required to continue to invest in the production of renewable energy, further promote and support the energy efficiency and compliance with environmental criteria and standards in the process of building new energy capacities. It is also required to improve the monitoring of emissions into the environment by the energy sector.

References and additional resources:	***Online resources:***
• *Report on the state of the air 2013, KEPA*	*www.ammk-rks.net/ajri*
• *Air quality in area of KEK 2013, KEPA*	*www.mzhe.rks-gov.net*
• *Energy balance 2002-2013, MED*	*www.kek-energy.com*
• *Environmental Quick Factsheet 2015, KAS*	*www.esk.rks-gov.net/mjedisi*

3.2. Industry

Industry is the key to the economic development of a country, but at the same time, it has a major impact on the environment. The resources used in the industry development are: energy, water and other resources. From the industrial activities, emissions are released on water, air and land. The industrial disasters pose another constant threat to the environment and human health. While the production of waste by most industries is another segment of the impact of this sector on the environment.

The industrial development of Kosovo is based almost exclusively on the exploitation of natural resources (coal, metal ores, non-metal ores, etc.). In the past, this development was characterized by intensive exploitation of natural resources by building large capacities (70s and 80s of last century) but with the obsolete technology and non-friendly to the environment. However, their impact on the Gross Domestic Product was very high (up to 50%) since the contributors were energy, ferrous metals and processing of metals.

The structure of the industry and their technology was and continues to be unfavourable, because it is dominated by the extensive industry based on the use of coal and metal ores. Many products in the industry that could be produced in Kosovo are nowadays imported from abroad. Privatized SOEs, except Sharrcem and Ferronikel, are not operational or operate with difficulties due to outdated technology and lack of funding in technology. The environmental impacts from such enterprises are significant in the pollution of air, water, soil and waste generation. Residues of industry activity inherited from the previous periods are numerous and require investments for their rehabilitation.

Under the Ministry of Trade and Industry, there is the Department of Industry, which proposes and designs sectoral and sub-sectoral policy documents, legislation and measures for the advancement of the industry, and ensures the implementation of policies for industrial development in Kosovo. It is not necessarily a particular document for national policy in this sector, but it is part of government programs. MTI has developed a concept of Policy on Kosovo Industry (PIK) 2014-2020 related to specific sectoral policies based on the National Development Strategy (NDS) 2020. Some of the common objectives of these strategies are: sustainable economic development and revenue increase, through capacity building, technological improvement and efficient use of natural resources.

Whereas, within the Environmental Protection Strategy 2013-2022 in the chapter of industry, as a environmental objective for the sectors, are: the improvement of the environmental performance of industrial units through the implementation of environmental management systems, establishment of the mitigating mechanisms for meeting the environmental standards and encouragement of the improvement and advancement of the production process through the application of the best practices and clean technologies[25].

25 *Environmental Protection Strategy 2013-2022, MESP*

The industrial activities, exploitation of minerals, lignite, production of building materials, cement production, processing of rubber, plastics, food processing, production of soft drinks, etc., cause impacts on the environment (water, air, soil, waste generation , the emission of noise and effects on ecosystems). Associated with air emissions (SO_2, $NO_{x,}$ dust and CO_2), the industrial activities increase the impact on the environment due to the participation in climate change. The discharges of untreated water into river streams and the occupation of land areas for disposal of industrial waste are direct pressures that impact the environment and public health.

In the absence of data from other active operators within this sector, the data on emissions from cement production SharrCem in Elez Han and Industrial Complex NewCo Ferronikeli Complex L.L.C will be presented.

The data on the average annual values of dust emissions by NewCoFeronikeli are presented in figure 21. As shown in the figure, there have been exceedances of the allowed values for these emissions in 2013 while in 2014 there were no exceedances of the allowed values. Exceedances of the annual average values were also for emissions of SO_2 for 2013, while for emissions of NOx, there were no exceedances of the allowed annual values (Figure 22). Both figures show that compared to 2013, there are significant decreases of average annual values of emissions in 2014.

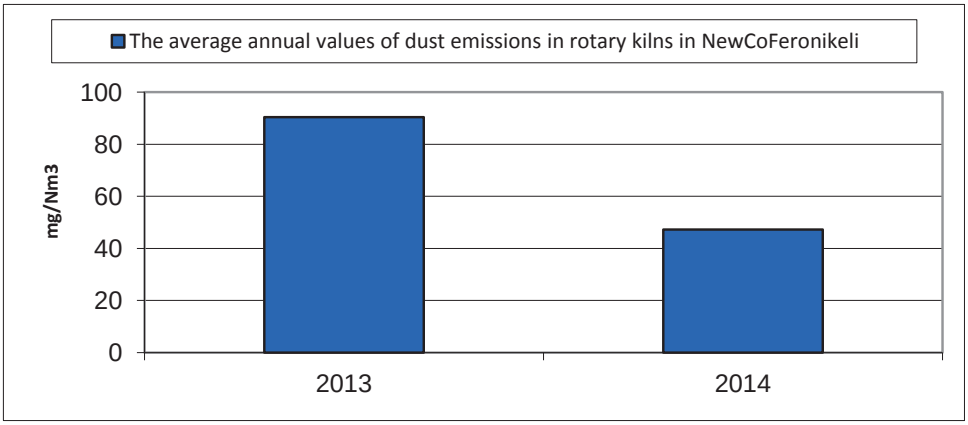


Figure 21: The annual average values of dust emissions in rotary kilns in NewCoFeronikeli 2013-2014[26]

26 *Annual report 2013/2014, Department of Environment, NewCoFeronikeli*

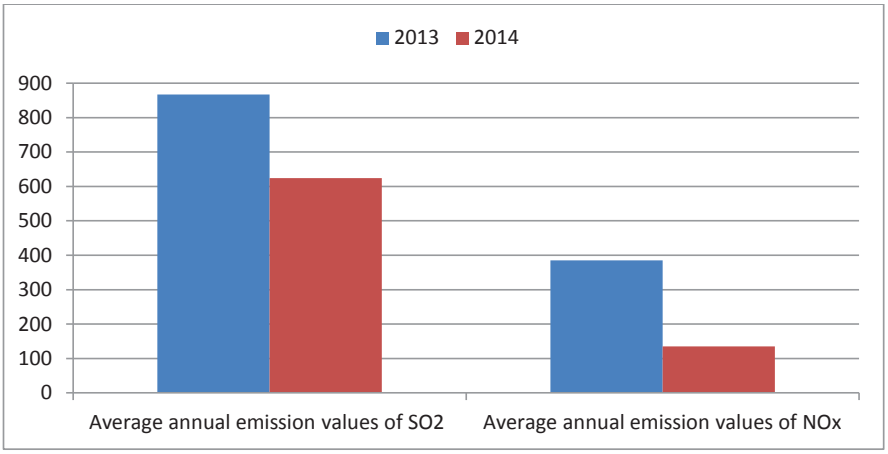


Figure 22: The annual average emission values (mg/Nm³) of SO_2 and NO_x rotary kilns of NewCoFeronikeli for 2013-2014[27]

Data on dust emissions by SharrCem are presented in Figure 23. Based on the data, it can be concluded that during 2012-2014, there is a significant decrease of the average annual values for dust emissions and there are no exceedances recorded. Also the data on emissions of SO_2 and NOx by SharrCem, for the period 2003 - 2014, presented in figure 24, show that during 2011-2014, there were no exceedances of the average annual values for NOx, while for emissions of SO_2, the exceedances of these values have been recorded in 2010, 2011 and 2013. In long term aspect, it is noticed that during 2003 to 2014, there has been a continuous decrease in emissions of SO_2 and NO_x.

Data on air quality by monitoring of IHKM in the station of Elez Han, which is located in the area impacted by the Factory SharrCem, are presented in the chapter on air.

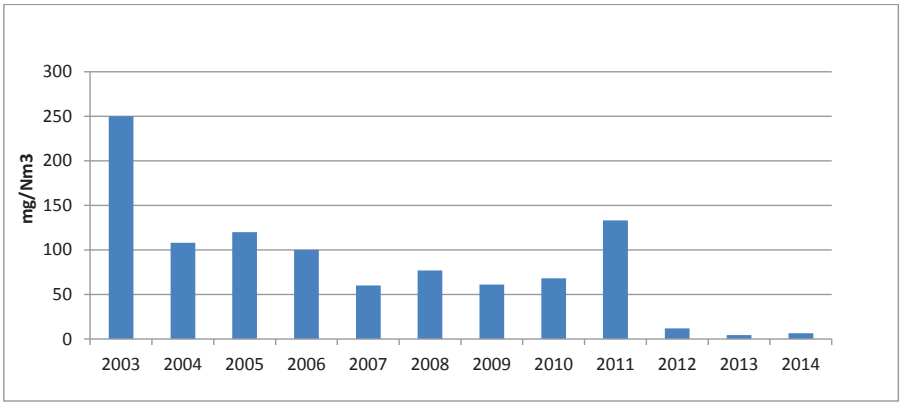


Figure 23: The annual average values of dust in SharrCem during 2003 – 2014[28]

27 *Ibid*
28 *Annual reports of SharrCem 2003-2014*

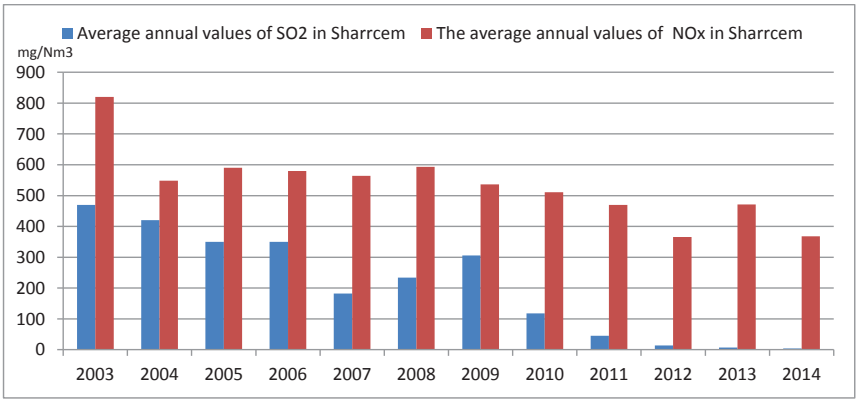


Figure 24: The annual average values of SO_2 and NOx by SharrCem during 2003 – 2014[29]

In order to reduce and prevent the pollution from the sector of Industry, it is recommended for the industry to be focused on improving the environmental performance through the implementation of systems of environmental management, waste management and treatment of wastewater and the advancement of the production process through the application of best practices and clean technologies. While institutions should engage in establishing facilitative mechanisms for meeting environmental standards and facilities and support for industries to improve manufacturing technologies.

References and additional resources:	***Online resources:***
• *Report on the state of the air 2013, KEPA*	*www.ammk-rks.net/ajri*
• *Environmental protection strategy 2013-2022, MESP*	*www.mmph-rks.org*
• *Environmental Quick Factsheet 2015, KAS*	*www.esk.rks-gov.net/mjedisi*

29 Ibid

3.3. Transportation

This sector affects the quality of the environment, especially in urban environment. Most vehicles use diesel, which means a release of emissions into air, water and soil. Also, during road construction, the landscape and land changes are made, including a potential degradation in habitat. Unusable vehicles also pose a serious environmental risk. From transportation of hazardous materials, it can easily come to accidents with fatal consequences for the environment.

In the context of sectoral policy-making, the Government of Kosovo has also drafted and approved the Multimodal Transport Strategy and Action Plan. The main aim of this strategy is to contribute to the economic growth through the establishment of integrated, efficient, and low cost multimodal transport system (road, rail and air), and which does not threaten the environment. As part of this strategy, the environmental impacts are planned, that may arise as a result of the development of infrastructure projects. The approach to the environmental protection of this strategy is consistent with the Law no. 03/L-025 on Strategic Environmental Assessment which clearly specifies that for all of the infrastructure projects, the strategic environmental assessments should be previously carried out, which would enable the harmonization of economic development and social wellbeing through basic principles of the environmental protection, according to the concept of sustainable development. The environmental factors identified in this document and that should be considered for their protection before any decision for the development of any infrastructure project is taken, are also the protected areas, where it is stated that these areas should not be impacted in terms of deterioration of ecosystems, then hydrological factor, landslides, air pollution, waste management, etc.[30].

The Strategy on Climate Change (SCC) 2014 - 2024, as part of the measures proposed in this sector are: reduction of greenhouse gas emissions, reduce noise and road infrastructure development conducive to environmental protection. While the main objective of Environmental Protection Strategy 2013-2022, in order to reduce environmental impact in the transport sector is to design, develop and operationalize a system of sustainable and safe transport in accordance with the requirements of environmental protection.

Kosovo population growth and increase of the need for movement and mobile means, is considered as the main driving force in the development of this sector and its increase of impact on the environment. While the increasing number of vehicles and poor fuel quality are considered as the driving force that had a direct impact on air pollution and the environment in general.

Transport also affects the environment through land occupation and change of destination of agricultural land use and other land.

30 *Multimodal Transport Strategy and Action Plan 2012- 2021*

Road transport network in Kosovo consists of transport road with 78 km motorway, 631 km of highway and 1,295 Km regional roads. As noted in Figure 25, only during the period 2010-2013 there is an increase of 80 km of new roads, most of them in the motorway category. Converting to hectares, it is estimated that more than 230 ha are occupied only from these roads, mainly agricultural land area and forestry.

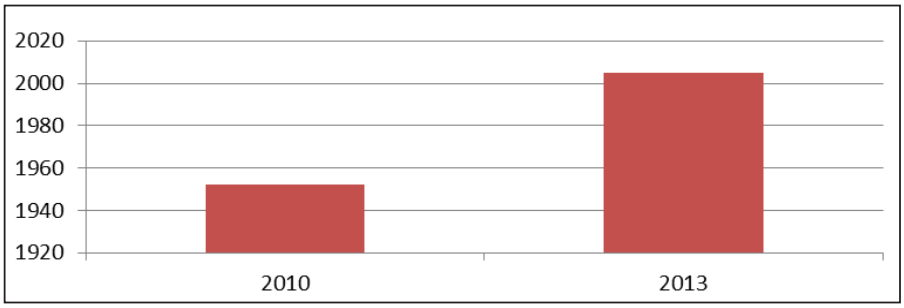


Figure 25: Roads in Kosovo (km) 2010-2013

Vehicles are used as the main means of transport in Kosovo, where this comes as a result of not proper functioning of urban transport which operates with outdated buses that are too slow and cause too much pollution. As shown in the figure, from 2006 to 2014, there was a progressive increase in the number of vehicles in Kosovo. Based on this, it can be concluded that there was also an increase of combustion of fuel from these vehicles, which consequently increased the amount of pollutants in the air. According to the greenhouse gas inventory of 2012, road transport contributes by 12% of the total emissions in the energy sector and it is the second sector in the country, after the energy industry that emits 75% of emissions.

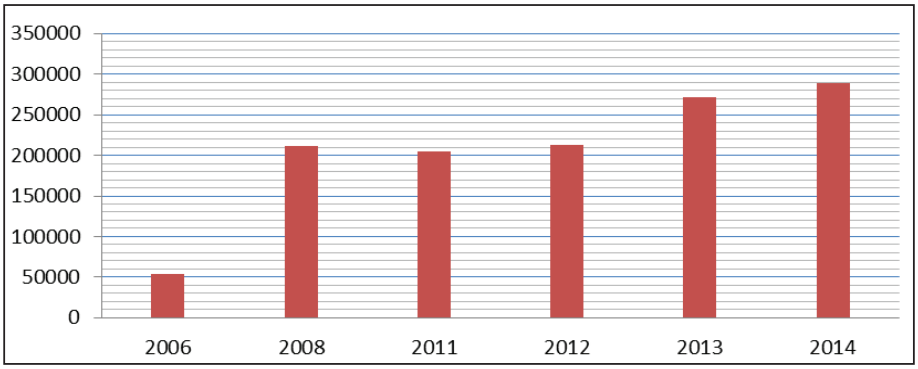


Figure 26: The number of vehicles in Kosovo 2006-2014[31]

The train is also used as the inter urban transport mean. Kosovo has 333 km railway network. Since 2015 until 2013, there has been a constant increase in the number of passengers who use the train to travel.

31 *Transport and telecommunications statistics 2015, KAS*

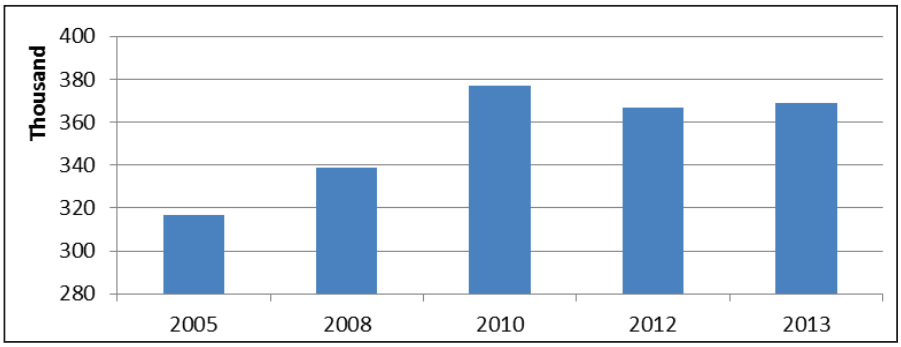


Figure 27: The trend of the use of railway transport [32]

The air transport in Kosovo is mainly used for international transport. According to the data from the International Airport of Prishtina "Adem Jashari", during the period 2006-2013, the number of passengers and number of flights has increased progressively. Figure 27 presents the trend of travellers who used air transport through IAP. The figure shows that from about 90 thousand passengers in 2006, the number of passengers is increased to over 1,600 thousand in 2013.

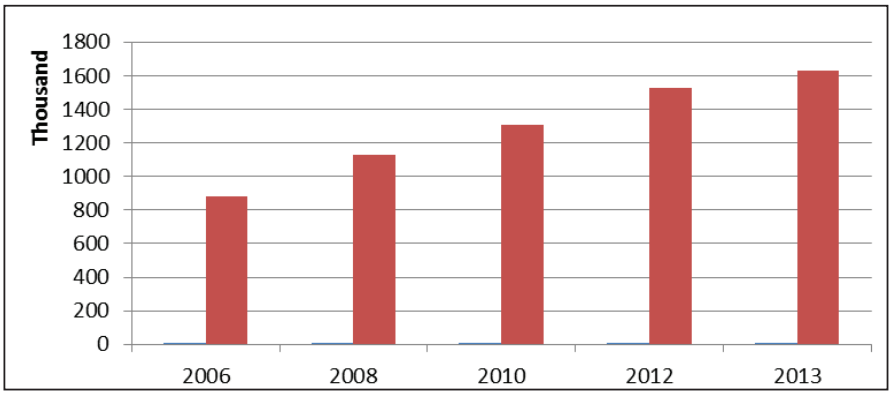


Figure 28: Passenger Trend at the "Adem Jashari" International Airport [33]

In order to mitigate the environmental pressures coming from the transport sector, the following measures are recommended: use of more qualitative fuel, use of alternative transport which produces less pollution on the environment, a time limit of use of old vehicles and those without catalytic converter, the implementation of allowed noise standards of vehicles, rehabilitation of the existing road infrastructure and solution of the problem of old and disposed vehicles.

32 *Ibid*
33 *International Airport of Prishtina "Adem Jashari"*

References and additional resources:	***Online resources:***
• *Emission of greenhouse gases in Kosovo 2009, UNDP* • *Transport and telecommunications statistics 2015, KAS* • *Environmental protection strategy 2013-2022, MESP* • *Environmental Quick Factsheet 2015, KAS*	*www.ammk-rks.net/raporte* *www.mmph-rks.org* *www.esk.rks-gov.net/transporti* *www.mi-ks.net*

3.4. Agriculture

After 2000, the tendency of increasing agricultural production, and also the tendency of developing agriculture in Kosovo has been noted. The number of farms and agricultural producers is increased. The use of fertilizer, chemicals and other chemical products with environmental impact is increased. However, despite these developments, the interest in producing ecological (organic) products is still at a low level.

In the framework of the proposed measures for the sector, The National Plan for Agriculture and Rural Development 2010-2013 also provides measures on: environmental protection and sustainable use of land and improved management of natural resources[34]. While the chapter of agriculture within the Environmental Protection Strategy 2013-2022, in the context of development goals, provides the protection and rational use of agricultural land, support for organic production, control of the use of fertilizers and pesticides and the protection of native species of plants and animals at risk.[35]

Also, the Strategy on Climate Change, in the framework of measures for adaptation to climate change, provides the adaption to changes in the agricultural sector, while in the framework of activities for the completion of the inventory of greenhouse gases, the gases of the greenhouse from agriculture sector are also inventoried.

Population growth and increasing need for food is considered as the main driving force in the development of this sector and its increasing impact on the environment. While the expansion of settlements and urbanization are regarded as the driving forces that have a direct impact on the reduction of agricultural land.

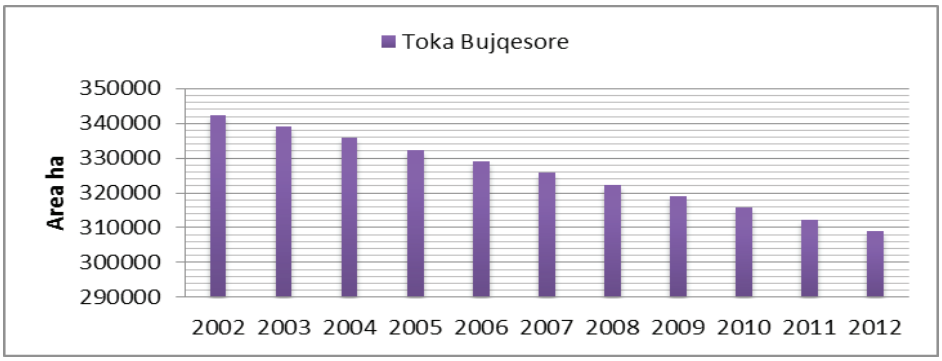


Figure 29: Agricultural land areas (ha) 2002-2012[36]

34 *The Agriculture and Rural Development Plan, 2010-2013, MAFRD*
35 *Environmental Protection Strategy 2013-2022.*
36 *Kosovo Forest Inventory 2002 and 2012, APK*

The reduction of agricultural land and change of the destination of their use remains one of the key problems in the sector. According to the data from the Kosovo Forest Inventory 2002 and 2012, it results that the agricultural area are progressively reduced. From 342,400 ha in 2002, 309,000 ha are recorded in 2012, which is estimated that during this period, an average of about 3000 ha of agricultural land per year are reduced or changed their destination. (Figure 29)

Key environmental pressures by agricultural sector mainly occur by the use of chemical fertilizers, pesticides and other agricultural chemicals. According to the data from the surveys on agriculture carried out by the Agency of Statistics, about 80,334 tons of fertilizer were used in 2013, which in their content have nitrogen (NPK, UREA and NAG). Based on the amount of fertilizer used, it is estimated that around 26,592 tonnes of nitrogen (N)[37] are used in agriculture.

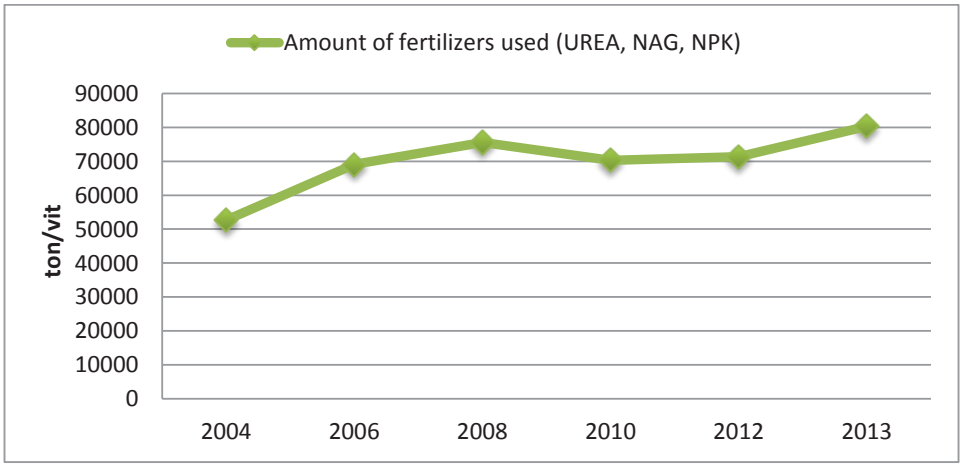


Figure 30. The trend of usage of fertilizer 2004-2013 tonnes/year[38]

The agricultural sector is considered one of the sectors that is a source of greenhouse gases. According to data from the greenhouse gas inventory, in 2012, this sector contributes with about 600 Gg CO_2 equivalent, which mainly come from the use of urea, enteric fermentation from cattle, farmyard manure management and agricultural land management.

As a key sector of food production, the agricultural sector has a direct impact on public health. The quality of agricultural products, the quality of land use for production of food in one hand and the impact on pollution of surface water by chemical products used in agriculture in the other hand, are just some of the forms of impact on public health, although there is no concrete data and research that would assess this impact.

37 *The amount of nitrogen (N) is calculated based on % of its content within the used fertilizer (46% UREA, 32% NAG and 22% NPK).*

38 *Calculation of data based on KAS surveys on agricultural households*

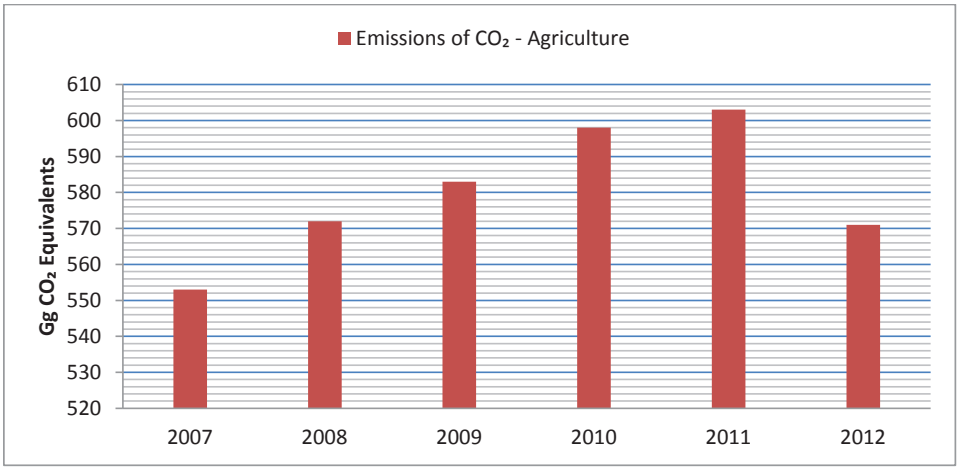


Figure 31: Trend of emissions of CO_2 in the agricultural sector

With the support of the European Commission, during 2012-2014, the project ALPS "Research on the Agriculture Land Pollution Survey in Kosovo" was implemented, which among other things, its goal was the evaluation of the status of agricultural land in terms of contamination and pollution. Within the project, a monitoring of 214,749 ha of agricultural land in 17 municipalities was made. 2,840 of soil samples[39] were taken for analysis. (For more, see the chapter on Land / soil, in this report).

In order to improve the situation and mitigate the environmental impacts from the agricultural sector, it is recommended to establish a monitoring system for soil quality, where among other things, it would monitor the soil quality in agricultural land. Also, the measures in the framework of control and monitoring of usage of pesticide, fertilizer and other chemical products used in agriculture and their spread on environmental media should be taken. Finalizing the inventory of greenhouse gas emissions in this sector would help to identify all sources of greenhouse gas emissions in agriculture. Stimulation and support for the production of organic products and protection of agricultural land from changing their destination is considered as a need that should be implemented in the future.

39 *The final report of the project "Agriculture Land Pollution Survey in Kosovo", GIZ International Services and NIRAS 2015*

References and additional resources:	***Online resources:***
• *Agriculture and Rural Development Plan, 2010-2013, MAFRD* • *Agricultural Household Survey 2014, ASK* • *Kosovo Forest Inventory 2002 and 2012, APK* • *The final report of the project "Agriculture Land Pollution Survey", GIZ 2015*	www.ask.rks-gov.net/bujqesia www.mbpzhr-ks.net www.fiskos.org ww.alps-kosovo.org

3.5. Forestry

Forests are the most complex natural ecosystems with ecological, economic and health importance. They are natural regulators of climate, preserve the quality of water, air and protect the soil from erosion and rinsing of productive layer. Forests are also the greatest accumulators of CO_2 quantity in soil and main suppliers of the atmospheric oxygen. They are natural renewable resources, products of which can be used in industry, incineration and for other purposes. Forests are ecosystems in which a large number of plants and animal species is grown, with nutritional and medical importance to man. In addition to resisting strong winds, they are also recreational media for man.

Regarding the national policies on the forestry sector, Kosovo has adopted the Forestry Development Strategy for 2010-2020, prepared by MAFRD, with the main objective to increase the contribution of the forest sector to the national economy through sustainable exploitation of forest resources, taking into account the multi-functional role of forests[40]. The other important document in the forestry sector is the Strategy of Climate Protection in the forestry sector, with the main objective to identify and analyse the institutions, policies, methods and forms to reduce greenhouse gas emissions and remove CO_2 through their accumulation/reduction.[41] The Strategy and Action Plan for Biodiversity 2011-2020 is a part of the documents for the protection of forests, which within its priorities (strategic actions), among others, provides that forest management should be conducted on the principles of sustainable development and forest certification schemes[42].

According to the forest inventory conducted in 2013, forests and forest lands cover 47.4% of the territory of Kosovo or 510,200 ha, which represents an increase of 5% compared to the 2002 census, where forests covered 44.7% of the territory or 489,000 ha. Kosovo's forests are dominated by timber forests, covering 93%. Coniferous forests cover about 5% of the forest area (23,800 ha). In total, 180,800 ha (38%) of Kosovo's forests is classified as private property, and 295,200 ha (62%)

40 *Forestry Development Strategy 2010-2020, MAFRD*
41 *Climate Protection strategy in the Forestry Sector, MAFRD*
42 *Strategy and Action Plan for Biodiversity 2011-2020, MESP*

is classified as public forest. Standing trees volume accounts for 40.5 million m^3. Among the trees, species *Fagus sp.* (Beech) contribute with 46% of the volume, and species *Quercus sp*. (Oaks) represent 23%. The average of standing trees volume of forest in Kosovo is 84 m^3/ha[43].

The population growth and expansion of settlements have increased the need of use of primary energy sources, which also includes biomass, most of which comes from forests. While the need for economic development has increased the need for exploitation of natural resources by increasing the pressure on forest ecosystems. Uncontrolled cutting of forests affects among other things the emergence of many environmental changes such as: erosion, climate change, floods, etc.

According to the analyses conducted by the national forest inventory in 2012, the average annual cutting of trees in the forests of Kosovo is 1.6 million m^3, of which about 1.0 million m^3 occur in public forests and 560,000 m^3 in private forests. Over 90% of the annual cutting are not conducted according to the rules and legislation in force, and these irregularities in 59% of cases occurred in public forests and 34% in private forests. Only a small part of the cuttings (7%) is performed in accordance with forest legislation. However the annual growth of trees, which is estimated to be around 1.56 million m^3 is almost in balance with annual cutting (1.60 million m^3). Forest inventory study estimates that the gross potential of sustainable annual cutting in Kosovo should be about 1.45 million m^3 in order to maintain the sustainability of annual growth[44].

Fires are another factor that affect, not only the damage to forests, but also the growth of greenhouse gas emissions from this sector. Usually, along with the vitality damage of forests, forest fires are accompanied with the presentation of other forest diseases and economic losses. According to forest inventory, a total area of 12.200 ha, or 2.5% of total forest area was seriously affected by the fires during the period 2003 to 2012. According to data of the Kosovo Forestry Agency, the majority of burned forest areas occurred in 2007 with about 10 thousand ha. During the period 2011-2013, around 3,500 ha have been burned (figure 32).

43 *National Forest Inventory in Kosovo 2012, APK*
44 *National Forest Inventory in Kosovo 2012, APK*

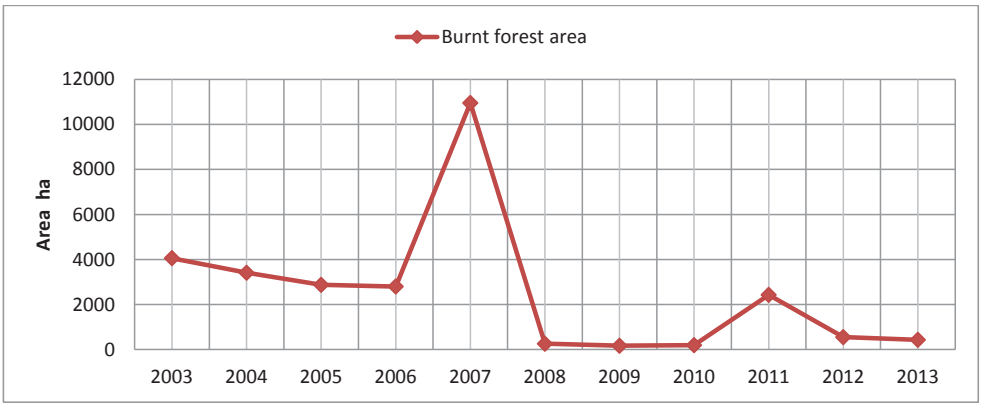


Figure 32: Burnt forest areas per ha/year 2003-2013[45]

In the framework of the National Inventory of greenhouse gases, the forestry sector is one of the most important sectors in reducing (accumulation, absorption) of CO_2 emissions and is considered a powerful reservoir of atmospheric carbon. Based on the data of the greenhouse gas inventory in 2012, about 40 thousand tons (40 Gg) of CO_2 equivalent[46] have been accumulated (reduced) in the Forests category,

0.5% per cent of forests in Kosovo are regenerated by forestation or natural seeding. Approximately 85% of the forest area is regenerated with vegetative origin through stumps seedlings/cuttings. While in the framework of the measures and activities for expansion of forested area, about 3 thousand and 500 ha of bare surface have been afforested during the period 2005-2013.

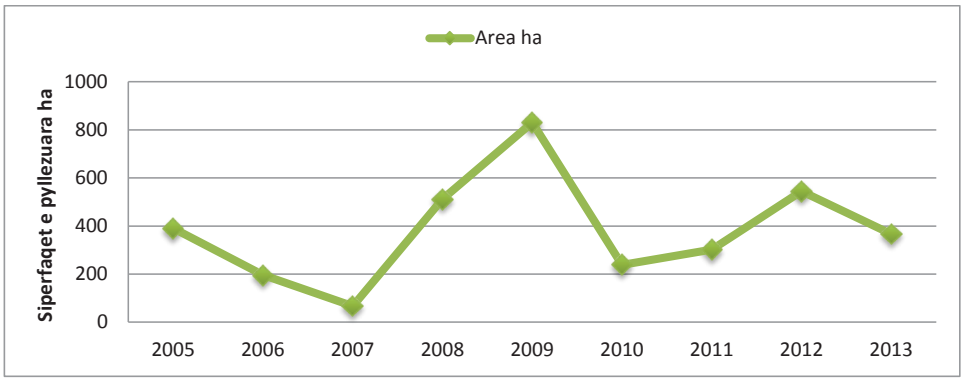


Figure 33: Forested areas per ha/year 2005-2013[47]

Besides forestation of bare surfaces, drafting legislation in the forestry sector and the development of other strategic documents, as other measures of importance that have been taken to improve the situation in the forest sector, the Kosovo Forestry

45 *Kosovo Forestry Agency*
46 *Report of Greenhouse Gas Inventory for 2012, KEPA*
47 *Kosovo Forestry Agency*

Inventory conducted in 2013 and beginning of the process of forest certification. The expansion of protected clean forest areas through two National Parks "Sharri" and "Bjeshkët e Nemuna", could be considered as an important action to protect these ecosystems and the species that live in them.

The implementation of practices on sustainable exploitation of forests, prohibition of illegal cutting and increased cooperation between relevant institutions is recommended in order of improving the situation in this sector. Other measures to be applied are the prevention of forest fires, expansion of protected forest areas and development of management plans for the high forests.

References and additional resources:	***Online resources:***
• *Forestry Development Strategy 2010-2020, MAFRD*	www.mbpzhr-ks.net
• *Climate Protection strategy in the Forestry Sector, MAFRD*	www.fiskos.org
• *Agricultural Household Survey 2014, KAS*	www.mmph-rks.org
• *Strategy and Action Plan for Biodiversity 2011-2020, MESP*	www.ask.rks-gov.net/bujqesia.

3.6. Tourism

Tourism is of great importance in the economic and cultural development of a country. But its development has a negative impact on the environment and, in particular, in the natural ecosystems as a result of the uncontrolled waste disposal, damage to natural resources and biodiversity. In order of reducing this impact besides the economic aspect, tourism should pay attention to environmental protection, therefore, as an advanced form of tourism, nowadays, is known as ecotourism or sustainable tourism.

Kosovo still has no strategy for tourism development. Therefore, the main legal act regulating the sector of tourism is The Law on Tourism (Law No.04/L-176). This law aims to establish principles and rules for the development and promotion of tourism and establishment and development of standards on tourist services. While the main principles of the law is the protection of the environment and cultural heritage[48].

48 *Law on Tourism (Law No.. 04/ L-176)*

Tourism as a branch is important for the economic development of Kosovo, but because of the weak organizational structures, the development level of tourism is not at satisfactory level, despite the natural and cultural values offered by this country. Kosovo has yet to produce a proper strategy for tourism development and management, and only in recent years, a more prominent tourism marketing and organization was launched. However there are results in the promotion of natural and cultural tourism values of Kosovo in the world. During 2013, the forum of companies leaders of tourism "World Travel and Tourism Council", based in London, has selected Peja, as the most beautiful city in the region, based on the tourism potential of Bjeshket e Nemuna and winning "Tourism of the future" award, established in 1990 in London. Also in May 2013, "The World Tourism Organization" has estimated Peja and transboundary project "Peaks of the Balkans (Majat e Ballkanit)", (which includes transboundary area, Kosovo, Montenegro, Albania) as the most beautiful tourist destination. In the list of the most wonderful places in the world announced by MSN in 2013, the city of Prizren is ranked 9th[49].

Thanks to these promotions, the number of foreign tourists visiting Kosovo has increased. If we analyse the number of foreign tourists in Kosovo and nights spent from 2008 to 2014, we see that there is a progressive increase in both the number of tourists and the nights spent. In 2014, according to the Kosovo Agency of Statistics, about 61 thousand 300 foreign tourists by about 102 thousand nights spent were registered, marking an increase of about 10 thousand tourists and 20 thousand more nights spent (figure 34).

The increase in the number of tourists and nights spent is also noticed in terms of local visitors. According to the Kosovo Agency of Statistics, compared to 2013, about 1,000 tourists more and also about 800 nights spent more have been registered in 2014 (figure 35).

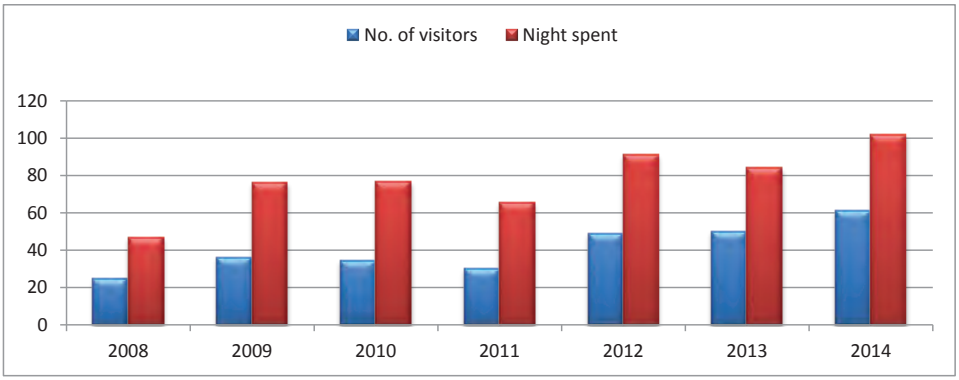


Figure 34. The number of foreign visitors and nights spent for 2008 – 2014

49 *Microsoft's portal, December, 2013.*

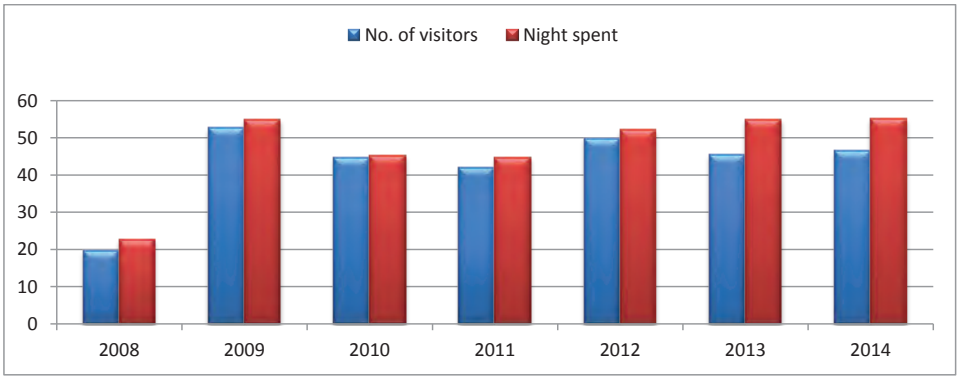


Figure 35. The number of country visitors and nights spent for 2008 – 2014

In some countries that are distinguished by the important values of biodiversity and other natural resources, the objects for tourist purposes were constructed, which affect negatively in those areas as in flora, fauna, ecosystems, landscapes and watercourses. Such unplanned and uncontrolled constructions affect the change in microclimate of those areas, the loss of natural values and biodiversity. One of these examples is the case of Prevalla, where illegal constructions occur close to natural reserves or protected area, with consequences to endemic pine community.

Almost all of the regions of Kosovo have tourist resources, but “Malet e Sharrit (Sharri Mountain)” and “Bjeshket e Nemuna (Accursed Mountains)” are the most important areas. The untouched natural values of Kosovo and the diversity of cultural and historical monuments create good opportunities of tourist development. The following table presents the types of tourism in Kosovo and their level of development.

Table 5: Kosovo tourism potential: Types, conditions and opportunities [50]

Types of tourism	Description	State		
		Actual	Inicial	Potential
Nature	Gorges, high peaks, national parks, natural monuments, etc..		✓	
Water springs	Baths (banja) and other water springs			✓
Health	Parks, natural areas and baths with healing effect	✓		
Winter	Skiing and other winter sports	✓		
Cultural-Historical	Cultural, archaeological and historical objects and cultural events		✓	
Rural	Rural tourist destinations, traditional food and cultural heritage			✓
Hunting and fishing	Hunting and fishing areas			✓
Mountain/Alpine	Alpine mountain areas, hiking, skiing, etc.		✓	
Speleological (cave)	Caves and speleological phenomena			✓
Adventure	Climbing, mountaineering and winter sports		✓	
Transit	Daily tourism, bystanders, transboundary and regional	✓		
Scientific	Scientific research, expeditions research, scientific meetings and other events			✓

The development of the tourism sector in Kosovo must be based on the concept of sustainable development. The tourist offer in Kosovo must be based on the diversity of natural and cultural attractions and different tourist activities which imply natural environment and the diversity of historical and cultural heritage. So, the tourism sector in Kosovo must be reliable and qualitative and should aim to meet two objectives: raising the social and economic welfare of the citizens of Kosovo and the protection of natural resources. The national strategy of sustainable development should promote sustainable development in the tourism sector, which means development that respects the principles of nature protection.

50 *Tourism Division of the Ministry of Trade and Industry, http://www.mti-ks.org/*

References and additional resources:	***Online resources:***
• *Statistics on catering 2015, KAS* • *Strategy and Action Plan for Biodiversity 2011-2020, MESP* • *Division of Tourism of MTI*	www.mmph-rks.org *www.ask.rks-gov.net/*hoteleria *www.mti-ks.org*

4. State(s)

The state of the environment describes the amount and quality of physical phenomena (e.g. temperature), biological phenomena (e.g. fish stocks) and chemical phenomena (e.g. the concentration of CO2 in the atmosphere) in a given area. The state indicators prescribe, for example, forests and wildlife fund presented in them, the concentration of phosphor and sulphur in lakes and rivers, or the level of noise in a neighbourhood near a noise source, such as, airports. The state of environment is changing due to the environmental pressures occurred in it. Changes in the environmental state impact the components of the environment.

4.1. Air

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

In order of protecting the air from the pollution, Kosovo has developed the Strategy and Action Plan for Air Quality, which has the following general objectives: To increase the opportunities for improving air quality throughout Kosovo,

- Completion of legislation, in accordance with the EU Directives, and provide the framework for the protection of air quality in cooperation with all communities,
- Ensure that the air quality will be taken into consideration by the government, utilities, residents, businesses and organizations, when making decisions about their actions and
- Promote the importance of air quality as a determinant of population health and welfare.

Within the monitoring of air quality, a network for monitoring the air quality is established, which consists of 12 automatic stations and one mobile station. This network is managed by the Kosovo Hydrometeorology Institute, which operates within the KEPA.

Two of the stations located in Prishtina are representative of air quality in the **sub-urban** background (IMHK) and in the **urban-traffic** background (Rilinjda), also the station located in Gjilan is representative of **urban-traffic** background while 5 other stations located in Mitrovica, Glogovac, Peja, Prizren, Hani i Elezit, are representative of air quality in **urban background** and the station located in Brezovica for **rural background**. Three (3) industrial background stations are located in the area of KEK (Dardhishtë, Palaj and Obilic).

These stations monitor the parameters: SO_2, NO_2, O_3, CO, PM10 and PM2.5. This report presents the data for these parameters for three years (2012-2014) for all stations that have been operational at this time.

During the period referred to in this report, there are no parameters of SO_2, NO_2, CO, O_3 and PM10 and PM2.5 in the stations located in Pristina, Drenas and Mitrovica due to technical problems in measuring analysers, with the exception of the station which is located in Prishtina (Rilindja) in which measurements for PM10 and PM 2.5 are carried since 2014. While the stations located in the industrial area of KEK (Obilic, Dardhishte and Palaj) are installed by the end of December 2012 and data from measurements at three stations are kept since 2013.

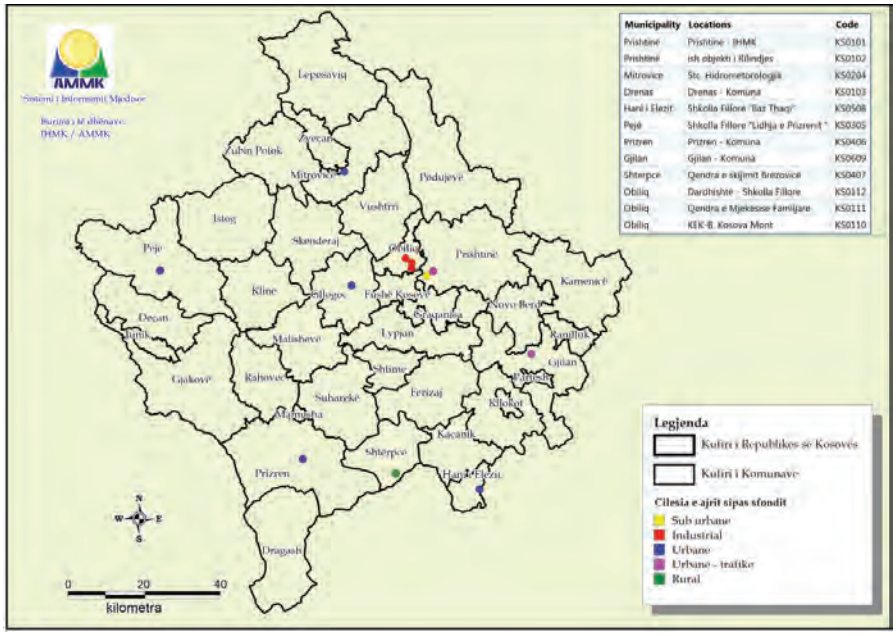


Figure 36. The distribution of network for air quality monitoring

An annual assessment of air quality is made in this report based on the data from the monitoring stations network of air quality. The maximum allowed annual values for air quality parameters are presented in the following table.

Table 6: The annual limit values for air quality [51]

Parameter	Description of annual limit/average values allowed	Annual limit values
Particulate matter PM10	The allowed number of days exceeded within the year	35 days
	The annual limit value	40 µg/m^3
Particulate matter PM2.5	The annual limit value / The level of protection of human health	25 µg/m^3
Sulphur dioxide (SO_2)-	Level of vegetation protection/Annual average	20 µg/m^3
Ozone O_3	The level of human health protection (a daily average of 8 hours within a calendar year)	>120 µg/m^3
	Level of materials protection	40 µg/m^3
Nitrogen dioxide (NO_2)	Average annual value Level of health protection	40 µg/m^3
CO	Daily limit value of maximum averages 8h (10mg/m^3)	not provided

Air quality assessment based on the data from the monitoring stations - As shown in figure 37, the highest values of SO_2 were recorded in 2014, mainly in stations, which are representative for the **industrial** and **urban-traffic** background, but no exceedances of the daily allowed values (125 µg/m^3) for 2014 were recorded in any monitoring point. Also no exceedances of the annual allowed value (20 ug/m^3) of level for the protection of vegetation were recorded.

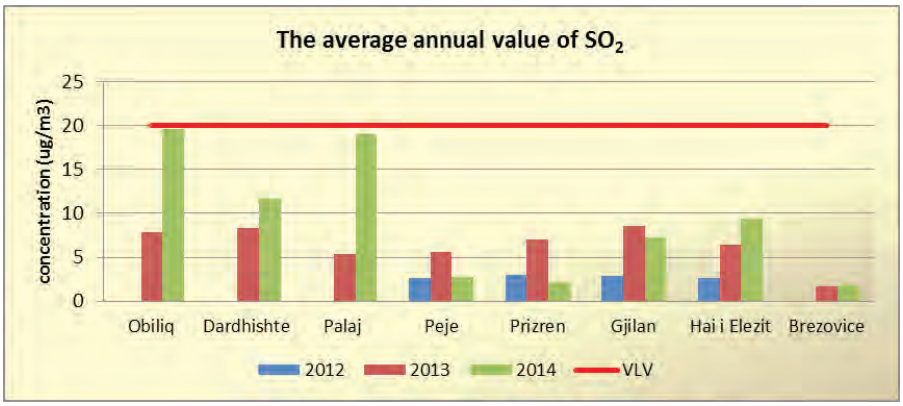


Figure 37: The annual average values of SO_2

51 *Air quality regulations in Kosovo are regulated by the Administrative Instruction No.02/2011 on limit values - air quality standards*

As shown in the figure 38, no exceedances of allowed annual values of NO_2- the level of health protection (40 ug/m^3), for the monitoring period 2012-2014 were recorded in any of the monitoring stations, but higher values compared to other stations are recorded in stations of Obilic, Prizren, Gjilan and Hani i Elezit. Based on the position of these stations, we can conclude that in addition to the industry, the increase in concentration of NO_2 is contributed by the greenhouse gas emissions by vehicles (transport) and emissions from fuel used for heating of homes.

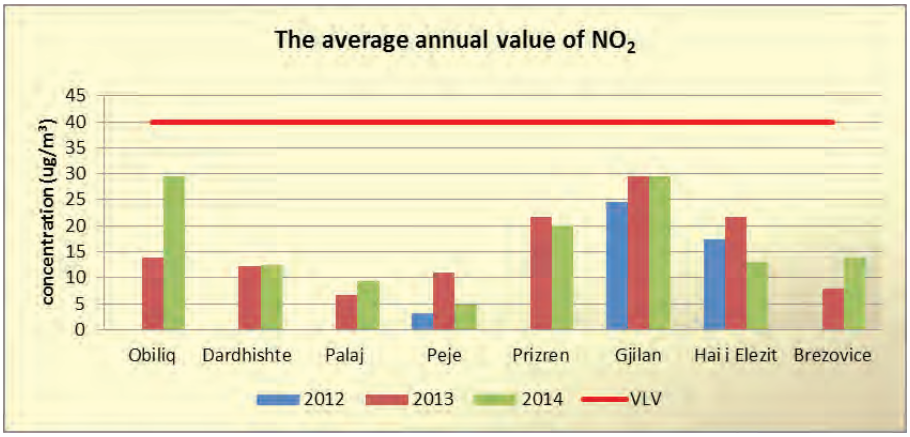


Figure 38: The annual average value NO_2

The assessment of Ozone concentration in the environmental air is made by comparing the values recorded during the monitoring and values given for a daily average of 8 hours, the information threshold and alarm threshold as required by Directive 2008/50 and UA No.02/2011. Based on the data presented in figure 39, we can conclude that in some of the monitoring stations, the exceedances of average daily value of 8 hours (120ug/m^3) and exceedance of the threshold information (180 ug/m^3) have been recorded during 2013. There are cases when the average annual value amounts to 97.7 ug/m^3, meaning that several times during the year, the values were above 120ug/m^3. The highest values were recorded in 2013 in stations of Prizren, Hani i Elezit and Brezovica.

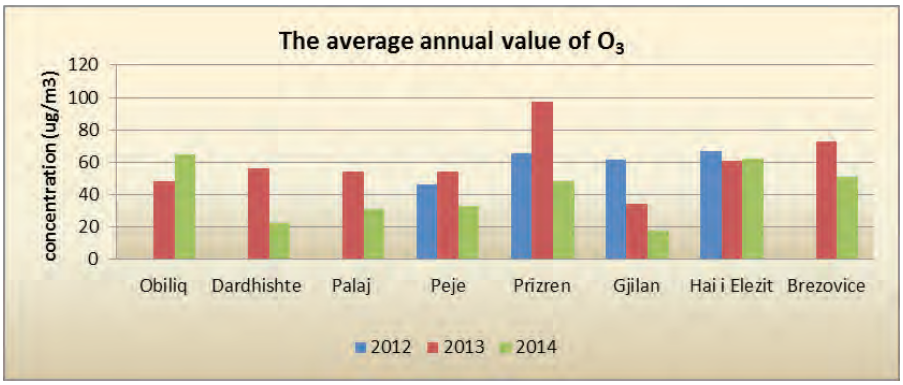


Figure 39: The annual average value of O_3

Based on the annual average values of the concentration of CO shown in figure 40, it is noted that the maximum value of the annual average reached to 2.5 mg/m^3 at the monitoring station in Peja, while all other monitoring stations registered very low values, where we can conclude that there were no exceedances of the daily limit value of maximum 8h averages (10mg/m^3) with CO in any of the monitoring stations.

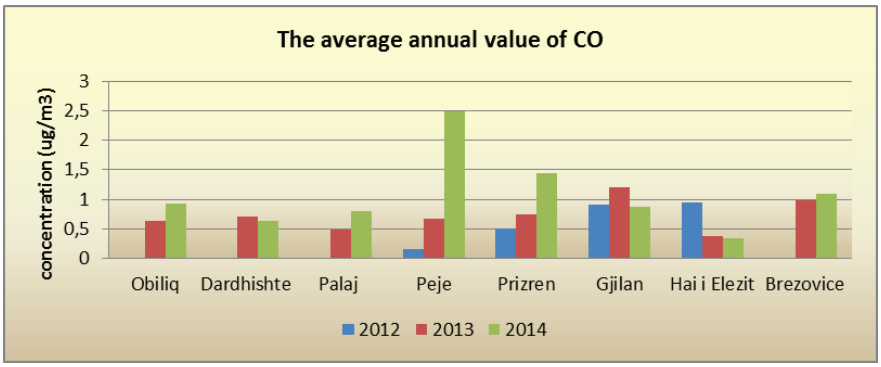


Figure 40: The annual average value of CO

Based on figure 41, it is noted that exceedances of the allowed annual value of PM10 during 2012 were recorded at monitoring stations located in Prizren, Gjilan and Han Han, during 2013 in Obilic, Palaj, Dardhishtë, Peja, Prizren, Gjilan and Han Han, whereas in 2014 in Prishtina (Rilindja), Obilic, Palaj, Dardhishtë, Prizren and Gjilan. Almost all of the monitoring stations recorded exceedances of the allowed annual values, except the station in Brezovica, representative for rural background. The highest values were recorded at stations which are representative of industrial background and urban-traffic background, while low values presented in the station located in Prishtina are as a result of the fact that there was a small number of measurements during the year.

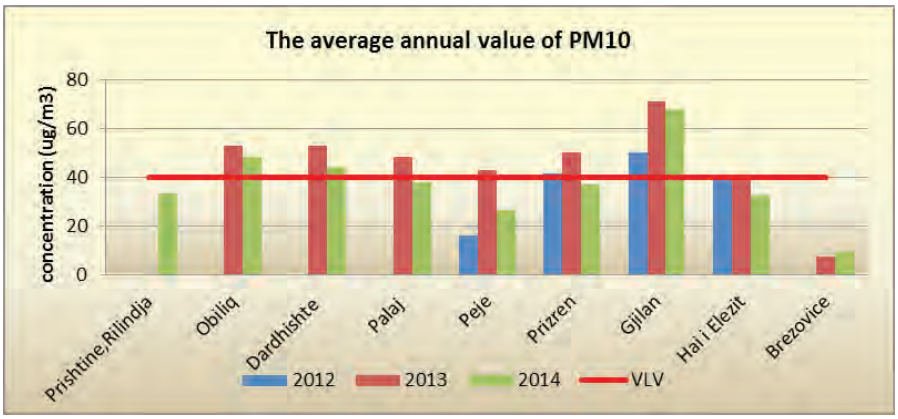


Figure 41: The annual average value of PM10

The average annual values for PM2.5 are presented in figure 42. For the period 2012-2014, values in excess of annual limits during 2012 were recorded at stations located in Prizren, during 2013 in Obilic, Palaj, Dardhishte, Peja, Prizren and Gjilan, whereas in 2014 in Dardhishte, Prizren and Gjilan. It is worth noting that there were values in excess of limits in almost all stations except stations in Prishtina (Rilindja), Peja (except in 2013) Hani i Elezit and Brezovica.

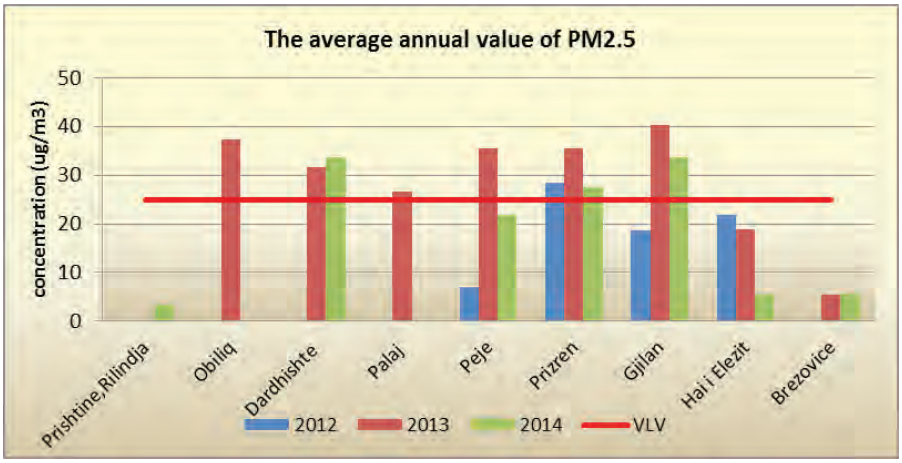


Figure 42: The annual average value of PM2.5

Based on the analysis of pollution sources as well as the monitoring results, it can be concluded that the energy, industry and communication are considered the main sources of air pollution in Kosovo.

In order to improve air quality and its protection from pollution and in order to improve monitoring and reporting of air quality, it is recommended to:

- Implement the Strategy and Action Plan on air quality, and implement the specific projects aiming to improve air quality,
- Complete inventory of emissions and sources of pollutants in the air,
- Complete and fully functionalise the national system for monitoring of air quality in order to improve the collection, processing and reporting of data on air quality,
- Strengthen the institutional and technical capacities for maintaining the network of air quality monitoring, servicing and calibration of equipment and accredit laboratories.
- Improve cooperation between monitoring institutions and operators, especially in the process of the flow of information, their processing and reporting and more efficient public information on air quality.

References and additional resources:	***Online resources:***
• *Report on State of Air in Kosovo, KEPA*	*www.ammk-rks.net/ajri*
• *Air Quality in KEK area, KEPA*	*www.mzhe.rks-gov.net*
• *Air Quality Strategy and Action Plan 2011-2021, MESP*	*www.mmph-rks.org*
• *Environment Quick Factsheet 2015, KAS*	*www.esk.rks-gov.net/mjedisi*

4.2. Water

Water is a very important resource for the economic development and public health. However, society development patterns emerging with the rise of various types of production activities, intensive agriculture, expansion of settlements, urbanization and other activities are affecting, not only its use, but also its impact.

In Kosovo, just like in many countries of the world, the human health and meeting the associated needs is increasingly threatened by the poor quality of potable water or the lack of clean potable water. Protection, conservation and monitoring the quality of water resources is one of the largest environmental challenges of our society. Industrial development, urbanization, intensive agriculture are merely few of the factors that affect the water pollution. In spite of continued efforts, the uncontrolled use of resources and damaging the riverbeds remains one of the most expansive forms of water resources degradation.

In order to protect and ensure sustainable use of water resources, in 2014 MESP developed the National Water Strategy of Kosovo 2015-2034, which is presently in the approval procedure. The overall purpose of this strategy is to ensure effective management of water resources as the crucial element of the economic development and social welfare of the Republic of Kosovo. In line with the principle of the integrated water management, the strategy has a broad, multi-sectorial approach, which seeks to incorporate all important aspects of water management in the Republic of Kosovo, including but not limited to, supply of water to population and business in areas inhabited by: Water supply, wastewater collection and wastewater treatment[52]. The strategy also defines the strategic objectives on the efficient use of water, as well as good and effective governance of waters.

Pressure upon water comes mostly as a result of increased water discharged without adequate physical, chemical and biological treatment. This causes increased values for physical, chemical and microbiological values in water bodies. Additionally,

52 *Draft National Water Strategy of Kosovo 2015-2034*

multiple impacts are also caused by atmospheric precipitation: gas content in the air, such as (NO_x, SO_2, CO_2, etc.), which create acid rains during precipitation, thus resulting in increased water acidity. Other pressures caused by precipitation includes washing away of agricultural land and other polluting areas, which results in increase of suspended matter, inorganic matter (fertilizers-N, P, K, NH_4^+, etc.) and organic matter (PAH, PCB, Herbicides, etc.). One of the major pressures exerted on water are industrial discharge from various activities.

Monitoring of river water in the territory of the Republic of Kosovo is done by the Kosovo Hydro meteorological Institute. The quality of these rivers is established based on physical-chemical analysis and heavy metals. The monitoring network has a total of 54 sampling points (monitoring stations). There are 10 parametres that are monitored and used as indicators (measured 11 times per year), 39 chemical parametres (measured 11 times per year) and 8 heavy metals (2 times per year).

Detailed data on all the monitored parametres for all sampling points of the water monitoring network are available in the Report on State of Waters in Kosovo 2015, at KEPA's website www.ammk-rks.net

The state of water in this report is reflected through the following indicators: Nitrate ion Nitrogen ($N\text{-}NO_3$), phosphorus from ion Phosphates ($P\text{-}PO_4$) and Biochemical Oxygen consumed in 5 days ($SHBO_5$), for the period 2008 to 2014.

This estimate is based on the fact that the increase in Ion Nitrate Nitrogen ($N\text{-}NO_3$) and Phosphorus from Ion Phosphates ($P\text{-}PO_4$) caused water eutrophication, while the biochemical oxygen consumed in 5 days ($SHBO_5$) indicates the level of organic and bacteriological pollution of waters, which are peremetres expected to be under pressures from the phenomena above. Figure 43 indicates that the Nitrogen-N values and Nitrate Ions $-N\text{-}NO_3$ have seen slight fluctuations year-on-year, which occurs depending on the presence of fertilizers used during a calendar year as well as quantity of precipitations, air composition and the level of pollution in water surfaces. The nitrogen value in nitrate composition for this time period ranges from 0.66 to 1.18 mg/l.

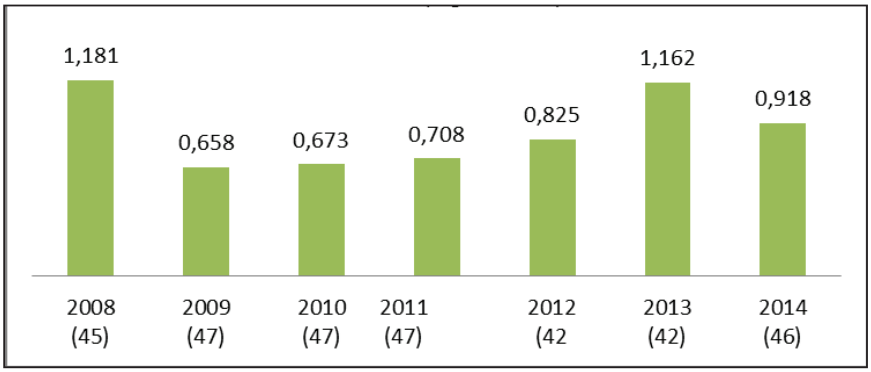


Figure 43: Nitrates (mg N-NO_3^-/l) in surface water (2008-2014); (brackets indicate the number of sampling stations)

The other indicator shows the presence of Ion Phosphates – PC_4^{3-}, i.e. the quantity of phosphorus in Phosphate Ions P-PO_4. The analysis conducted during the period, the presence of phosphorus in the phosphate ions P-PO_4 in the river waters indicate that pressures on surface waters are not excessive, as the values indicated in the diagram range from 0.14 and 0.23 mg/l P-PO_4. Hence, Kosovo surface waters are not at risk of eutrophication. (Figure 44).

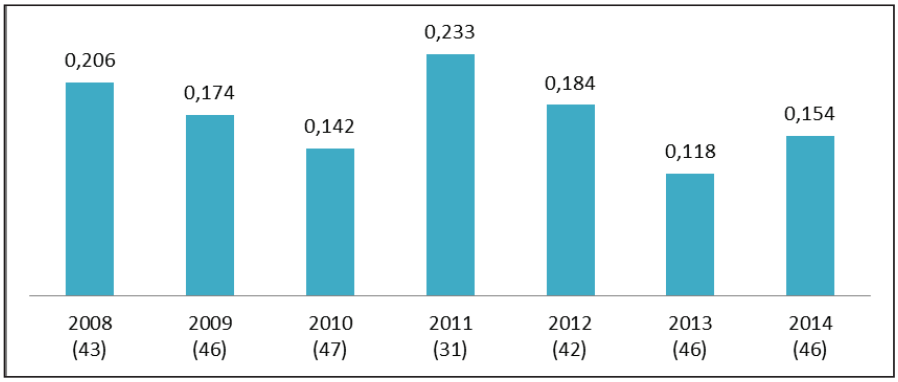


Figure 44: Orthophosphates (mg P-PO_4^{3-}/l) in surface water (2008-2014); (brackets indicate the number of sampling stations)

According to the results presented in Figure 45, the biochemical oxygen consumption ($SHBO_5$) during the monitoring period is not high. The calculated values range between 3.9 and 7.2 mg O_2/l, which represent pollution yet to attain alarming levels, but indicative of an increasing trend in the last four years. Although in the natural conditions, clean waters do not possess any $SHBO_5$ quantities, this pollution may be justified with the fact that surface waters are exposed to the open environment whereby pollution from various microorganisms is inevitable, followed by their rapid multiplication.

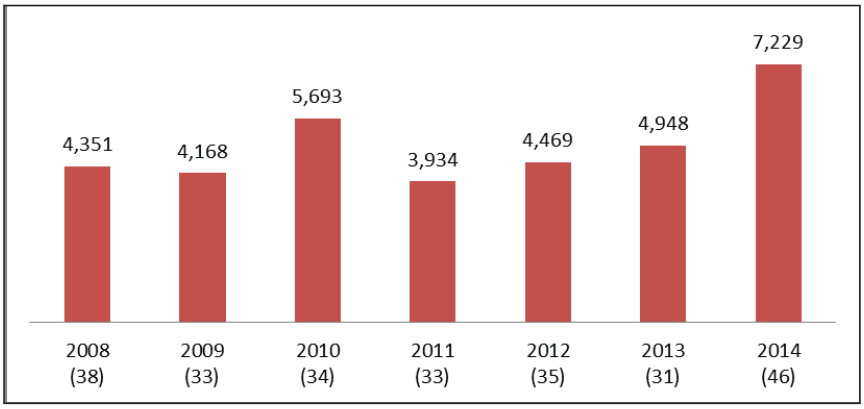


Figure 45: Biochemical oxygen consumption (mg O_2/l) in surface water (2008-2014); (brackets indicate the number of sampling stations)

With the view of improving the state of water, following feasibility studies supported by various donors, construction of wastewater treatment plans is planned for Prizren, GJakova, Peja, Gjilan, Ferizaj and Mitrovica regions. The feasibility study and the project for Prizren, Gjakova and Peja is funded by KfW (German Development Bank) and the Government of Kosovo, while the feasibility study for urban water treatment for Gjilan, Ferizaj and Mitrovica is funded by the European Union. Plants operation will enhance the protection of waters and improve their quality.

Monitoring of water quantities is carried out through hydrometric network, made of a number of measurement stations along rivers, where measurement occurs. Hydrometric network is made of 22 hydrometric stations, some of which are out of order due to technical problems. These stations measure the head (h) and yield (Q). The following table represents data on the water level H (cm) for some stations, which have registered the water levels for the period 2010-2014.

Table 7: The annual average levels H (cm) by measurement stations[53]

STATION	RIVER	2010	2011	2012	2013	2014
Gourge	Bistrica Pejës	0.614	0.530	0.669	0.549	-
Drelë	Bistrica e Pejës	0.503	0.438	0.515	-	-
Prizren	Bistrica Prizrenit	0.463	0.361	0.589	0.666	0.593
Mlikë	Brod	0.763	0.579	0.638	0.668	0.588
Lluzhan	Llapi	1.141	0.843	0.699	0.860	1.042
Milloshëvë	Llapi	0.990	0.543	0.566	0.934	-
Viti	Morava Binçës	0.333	0.219	0.216	0.193	0.277
Hani Elezit	Lepenci	0.692	0.619	0.547	0.630	1.000
Brod	Lepenci	0.492	0.397	0.433	0.402	0.480
Gjakovë	Ereniku	0.690	0.519	0.597	0.743	0.583

53 *Kosovo Hydro meteorological Institute*

The lack of monitoring of ground water presents an issue that needs to be addressed. More attention should be paid to improving the water infrastructure, construction of wastewater treatment plans and adaption to climate changes of water sector, while the implementation of legislation in the water sector and transposition of EU directors, as well as National Water Strategy remains one of the key priorities of the sector.

Additional references and sources:	***Internet sources:***
• *Report on the State of Waters 2015, KEPA*	*www.ammk-rks.net/raporte*
• *Cadastre of Water Polluters 2010, KEPA & REC*	*www.mmph-rks.org*
• *National Water Strategy 2015-2034*	*www.mmph-rks.org*
• *Environment Quick Factsheet 2015, KAS*	*www.esk.rks-gov.net/mjedisi*

4.3. Soil/Land

Degradation of land areas is a continued impact of human activity, which causes adverse environmental and socio—economic effects. Preventing the degradation of land and its pollution through specific land protection measures and policies represents a challenge.

As part of its efforts to ensure protection of land, the Government of Kosovo adopted the Land Consolidation Strategy 2010-2020, which lists land consolidation projects and rational use of agriculture land, environment protection, cultural heritage and support to agriculture as some of its objectives.

On the other hand, the main objectives of the Environment Protection Strategy 2013-2022, chapter on land, contains the following sectorial objectives: develop a special strategy on sustainable management and use of land as natural resources as well as prevent and decrease further land degradation from polluters and erosion. [54]

According to the applicable legislation, soil/land protection is entrusted to two ministries. Protection of agriculture land from pollution, erosion, regulation, continued monitoring and all changes to agriculture land such as physical, chemical and biological properties are the responsibility of the Ministry of Agriculture, Forestry and Rural Development. [55]

54 *Environment Protection Strategy 2013-2022, MESP*
55 *Law on Agricultural Land (Law No. 02/L-26)*

On the other hand, monitoring the state of the environment and emissions, including the land (soil) component, is the responsibility of the Ministry of Environment and Spatial Planning, regulated under the Law on Environment Protection and other environmental laws.

Kosovo is yet to develop a land (soil) monitoring system. Additionally, economic operators with potential for environment pollution also do not conduct regular monitoring of land (soil), therefore KEPA lacks data on the quality of land in these areas.

In the absence of land/soil monitoring data, it is difficult to make a credible assessment. Notwithstanding, the issue has been addressed through specific projects. One such project, funded by the EU, aimed to conduct a study on agriculture land in Kosovo (ALPS – Agriculture Land Pollution Survey). Main project beneficiaries were Ministry of Environment and Spatial Planning and Ministry of Agriculture, Forestry and Rural Development.

The project was implemented by the German organization for international cooperation GIZ and NIRAS from Poland. The main goal of the project was to assess the pollution of agriculture land. The project also aimed to strengthen legislation and build capacities of staff in MESP, MAFRD, KEPA, Agriculture Institute and Food and Veterinary Agency to monitor and assess the condition of agricultural land.

As part of the project, the following was analysed: 2840 soil samples for 17 heavy metals, 2840 soil samples on fertility indicators, 200 soil samples on organic polluters content, 150 plant samples on heavy metal content whereby 100 soil samples deemed suspicious have been sent for re-analysis.

The assessment of agriculture land was focused around potentially polluted areas such as: industrial zones, contaminated water and residues, floods, agricultural operations, etc.

The samples were taken in 17 municipalities of Kosovo, covering around 4,101 km^2. More detailed data on analysed samples broken down by municipalities and types of analysis are given in the table below.

Table 8: Types of soil samples analysed by municipality[56]

Municipal-ities	Agriculture land /ha	Sample /ha	Samples analysed for heavy metal	Samples analysed for land fertility pa-rameters	Plant samples analysed for heavy metal	Samples analysed for soil organic polluters
Drenas	12,550.00	50	249	249	15	7
Ferizaj	12,704.00	100	155	155	10	9
F.Kosovë	3,807.00	50	76	76	8	7
Gjilan	12,055.00	100	114	114	10	11
Leposaviq	20,800.00	50	242	242	10	12
Lipjan	12,910.00	50	260	260	7	12
Malishevë	16,069.24	100	157	157	8	7
Mitrovicë	14,954.00	50	166	166	10	10
Novobërd	4,207.00	100	50	50	6	5
Podujevë	18,827.00	100	208	208	7	8
Prishtinë	12,286.00	50	243	243	8	12
Prizren	15,429.70	100	148	148	8	10
Rahovec	13,662,94	100	158	158	8	10
Shtime	3,830.00	100	53	53	7	5
Suharekë	6,764.14	50	200	200	10	7
Vushtrri	12,263.00	50	283	283	10	8
Z. Potok	21,630.00	100	42	42	8	5
Total	**214,749**		**2804**	**2804**	**150**	**145**

The project managed to obtain results of detailed agriculture land pollution survey, identify sources and issued recommendations for monitoring and control of agriculture land.

The key project results were the following:

- Heavy metal concentrations (Zn, Cu, Cr, Ni, Cd, Pb, Hg, Zn, Cu, and Ni) for 17 municipalities show within standards of land pollution.
- Heavy metal presence at higher levels (e.g. Cr, Ni, Pb and Cd) were noted in fields other than agriculture land or land used for non-agriculture/urban purposes.

56 *Final Report of Project "Agriculture land pollution survey in Kosovo", GIZ International Services and NIRAS 2015*

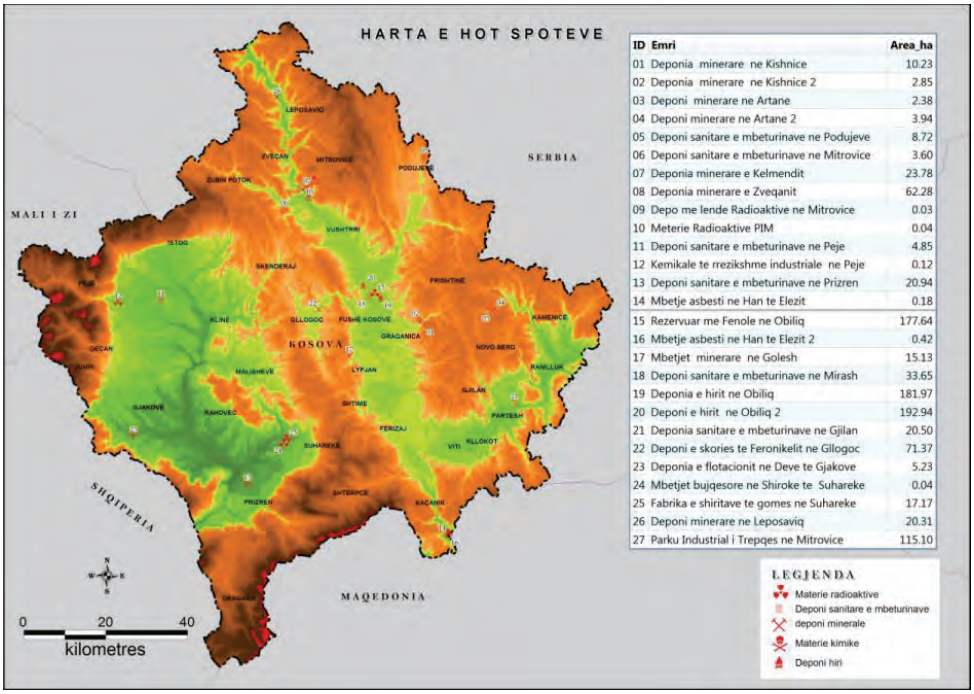
- No crop pollution has been noted (vegetables, cereals and fruit) from heavy metals (specifically Cr, Ni, Pb, Zn) in the agriculture land samples in 17 municipalities.
- As part of Food Management Safety System, it is recommended that all agricultural produce should be regularly and systematically checked to ensure public safety and trust[57].

Based on the project results, the following recommendations for sustainable agriculture land management in future were issued:

- Ensure standardized waste management throughout Kosovo and start construction of wastewater treatment plants for industries and urban waters;
- Encourage use of Best Available Technologies (BAT) for management of mines and wastewater, and control landfill leachate;
- Monitor the so-called "environmental hotspots" and carry out their rehabilitation.
- Continue monitoring the land quality and fertility parameters as well as food quality;
- Continue land monitoring for remaining 21 municipalities not covered by the project.

Another study carried out with the view of identifying potentially polluted land areas was also the survey conducted by the Kosovo Environment Protection Agency, as part of which 28 areas with pollution potential have been identified[58]. These areas were mostly inherited as a result of industrial activity in the past, or as a result of mining operations, from old unmanaged landfills, deposited chemicals, oil residues, expired pesticides, etc. (Figure 46).

57 *Final Report of Project "Agriculture Land Pollution Survey in Kosovo", GIZ International Services and NIRAS 2015*
58 *Report, Kosovo Environmental Hostpots, KEPA 2011*



ID	Emri	Area_ha
01	Deponia minerare ne Kishnice	10.23
02	Deponia minerare ne Kishnice 2	2.85
03	Deponi minerare ne Artane	2.38
04	Deponi minerare ne Artane 2	3.94
05	Deponi sanitare e mbeturinave ne Podujeve	8.72
06	Deponi sanitare e mbeturinave ne Mitrovice	3.60
07	Deponia minerare e Kelmendit	23.78
08	Deponia minerare e Zveqanit	62.28
09	Depo me lende Radioaktive ne Mitrovice	0.03
10	Meterie Radioaktive PIM	0.04
11	Deponi sanitare e mbeturinave ne Peje	4.85
12	Kemikale te rrezikshme industriale ne Peje	0.12
13	Deponi sanitare e mbeturinave ne Prizren	20.94
14	Mbetje asbesti ne Han te Elezit	0.18
15	Rezervuar me Fenole ne Obiliq	177.64
16	Mbetje asbesti ne Han te Elezit 2	0.42
17	Mbetjet minerare ne Golesh	15.13
18	Deponi sanitare e mbeturinave ne Mirash	33.65
19	Deponia e hirit ne Obiliq	181.97
20	Deponi e hirit ne Obiliq 2	192.94
21	Deponia sanitare e mbeturinave ne Gjilan	20.50
22	Deponi e skories te Feronikelit ne Gllogoc	71.37
23	Deponia e flotacionit ne Deve te Gjakove	5.23
24	Mbetjet bujqesore ne Shiroke te Suhareke	0.04
25	Fabrika e shiritave te gomes ne Suhareke	17.17
26	Deponi minerare ne Leposaviq	20.31
27	Parku Industrial i Trepqes ne Mitrovice	115.10

Figure 46: Distribution of potentially polluted areas

KEK industrial zone is also among the potential areas for pollution. This operator is conducting land monitoring in the areas surrounding PP-A and PP-B on its own, in order to determine the degree of land pollution caused by power plant operations. Analysis are done on monthly basis and samples are analysed for physical – chemical properties and heavy metal content (Iron – Fe, Cooper – Cu, Lead – Pb and Cadmium – Cd). [59] Data in the monthly monitoring reports in KEK area indicate that parameters under monitoring have not been exceeded.

Additional references and sources:	***Internet sources:***
• *Final Report of Project "Agriculture Land Survey" GIZ & NIRAS, 2015* • *Kosovo Environmental Hotpots Report, KEPA 2013* • *Report, State of waste and chemicals in Kosovo 2014, KEPA*	*www.ammk-rks.net/raporte* *www.mmph-rks.org* *www.esk.rks-gov.net*

59 KEK; *Environmental monitoring report in PP Kosova A and PP Kosova, January, 2015*

4.4. Waste

Waste is a substance produced during the daily activities. The development of the technology resulted in the generation of various types of packaged and wrapped goods, of various material, which after its use were disposed of as waste. The ggeneration of municipal waste per capita in Kosovo is on the rise. The quantity of waste disposed in sanitary landfills in Kosovo has recently seen a slight decrease. The overall condition of landfills in Kosovo is not good. Kosovo continues to hold hazardous waste, a legacy of industrial and technological operations of the past.

To ensure more effective waste management, MESP developed the Waste Management Strategy 2013-2022, adopted by the Government of Kosovo. The main objective of the Strategy is to establish a framework to decrease the waste volumes and set up a system for sustainable waste management as well as decrease the waste risks;

The associated Waste Management Plan 2013-2017 in support of the Strategy has also been adopted, whose main purpose is to ensure waste management and environment protection through: strengthening the waste management system, investment in waste management infrastructure and promoting awareness and information on waste management.

At local level too, more than 15 municipalities of Kosovo have developed Local Waste Management Plans, while 10 others are in the process of developing the plans.

The generation of municipal waste per capita in Kosovo is on the rise. Regular increase of waste generation is notable during the period 2007, with a slight decrease in 2013 (Figure 47).

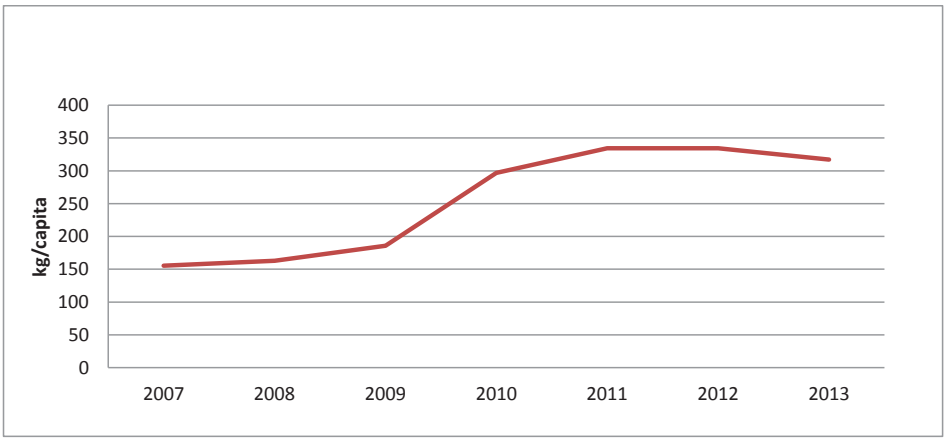


Figure 47: The generation of municipal waste per capita 2007-2013[60]

60 *KAS-Municipal waste survey 2007-2013*

When comparing the volumes of waste disposed in sanitary landfills from 2007 to 2014, a constant increase is noted throughout the years. The only exception occurs for the period 2012 to 2014, when waste disposed in Kosovo landfills by waste collection companies is slight lower (Figure 48). The condition of landfills in Kosovo is not good, with leachates occurring in most of them, and failure to compact waste to landfill administration standards.

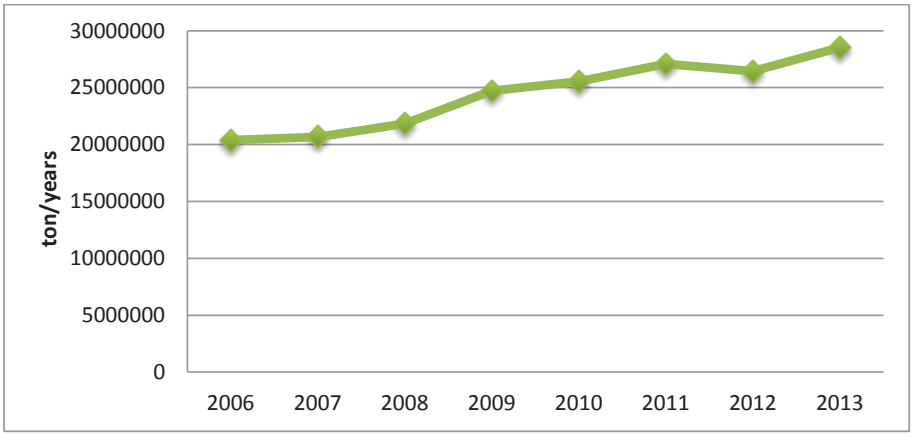


Figure 48. The landfill waste disposal trends in Kosovo 2007-2013

The waste management sector is also one of the sectors that is the source of greenhouse gas emissions. According to data on the greenhouse gas inventory, in 2012 the sector's share of greenhouse gases was 380 tons CO_2 equivalent, mostly from waste generation, disposal and burning. (Figure 49).

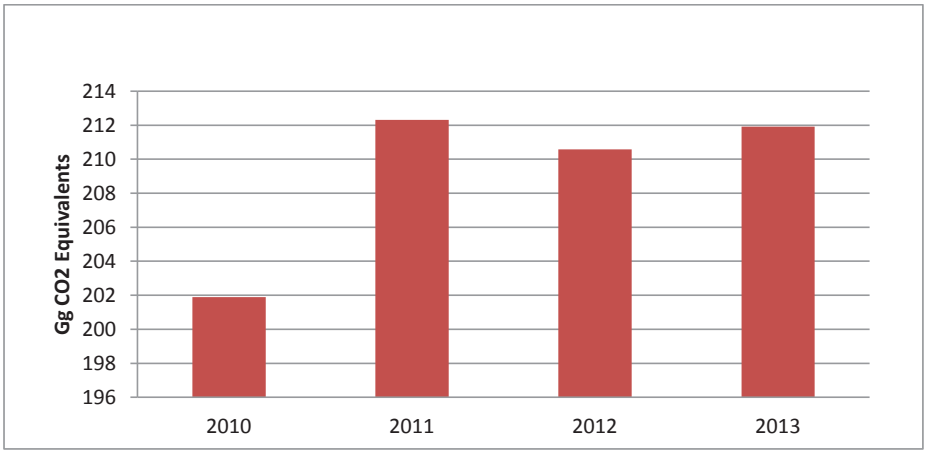


Figure 49: Waste sector CO_2 emission trends

Medicinal waste is treated in seven plants for sterilization of medicinal waste, located in main regions of Kosovo. In 2014, the total amount of treated medicinal

waste in these centre is 417,822.8 kg, with a monthly average of 34,526.8 kg. The largest volume of these wastes was treated in Prishtina plant, totalling 164,739 kg, with the smallest volume in Gjakova plant at 1,779.9 kg. The plant in Gjakova is periodically out of order, which resulted in the smaller quantity of treated waste.

According to a survey of the Kosovo Statistical Agency, the quantity of industrial waste generated in Kosovo saw a decline in the recent years. While in 2010, 580,154 tons were generated, in 2013 the quantity of industrial waste decreased almost by half, at 302,205 tons. (Figure 50).

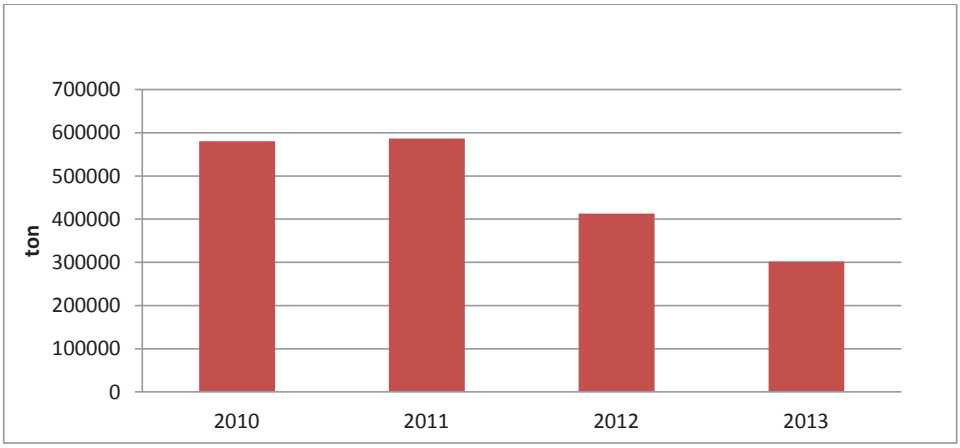


Figure 50: The generation of the industrial waste 2010-2014[61]

Despite the initiatives and individual projects in Kosovo, there is no general system for recycling, reusing or treating waste. In order to improve the waste management system, it is recommended that, in addition to implementing Strategies and Plans, work should also be done to strengthen central and local institutions as well as waste management companies to develop and implement projects, plans and programmes for recycling, treating and reusing waste and promote awareness.

Additional references and sources:	***Internet sources:***
• *Report, Status of waste and chemicals in Kosovo 2014, KEPA* • *Waste management strategy 2013-2022* • *Municipal waste survey 2007-2013, KAS* • *Industrial waste survey 2010-2013, KAS*	*www.ammk-rks.net/raporte* *www.mmph-rks.org* *www.esk.rks-gov.net/mjedisi*

61 *Industrial Waste Survey 2010-2013, KAS*

4.5. Biodiversity

Biodiversity is a very complex notion, which encompasses the set of species and ecosystems in a region or globally, i.e. biodiversity represents the diversity of live on Earth. Geographical position, geological, pedological and hydrological factors, relief and climate are some of the factors that allowed Kosovo to enjoy a rich biological and landscape diversity.

The most important strategic document for protection of biodiversity in Kosovo is the Biodiversity Strategy and Action Plan 2011-2020. It sets long-term goals for protection of biodiversity and landscape diversity, natural protection values as well as implementation approaches, in line with overall economic, social and cultural development of the Republic of Kosovo[62].

Other important documents regulating this area include: Forestry Strategy 2010-2020, Wildlife and Hunting Management Strategy 2012-2022 and Strategy on Non-Timber Forest Products.

State of flora and vegetation – although many studies have been conducts on Kosovo flora and vegetation by many national and international authors, no full inventory of flora is available and the exact number of plant species is yet to be determined in Kosovo. According to notes from various authors, it is believed that in Kosovo there are around 2,800 – 3,000 species of vascular flora. [63]

Lilium albanicum

Polygala doerfleri

Plantago gentianoides

Indiscriminate woodcutting, habitat degradation and global climate changes are some of the factors exerting direct impact on various plant and animal species, some of which are at risk of extinction. Important habitat are being damaged and degraded, while ecosystems are destabilized as a consequence of human interferences, especially those close to settlements. In recent years, as a result of rampant woodcutting and forest wildfires, many species are at a risk of losing their habitat, giving ground to invasive alien species that change the floral landscape of ecosystems. [64]

62 *Biodiversity Strategy and Action Plan 2011-2020*
63 *The Red Book of Vascular Flora of the Republic of Kosovo, MESP*
64 Ibid

Although Kosovo's phytodiversity has been used for centuries, it is concerning that recently, this use has been rendered irrational and random, which may result in unforeseen consequences in the future. Medicinal, aromatic and industrial plants are being ravaged, owing to reckless collection.

The Red Book of Vascular Flora – with the support of German GIZ and MESP, the Red Book of Vascular Flora of Kosovo was published in 2013. The publication helped build a realistic picture on the state of important species of vascular flora of Kosovo, their level of risk, main factors and causes generating this risk.

The red list of vascular flora of the Republic of Kosova is important as it focuses attention of all entities working with nature on the gravity of threat to biodiversity; it lists species in need of protective measures and provides information that may serve as basis for further monitoring. The Red Book is important as it provides information that helps set out protection priorities at local level and build better cooperation with international environmental organizations.

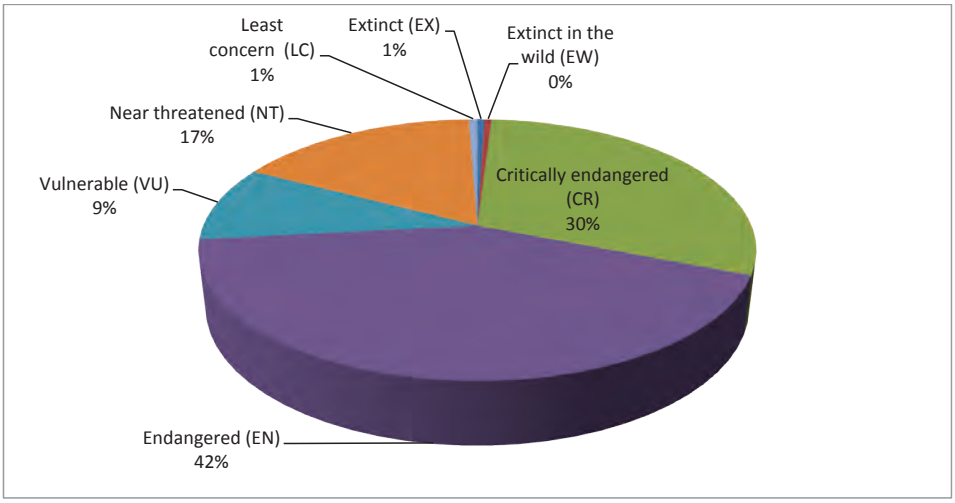


Figure 51. Graphical representation of the number of plant specifies that fall under various risk categories

This assessment, the first of its kind in Kosovo, found the following about the species of vascular flora in the territory of our country: 61 species categorized as Critically Endangered (CR), 86 as Endangered species (EN), 19 in the category of Vulnerable (VU), 34 in the category of Near Threatened (NT) and 35 species in the category of Least Concern (LC).

State of fauna – in terms of fauna, Kosova has a rich diversity of species, although research in this regard is yet to be completed. The richest fauna areas in Kosovo are all mountain massifs in Kosovo, however, the following may be singled out: Sharri Mountains and Bjeshkët e Nemuna.

The overall condition of fauna has deteriorated as a result of increased human presence in their habitat and continued threat of pouching that occurs periodically, especially during weekends in protected areas.

Lacerta viridis

Merops apiaster

Vulpes vulpes

Deer and wild goats are the most endangered by pouching, while grey bear and wolf have seen good progress. The biggest threat of dwindling numbers and even extinction of lynx comes from quarries in the strict nature reserve "Rusenica", which represents main habitat of this rare type in National Park "Sharri". Some species of predator birds are also endangered.

It is estimated that in Kosovo there are 250 types of vertebrates, 200 types of butterflies and more than taxa of macrozoobenthos of waters. The exact number of fauna species need to be determined based on inventorying that is planned to be conducted in future, as well as during development of Red Book of Fauna, also part of other projects.

In order to protect the biodiversity in Kosovo, the following is recommended: do a study and inventorying of species and habitats, develop the Red List of Fauna of Kosovo, do continues monitoring of the rare and endangered plant and animal species, protect habitat of rare and endangered types as well as prepare professional justification for declaring protected birds and habitats, in line with Natura 2000 environmental network.

Additional references and sources:	***Internet sources:***
• *Report, State of Environment 201—2014, KEPA* • *Biodiversity Strategy and Action Plan 2011-2020, KEPA* • *The Red Book of Vascular Flora of Kosovo, MESP 2014* • *Preliminary identification of Natura 2000 areas in Kosovo, PMQP 2009* • *Kosovo biodiversity, KEPA (www.ammk-rks.net/?page=1,23)*	*www.ammk-rks.net/raporte* *www.mmph-rks.org* *www.esk.rks-gov.net/mjedisi*

4.6. Protected nature areas

Protected nature areas are defined as parts of nature, which require special protection in order to preserve biological and landscape diversity due to their vulnerability or due to scientific, cultural ,aesthetic, educational, economic interests or due to other public interests. In order to protect, conserve and manage these natural values in a sustainable manner, the practice of declaring such areas as protected natural areas is a well-known and recognized practice.

In addition to the Law on Protection of Nature and the Biodiversity Strategy and Action Plan 2011-2013, important documents in the area of planning and management of protected areas are also the Spatial Plan of the Sharri National Park and Spatial Plan of the Mirusha Waterfalls, as adopted by the Assembly of Kosovo and the Sharri National Park Management Plan, adopted by the MESP. During 2014-2015, the draft Spatial Plan of the Bjeshket e Nemuna National Park was also developed, which is presently under approval procedure.

Presently, the number of nature protected areas in Kosovo (2014) is 116 and cover an area of 118,913.95 ha (10.9% of Kosovo area). These areas include: 11 Strict Nature Reserves (river bifurcation on Nerodime, Arneni Reserve, Rops Peak, Rusenica, Kamilja, etj.), 2 National Parks (Sharri NP, Bjeshket e Nemuna NP), 99 nature monuments (Drini i Bardh spring with Radavi Cave, Gadima Cave, Mirusha Waterfall, Rugova Gourges, Drini i Bardh Canyon near Ura e Fshajte, Rrapi Trunk in Marash, etc.), 1 Nature Regional Park (Germia), 2 protected landscapes (Shkugëza and Pishat e Deçanit) and 1 Special Bird Protected Areas (Henci-Radeves wetlands). The largest area of protected areas is made of national parks "Mali Sharr" and "Bjeshket e Nemuna".

Table 9. Protected Nature Areas by categories

Category IUCN	Designation	No.	*Area /ha*	*Share in PZ %*
I	**Strict Nature Reserves**	**11**	**847**	**0.08**
	Plant NR	7		
	Animal NR	2		
	Hydrological NR	1		
	Geological NR	1		
II	National Parks	2	115957	10.6
III	Nature Monuments	99	5972	0.5
	Speleological NM	9		
	Hydrological MN	17		
	Geomorphological NM	7		
	Botanic NM	66		
V	Regional Nature Park	1	1126	0.1
V	Protected Landscape	2	85	0.007
V	Special Bird Protected Area	1	109	0.009
	Total	**116**	**118913.95[1]**	**10. 90 %[1]**

The full list of the protected areas and detailed information on all of the protected areas can be retrieved from the Report on State of Nature 2011-2014, available on KEPA's website at www.ammk-rks.net

In 2012, the second National Park of Kosovo was proclaimed, the "Bjeshket e Nemuna" Park at 62,488 ha, along with an expansion to "Sharri" National Park with around 20,000 ha, thereby increasing the protected areas of Kosovo's territory from 4.4% to 10.9%. A chronology of the expansion of protected areas and their share in the total area of the country in the period from 1980 to 2014 is presented in figure 52.

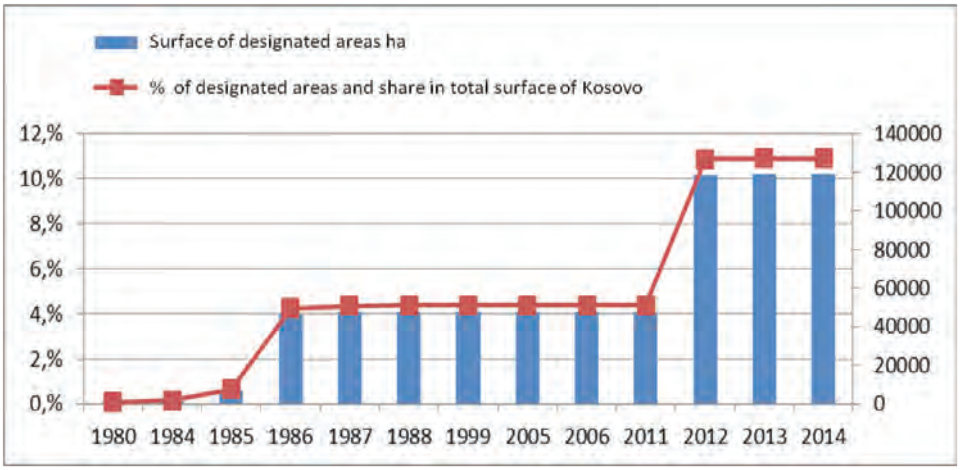


Figure 52: the history of proclamation of the protected areas 1980-2014, area (ha) and their share (%) in the total area of Kosovo.

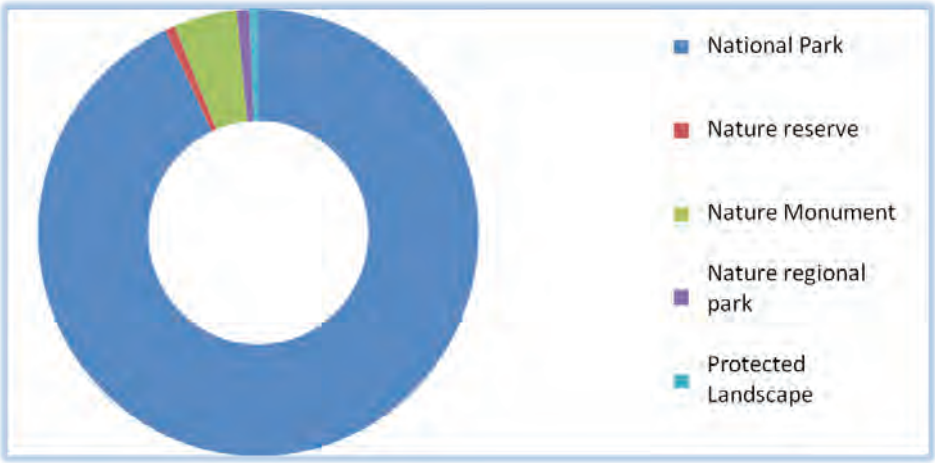


Figure 53: The protected areas by categories

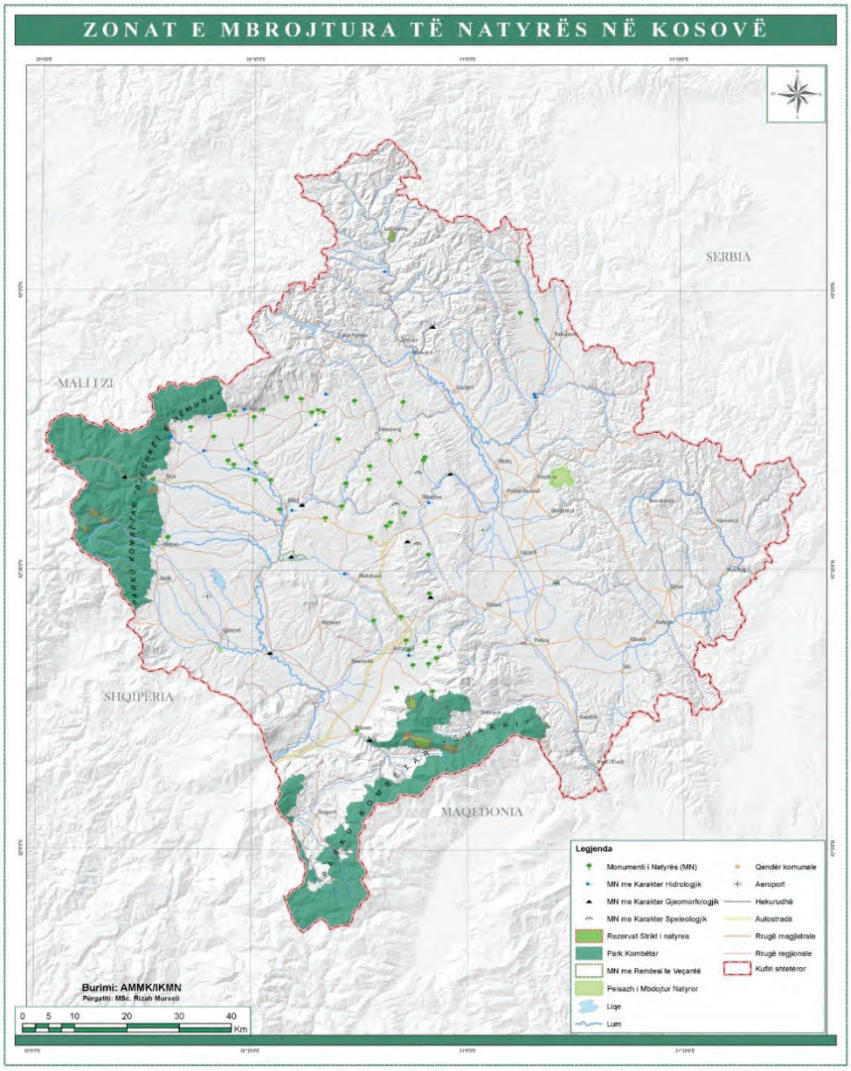


Figure 54: Protected Areas map

In order to improve the management of protected areas and their condition, it is recommended that in addition to adopting Spatial and Management Plans, work should be done to ensure marking and digitalization of protected areas, establish management bodies for protected areas, harmonize and categorize protected areas under the Law on Nature Protection and implement national and transboundary projects aimed at nature protection.

Additional references and sources:	***Internet sources:***
• *Report, State of Environment 2010—2014, KEPA* • *Preliminary identification of Natura 2000 areas in Kosovo, PMQP 2009* • *Natural Heritage values in Kosovo. MESP-KINM* • *Reports on the State of Nature 2007-2007 and 2008-2009, KEPA* • *Study on Proclamation of National Park Bjeshket e Nemuna, KINM 2003* • *Spatial Plan of "Sharri" NP, KEPA/ISP*	*www.ammk-rks.net/raporte* *www.mmph-rks.org* *www.esk.rks-gov.net/mjedisi*

5. Impacts

Due to the changes in the environment, impacts occur, which produce effects in various chains of environmental components, such as, the impact on ecosystem, impact on natural resources and living beings. Because changing the state of the environment occurs, it has effects on different levels of the environmental components, such as, impacts on ecosystems, the impacts on natural resources and impacts on living beings.

5.1. Climate Changes

Climate changes undoubtedly represent one of the major challenges to humanity and environment protection in this age. In order to mitigate the impact of and adapt to these changes, actions have been taken and treaties entered into at global level. One of such treaties is the Rio Declaration (1992), which calls for implementation of the concept of sustainable development and Climate Changes Treaty, which entails commitment to decrease greenhouse gas emissions. Kyoto Protocol represents another important step towards reducing the CO_2, CH_4 , N_2O, HFC_s – hydrofluorocarbons and SF_6 – sulphur hexafluoride

While the global climate has been very stable for the past 10,000 years, ensuring a viable backdrop to development of human civilization, now there are visible signs that the climate is changing. This is widely recognized as one of the biggest challenges to humanity. Measurements of global atmospheric concentrations of greenhouses gases (GHG) indicate significant increases compared to pre-industrial times, with dioxide carbon levels (CO_2) exceeding the natural levels of the past 650,000 years by a considerable margin. The concentration of atmospheric CO_2 since the pre-industrial times has increased by around 280 ppm, and by 387 ppm in 2008.

In relation to global and European climate change policies, an important consideration for Kosovo is that our country is not a party to United Nations Framework Convention on Climate Change (UNFCCC), however, as Kosovo aspires to join EU, the bid involves adjustments to conform to EU legislation and its implementation, thus gradually move from a status of developing country to a developed country under the UNFCCC Convention. In view of its young age, the country's capacities and experience in dealing with climate changes are very limited, due to its grapple with other priorities in the recent years.

As part of its efforts, in 2014, Kosovo developed the Climate Change Strategy, which sets two main objectives:

- Kosovo will continue to build capacities to meet its future obligations under UNFCCC and an EU member.

- Kosovo will slow down the greenhouse gas emissions through: Increasing energy efficiency across all sectors, develop renewable power sources and ensure sustainable use of natural resources.

Climate changes will increase exposure to risks of draught, floods and forest fires. Therefore, the following are important facts to consider in the climate change discourse in Kosovo:

- The climate volatility has increased visibly in Kosovo, which is best noted through increased intensity and frequency of extreme precipitations, such as torrential rains,
- Flash floods are becoming ever more common in mountainous areas, while river flooding occurs more frequently in lower areas and areas;
- Kosovo has been hit by draught several times in the last two decades (1993, 2000, 2007 and 2008). Elevated temperatures, diminished precipitation and decreased river flows, combined with socio-economic development and increased use of water resources will increase the exposure to risk;
- Since 2004, 80% of Kosovo municipalities have faced water shortages due to hydrological draught and misuse of water[65].

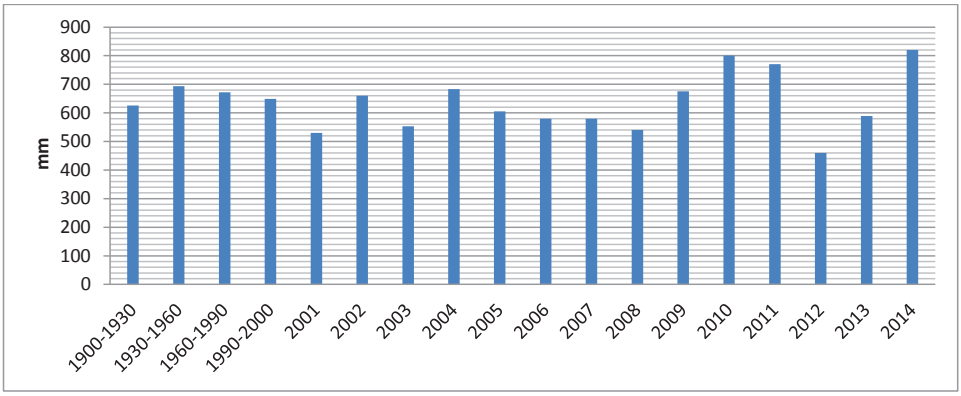


Figure 55: Precipitation 1990-2014[66]

65 *Climate Change Strategy 2014-2024, MESP 2015*
66 *World Bank Precipitation Data 1900-2000 (www.worldbank.org). Data for 2001-2014 by KHMI*

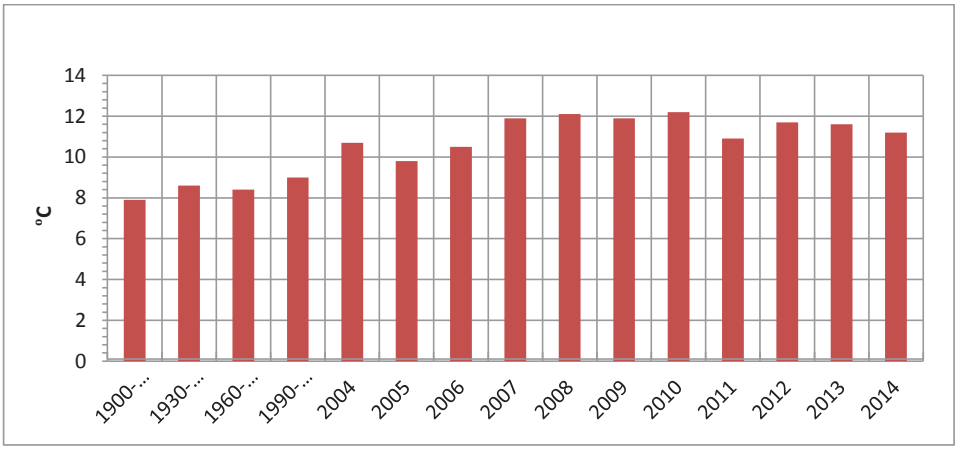


Figure 56: Air temperatures 1900-2014[67]

One of the reasons behind climate changes are increased GHG emissions, which come mainly as a result of fossil fuel burning, but also due to deforestation, use of land and agriculture.

According to data on Report on Greenhouse Gas Inventory 2012, total volume of greenhouse emissions in Kosovo in 2012 was 9.5 Mt CO_2 equivalent (9,526.74 tons). The energy sector is the largest contributor of the greenhouse gas emissions, with a total share of 87%. In the energy sector, the power industry accounts for most emissions at 75%, with road adding 12% of total emissions of the energy sector. The agriculture, forestry and land use sector accounts for 8% of total greenhouse gas emissions at national level, waste sector at 4%, while industrial processes and use of products is the sector with the lowest share at only 1% of total emissions. (Figure 57). Main categories of greenhouse gas emissions for 2012, according to IPCC, were presented in Table 10. Compared to previous years, the level of GHG emissions remains almost the same.

67 *World Bank Data on Temperature 1900-2000 (www.worldbank.org/country/kosovo).Data 2001-2014 from KHMI*

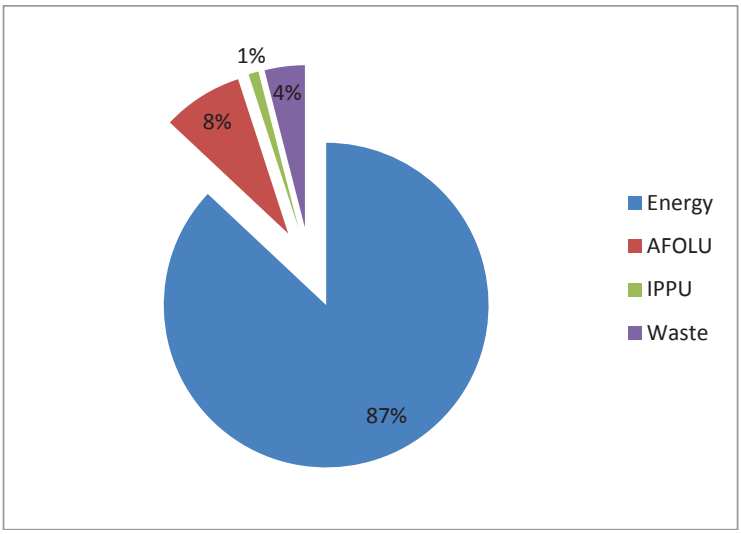


Figure 57: Greenhouse Gas Emissions (%) by sectors in 2012

Table 10: The main (key) categories of greenhouse gas emissions according to IPCC for 2012

IPCC Category Code	IPCC Category	Greenhouse Gas	2012 Ex, t (Gg CO_2 Eq)
1.A.1	Energy industry – solid fuel	Carbon dioxide (CO_2)	6171.82
1.A.3.b	Road transportation	Carbon dioxide (CO_2)	996.94
3.A.1	Enteric livestock fermentation	Methane (CH_4)	494.95
1.A.2	Use of liquid fuel in production and construction industry	Carbon dioxide (CO_2)	365.43
1.A.4	Other energy sectors – liquid fuels	Carbon dioxide (CO_2)	256.50
4.A	Solid waste disposal	Methane (CH_4)	226.89
1.A.2	Use of solid fuel in production and construction industry	Carbon dioxide (CO_2)	202.04
3.B.1.a	Forest land that remained forest land (preserved forest land)	Carbon dioxide (CO_2)	-39.21
2.A.1	Cement production	Carbon dioxide (CO_2)	83.99
1.A.4	Other energy sectors – solid fuels	Carbon dioxide (CO_2)	79.51
3.C.4	Direct N_2O emissions from soil/land management	Nitrogen Oxide (N_2O)	78.99
3.C.5	Indirect N_2O emissions from soil/land management	Nitrogen Oxide (N_2O)	75.19
3.C.3	Application of UREA in agriculture	Carbon dioxide (CO_2)	68.84
Total GHG for year 2012 in all categories			**9526.74**

Compared to other countries in Europe, Kosovo has the lowest emission rate per capita (5.4 t CO_2 equivalent in 2012). Greenhouse gas emissions per capita is lower than the EU average, which is slightly higher than the global average (figure 58).

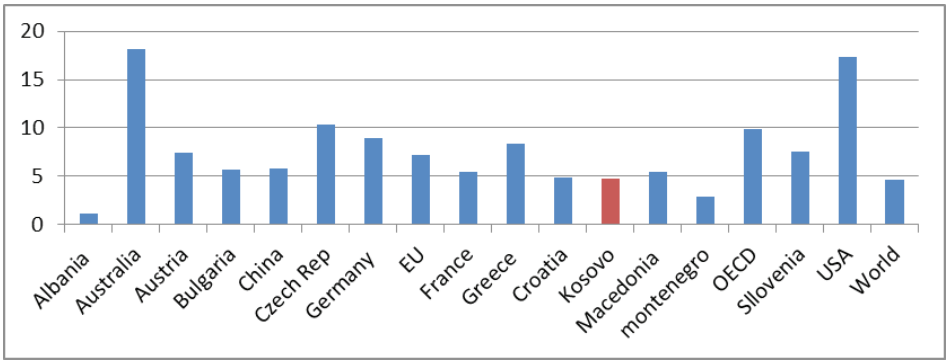


Figure 58: CO_2 emissions (ton equivalent) per capita in Kosovo, compared to some countries in the region, Europe, EU, the world

Additional references and sources:	***Internet sources:***
• *Report, Greenhouse Gas Inventory in Kosovo 2012, KEPA*	*www.ammk-rks.net*
• *Greenhouse gas emissions in Kosovo ,2008-2009, UNDP*	*www.mmph-rks.org*
• *Report on the state of environment, 2011-2012, KEPA*	*www.ks.undp.org*
• *Climate Changes Strategy 2014-2024, KEPA*	*www.ecranetwork.org*

5.2. Public Health

Health is not defined as the absence of disease, but also the welfare of individuals, such as, physical, mental, social and environmental dimension. The state of environment affects the health of population to a large degree. There is a range of environmental factors that adversely affect the public health such as quality of water and air, waste management, etc. For example, the production of fossil-fuel based power increases the environmental impact on public health, especially increased numbers of respiratory diseases, with many other diseases occurring as a result of lack of proper water and sanitation services. Exposure to environmental factors surrounding us include biological (viruses, bacteria, etc.), chemical (organic and non-organic composition), and physical factors (noise, radiation, etc.), but also other factors that jeopardize the public health and produce various contagious and chronical diseases.

It is clear that environmental pollution causes serious problems to public health, such as: diarrheic, respiratory, cardiac, skin and other disease, premature death and other diseases. Figure 59 indicates a constant rise of diarrheic diseases in Kosovo in the period from 2002 to 2014. The diagram excludes the year 2013, as most municipalities failed to report their data for the period.

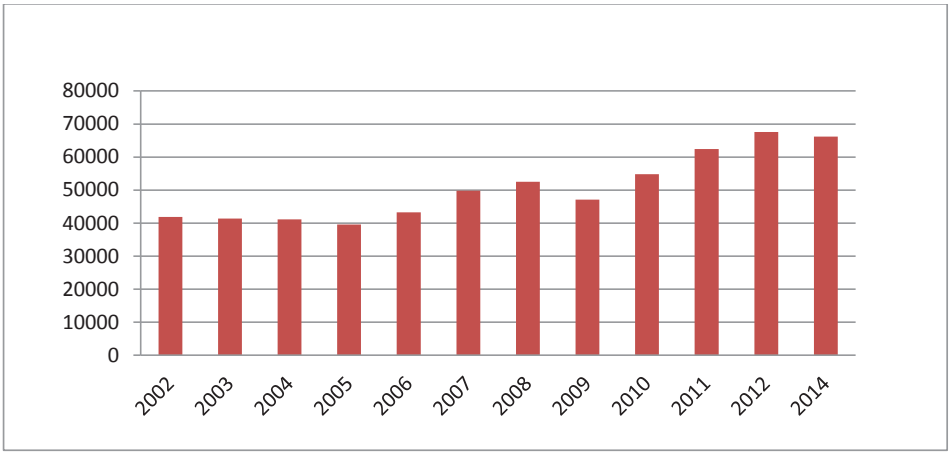


Figure 59: Diarrheic diseases in Kosovo 2002-2014[68]

One of the public health indicators is also life expectancy at birth. According to the World Bank, life expectancy in Kosovo increased in the period from 1999 to 2013. This indirectly speaks to improved living conditions and the environment. In 2013, life expectancy at work was 70 years compared to 67 years in 1999 (figure 60). However, compared to other countries of the region, life expectancy in Kosovo is lower (Serbia 74.5, Montenegro 74.6, Macedonia 74.8, Albania 76.9 and Croatia 76.6). [69]

68 *Instituti Kombëtar i Shëndetit Publik, 2015*
69 *Human development report in Kosovo 2012, UNDP*

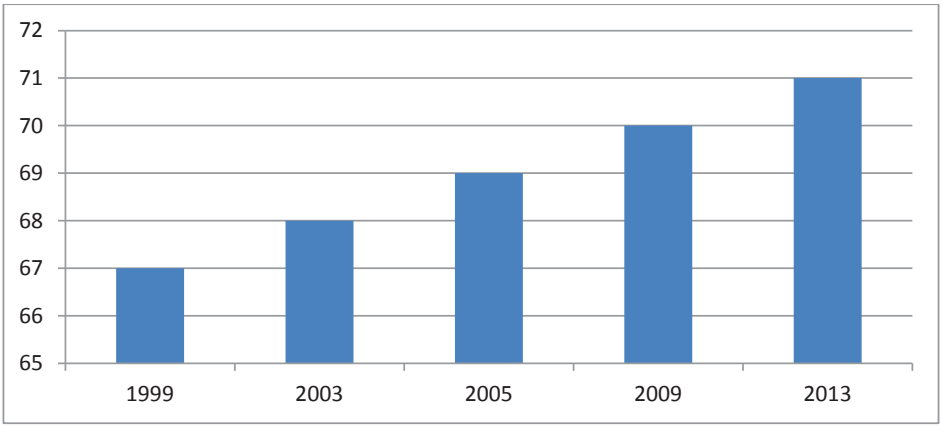


Figure 60. Life expectancy at birth[70]

The number of normal deaths may also be used as an indicator of pattern of developments in public health. Based on Statistics Agency data, the trend saw fluctuations in the period 200—2013. From 2002 to 2006, a continuous increase of the number of deaths was noted, followed by a decline in 2007-2008, to only increase in 2012. In 2013, the number of deaths has risen again relative to previous year. (Figure 61).

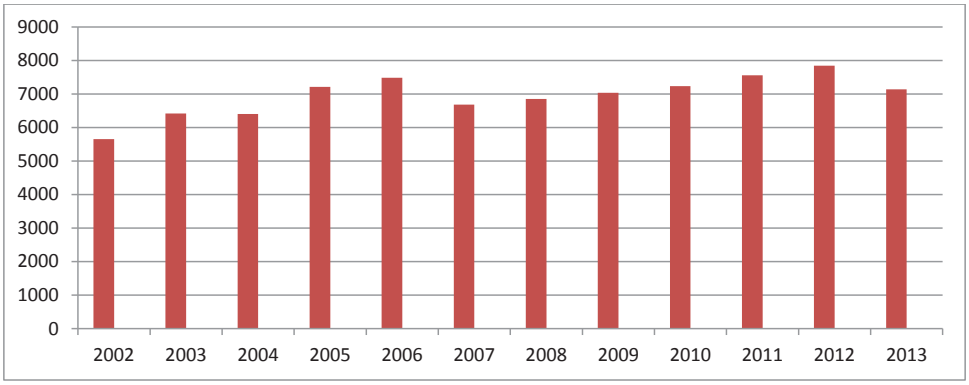


Figure 61: Number of deaths in Kosovo 2002 - 2013

In order to enhance the quality of life and public health, one of the important institutional measures involves improved sanitation conditions. To this end, in the period since the end of the war, Kosovo made continues investment. According to Reports of utility companies, in companies' service areas, sewerage coverage in 2013 was at 60%, an increase of more than 10% relative to last year. (Figure 62).

70 *World Bank data (www.worldbank.org/country/kosovo)*

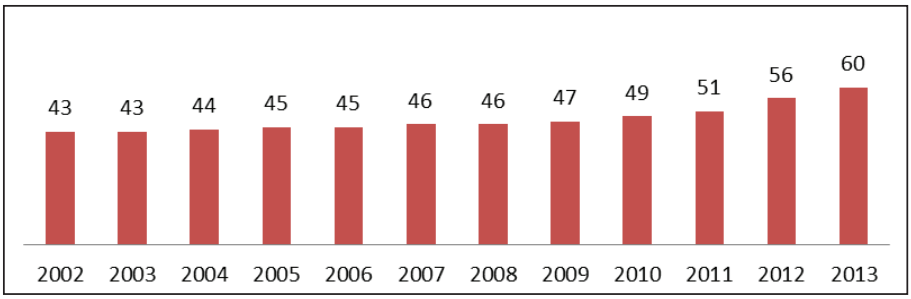


Figure 62. Sewerage network coverage (%), 2002-2012

The water supply network coverage is 82%, an increase of 4% relative to last year. (Figure 62)

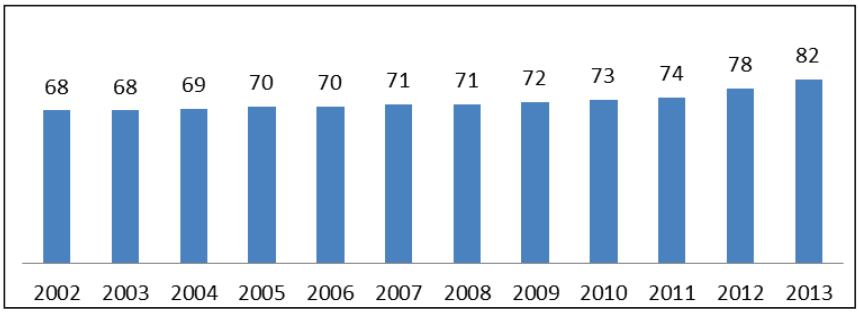


Figure 63. Water supply network coverage (%), 2002-2012

In order to improve the public health in general, but also assess the impact on environment on public health, more detailed research is recommended on impact of the air, water and land pollution on public health. It is also necessary to gather information and special data on the number of contagious and environment-based diseases and produce regular reports on quality of potable water, which should be made available to the public. It is necessary to invest and improve the quality of potable water and its regular monitoring, while the use of new technologies in energy and industry as well as adoption of renewable energy sources will also affect the quality of air and public health. Rehabilitation of polluted areas is a persisting challenge.

Additional references and sources:	***Internet sources:***
• *Report on State of Air in Kosovo, KEPA 2013* • *Report on the state of environment, 2011-2012, KEPA* • *Utilities performance reports 2013, WWRO* • *Country Environmental Analysis (cost assessment of environmental degradation, institutional review and public environmental expenditure review) the World Bank* • *Health Statistics 2013, KAS* • *Human Development Report 2010, UNDP* • *National Institute of Public Health*	*www.ammk-rks.net* *www.wwro.org* *www.ks.undp.org* *www.worldbank.org* *www.ask.rks-gov.net/shendetsia* *www.niph-kosova.org/*

6. Response/Measures taken

Responses refer to reactions from groups (or individuals) in the society, as well as, by government, these actions aimed at prevention, compensation, upgrading or adapting to changes in the state of the environment. Some of the reactions of the society can be considered as a negative driving force for the fact that they aim to change the trends in the process of consumption and production patterns. Others aim to increase the efficiency of products and processes, through stimulation, development and use of clean technologies. The examples of the indicators of response are achieving recycling rates of municipal waste or (quantity) increase the number of cars with the catalyst. Another indicator frequently used to indicate feedback or response to changing environmental conditions is a description of environmental investments

Responses refer to responses from groups (or individuals) in society, including Government, with action aimed at preventing, compensating, improving or adjusting to changes in the state of environment. Some of the society's responses may also be deemed as detrimental driving forces as they tend to change the trends in the consumption process and production models. Others yet aim at improving the efficiency of products and processes by encouraging, developing or deploying clean technologies. Examples of such response indicators include increased municipal waste recycling rates or increased (quantity) of number of cars equipped with catalytic converters. Another frequent indicator used to analyse reactions or responses to changes of the state of environment is description of environmental investments.

6.1. Legislation

Developing environmental legislation and other related legislation, as well as associated by-laws and their implementation is a key measure undertaken by the Kosovo institution in order to improve the state of environment and prevention of pollution by introducing environmental regulations, standards, principles, procedures and norms. Seen from this aspect, Kosova has a better environmental legislative infrastructure, although their implementation in practice calls for a more comprehensive engagement. Notwithstanding, Kosova has a specific law on climate changes, although this issue is regulated to a certain extent under other laws, such as the Law on environment protection, Law on Air and other laws. There is also no Law on Eco-fund, which would help establish a special environmental fund for projects aimed at improving the environment. The following table lists the main environmental laws and some other laws that regulate specific issues related to environment.

Table 11: Legal environmental sector

Law	Purpose of the Law
Law on Environment Protection (No. 03/L-025)	The purpose of this law is to promote creating a healthy environment of the people of Kosovo with gradual adoption of EU environmental standards.
Law on waste (No. 04/L-060)	The purpose of this law is to: avoid and reduce, to the extent possible, waste generation; use of reusable components, prevent adverse impacts on waste and health and final waste storage in an environment-friendly manner.
Law on Kosovo Waters (No. 04/L-147)	This law aims to provide for development and sustainable use of water resources, necessary for public health, environment and socio-economic development of the Republic of Kosovo;
Law on Spatial Planning (No. 04/L-174)	The purpose of this law is to ensure sustainable development and balanced spatial planning throughout the territory of Kosovo as a common national asset through good governance, adequate use of land, protection of environment and cultural and natural heritage.

Law on Water, Spatial Planning and Construction Inspectorate (No. 04/L-175)	This law regulates the principles, organization and supervisory inspections, coordination of supervisory inspections, rights, obligations and authority of inspectors, rights, obligations and supervisees, procedures for supervisory inspections and other issues related to supervisory inspections.
Law on Chemicals (No. 04/L-197)	The purpose of this law is to ensure appropriate management of hazardous chemicals, protect from and decrease the potential risk of chemicals, which may affect and cause adverse effects for human health and environment.
Law on amendment and addenda to Law on Kosovo Forests (No. 03/L-153) (Nr.2003/3)	This law defines Kosovo Forests as national resource, therefore aims to ensure they are managed in a way that provides good yield while protection their biodiversity for the benefit of current and future generations.
Law on hydro-meteorological operations (No. 02/L-79)	This law aims to regulate hydro-meteorological operations and the manner of their implementation.
Law on public health (No. 02/L-78)	The law defines the public health as an autonomous discipline dealing with identification and resolution of all community issues in terms of health, disease prevention, investigation of disease etymology, promote health, health education and social issues.
Law on Utilities Services (No. 03/L-086)	This law aims to regulate the work of all utility provides, both public and private, and defines standards of services.
Law on Nature Protection (No. 03/L-233)	This Law regulates protection of nature and its sustainable use.
Law on “Bjeshket e Nemuna” National Park (No. 04/L-086)	This Law defines the territory of the Bjeshket e Nemuna (Accursed Mountains) as a spatial entity, distinguished by natural values and rarities, considerable number of important forest ecosystems and other preserved ecosystems, endemic and relic types, with rich geo-morphological, hydrological and landscape properties, important to science, education, culture, leisure, tourism, which contribute to economic development in an environment-friendly manner.

Law on "Sharri" National Park (No. 04/L-087)	This law defines the territory of Sharri mountains as a spatial entity, distinguished by natural values and rarities, considerable number of important forest ecosystems and other preserved ecosystems, endemic and relic types, with rich geo-morphological, hydrological and landscape properties, important to science, education, culture, leisure, tourism, which contribute to economic development in an environment-friendly manner.
Law on Hunting (No. 03/L-53)	The purpose of the law is to protect the integrity of ecosystem and ecological balance, ensure adequate protection of wildlife, promote welfare and conditions for economic use of resources, provide safety of and ethical standards for hunting activities.
Law on Environmental Impact Assessment (No. 03/L-214)	The purpose of this law is to prevent and decrease adverse impacts of public and private projects, thereby contributing to protecting and improving the environment, human health and enhance the quality of life.
Law on Strategic Environmental Assessment (No. 03/L-015)	The purpose of this law is to ensure high degree of protection of environment and human health through strategic environmental assessment of plans and programmes.
Law on biocidal products (No. 03/L-119)	The main purpose of this law is to establish and regulate conditions for introduction and use of active substances on the market, used for production of biocides in the territory of the Republic of Kosovo in order to ensure protection of human and animal health as well as the environment.
Law on Road and Ecological Vehicular Tax (No. 04/L-117)	This law regulates the road tax for vehicles registered in the Republic of Kosovo and introduces an ecological tax for vehicles registered both in Kosovo and abroad. Ecological tax aims to enhance the quality of environment protection.
The Criminal Code of the Republic of Kosovo (No. 04/L-082)	Chapter XXVIII, i.e. Articles 347 to 364 cover criminal acts against environment, animals, plants and cultural buildings.

In addition to developing environmental legislation, care has been taken to approximation of national environmental legislation to Europe. The European Commission has been monitoring the progress of approximation of Kosovo's environmental legislation to EU and its implementation. The overall rate of

transposition of EU directives into national legislation is at 60%, although some environmental directives have been transposed to 100% (e.g. Directive on Strategic Environmental Assessment), however, there are some with transposition rate of 0% (.e.g Directive on bathing water). The following table contains a summary of main EU directives on environment as well as the level of their transposition into the national environmental legislation.

Table 12: Transposition of EU directives into national environmental legislation

Area	EU Directive	Transposition rate as of 2014[2]
Horizontal legislature	Directive on EIA (85/337/EEC)	100%
	Directive on SEA (2001/42/EC)	100%
	Directive on environmental information (2003/4/EC)	65%
	Directive on public participation (2003/35/EC)	100%
	Directive INSPIRE (2007/2/EC)	78%
	Directive on Environmental Crimes (2008/99/EC)	53%
	Environmental Liability Directive (2004/35/EC)	84%
Air Quality	Air Quality Directive (2008/50/EC)	91%
	Directive on arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (2004/107/EC 4th Daughter Directive)	98%
	NEC Directive, national air emissions ceilings (2001/81/EC NEC Directive)	11%
	Directive on Sulphur Content of Liquid Fuels (1999/32/EC)	27%
	Volatile Organic Compounds (VOC) Solvents Directive (94/63/EC)	98%
	Directive on Stage II petrol vapour recovery during refuelling - 2009/126/EU)	30%

Waste Manage-ment	Framework Directive on Waste (2008/98/EC)	80%
	Waste Batteries Directive (2006/66/EC)	40%
	Directive on packaging and packaging waste (94/62/EC)	87%
	Directive on PCB/PCT – polychlorinated biphe-nyls (PCBs) and polychlorinated terphenyls (PCTs) (96/59/EC PCB/PCT).	66%
	Directive on end-of-life vehicles (2000/53/EC)	100%
	Directive on Landfills (99/31/EC)	100%
	Directive on restriction of the use of certain hazardous substances in electrical and electronic equipment (2001/65/EU)	50%
	Directive on waste electrical and electronic equip-ment (2012/19/EU)	46%
	Directive on mining waste management (2006/21/EC Mining Waste)	91%
Water Quality	Water Framework Directive (2000/60/EC)	49%
	Directive on Urban Wastewater Treatment 991/271/EEC)	44%
	Directive on groundwater (2006/118/EC)	36%
	Drinking Water Directive 98/83/EC)	87%
	Nitrates Directive (91/676/EEC)	25%
	Directive on Bathing Waters (2006/7/EC)	0%
	Directive on water quality standards (2008/105/EC)	4%
	Directive on flood risk assessment and manage-ment (2007/60/EC)	12%
	Directive on technical specification for chemical analysis and monitoring of water status (2009/90/EC)	7%

Nature Protection	Directive on wild birds (79/409/EEC)	100%
	Directive on habitats (92/43/EC)	100%
	Directive on keeping of wild animals in zoos (1999/22/EC)	80%
Control of Industrial Pollution	Industrial emissions directive (2010/75/EU)	69%
	Directive Seveso III on control of major industrial accidents (2012/18/EU)	27%
	Directive on emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products (2004/42/EC)	25%
Chemicals	Directive on classification, labelling and packaging of dangerous substances (67/548/EEC)	65%
	Asbestos Directive (87/217/EEC)	82%
	Biocides Directive 98/8/EC)	84%
Noise	Ambient Noise Directive (2002/49/EC)	74%

Additional references and sources:	***Internet sources:***
• *Ministry of Environment and Spatial Planning* • *The Assembly of Kosovo* • *Official Gazette of the Republic of Kosovo* • *European Commission*	*www.mmph-rks.org* *www.kuvendikosoves.org* www.gzk-rks.net http://ec.europa.eu/environment/air/legis.htm

6.2. Environmental Strategies and Plans

In addition to legal measures, in order to ensure protection of environment and relevant environmental sectors and with the view of more effective implementation of long-term environmental policies, the Kosovo institutions have developed appropriate strategies, plans and programmes. The following table represents national Strategies, Plans and Programmes for the environment and specific environment sectors, for protected areas and areas of special importance, but also national development strategies and plans, which produce direct impact on the environment, or otherwise aim to mitigate the impact.

Table 13: Strategies, Plans and Programmes in the environmental and associated sectors

Strategy/Plan	Validity period	Status	Responsible institution
Kosovo Environment Strategy and Action Plan (review and update)	2013-2022	Adopted by the Government of the Republic of Kosovo	Ministry of Environment and Spatial Planning
Biodiversity Strategy and Action Plan	2011-2022	Adopted by the Government of the Republic of Kosovo	Ministry of Environment and Spatial Planning
Air Quality Strategy 2013-2022	2013-2022	Adopted by the Assembly of the Republic of Kosovo	Ministry of Environment and Spatial Planning
Action Plan on implementation of the Air Quality Strategy	2013-2017	Adopted by the Assembly of the Republic of Kosovo	Ministry of Environment and Spatial Planning
Strategy of the Republic of Kosovo on Waste Management	2013-2022	Adopted by the Government of the Republic of Kosovo	Ministry of Environment and Spatial Planning
Action Plan on implementation of the Waste Management Strategy	2013-2017	Adopted by the Government of the Republic of Kosovo	Ministry of Environment and Spatial Planning

Kosovo Climate Change Strategy	2014-2024	Adopted by the Ministry of Environment and Spatial Planning	Ministry of Environment and Spatial Planning
National Water Strategy	2015-202	Document submitted for approval to the Government of the Republic of Kosovo	Ministry of Environment and Spatial Planning
Surface and Ground Water Monitoring Programme	2014-2015	Adopted by the Ministry of Environment and Spatial Planning	Ministry of Environment and Spatial Planning
Kosovo Spatial Plan – Kosovo Spatial Development Strategy	2010-2020+	Adopted by the Assembly of the Republic of Kosovo	Ministry of Environment and Spatial Planning
"Sharri" National Park Spatial Plan	2013-2022	Adopted by the Assembly of the Republic of Kosovo	Ministry of Environment and Spatial Planning
Spatial Plan on Nature Monument of Special Importance "Mirusha Waterfalls"	2014-2023	Adopted by the Assembly of the Republic of Kosovo	Ministry of Environment and Spatial Planning
Spatial Plan for Protected Area of Special Importance "Beteja e Koshares"	2014-2023	Adopted by the Assembly of the Republic of Kosovo	Ministry of Environment and Spatial Planning
Spatial Plan for Special Interest Area "UCK General Headquarters, Kleçkë and Divjakë"	2014-2023	Adopted by the Assembly of the Republic of Kosovo	Ministry of Environment and Spatial Planning
Spatial Plan for Special Interest Area "New Mining Field"	2010-2020	Adopted by the Assembly of the Republic of Kosovo	Ministry of Environment and Spatial Planning

"Sharri" National Park Management Plan	2015-2024	Adopted by the Ministry of Environment and Spatial Planning	Ministry of Environment and Spatial Planning
Kosovo Energy Strategy	2009-2018	Adopted by the Government of the Republic of Kosovo	Ministry of Economic Development
National Action Plan on Renewable Energy Sources	2013-2020	Adopted by the Government of the Republic of Kosovo	Ministry of Economic Development
National Energy Efficiency Plan	2013-2015	Adopted by the Government of the Republic of Kosovo	Ministry of Economic Development
Republic of Kosovo Heating Strategy	2011-2018	Adopted by the Government of the Republic of Kosovo	Ministry of Economic Development
Kosovo Mining Strategy	2012-2025	Adopted by the Assembly of the Republic of Kosovo	Ministry of Economic Development
Forestry Development Strategy	2010-2020	Adopted by the Government of the Republic of Kosovo	Ministry of Agriculture, Forestry and Rural Development
Land Consolidation Strategy	2010-2020	Adopted by the Government of the Republic of Kosovo	Ministry of Agriculture, Forestry and Rural Development
Climate Protection Strategy in Kosovo's Forestry Sector	2013-2020	Draft of the Ministry of Agriculture, Forestry and Rural Development	Ministry of Agriculture, Forestry and Rural Development

National Agriculture and Rural Development Plan	2010-2013	Adopted by the Ministry of Agriculture, Forestry and Rural Development	Ministry of Agriculture, Forestry and Rural Development
Multimode Transport Strategy and Action Plan	2012-2021	Adopted by the Government of the Republic of Kosovo	Ministry of Infrastructure

Additional references and sources:	***Internet sources:***
• *Ministry of Environment and Spatial Planning* • *The Assembly of Kosovo* • *Office of the Prime Minister of the Government of Kosovo*	*www.mmph-rks.org* *www.kuvendikosoves.org* www.kryeministri-ks.net

6.3. Environmental Monitoring

In order to ensure continued monitoring of the condition of environment and environmental media, Kosovo has an environment monitoring system, which is made of specific monitoring networks and other forms of monitoring based on standard methodologies, surveillance and regular monitoring visits. Special monitoring networks include air quality monitoring, surface water monitoring network and hydrometric network. Monitoring greenhouse gases is based on standard methodology, while monitoring protected areas or landfills is based more on observations and monitoring visits. More detailed data on current monitoring system, types of monitoring, frequency and parameters (indicators under monitoring are presented in the table below).

Table 14: Current environmental monitoring system in Kosovo

Type of monitoring	Composition of monitoring network	Frequency	Parameters / indicators subject to monitoring
Air quality monitoring	12 automatic and 1 mobile station	Continuous measurement (24/7)	Sulphur dioxide SO_2, carbon monoxide CO, Nitrogen dioxide NO_2, Oarea O_3, suspended particles PM10, suspended particles 2.5.
Monitoring river water quality (surface waters)	54 sampling points in 4 river basins (23 Drini i Bardhë, 18 Ibri, 6 Morava e Binçës and 7 Lepenci)	18 reference stations with measurements occurring biennially, 36 other stations with monthly measurements.	10 physical parameters, 39 chemical parameters and 8 heavy metals.
Monitoring ground waters	Monitoring through projects and several RWCs	Project and request-based.	Chemical parameters, physical parameters and heavy metals.

Monitoring emissions and water discharge	Monitoring on request by environmental inspection	Monitoring on request by environmental inspection	Based on purpose of request and applicable standards.
Monitoring river water quantities – hydrometric network	22 hydrometric stations and 2 flood warning stations	Levels in hydrometric stations measured continuously (24/7) while inflow 1-2 times annual. Measurements in flood warning stations done in real time.	Level (h), quantity (Q) and river profile
Monitoring greenhouse gases	Prepare greenhouse gas inventory by IPCC sectors	Update inventory on annual basis	Greenhouse gases (CO_2, CH_4, N_2O, HFC_s, PFC_s, SF_6) from the following sectors: energy, industrial processes and use of products, agriculture, forestry and use of land, waste
Soil/land monitoring	Monitoring through projects	Project and request-based.	Presence of heavy metals and organic polluters in sampled points
Waste monitoring	Monitoring and assessment of landfills, including regional, hospital and other	Monitoring visits at least twice a year.	Management, compacting, coverage and management of landfill leachate and impact on environment.
Self-monitoring by economic operators	Monitoring by KEK, NewCo Feronikeli and Sharrcemi	Daily, monthly and periodic, depending on parameters	Air and water emissions, water usage, etc.

Monitoring of protected areas	Monitoring the national network of protected areas (105 protected areas)	Monitoring condition at least once per year in each area, illegal interventions, natural values.	2 national parks, 99 natural monuments, 1 regional natural park, 2 protected landscapes and 1 special protected bird habitat
Monitoring of biodiversity (rare flora and fauna species)	Monitoring endangered fauna species through trap-cameras	Cameras register movements of animals and are occasionally checked for any recordings they may have captured	Lynx, wild goat, grey bear, capercaillie, etc.
Monitoring meteorological conditions	5 meteorological / climatological stations	5 meteorological / climatological stations take measurements 3-6 times per day. Two meteorological stations take measurements in real time.	Air temperature, air pressure, humidity, wind direction and speed, visibility, insolation, precipitation, altitude and types of clouds, weather forecasts.

Additional references and sources:	***Internet sources:***
• *Kosovo Environmental Protection Agency / KEPA*	*www.ammk-rks.net*
• *Ministry of Environment and Spatial Planning / MESP*	*www.mmph-rks.org*

6.4. Investments in environment

Investment in environment is one of the direct forms of environment protection, remedy an environmental condition and prevent adverse environmental impact. The Government of Kosovo directed the largest portion of its investments in environment through the budget of the Ministry of Environment and Spatial Planning. Additionally, municipalities and other institutions direct a part of project funding to environment projects.

Analysis of budget of Ministry of Environment and Spatial Planning for the period 2012-2015 indicates a continued decline of the total budget and capital investments in environment. While environmental capital investments in 2012 were over 60 million euros, in 2015, they decreased to 35 million euros (Figure 64). This, to a certain extent, may be justified by decrease of expropriation budget, which in 2012 was larger due to expropriations carried out for highway construction and due to establishment of Agency for Protection Against Radiation and Nuclear Safety as independent agency, previously under MESP and establishment of Agency for Management of Memorial Complexes, which inherited a part of the budget for these memorials, previously managed by MESP.

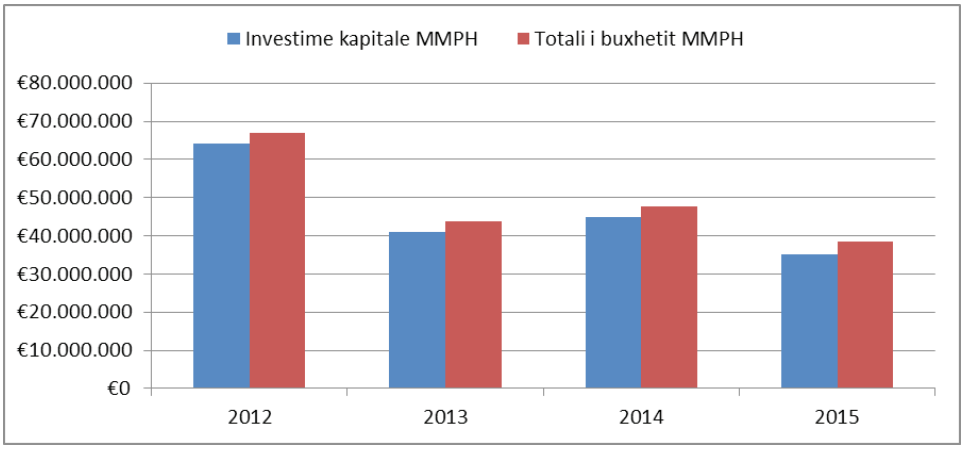


Figure 64: Total MESP budget and capital expenditure budget[71]

According to Donor Activity Report 2012-2013, developed by Ministry of European Integrations, the largest portion of capital projects in the environment sector were supported by the Central Budget of Kosovo with around 67% or 103,730,00 Euros, with donor community contributing the remaining 33%, or 50,292,397 Euros.

In 2012, Central Budget of Kosovo funded 72% of capital environmental projects or 64,380,000 euros, while donor community contributed with 28% or 25,195,536 Euros, while in 2013, the Central Budget of Kosovo supported 61% (39,350,000 Euros) of environmental projects, and 39% (25,096,860 Euros) from donor donor community (Figure 65).

71 *Ministry of Finance www.mf.rks-gov.net*

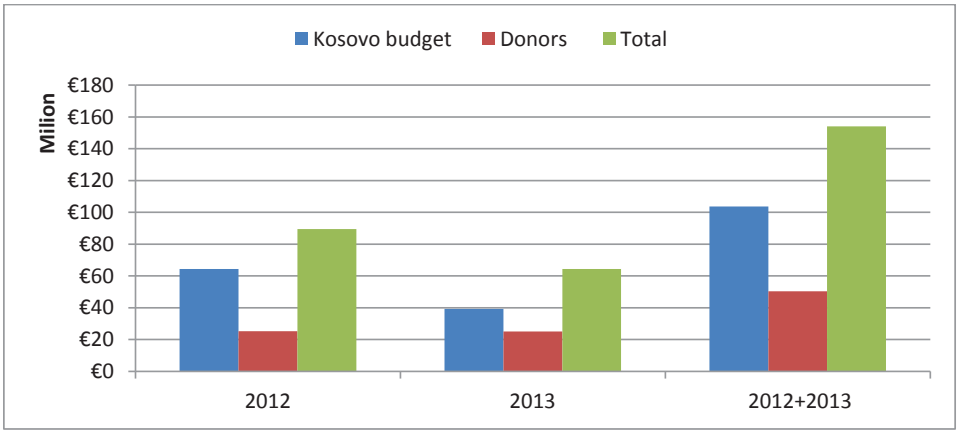


Figure 65: Capital investment in environmental sector from Central Budget of Kosovo and donor community for the period 2012-2013[72]

Projects funded by the Central Budget of Kosovo were focused in the spatial planning, housing and construction sector at 59,765,000€ in 2012 and and 39,350,000€ in 2013, while donor projects were oriented in the Environment Protection and Water Sanitation Sectors with 13,374,150€ in 2012 and 19,571,857€ in 2013.

Largest donors in this period was the European Commission Office with 10.7 million€ (5.6 million € in 2012 and 5.2 million € in 2013), the Government of Luxemburg with 7.5 million € (5 million € in 2012 and 2.5 million in 2013), USAID with 3.6 million € in 2012, German Government with 6.1 million € in 2013.

In the long-term, one of the sectors with largest portion of investments in Kosovo was the water sector. In the water sector[73], important investments were done by both Government of Kosovo and foreign donors. Investments of the Government of Kosovo were mostly directed towards rehabilitating riverbeds and improving water infrastructure, especially in water supply and sewerage systems. Donor investments were also oriented mostly in improving water sector services and feasibility studies for water treatment infrastructure.

Based on data available, since 1999, a total of 255.77 million € have been invested since 1999, 189.9 million € of which was donor funding. Major donors include the European Union, Swiss Government and German Government through German Development Bank/KfW, which together invested 154.9 million €, or 61% of total investments. Year 2010 was the year of the most investments with 26.63 million Euros in total. (Figure 66)

72 *Raporti për aktivitetet e donatorëve 2012-2013, MIE 2014,*
73 *Water sector refers to potable water, sewerage, irrigation, reservoirs, rivers, water resources administration, etc.*

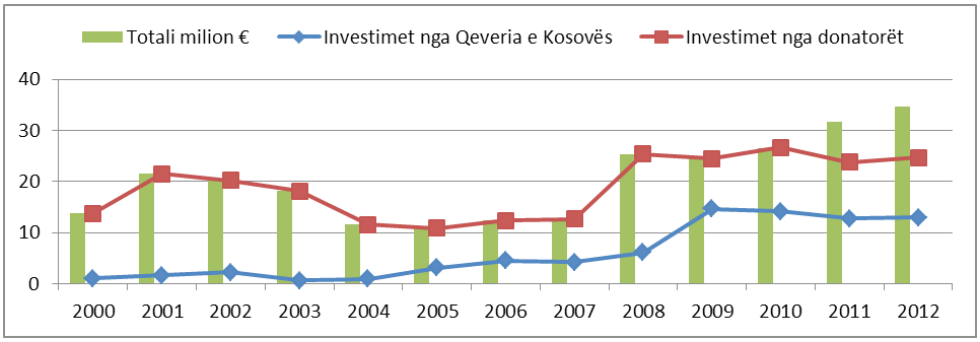


Figure 66: Water sector investments 2000-2012[74] (million euros)

In addition to water sector, donor investments were also oriented in other environmental sectors, such as waste, biodiversity, land condition survey, spatial planning, climate change, capacity building, etc. The following table shows data on some important projects funded by donors.

Table 15: some of the environmental projects supported by donors for the period 2011-2015

Project title	**Donor**	**Project amount in Euro**	**Implementation period**
Third Phase of Municipal Spatial Planning Programme support (MuSPP)	SIDA – Swedish International Development Agency	7.8 million euros	2014-2015
Support to Water Management and Water Resources Monitoring	European Union (IPA)	1.2 million euros	2012-2015
Waste Management Support	European Union (IPA)	1.5 million euros	2014-2016
Agriculture Land Pollution Survey in Kosovo (Support to MESP and MAFRD)	European Union (IPA)	1.8 million euros	2013-2015

74 *Historical trend of investments in water sector of Kosovo, Msce. Arian Shuku 2012*

Strengthening Waste Management Capacities towards Healthier Society	JICA – Japanese International Cooperation Agency	5.1 million euros	2011-2014
Land Cleaning and Reclaiming Project	The World Bank	3.7 million euros	2013-2015
Building capacities of MESP to complete and implement legislation in the area of environment and spatial planning	European Union (IPA)	1.8 million euros	2011-2013
Sustainable land use and biodiversity conservation in Dragash	UNDP – United Nations Development Programme	3.5 million euros	2011-2014
Support to low-emission development	ADC – Austrian Development Cooperation and UNDP	0.5 million euros	2013-2015
Kosovo Disaster Risk Reduction Initiative	UNDP – United Nations Development Programme	0.8 million euros	2013-2016

Additional references and sources:	***Internet sources:***
• *Ministry of Environment and Spatial Planning*	*www.mmph-rks.org*
• *Ministry of Finance*	*www.mf.rks-gov.net*
• *Ministry of European Integrations*	*www.mie-ks.net*

6.5. Regional and International Cooperation in the Environment Sector

Kosovo's participation in the regional environmental initiatives, projects and organizations is one of the forms that allow not only increased cooperation but also building capacities in the environment sector, thus meeting obligations under European integration process. Exchange of experiences and best practices under these activities and subsequent implementation in Kosovo is also an opportunity to promote environment protection and management.

This report presents some of the activities, initiatives and programmes to which the environment institutions of Kosovo participated.

6.5.1. Kosovo in Report: European Environment - State and Outlook 2015 The European Environment – State and Outlook 2015

In March this year, the European Environment Agency issued the Report "The European Environment - State and Outlook 2015", also known as SOER. SOER is the key integrated document on the state of environment in Europe, which European Environment Agency submits to European Parliament.

SOER Report 2015[75] contains information on the European Environment, environmental assessment at global level, comparative country analysis through environmental indicators and specific country and regional reports. This represents a good basis and invaluable tool for future national and European policy-making in the area of environment.

Of special importance to Kosovo is that Section 4 of SOER 2015 contains, for the first time, a national chapter on the Republic of Kosovo (Country Briefing), which provides a special overview on the state of environment in our country. The national chapter is publicly available on the European Environment Agency's website[76].

The Republic of Kosovo, through the Kosovo Environmental Protection Agency - KEPA, as part of EIONET network, took active part in the whole process of preparing and drafting the SOER 2015, along with 38 other European countries.

For more details, read the section on Kosovo in the "The European Environment – State and Outlook 2015""available at http://www.eea.europa.eu/soer-2015/countries/kosovo and look at the full synthesis of the report at http://www.eea.europa.eu/soer#tab-synthesis-report .

75 http://www.eea.europa.eu/soer#tab-synthesis-report
76 http://www.eea.europa.eu/soer-2015/countries/kosovo

6.5.2. Participation in EIONET and EEA activities

Since 2010, Kosovo is part of EIONET – European Environmental Information and Observation Network in the capacity of cooperating country[77], thus taking active part in activities organized by European Environment Agency/EEA. Kosovo's participation, i.e. Kosovo's Environment Protection Agency in activities of European Environment Agency and EIONET is facilitated as part of IPA project: "Participation of Western Balkan Countries in the work of European Environment Agency".

The project aims, among others, to improve the process of information flow and exchange between Balkan Environment Agencies and European Environment Agency, ensure their input in state of European environment assessments and reports, support National Contact Centres and National Reference Centres in their participation at workshops, trainings and meetings organized by EEA and EIONET and provide other technical assistance through experts and projects.

6.5.3. Participation in EPA Network activities – Network of Heads of European Environment Agencies

Since 2011, KEPA is part of the Network of Heads of European Environment Agencies, known as EPA Network[78]. During this time, KEPA took active part in all activities organized by the network and, in 2014-2015, was also part of the network leadership trio, whereby in September 2014, it organized the 23 meeting of the network. As part of its activities, KEPA also initiated establishment of network of Balkan Environment Agencies, as well as the Western Balkans caucus as part of the network and subsequently took active part in developing the work programme of the caucus.

The Network of Heads of European Environment Agency, known as EPA Network, otherwise gathers all heads or directors of National Environment Protection Agencies or peer European institutions.

6.5.4. Participation of KHMI in the European Flood Awareness System network

The Kosovo Hydro-meteorological Institute – KHMI, received in2015 confirmation from Swedish Institute of Meteorology and Hydrology, which represents the European System Operations Centre of the Flood Awareness System[79] of its admittance into the network of these organizations. Just prior to the admission, the Kosovo Hydro-meteorological Institute and Swedish Institute of Meteorology and Hydrology signed a document detailing the terms of participation in this organization. The members of this network are usually national organizations and authorities of the European countries, with responsibility to deliver services and information on flood risk management. Upon acceptance of these terms, KHMI,

77 https://www.eionet.europa.eu/countries
78 http://epanet.pbe.eea.europa.eu/european_epas/countries/kosovo
79 www.efas.eu

as the Kosovo agency responsible to provide information on hydrology, is required to produce information and flood forecasts in Kosovo and to European Flood Awareness System (EFAS). This participation will allow KHMI an opportunity to exchange information and gain experience, access to training and other activities organized by EFAS.

6.5.5. Regional ECRAN Programme

ECRAN (Environment and Climate Regional Accession Network), funded by BE and managed by the European Commission, helps beneficiaries to exchange information and experience in preparation for accession. ECRAN provides opportunities for strengthening regional cooperation among EU candidate and potential candidate countries in the area of environment and climate action, as well as support to transposition and implementation of environmental and climate EU *acquis.* ECRAN is based on experiences and results of RENA (Regional Environmental Network for Accession), specifically those related to environmental and climate investment, transposition and enforcement of environmental and climate legislation, compliance and implementation, local and regional initiatives, climate action, water management, waste management, air quality, industrial discharge, nature protection, EIA / SEM, support to NGOs and public participation. ECRAN is made of three main components: Environment, Climate Action and Environment NGOs Forum. Activities under each component are implemented through a Working Group System[80].

6.5.6. Dinaric Arc Parks – Regional Network of Protected Areas

WWF initiated the Dinaric Arc Parks Project in early 2012, in order to create an association of National and Nature Parks in the Dinaric Arc constituent territories; Albania, Bosnia and Herzegovina, Croatia, Kosovo, Macedonia, Montenegro, Serbia and Slovenia. This three-year project is funded by the Norwegian Ministry of Foreign Affairs and MAVA Foundation.

The first and primary objective of this project is to create a network of protected areas by connecting all parks in the Dinaric Arc region. Kosovo is represented in the project with two National Parks: NP “Sharri” and NP “Bjeshket e Nemuna”, as well as two Natural Parks: Germia and Mirusha Waterfalls[81].

6.5.7. Oak Forest Area Project

The Ministry of Environment and Spatial Planning, i.e. the Kosovo Environment Protection Agency started cooperation with the German Federal Ministry of Environment, Nature Conservation, Construction and Nuclear Safety – BMUM and German Federal Agency of Nature Conservation – BfN, as well as Ecosystems Management Centre – CEEM at the University of Eberswald for Sustainable Development – HNEE, on the Project: “Oak Forests – Common European Natural

80 http://www.ecranetwork.org/
81 http://www.parksdinarides.org/en/kosovo

Heritage". The purpose of this cooperation is to present rich natural values of our country, especially the portion of old oak vegetation located inside the "Bjeshket e Nemuna" National Park. Cooperation in this project began in 2013 and continued with participation at workshops and meetings, as planned. The project will run until 2017 and the main purpose is to ensure continuous engagement in the areas above and be awarded preference in designation, followed by a discussion at national level.

6.5.8. Transboundary Protected Areas

In order to strengthen the protection of nature at regional level, Kosova has been an active part of several initiatives, projects and researches in the Western Balkans region, but also part of cross-border initiatives with neighbours such as Macedonia, Albania, Serbia and Montenegro. Protection of biodiversity and management of protected areas are some of the these activities. As part of regional activities, two studies have also been developed on proclamation of two transboundary protected areas:

Creation of protected transboundary area "Bjeshket e Nemuna" – the proposed protection area is expected to encompass Albania, Kosovo, Montenegro and Serbia. Bjeshket e Nemuna includes mountains and unique landscape and represents one of the most important regions for protection of biodiversity in Balkans and Europe. This region is considered as home to many rare wildlife species not only in Balkan Peninsula but also in Europe[82].

Establishment of protected transboundary area "Sharr-Korab-Deshat" - this protected area is established in border areas of Albania, Kosovo and former Yugoslav Republic of Macedonia and includes unique natural landscape. This tripartite border area includes a considerable number of natural and endemic habitat as well as rare and endangered flora and fauna relicts, including species of shared European importance, such as grey bear and Balkan lynx. [83]

6.5.9. Climate changes adaptation programme in the Western Balkans

German Agency for International Development (GIZ) is developing a programme (2012-2015) involving joint projects with government institutions of the Western Balkans countries (Albania, Macedonia, Montenegro, Serbia and Kosovo) for climate change adaptation in the water sector[84].

The main objective of this project is to build adequate human, technical and legislative capacities of national institutions of beneficiary countries that work on monitoring the meteorological and hydrological elements, in order to adequately monitor by providing qualitative and regular information on these processes, so as to be able to predict, forecast and alert in timely manner on any event involving weather, climate, hydrology, etc.

82 *http://www.unep.at/documents_unep/Balkan_Feasibility_Studies/Prokletije_25-10-2010.pdf*
83 *http://www.unep.at/documents_unep/Balkan_Feasibility_Studies/Sharr_25-10-2010.pdf*
84 *Transboundary Water Management, Climate Change Adaptation in Western Balkan (www.giz.de)*

Another very important aspect is regional and international cooperation, with the view of mutual cooperation and exchange of information, so that national institutions may be able to operate more effectively.

6.5.10. Danube Water Programme (IAWD)[85]

Year 2013 saw the beginning of the implementation of Danube Water Programme supported by the World Bank. Kosova is part of this programme, along with 12 other countries of the Danube region (Austria, Albania, Ukraine, Romania, Moldavia, Bulgaria, Macedonia, Serbia, Croatia, Bosnia and Herzegovina and Montenegro). The project aims to help these countries build robust and sustainable water supply and wastewater services. The work plan is structured around five following pillars: Policies, Tariffs, Asset Management, Investment Planning and Improve Service Efficiency. The programme will be implemented using three main elements: analytical and advisory work, platform for sharing knowledge and capacity development activities.

Additional references and sources:	***Internet sources:***
• *Kosovo Environmental Protection Agency / KEPA*	*www.ammk-rks.net*
• *European Environment Agency/EEA*	*www.eionet.europa.eu*
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