



Annual Report on the State of the Environment

2021



August 2022,
Prishtina



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Ministria e Mjedisit, Planifikimit Hapësinor dhe Infrastrukturës
Ministarstvo Životne Sredine, Prostornog Planiranja i Infrastrukture
Ministry of Environment, Spatial Planning and Infrastructure

AGJENCIA PËR MBROJTJEN
E MJEDISIT TË KOSOVËS

KOSOVSKA AGENCIJA
ZA ZAŠTITU SREDINE

KOSOVO ENVIRONMENTAL
PROTECTION AGENCY



**Annual Report on the State of the
Environment for 2021**

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1. Introduction

The drafting of the Report on the State of the Environment in Kosovo is based on the Law on Environmental Protection¹. According to Article 25 of this law, the Government of Kosovo, on the proposal of the Ministry of Environment, Spatial Planning and Infrastructure, submits to the Assembly an Annual Report on the State of the Environment.

The report should contain data on the state of the environment and changes in the environment compared to the previous report, utilization of natural resources, environmental impacts on the health of the population, the condition of endangered environments, implementation of the environmental strategy and action plan, measures taken for the protection of the environment, development of environmental institutions and financing of the system for environmental protection.

In accordance with the duties and responsibilities of government institutions, the Kosovo Environmental Protection Agency is the institution drafting this document. This annual report presents the state of the environment for 2021, but even earlier data occupy a considerable place for the purpose of comparison.

To compile the report, KEPA has collected environmental data from monitoring institutions, operators, various enterprises, publications, reports and other sources. The data collected have been processed into qualitative environmental information that is now presented in this report.

The presentation of the situation for some environmental sectors is less covered due to lack of data, lack of monitoring, insufficient legal basis or other institutional and managerial aspects. Therefore, the content and quality of this report, to some extent, is also a reflection of the quality of monitoring implemented nationwide and the level of organization of the environmental information system.

The main purpose of this report is to inform decision-making institutions on the state of the environment in Kosovo, in order for the presented data to serve for the design of adequate environmental policies and for the orientation of developments, planning and strategic investments in sectors that have an impact on the environment, such as economy, industry, energy, transport, agriculture, etc.

¹ Law No. 03/L-025 on Environmental Protection

2. Summary of key findings of the report

Air - The monitoring data contain data on exceeding the maximum allowed values for some parameters, in particular for PM10 and PM2.5, and this is mainly reflected during the winter season. The largest number of days where values have been exceeded was recorded at the measuring stations in Prishtina (Rilindja 59 and KHMI 370, Peja (41) and Gjilan (37). The highest concentration of the annual average for PM10 was recorded in the “Rilindja-Prishtina” stations at 33.4 $\mu\text{g}/\text{m}^3$ and in Gjilan at 31.3 $\mu\text{g}/\text{m}^3$. Regarding the trend of the annual concentration of the monitored parameters, based on the annual data for the period 2013-2021, a significant decrease in the concentration of pollutants can be observed, which can also be related to the measures taken to reduce pollution. Regarding air emissions, according to the fuel consumption-based assessment, the main source of emissions for NO₂ and SO₂ pollutants is energy and heating generation, while for PM2.5, PM10, total dust and carbon monoxide pollutants (CO), the main source of pollution is that of small combustion, which includes residential, institutional and commercial sources. Transport is the second source of NO₂ pollution after the power generation sector, while the manufacturing and construction industry is the second sector for CO pollution after small combustion. Annual greenhouse gas emissions in Kosovo for 2020 are estimated at 10,266 Gg (Giga grams) CO₂ eq, (equivalent) or about 10.2 million tons of CO₂ eq. The main source of greenhouse gas emissions is the energy sector with a share of 88% of the total emissions. The second sector is agriculture, forestry and land use with 6%, while the waste sector represents 4% of total emissions. The enforcement of laws, by-laws and policies for the air sector, as is the case with policies for the control of emissions from mobile sources and those for the control of oil quality, is considered to be at an unsatisfactory level. The low level of implementation of legal requirements is also noted at the local level.

Water - Surface water quality in Kosovo continues to be affected by pollution resulting from urban and industrial water discharges, uncontrolled dumping of waste into rivers, use of pesticides and fertilizers in agriculture as well as damage to river beds from the use of aggregates and illegal construction. In 2021, surface water quality monitoring was carried out at 54 monitoring points in rivers. The water quality indicators presented in this report indicate the presence of organic pollutants in river waters, although it can be concluded that surface waters are not endangered by eutrophication. Water quantity monitoring was carried out at 20 measuring stations, in terms of H level (cm) and 6 measuring stations in terms of Q flows. (m^3/sec).

Kosovo still has no regular monitoring of the water quality of lakes and underground water, and there is no biological monitoring of surface water either. Kosovo has not yet

fully developed a wastewater treatment system, even though there has been some progress in this area in 2021. Wastewater treatment still remains at a low level with only 11% of the total amount of waste water. Donor support for the water resources integrated management in 2021 has recorded positive developments in this sector.

Land - Currently, Kosovo does not have a program or regular monitoring of soil/land quality. This activity is carried out mainly through projects and periodic activities. According to the analysis of the land coverage trend, it has been concluded that the change of land destination remains one of the main environmental challenges in the land sector. According to KEPA estimates, artificial construction areas occupy an area of 4.7% of the land coverage in Kosovo, about 57% of the area is covered with forests, forest lands and semi-natural areas, 38% with agricultural areas, while wet lands and water areas are represented by less than 1%. Agriculture is considered one of the main sources of pollution of agricultural lands, resulting from the use of chemical fertilizers and other chemicals for soil treatment. Likewise, sanitary and illegal waste dumps, active and obsolete industries are potential sources of land pollution due to industrial waste generation and the use of chemicals, which in some cases are stored in unsafe places.

Waste Management - Kosovo continues to face a lack of efficient waste management. Waste generation per capita is estimated at 251 kg/inhabitants/year. Currently, at the national level, about 90% of the generated waste is collected. Most of them are disposed of in sanitary landfills, while there is still no organized system of separation at the source and recycling of waste. The management of sanitary landfills in Kosovo is not good and among the main problems are the non-functioning of landfill water pumping systems, poor compression of landfilled waste and insufficient waste coverage. A large number of illegal landfills have been identified throughout Kosovo, although there has been little progress in 2021 (763 landfills) compared to 2020 (1189 landfills). Despite the continued commitment of central institutions, municipalities and donors, illegal landfills continue to be a challenge for this sector. Activities for source separation, waste treatment, waste recycling and other aspects related to the circular economy are still on a low scale.

Protected areas and biodiversity - In 2021, 31 new areas were added to the national register of protected areas, increasing the number of protected areas to 248 areas, with an area of 126023.2 ha or 11.55% of the territory of Kosovo. Despite the continuous increase in the number of protected areas and their area, efficient management of protected areas and prevention of illegal actions in these areas continues to be a problem for Kosovo institutions. There are still protected areas that enjoy special protection status which do not yet have relevant management bodies. The lack of spatial, management and regulatory plans for some of these areas is also considered to be a problem. The

monitoring of fauna through trap cameras provided information on the presence of some rare and endangered species of fauna in Kosovo and their state is assessed as satisfactory. There is a lack of specific programs for monitoring biodiversity in general or specific species in particular. The implementation of several initiatives and projects for crossborder management of natural areas is considered positive and important.

Utilization of natural resources - Exploitation of stone and other mining resources is realized through quarries, which is one of the most frequent forms of exploitation of natural resources in Kosovo. In 2021, 232 licenses for stone exploitation and 170 licenses for the exploration of stone reserves were issued. The data indicate that there are also illegal operators involved with this activity. Based on the assessments conducted, the degraded surfaces of the rivers due to the exploitation of aggregates have increased by 341.65 ha. The total production of water distributed by regional companies in 2021 was 156.4 million m³. About 65.97 million m³ have been used for drinking water supply, water losses are estimated to be approximately 85.61 million m³, while the amount of water used for agriculture irrigation in 2021 was 77.69 million m³ water. It is estimated that in 2020, according to the plan, about 168 thousand m³ of wood was used from public forests. Illegal logging remains one of the main challenges of the forest management sector. In 2021, the municipal forestry units confiscated 1,524.26 m³ of wood mass, of which 139.45 m³ was technical wood and 1,384.81 m³ of firewood.

Public health - The number of registered environmental diseases continues to keep having a linear trend in Kosovo. A significant increase in the number of certain diseases related to environmental aspects has been recorded in some cases. In 2021, a large number of patients with COVID-19 must be pointed out. However, there is still no detailed study in Kosovo based on indicators that would assess the real impact of the state of the environment on public health. According to statistical data on the causes of death in Kosovo, it is established that the largest number of deaths, as far as environment-related causes are concerned, are those from diseases of the blood circulation system, tumours and respiratory system diseases. Compared to the previous year, the overall drinking water quality in Kosovo provided to consumers in the service areas covered by the seven RWCs in 2021, was poorer. The overall average of microbiological compatibility in 2021 was 98.3%, compared to 99.5% in 2020, while the average of physicochemical compatibility in 2021 was 98.6% compared to 99.4% in 2020. In 2021, RWCs (Regional Water Companies), as licensed providers of water supply services provided water supply services to 79% of the population.

Endangered environments - the report specifically deals with the environmental state in the KEK, Ferronikel and Sharrcem operating areas, where the general aspects of environmental management are dealt with, including air emissions, water discharges, industrial waste management, as well as other environmental aspects. The report also presents general data for 17 other locations which are considered environmental hotspots, and which were created mainly as a result of past industrial activity, triggered

by mining activities from old unmanaged landfills, stored chemicals, waste oils, pesticides, herbicides, etc.

Measures taken to improve the state of the environment - Kosovo continues its commitment to aligning the national legislation with EU Directives, although their implementation remains a challenge. Strategies and action plans have been drafted and approved for all environmental sectors, both at the central and local levels, but the level of their implementation is partial. Although inspection and surveillance activities in the nature protection sector have increased during 2021, illegal activities that degrade and damage the environment are still in alarming numbers. Despite the lack of staff and the lack of enforcement of regulations on the institutional organizational structure, environmental institutions are fulfilling their duties and responsibilities satisfactorily and there are cases when impressive results are achieved. One such example is the performance of the Kosovo Environmental Protection Agency within the European Environment Information and Observation Network (EIONET), which fulfilled its reporting obligations by 100% in 2021. Although the budget for environmental capital projects has increased, and the number of donor projects has also increased, the need and demand for environmental investments remains high. The issue of the environment in Kosovo is still treated with low priority by the Government of Kosovo.

3. State of environment and trend

3.1. Air

3.1.1. Air quality

Air quality is described according to the Air Quality Index (AQI), which is based on the concentration of pollutants present in the air in a given location. This reports presents the tables with data on annual averages and the number of days where such averages are exceeded. The measurements conducted by the air quality real-time monitoring stations (figure 1).

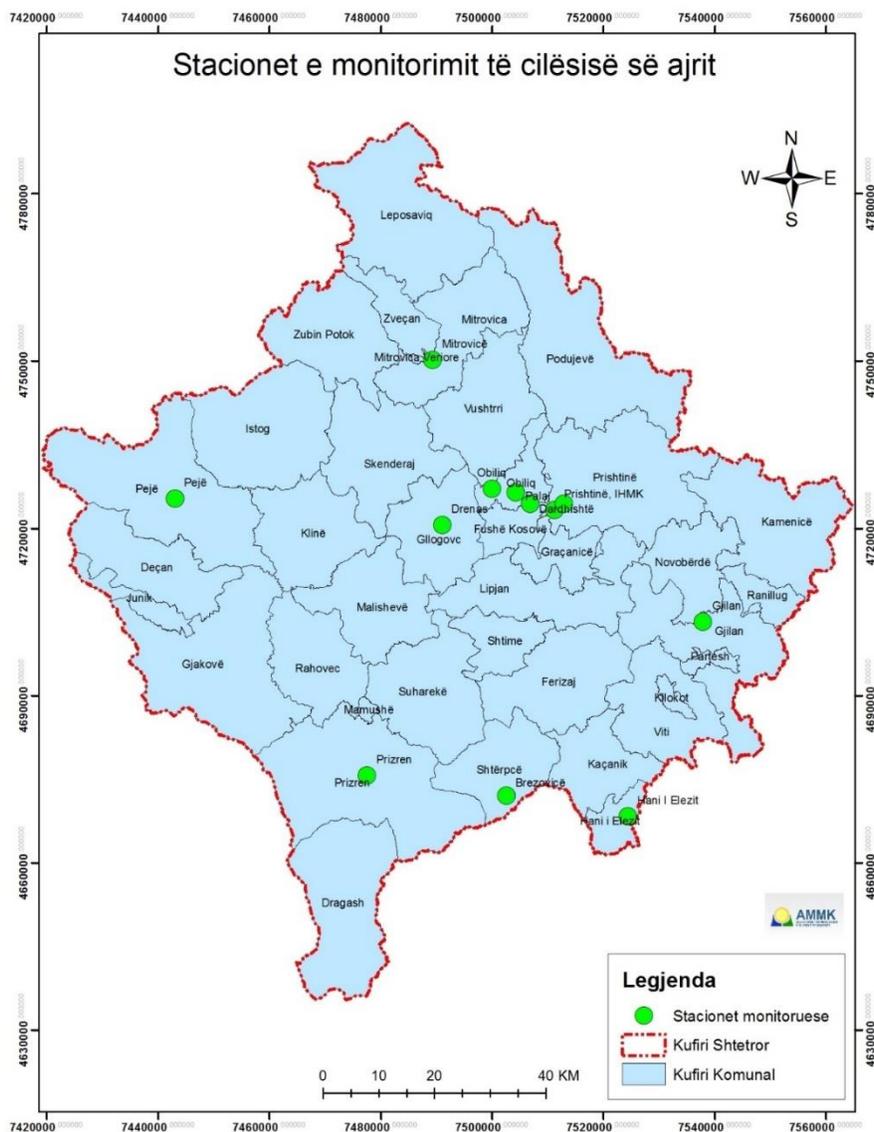


Figure 1: Location of air quality monitoring stations

Air quality monitoring - Air quality monitoring is a systematic and long-term assessment of pollutant levels by measuring the air quality in a given neighbourhood. Air quality monitoring is done for dust particles (PM10 and PM2.5) as well as four types of gases (NO₂, SO₂, O₃ and CO). The table with data on monitoring stations and monitored parameters is presented in Annex 1 of the Report.

The air quality norms applicable for air quality monitoring in Kosovo are defined according to Administrative Instruction No. 02/2011 on Air Quality Norms, which are presented in Annex 2 of this Report. The online system offers the opportunity for citizens to be informed of the real situation and forecast of air quality in the territory of the Republic of Kosovo. Air quality reporting from the monitoring network is administered by the Kosovo Hydrometeorological Institute.

Air quality monitoring in Kosovo is divided into two areas: Agglomerate - AKS1 (Table 1 and Figure 2), with KHMI stations, Rilindja, Obiliqi, Dardhishta and Palaj, and ZKS1 Area (Table 2 and Figure 3) with stations in Gjilan, Peja, Prizren, Drenas, Brezovica, Mitrovica and Hani i Elezit.

Tables 1 and 2 present the data on air quality by monitored parameters for 2021. The data show that the limit values of the annual average by 40 µg/m³ standard have been exceeded for the PM10 parameter, and the other monitored parameters indicate that no exceeding of the limit values of the annual average was recorded in any of the monitoring stations. While the number of days exceeded in 24 hours for the PM10 parameter, indicates that the daily limit values of the 50 µg/m³ standard for this parameter were exceeded. Based on the data from the monitoring stations, we estimate that the exceedances recorded at these stations as follows: Rilindja with 59 days, Peja with 41 days, KHMI with 37 days and Gjilan with 37 days.

The largest number of cases exceeded was recorded during the autumn-winter season, which resulted from the use of heating fuels. During this season, meteorological conditions greatly affect air quality due to air humidity, low temperatures, fog, etc.

Table 1: Air quality data by parameters and monitoring stations in the KS1 agglomeration for 2021

Stations	PM 10 µg/m ³	PM 2.5 µg/m ³	O ₃ µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	No. days with excesses for PM10
Prishtina/KHMI	27.63	19.04	41.36	8.85	22.24	1.59	37
Prishtina/Rilindja	33.4	21.86	47.17	7.67	26.42	1.84	59
Palaj	15.05	10.37	49.75	5.31	7.68	0.29	5
Obiliq	22.24	15.74	41.88	9.44	16.49	1	21
Dardhishta	22.76	15.88	29.69	6.05	3.68	1.13	22

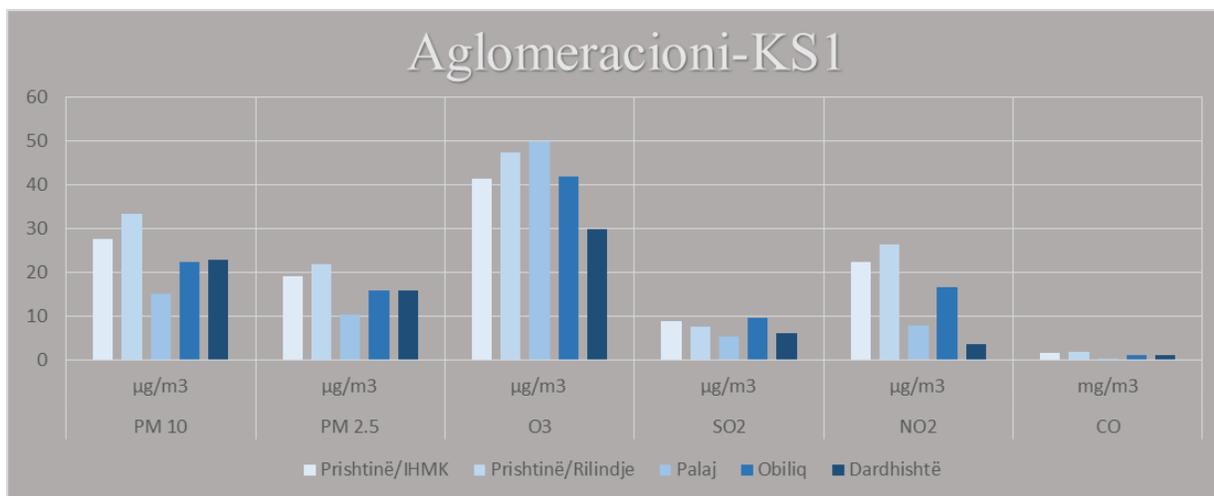


Figure 2: Parameters monitored in AKS 1

Table 2: Air quality data by parameters and monitoring stations ZKS1 for 2021

Stations	PM 10 µg/m ³	PM 2.5 µg/m ³	O ₃ µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³	No. days with excesses for PM10
Drenas	18.6	14.70	56.66	5.71	15.28	0.55	13
Mitrovica	25.97	19.16	32.99	19.87	14.19	0.35	20
Peja	29.11	21.18	60.24	3.96	17.64	0.7	41
Prizren	22.48	16.39	59.88	6.63	19.08	0.49	31
Brezovica	11.47	8	73.29	2.62	4.56	0.67	1
Hani i Elezit	17	13.52	60.28	8.52	16.29	0.35	12
Gjilan	31.39	23.99	53.57	3.77	22.52	0.58	37

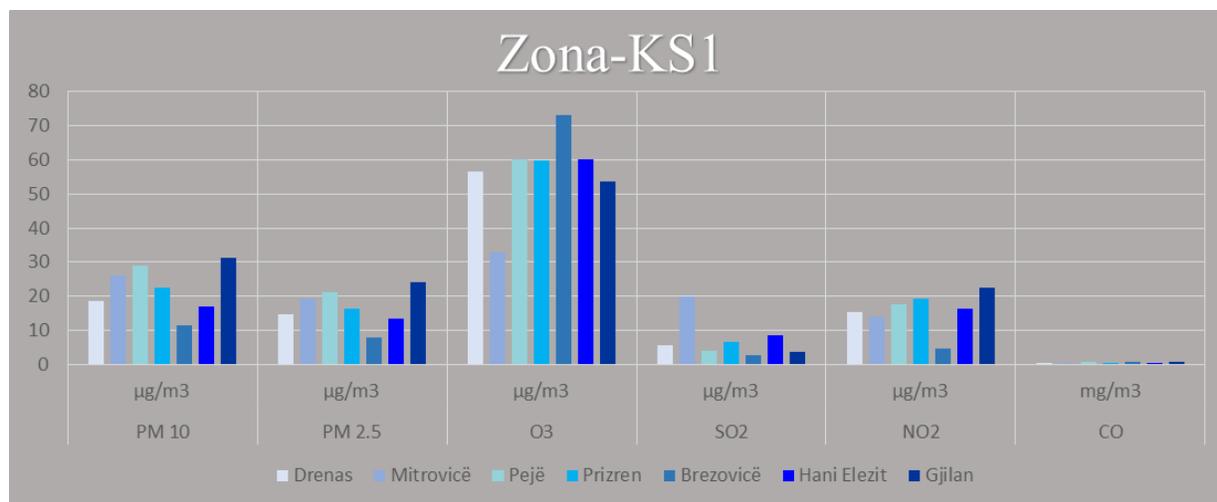


Figure 3: Parameters monitored in ZKS 1

Air quality trend - Regarding the trend of the annual concentration of the monitored parameters, based on the annual data for the period 2013-2021, a significant decrease in the concentration of pollutants is observed in recent years, which can also be related to the measures taken to reduce pollution. The decreasing concentration trend is evident, especially in the case of the parameters PM₁₀, PM_{2.5} and NO₂ (Figures 4, 5 and 8) and for the last three years, while for the other parameters O₃, SO₂ and CO (Figures 6, 7 and 9), a more linear trend can be observed in the last three years.

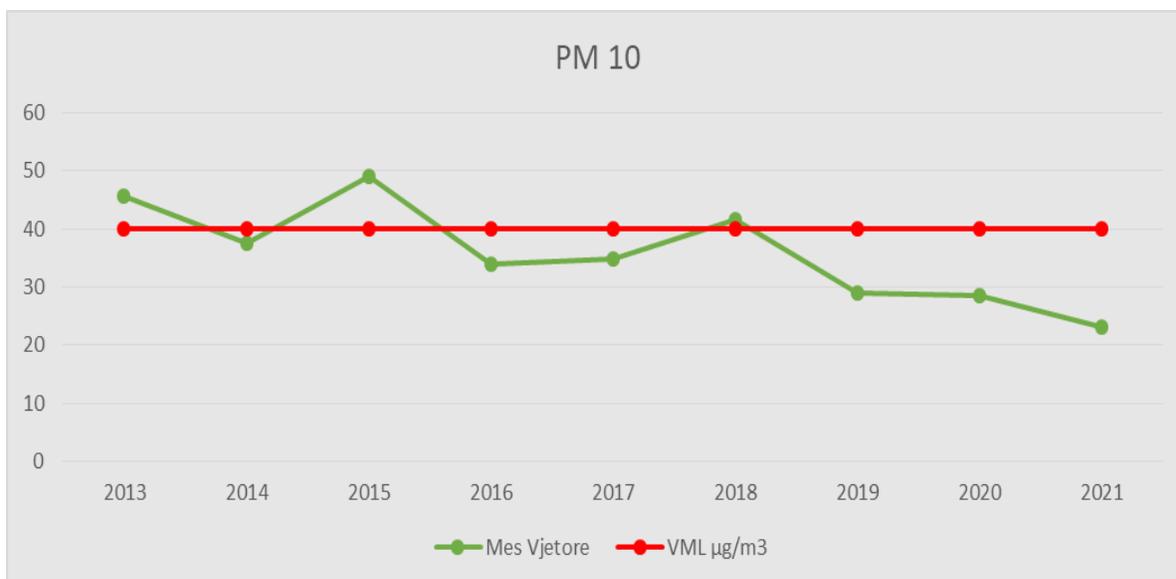


Figure 4: The trend of annual PM₁₀ averages for the years 2013-2021

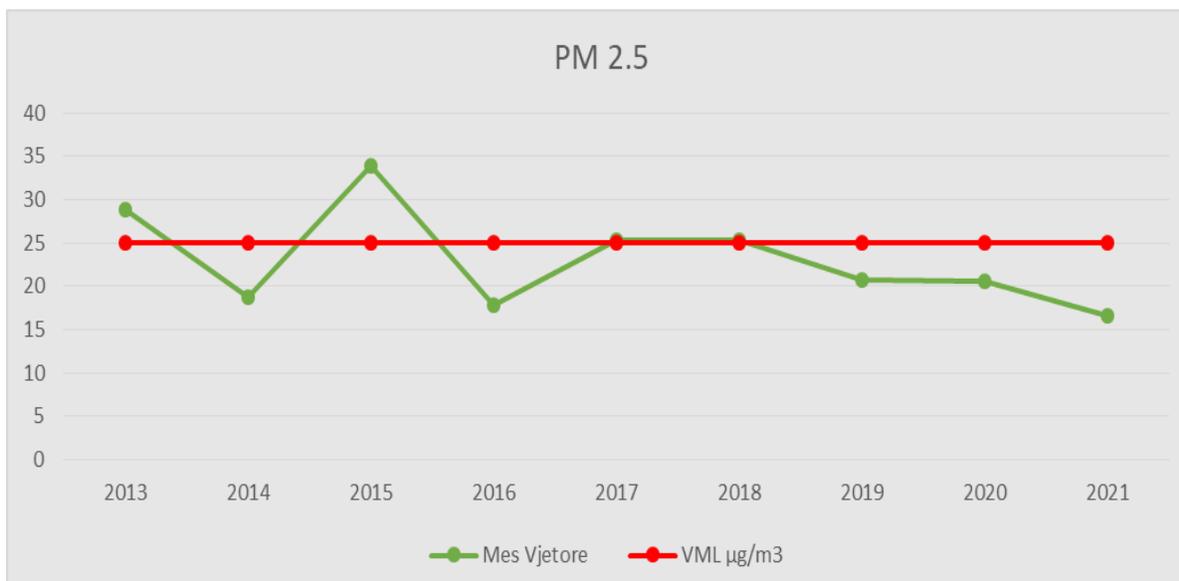


Figure 5: The trend of annual PM_{2.5} averages for the years 2013-2021

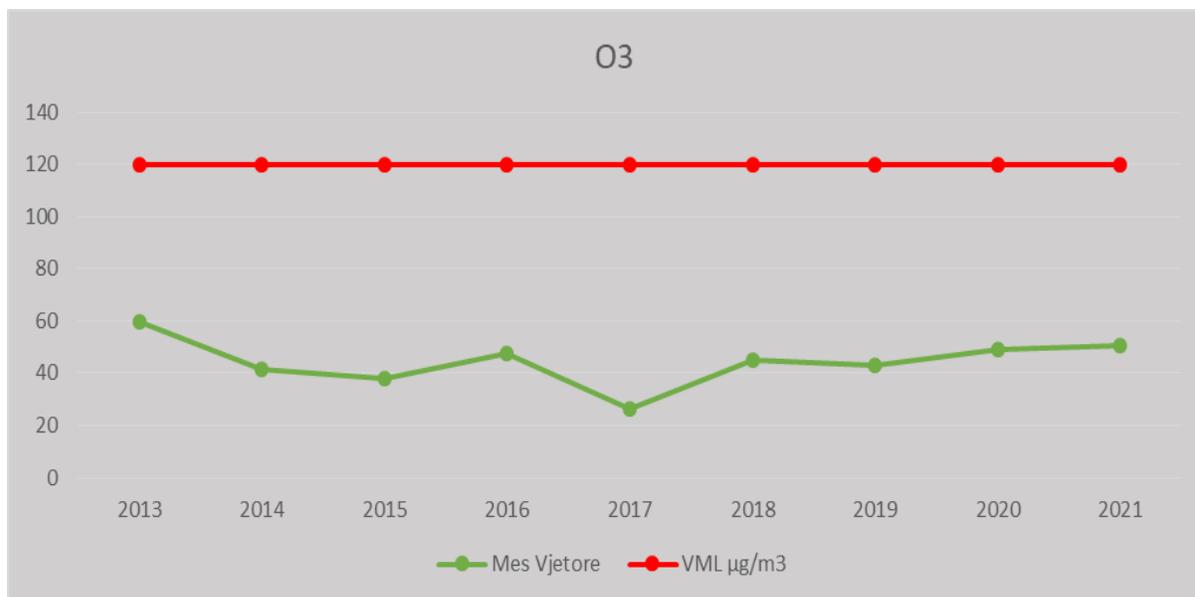


Figure 6: The trend of annual O₃ averages for the years 2013-2021

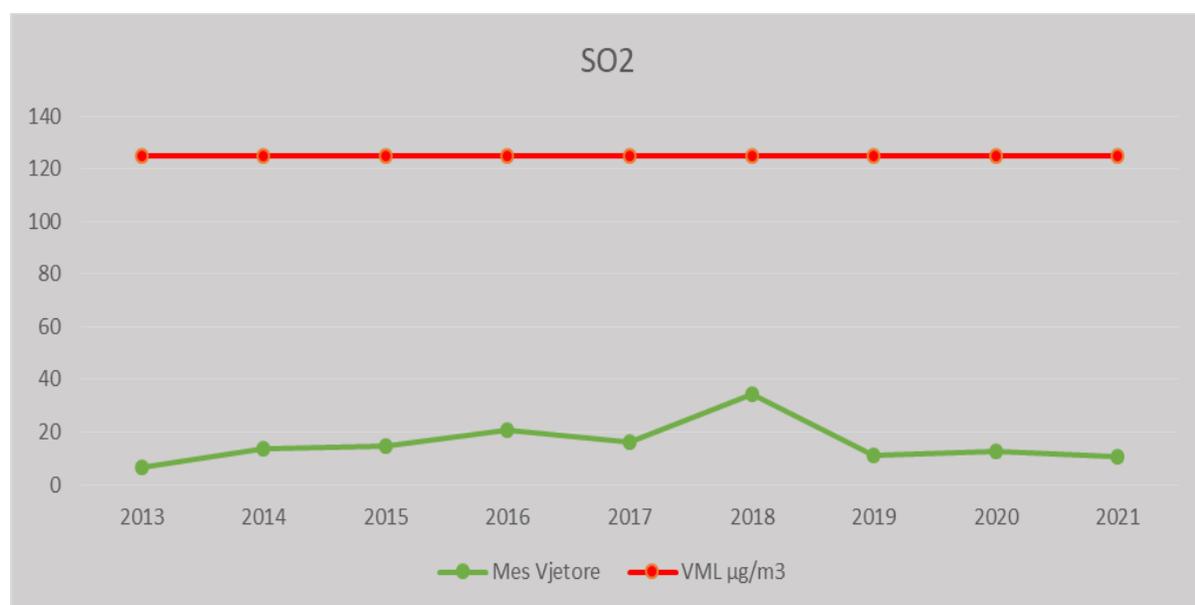


Figure 7: The trend of annual SO₂ averages for the years 2013-2021

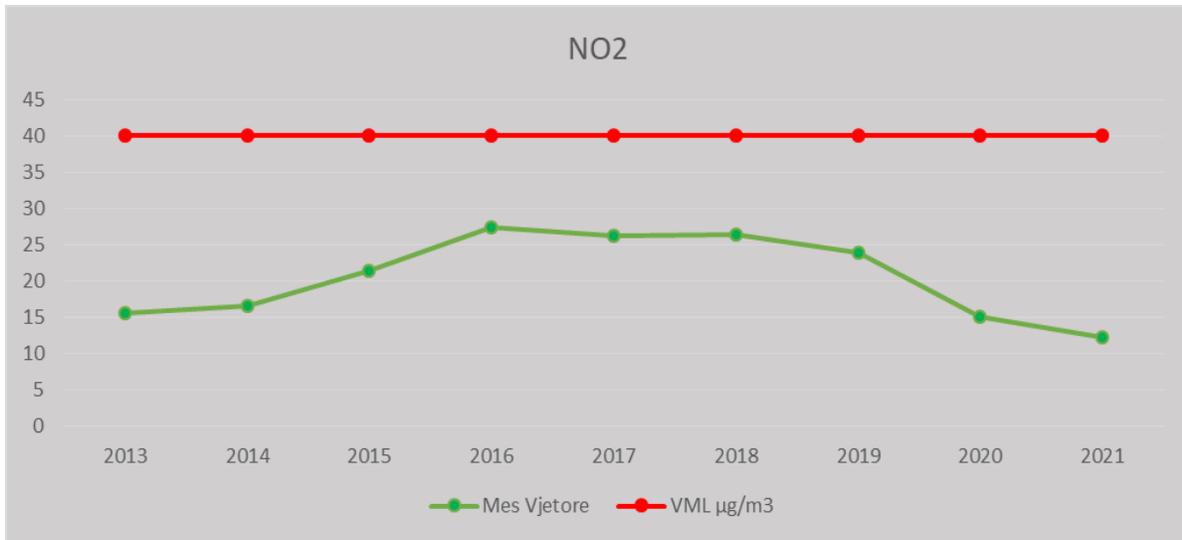


Figure 8: The trend of annual NO₂ averages for the years 2013-2021

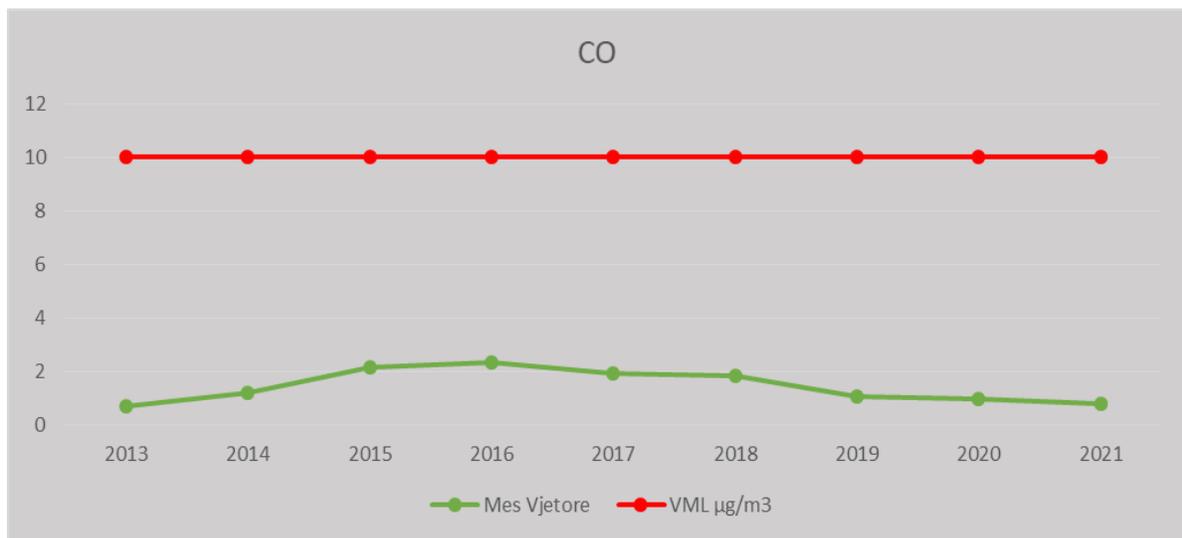


Figure 9: The trend of annual CO averages for the years 2013-2021

3.1.2. Air emissions

Emission inventory provides an estimate of the location and amount of pollutants released into the air from various sources. Inventory is one of the main tools used in air quality management as it provides information through which we understand who are the relative contributors by activities and resources, thus enabling effective action to reduce emissions and improve the environment air quality.

The Kosovo Environmental Protection Agency conducts an assessment of air emissions on an annual basis, based on the consumption of fuels. In 2022, the air emission assessment was conducted based on the consumption of fuels for 2020. Table 3 presents data on the main pollutants by pollution sources.

Table 3: Air emissions for the main pollutants by emission sources (tons/year)²

Emission sources	NO ₂	SO ₂	PM2.5	PM10	PT ³	NM VOC	CO
Energy industry (Energy and heat generation)	15.776	106.365	205	503	745	89	554
Manufacturing and construction industry	3.610	578	492	509	316	898	2.029
Transport (Aviation, vehicles and railways)	9.100	834	355	355	355	443	1.171
Small combustions (Commercial, residential and agricultural)	2,233	679	10,850	11,146	11,733	8,939	58,912
Total (tons/year)	30,720	108,455	11,901	12,512	13,148	10,369	62,666

As it can be seen from the data presented in the table, the main source of emissions for NO₂ and SO₂ pollutants is energy and heating generation, while for PM2.5, PM10, total dust and carbon monoxide pollutants (CO), the main source of pollution is that of small combustion, which includes residential, institutional and commercial sources. Transport is the second source of NO₂ pollution after the power generation sector, while the manufacturing industry is the second sector for CO pollution after small combustion. Compared to the 2019 emissions, there was a slight decrease in emissions for all pollutants and all sources in 2020. In order to reduce pollution and reduce emissions from different sources, it is required to develop favourable policies for the use of fuels that have lower emissions to the environment, as well as for the implementation of clean technologies in manufacturing processes. It is also recommended to favour the use of alternative transport that has lower emissions into the air and apply the timelimit on the use of obsolete vehicles and those without catalysts. Measure that must be implemented include inter alia: Increasing the energy efficiency of buildings and increasing green spaces and promoting, as well as implementing clean technologies in industrial processes in order to reduce air emissions, etc.

² KEPA annual report on air emissions according to CLRTAP requirements reported to the European Environment Agency (<https://cdr.eionet.europa.eu/xk/un/clrtap/inventories/envyfo8xa/>)

³ Total Dust

3.1.3. Greenhouse gas emissions (GHG)

As part of the activities for 2022, KEPA has also made the assessment of greenhouse gas emissions for 2020.

Annual greenhouse gas emissions in Kosovo for 2020 are estimated at 10,266 Gg (Giga grams) CO₂ eq, (equivalent) or about 10.2 million tons of CO₂ eq. The main source of greenhouse gas emissions is the energy sector with a share of 88% of the total emissions. The second sector is agriculture, forestry and land use with 6%. The waste sector represents 4% of the total emissions, while the industrial processes and product use sector represents about 2% (Table 4).

Table 4: Total greenhouse gas emissions in Kosovo by sectors 2020

Category (sector)	Gg CO ₂ eq.	%
Energy	8989	88
Industrial processes and use of products	214	2
Agriculture, forestry and land use	600	6
Waste	463	4
Total emissions	10266	100%

The trend of total GHG emissions in Kosovo during the period 2008-2020 (Figure 10) records a rather non-linear trend. 2014 has the lowest emissions (8811 Gg CO₂ eq.), while 2016 recorded the highest emissions (10641 Gg CO₂). 2020 with 10266 Co.2 Gg eq., records an increasing emission trend compared to the previous year 2019 (9995 Gg CO₂ eq.) The total greenhouse gas emissions in Kosovo are highly dependent on the amount of coal-generated energy, which is the main source of greenhouse gas emissions in our country.

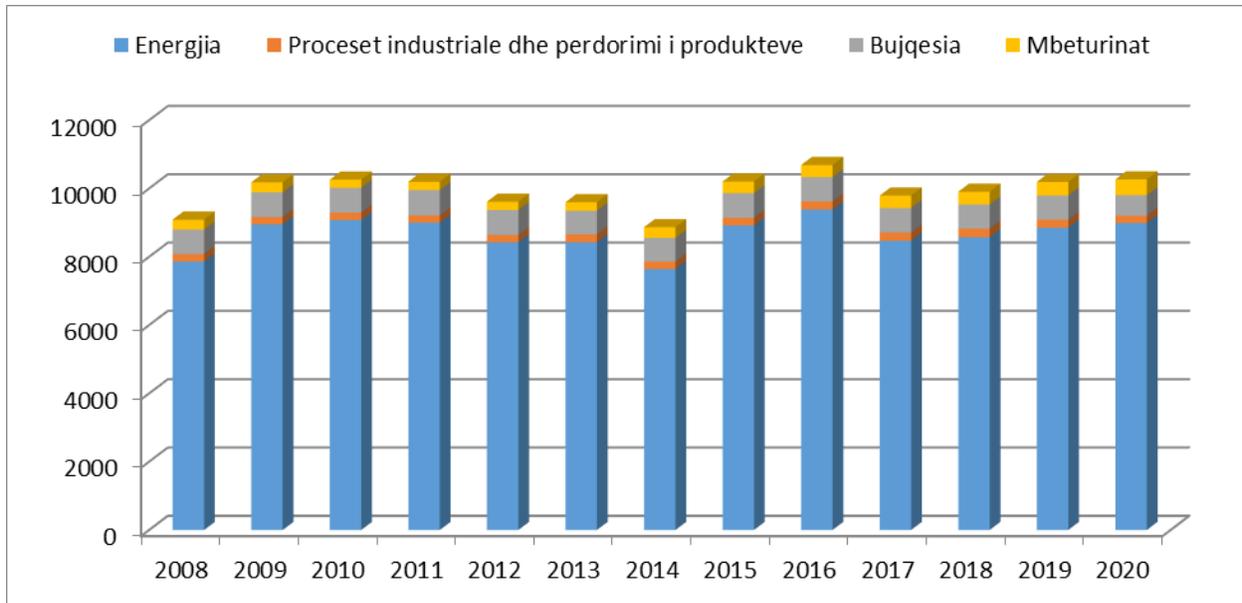


Figure 10: The trend of total gas emissions in Kosovo 2008-2020

In order to reduce greenhouse gases, it is recommended to implement specific measures according to the relevant sectors, including inter alia:

- Increasing the use of renewable energy sources and reducing the use of coal for energy generation;
- Removing old vehicles from traffic and implementing vehicle control standards and promoting of resilient transport with less motor vehicle traffic;
- Controlling the use of products that dilute the ozone layer;
- Managing more efficiently the animal manure and controlled use of fertilizers;
- Improving waste management and implementation of recycling, separation and waste treatment systems;
- Improving waste water management through treatment;
- Reducing burnt surfaces according to land categories;
- Reducing illegal logging and preservation of land use destinations according to categories.

3.2. Water

Industrial development, urbanization and intensive agriculture are just some of the factors that affect water pollution. Despite continued engagement, the uncontrolled use of water resources and damage to river beds still remains one of the forms of degradation of our water resources.

Pressures in the water come mainly as a result of an increased volume of discharged wastewater without proper physical, chemical and biological treatment. All of this has an impact on the increase of values in physical, chemical and microbiological parameters in water bodies

Other precipitation pressures are the runoff of agricultural lands and other pollution surfaces, which leads to the growth of suspended matter, inorganic materials (fertilizers -N, P, K, NH₄⁺ etc.) and organic ones (PCB, Herbicides etc.). Among the biggest pressures on water bodies are industrial discharges of various activities.

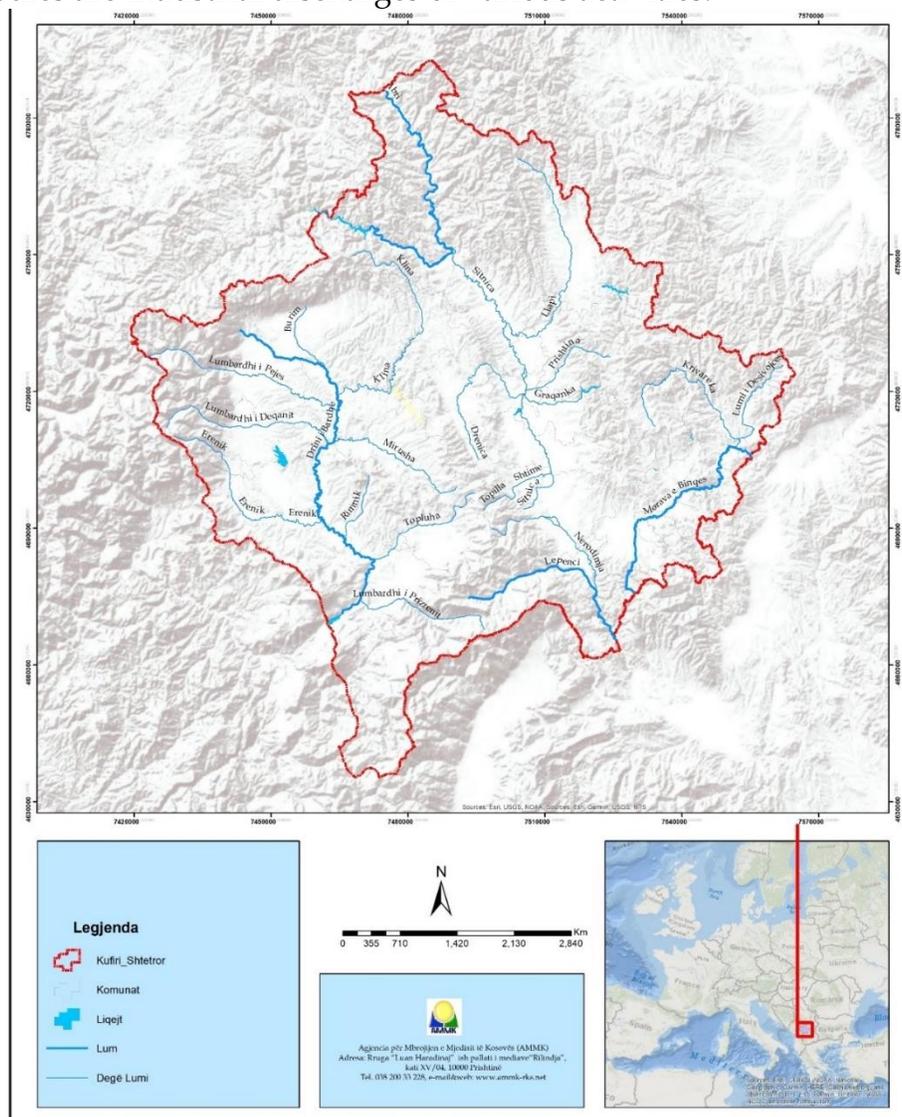


Figure 11: Surface water network in Kosovo

3.2.1. Surface water quality

River waters in the territory of the Republic of Kosovo are monitored by the Kosovo Hydrometeorological Institute. The quality of these rivers is determined based on physical, chemical and heavy metal analyses. The monitoring network has a total of 54 sampling sites (monitoring stations). The physical parameters currently being monitored are 10 physical parameters (measured 11 times a year), 39 chemical parameters (measured 11 times a year) and 8 heavy metals (2 times a year). River monitoring stations monitored parameters and frequency of measurements have been presented in Annex 3 and 4 of the Report.

In this report, the state of the water is reflected through these indicators (parameters): Dissolved Oxygen (mg/l O₂); Biochemical Oxygen Demand - BOD₅ (mg/l O₂), Chemical Oxygen Demand - COD (mg/l O₂); Total Organic Carbon - C (mg/l); Total Phosphorus - P (mg/l), and Total Suspended Matter-TSM (mg/L). The values presented in the charts are average values for 2020. Parameters such as Dissolved Oxygen (O₂), Biochemical Oxygen Demand for 5 days (BOD), Chemical Oxygen Demand (COD), show the level of organic and bacteriological pollution of water and belong to the set of parameters expected to have pressures from the above-mentioned phenomena. The presence of phosphorus (P_{tot}) causes eutrophication in the waters.

The Drini i Bardhë Basin - In this basin, the selection is made for two rivers, namely Drini i Bardhë and Ereniku river (Figure 12), whereas annual average value is presented the Chemical Oxygen Demand /mg/l O₂ (COD) and that in both rivers of the monitoring stations along the flow excluding referent stations (sources).

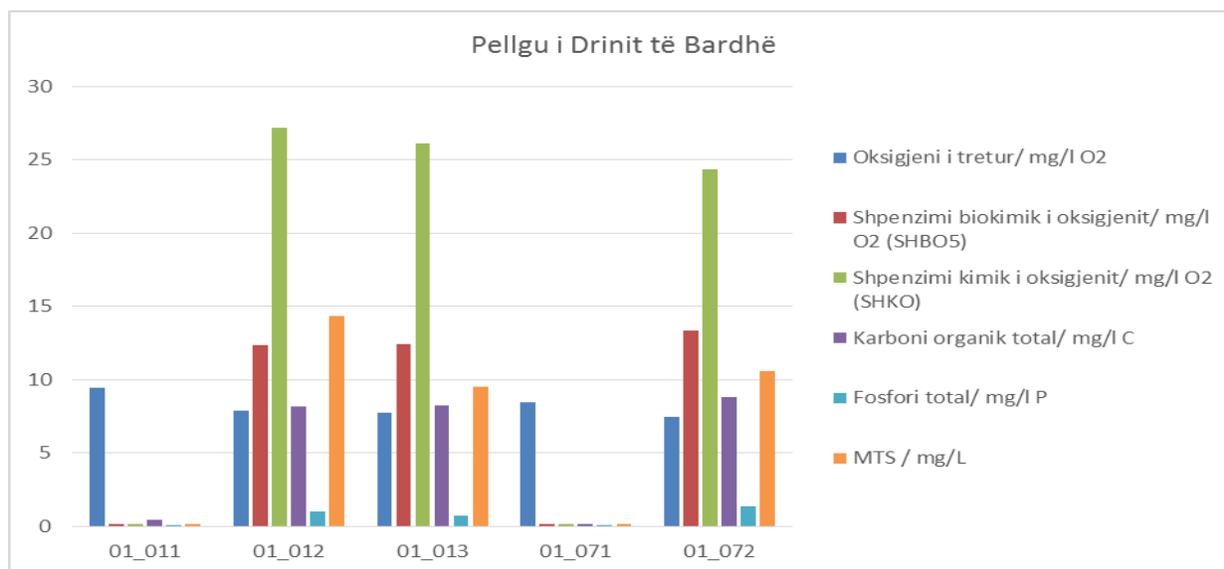


Figure 12: Indicators selected by river water quality monitoring - Drini i Bardhë Basin (KHMI 2021)

Iber River Basin - In this basin the selection has been made for these rivers: Ibri, Sitnica, Prishtevka, Graçanka and Drenica (Figure 13), where it can be seen that the river Prishtevka/Bresje, with almost all the presented parameters, shows higher values. These values can be related to the position of the river that stretches mainly along the most populated urban area and also includes industrial areas.

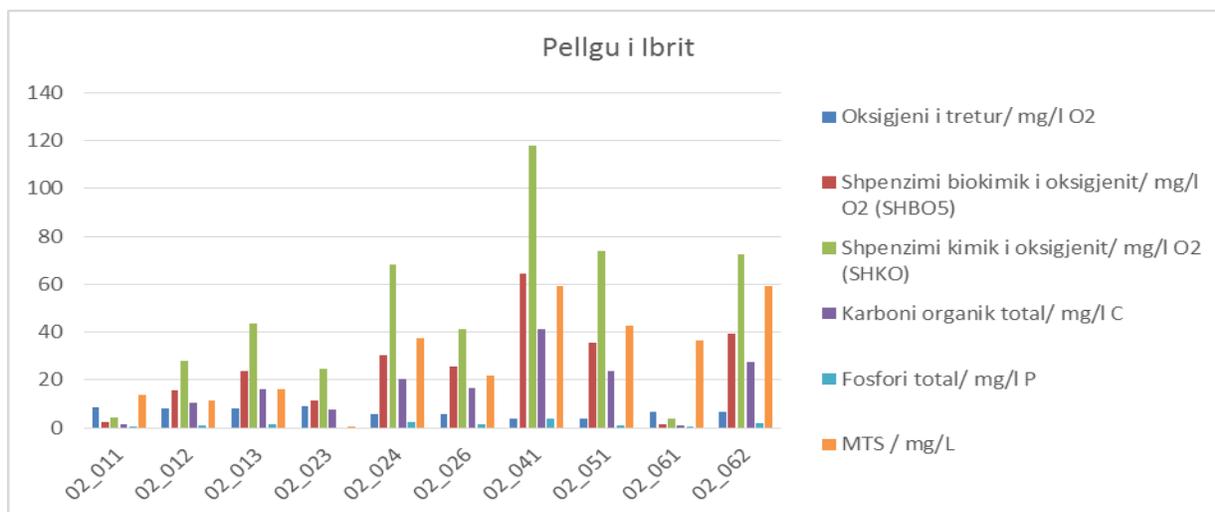


Figure 13: Indicators selected by river water quality monitoring - Iber River Basin (KHMI 2021)

Morava e Binçes and Lepenci Basin - In the Morava e Binçes Basin, the Morava e Binçes River has been selected with four monitoring stations in total (Figure 14), where almost in all its monitoring stations there is an increase of these six parameters. Whereas in the Lepenci Basin, two rivers have been selected: Lepenci and Nerodinja. Even in these rivers, the 'chemical oxygen demand' parameter shows an increase along the river flow.

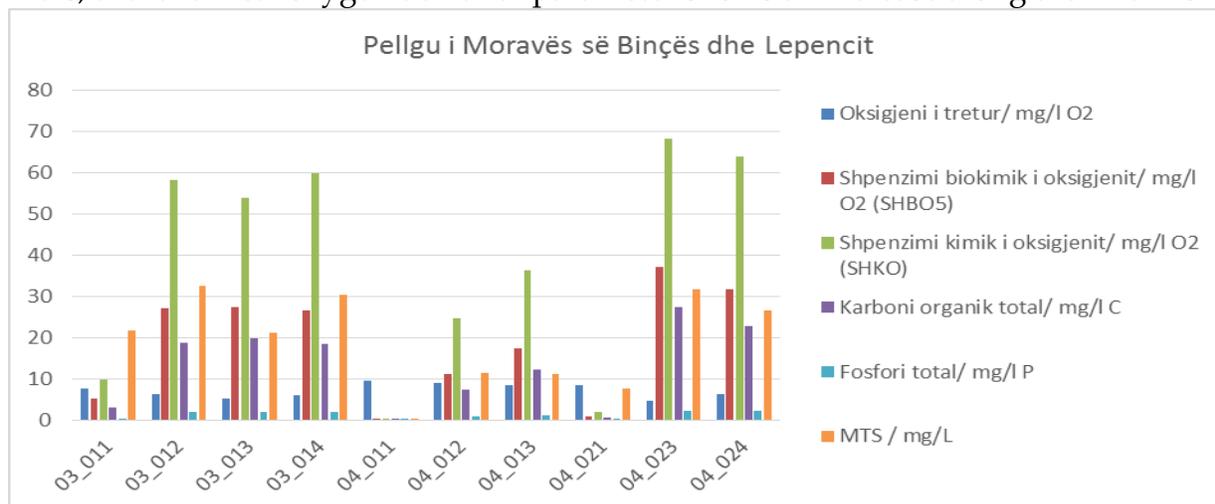


Figure 14: Indicators selected by river water quality monitoring - Morava e Binçes and

Lepenc Basin (KHMI 2021)

Based on these three charts (territorial stretches of all basins), where the presence of a total quantity of total phosphorus/mg/l P, based on the analyses conducted during this period, in the river waters will not have expressed impact on the surface waters, because its values shown in the 2021 chart range between 0.03 mg/l P (Drini i Bardhë/Radavc) and 3.83 mg/l P (Prishtevka/Bresje). Based on that, we can conclude that surface waters in Kosovo are not endangered by eutrophication. Also, the indicator Biochemical Oxygen Demand (BOD₅), during the monitoring period for 2021, shows that the estimated values range between 0.15 mg O₂/l in Drini i Bardhë/Radavc and 64.27 mg O₂/l, in Prishtevka/Bresje River. Even for 2021, the Prishtevka River is the river with the highest pollution in terms of the average annual value. Even though in natural conditions clean waters do not have at all BOD₅ quantity, this pollution is justified by the fact that surface waters are always and all around increasingly exposed to discharges of polluted waters through which are created optimal conditions for increase of BOD₅ values.

The trend of changing water status for the respective monitoring stations for the indicators included in this assessment is shown in Table 5.

Table 5: River water quality trend 2020-2021

Monitoring stations	Dissolved Oxygen/ mg/l O ₂	Biochemical Oxygen Demand/ mg/l O ₂ (BOD ₅)	Chemical Oxygen Demand/ mg/l O ₂ (COD)	Total Organic Carbon/ mg/l C	Total Phosphorus/ mg/l P	Total Suspended Matter/ mg/L (MTS)
RV01_011	↑	↓	↑	↑	↓	↔
RV01_012	↓	↓	↓	↓	↑	↓
RV01_013	↑	↓	↓	↓	↑	↓
RV01_071	↑	↓	↓	↓	No measurement	↓
RV01_072	↑	↓	↓	↓	↑	↓
RV02_011	↑	↓	↓	↓	No measurement	↑
RV02_012	↓	↓	↓	↓	↑	↓
RV02_013	↑	↑	↑	↑	↑	↓
RV02_023	↑	↓	↓	↓	No measurement	↓
RV02_024	↑	↓	↑	↓	↑	↑
RV02_026	↓	↓	↑	↓	↑	↑
RV02_041	↓	↓	↓	↓	↑	↓
RV02_051	↓	↓	↓	↓	↔	↑
RV02_061	↑	↓	↓	↓	No measurement	↑
RV02_062	↑	↓	↓	↓	↑	↑
RV03_011	↑	↑	↑	↑	No measurement	↑
RV03_012	↓	↓	↑	↓	↑	↓
RV03_013	↓	↓	↓	↓	↓	↓
RV03_014	↓	↓	↓	↓	↑	↓
RV04_011	↑	↓	↓	↓	No measurement	↔
RV04_012	↑	↓	↓	↓	↓	↓
RV04_013	↑	↓	↓	↓	↓	↓
RV04_021	↑	↓	↓	↓	No measurement	↑
RV04_023	↓	↑	↑	↑	↑	↑
RV04_024	↓	↓	↑	↑	↑	↑

3.2.2. Surface water amount

In addition to water quality, KHMI also monitors the amount of water. The amount of water is monitored through the hydrometric network, which consists of several measuring stations in the rivers where the measurements for the amount of water are taken. These stations measure the Level (H) and Feed (Q). The following tables present the data for the water Level H (cm) and Feed (Q) in hydrometric stations, carried out in 2021 and the trend in relation to 2020 (Table 6).

Table 6: Average annual values of the water level H (cm) by measuring stations for 2021 and the trend in relation to 2020

Station	Ave. (cm) 2021	Trend compared to 2020
Gjonaj	241	↑
Këpuz	132	↑
Grykë	76	↑
Drelaj	60	↑
Prizren	44	↓
Mirusha	62	↑
Klinë	49	No measurement
Leposaviç	180	↑
Vragoli	89	↑
Nedakovc	186	↑
Drenas	78	No measurement
Lluzhan	105	↑
Lipjan	40	↑
Mitrovica	63	No measurement
Konçul	217	↓
Viti	37	↑
Domorovc	107	↓
Hani i Elezit	78	↑
Brod	41	↑
Kaçanik	41	↔

Figure 15 presents the trend of the average annual values of the water Level H (cm) by measuring stations for the period 2018-2021. The figure shows that there was a positive trend in 2021 in terms of the annual water level averages in most of the measuring stations. A negative trend or drop in the water level has been noted at the measuring stations in Domoroc and Mitrovica.

Figure 16 presents the trend of the average annual values of Feed Q (m³/sec) by measuring stations for the period 2018-2021. The figure shows that there was a positive trend in 2021 in terms of the annual water feed averages in the stations. Gjonaj, Lluzhan and Brod, while a negative trend for the measuring stations: Grykë, Prizren and Kaçanik.

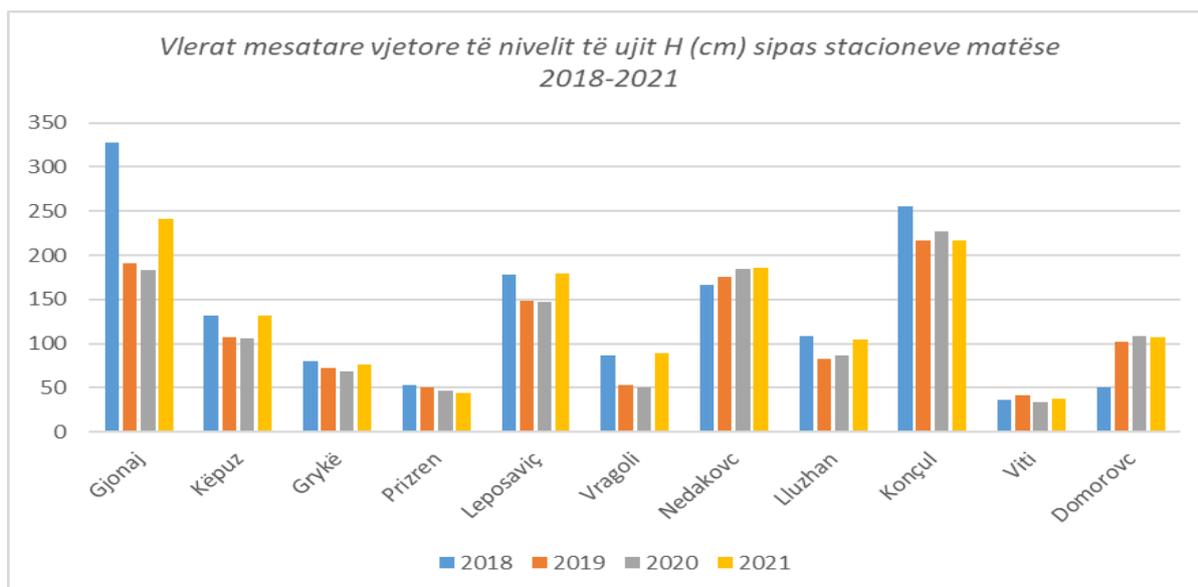


Figure 15: The trend of average annual values of water Level H (cm) 2018-2021 by measuring stations.

Table 7: Average annual values of Feed Q (m³/sec) by measuring stations 2021

No.	Station	Avg.(m ³ /sec) 2021	Trend compared 2020
1.	Gjonaj	89.649	↑
2.	Grykë	4.842	↓
3.	Prizren	1.943	↓
4.	Lluzhan	3.819	↑
5.	Brod	1.394	↑
6.	Kaçanik	0.975	↓

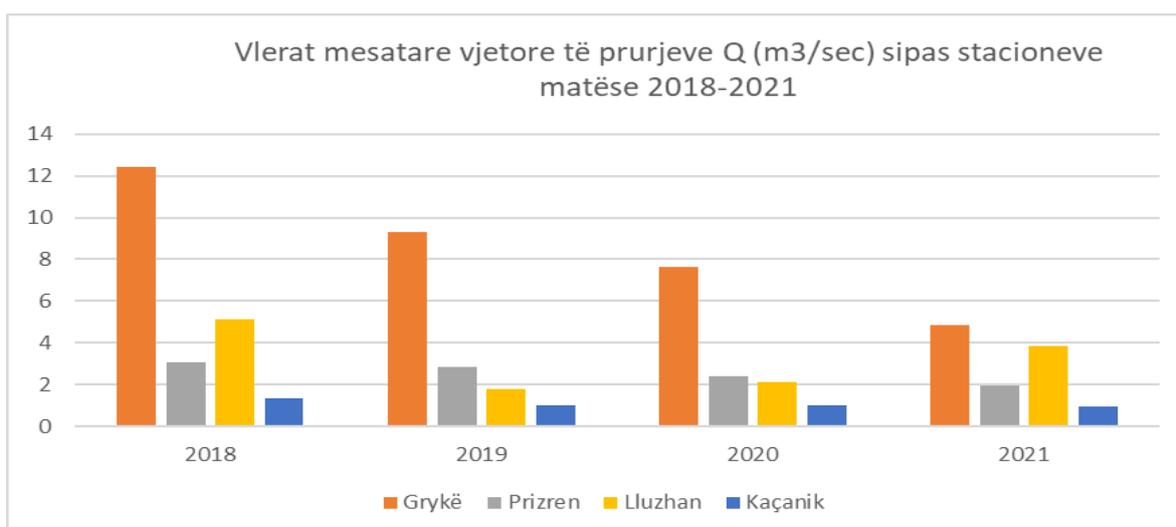


Figure 16: The trend of average annual values of water Feed Q (m³/sec) 2018-2021 by measuring stations.

3.3.3. Wastewater treatment

Kosovo has not yet developed a wastewater treatment system, as it is in the construction phase of wastewater treatment plants. According to the WSRA data, the service for the collection of polluted water within the RWC service area in 2021 was provided to 65% of the population⁴. About 19% of the population have partial access to wastewater collection services, while 16% have no access.

Collected waste water is discharged into about 25 water bodies in a mostly untreated state, although the Kosovo legislation on the urban and industrial wastewater treatment regulated by Administrative Instruction No. 30/2014, requires all polluters to apply a preliminary treatment of polluted waters before discharging them into water bodies. Wastewater treatment still remains at a low level with 11% of the total amount of waste water billed to consumers by all RWCs. Currently, there are only five (5) functional wastewater treatment plants under the RWC management. These five plants treat residential wastewater: Skenderaj, Prekaz i Epërm, Prekaz i Poshtëm, Tërnavc (managed by RWC Mitrovica), Mramor and Harilaç (managed by RWC Prishtina) and a part of the urban area of the city of Prizren (managed by RWC Hidroregjioni Jugor).

The wastewater treatment plants in Junik and Prizren were operationalized in 2021-2022. The wastewater treatment plants in Gjakova, Peja, Gjilan, Prishtina, Fushe-Kosova, Obiliq, and Mitrovica are also in the stage of execution of works and operationalization. The wastewater treatment plants for Podujeva and Ferizaj are also in the planning process. In rural areas, there are also several other waste water treatment plants with a small capacity, in the localities of: Skivjan (Gjakova), Kuk/Kosava (Dragash), Vrelle/Medvec (Lipjan), Hallaq i Madh (Lipjan), Kramovik (Rahovec), Volljak (Klina), Marmull (Gjakova), Banja e Pejes (Istog) and Orllan (Podujevo).

⁴ WSRA 2022, *Level of services provided by licensed providers for 2021*

3.3. Land/soil

3.3.1. Land monitoring

Land monitoring in terms of the environmental aspects of pollution is under the responsibility of the Kosovo Hydrometeorological Institute (KHMI), according to the provisions regulated by Law 06/-035 on Hydrometeorological Activity, which also specifies land monitoring. Currently, KHMI does not monitor land due to the lack of relevant staff.

Land monitoring in terms of agricultural aspects is the responsibility of the Kosovo Agricultural Institute (KAI), which is, inter alia, responsible for technical and scientific support to the MAFRD technical departments, quality control of agricultural inputs, food and preservation of the living environment, conducting research on the varieties of agricultural crops (wheat, barley, corn and potatoes) in the Aerophotogrammetric conditions of Kosovo, carrying out preparatory work to establish the gene bank for the different crops, the evaluation of the productive qualities and the quality of the soils as well as the research, identification and inventory of harmful biological agents (pests, pathogens, harmful bacteria, etc.)⁵

3.3.2. Land pollution

The land is undoubtedly one of the most vital resources for our citizens, and its protection from pollution and degradation is therefore a necessity and an obligation of everyone. Nowadays, the earth is under constant pollution pressure from polluting emissions discharged from different sources. Quite a few areas are under the permanent influence of long-term pollution, especially near industrial landfills that are now decades old.

Polluted land directly affects human health, through direct contact with the soil, or through inhalation of soil pollutants that have evaporated; Greater potential hazards arise from the percolation of contaminants within the soil into groundwater, which is used for human drinking, sometimes in areas far from any apparent source of surface contamination. This can result in the breakout of diseases that appear as a result of pollution. The health consequences of exposure to polluted land vary depending on the type of pollutant, the route of exposure, and the sensitivity of the exposed population.

Chronic exposure to chromium, lead and other metals, oil, solvents, and many pesticides and herbicides can be carcinogenic, can cause birth deformities to babies, or may cause other chronic health conditions. Nitrates and ammonia in fertilizers used in agriculture have also been identified as health hazards in soil and groundwater. Chronic exposure to benzene at high concentrations is associated with a higher

⁵ <https://www.mbpzhr-ks.net/sq/instituti-bujqesor-i-kosoves>

incidence of leukaemia, while mercury exposure is predisposed to cause a higher incidence of kidney damage.

Polychlorinated biphenyls and cyclodienes damage the liver, while organophosphates and carbonates may cause a cascade of reactions that cause neuromuscular blockade. In sufficient doses, a large number of land pollutants can cause death as a result of direct exposure, inhalation, or ingestion of contaminants in contaminated groundwater via soil.

In the absence of continuous monitoring of the land state, it is difficult to collect data and assess the land state. However, based on the data from the various projects and the sectoral impacts on the land state, it can be concluded that there are several different sources of land pollution (Table 8).

Table 8: Land pollution sources in Kosovo

Agriculture	Municipal waste	Sanitary landfills	Chemicals and hazardous waste	Industry	Mines	Other sources
Agricultural malpractices. Indiscriminate use of pesticides and fertilizers	Inefficient solid waste management. Waste disposal without criteria and standards	Wastewater runoff and waste disposal from poorly managed landfills	Unsafe storage of chemicals and hazardous waste	Mismanagement of industrial waste and its disposal on land surfaces without criteria and standards	Emissions of harmful substances from mines and mining waste landfills	Old car yards and auto repair shops
In 2021, 78,976,185 kg of fertilizers of various types were used in Kosovo, while 122,138 ha of land were treated with pesticides	In 2021, 763 illegal unmanaged landfills were identified in Kosovo	Kosovo has 8 sanitary landfills which are not managed according to standards and criteria	About 17 locations of hazardous chemicals and waste have been identified in Kosovo	Several large industrial operators, which generate industrial waste, operate in Kosovo	In Kosovo, there are dozens of mines and mine waste dumps that have not been rehabilitated	Used oils and other car waste

3.3.2. Land use

The land is used for various purposes, such as residence, construction, agriculture, industry, industrial and urban waste disposal, tourism, recreation, forestry, etc. There is still no complete official data on the occupation of land by the construction industry because the building legalization process has not yet been completed, and because the trend of construction without permits still persists in almost all municipalities of Kosovo, especially in rural areas.

The most detailed data on land use is available for the agricultural sector. Data on agricultural land use are obtained from the Agricultural Household Survey. Based on data from this survey there are several categories of agricultural land use, but the main ones are arable land (fields) and meadows and pastures.

In general, the use of agricultural land and pastures have gradually changed, for the fact that migration from rural areas to urban areas and permanent migration to western countries has been persistent.

In 2021, the total area of agricultural land utilized was **420,326.60 ha**. The largest area of utilized land is occupied by meadows and pastures (constituting 51% of the utilized area of agricultural land). The category of arable land - fields has a share of 44% of the total agricultural land. The area of tree plantations constitutes 2% of the total land, vineyards 1%, and gardens 1.8% (Table 9).

Table 9: The utilized area of agricultural land 2021⁶

Agricultural land use	Area (ha)	Area (%)
Arable land - fields	188.374,71	44%
Garden	8.490,51	1.8%
Tree plantations	10.144,07	2%
Vineyard plantations	3.471,23	1%
Plant nursery	140,26	0.2%
Meadows and pastures	217,106,91	51%
Total utilized agricultural land area	420.326,60	100%

Regarding land cover categories, there was no recent inventory. According to an assessment made by the Kosovo Environmental Protection Agency, the artificial construction areas occupy an area of 4.7% of the land coverage in Kosovo. Based on the data obtained from previous studies, about 57% of the surfaces are covered with forests, forest lands and other semi-natural areas, while wetlands and water areas are represented by less than 1% (Figure 17).

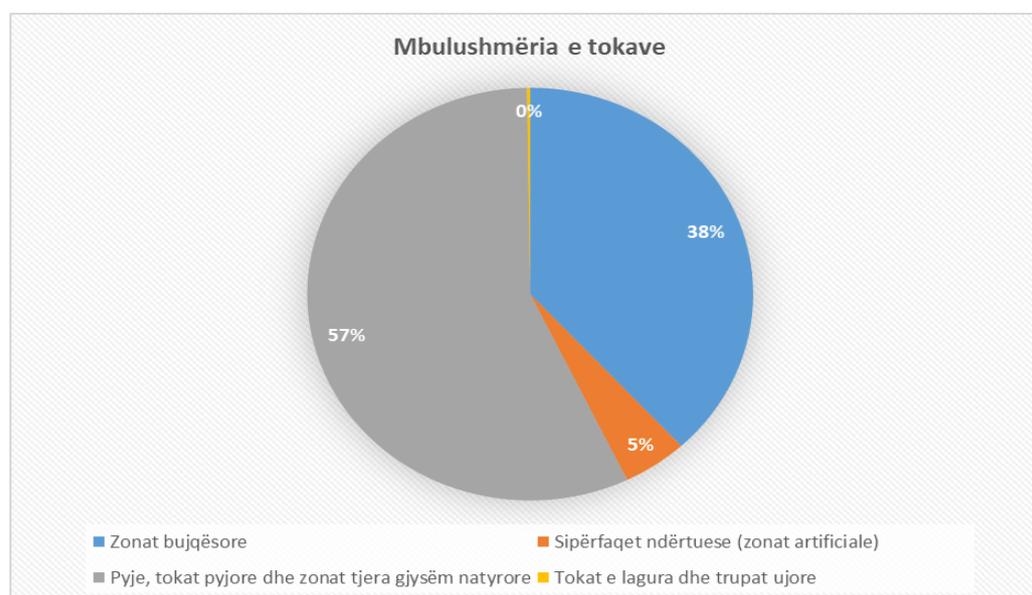


Figure 17: The key categories of land cover in Kosovo

⁶ Agricultural Household Survey 2021, KAS

The factors that have influenced the deterioration of the land condition are different. The most important ones are:

- Lack of enforcement of the legal infrastructure for lands;
- Lack of enforcement of sustainable land management policies;
- Using and changing the land destination without legal criteria;
- Concreting of land and occupation with strong construction objects, roads and highways;
- Lack of assessment of land loss from construction, erosion and degradation;
- Discharges of polluting emissions to the ground by economic operators, agribusinesses; mining, urban and industrial waste landfills, households, etc.;
- Lack of land studies and monitoring countrywide;
- Lack of environmental policies that reduce the use of excessive chemicals, fertilizers and pesticides;
- Lack of enforcement of the land consolidation strategy;
- Lack of socio-economic assessments in recent years, demographic movements, the increase of the population in the major urban areas, etc., have led to the failure of land management and even their abandonment.

3.4. Waste

Waste management is a challenge for both the local and the central level. Major commitments are required to improve the situation in this important environmental sector. There is a solid base of legislation regulating waste management, as well as documents such as the “Kosovo Integrated Waste Management Strategy” and Action Plan.

A range of objectives and activities are envisaged in the Strategy and Action Plan. The responsible stakeholders are to take concrete steps for their implementation in order to improve the situation.

However, based on the monitoring conducted by KEPA in these sectors, we estimate that the situation has improved. Municipalities have increased efforts to improve waste management. Based on the data reported, we have estimated that there is an increase in the level of coverage with waste collection services, an increase in collection, the cleaning of a large number of illegal landfills and also an improvement in the area of fulfilling legal obligations from the local level.

There are initiatives from the central level for the implementation of projects foreseen under the Strategy and Action Plan, such as feasibility studies for sanitary landfills, non-use or application of a tax for plastic bags, research of the situation regarding the commencement of the implementation of the deposit refund system for bottles and cans and the commencement of the implementation of this objective, circular economy, etc.

Also, cooperation with external donors who are supporting us in capacity building, direct investments in technical equipment and software for the implementation of projects and usual activities in the waste sector.

Regarding municipal waste management, the municipalities have been subject to the MESPI and GIZ project: 'Municipal performance - competition for a clean environment', where based on the assessment of indicators fulfilled by the municipalities, they were supported with waste collection transport trucks, containers and other aspects according to the assessed needs.

Another spectrum of waste that still does not have any special or controlled treatment remains problematic, and this includes hazardous waste, a part of hospital waste, construction and demolition waste, waste tires, waste oils, etc., which situation keeps posing a serious challenge for the environmental welfare.

The state of sanitary landfills for the disposal of municipal waste from year to year continues to deteriorate as a result of many factors, with special emphasis on their inadequate management, lack of investments, etc.

The management of industrial waste and active industrial landfills, but also those inherited from mining and industrial activities, pose a specific problem for the environment. Their situation is not fully known, so it is necessary to make an assessment in the future and to draw up plans and projects for their management and rehabilitation.

The current waste management system in Kosovo does not provide complete data on the generation, collection, treatment and disposal of waste, and this presents a challenge for the assessment of the situation in this sector. For this purpose, KEPA, supported by donors, is developing a web-application for reporting by all stakeholders involved in one form or another in waste management.

3.4.1. Generation of municipal waste countrywide

The data on the collected waste amount were obtained from the reports of 35 municipalities, as part of the reporting for 2021 and after assessing such reports, the generation of waste resulted in 0.69 kg/per capita/day, respectively 250.86 kg/per capita/year.

There is still no analysis of the waste composition countrywide, which would provide data on the waste amounts generated in municipalities, with differentiated data in rural and urban areas.

It should be noted that this result for waste generation is based only on the waste amount collected by waste collection and transport operators, so it does not include the entire waste amount that is actually generated nationwide.

Thus, taking into account the number of 1,779,521 inhabitants in the country (2011 population census) and the annual amount of municipal waste per capita, which is approximately 0.69 kg/per capita/day, the total waste amount generated for 2021⁷ results in approximately 448,172.36 tons.

Table 10: Generation of municipal waste kg\per capita\year

Region	2020		2021 ⁸	
	kg/per capita/year	kg/per capita/day	kg/per capita/year	kg/per capita/day
PRISHTINA REGION	263.13	0.72	229.33	0.63
MITROVICA REGION	277.77	0.76	236.37	0.65
PEJA REGION	354.52	0.97	376.13	1.03
PRIZREN REGION	227.97	0.62	230.73	0.63
FERIZAJ REGION	283.65	0.78	255.42	0.70
GJILAN REGION	299.15	0.82	268.59	0.74
GJAKOVA REGION	262.05	0.72	259.18	0.71
KOSOVO	271.67	0.74	250.86	0.69

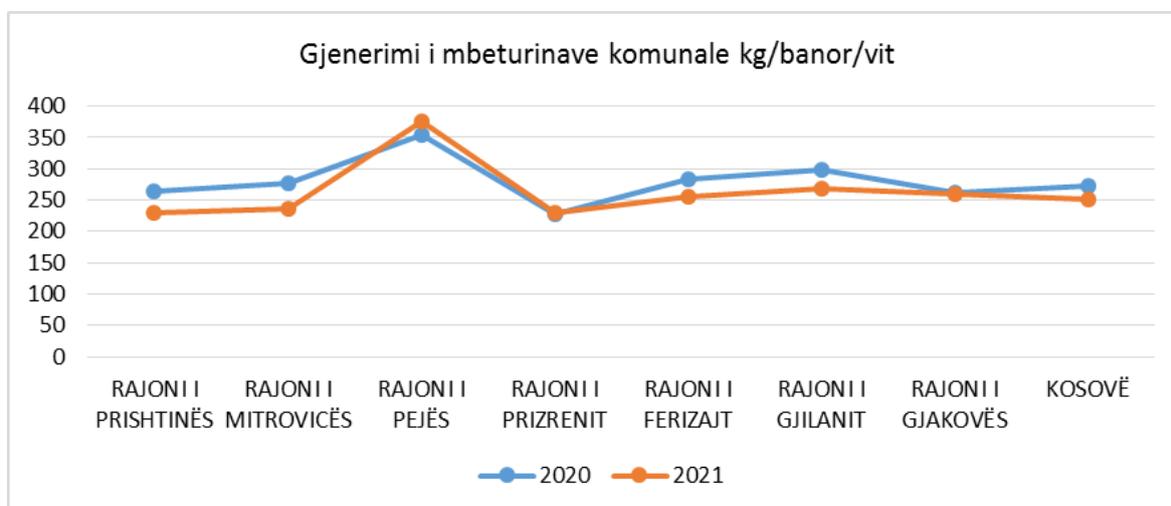


Figure 18: Generation of municipal waste kg/per capita/year 2020 and 2021

⁷ Generation of 448,172.36 tons was calculated only on the basis of the data estimated from the reporting of 35 municipalities (3 municipalities did not report), and consequently this also affects the assessment of the real amount of generation.

⁸ Waste generation for 2021 is a preliminary data, as the reported data is in the process of verification. The data was generated from the reporting of 35 municipalities on waste management in 2021.

3.4.2. Coverage with municipal waste collection service

The coverage with municipal waste collection service for households countrywide by the end of 2021 is 90.02%. According to the data reported on service coverage, out of 35 municipalities that reported to KEPA, 9 municipalities have already reached 100% service coverage.

We are facing a challenge in using the KAS official data (Population Census 2011) regarding the number of inhabitants and households in municipalities, which are already outdated, as well as the great change in population movements during these years, a significant number of municipalities have a larger number of households billed compared to the total number of households taken as a reference by KAS, such as Municipality of Prishtina, Fushe Kosova, Vushtrri, Prizren, etc. Therefore, the number of households in some municipalities is much larger than that in the Population and Household Census in 2011, thus making it impossible to present real data with the situation on the ground.

In the reporting year 2021, the coverage rate with waste collection service for households is therefore 90.02%, thus recording an increase of 4.5% countrywide compared to 2020. Prishtina Region has recorded the highest coverage level with municipal waste collection and transport services, reaching 96.6%, recording an increase of 7.4% compared to the previous year, while the region with the lowest level of service coverage Ferizaj Region with 73.3% recording an increase of 2.9% compared to the previous year.

Table 11: Coverage rate of waste collection service by region and countrywide

REGION	Service coverage rate for households (2020)	Service coverage rate for households (2021) ⁹	Increase or decrease in the coverage rate for households 2020-2021 (%)
PRISHTINA REGION	89.20%	94.70%	5.50%
MITROVICA REGION	90.40%	92.80%	2.40%
PEJA REGION	87.60%	94.70%	7.10%
PRIZREN REGION	94.20%	96.50%	2.30%
FERIZAJ REGION	70.40%	76.10%	5.70%
GJILAN REGION	72.00%	81.40%	9.60%
GJAKOVA REGION	80.40%	88.5%	8.10%
KOSOVO	85.30%	90.02%	4.72%

⁹ The coverage rate with waste collection service for 2021 is given preliminary, as the data reported by 35 municipalities is in the process of verification!

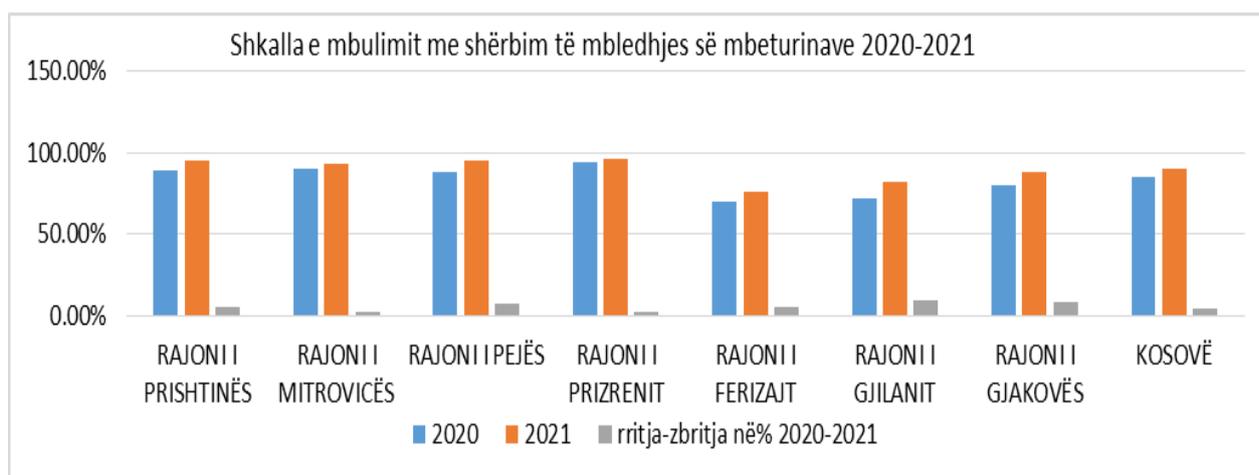


Figure 19: Coverage rate with waste collection service

3.4.3. Illegal landfills

Landfills in the field were registered in 38 municipalities in June 2022, with 763 illegal landfills registered. Compared to the previous registration of illegal landfills, which was carried out in May 2021, this year marked a significant improvement in terms of the elimination of illegal landfills, with a difference of 426 landfills less.

As noted in the following table, the region with the most illegal landfills in all registrations was the Prishtina Region with 1351 landfills, while the region with the smallest number of landfills was Gjakova Region with a total of 250 landfills. The most significant improvement in the elimination of illegal landfills was noted in Gjilan Region with a total of 160 landfills eliminated.

Table 12: Illegal landfills by regions

REGIONS	2018	2019	2020	2021	Total	Addition-elimination of illegal landfills 2020-2021
PRISHTINA REGION	582	313	277	179	1351	-98
MITROVICA REGION	221	222	101	118	662	17
PEJA REGION	342	141	156	68	707	-88
PRIZREN REGION	448	298	256	187	1189	-69
FERIZAJ REGION	158	127	118	99	502	-19
GJILAN REGION	377	325	242	82	1026	-160
GJAKOVA REGION	118	63	39	30	250	-9
KOSOVO	2246	1489	1189	763	5687	-426

The illegal landfills that have been registered are classified according to the size and composition of the waste.

According to the waste fraction, illegal landfills are classified as (a) household waste landfills; (b) construction and demolition waste landfills; (c) hazardous industrial waste landfills; (d) bulky waste landfills; and (e) other (mixed) landfills.

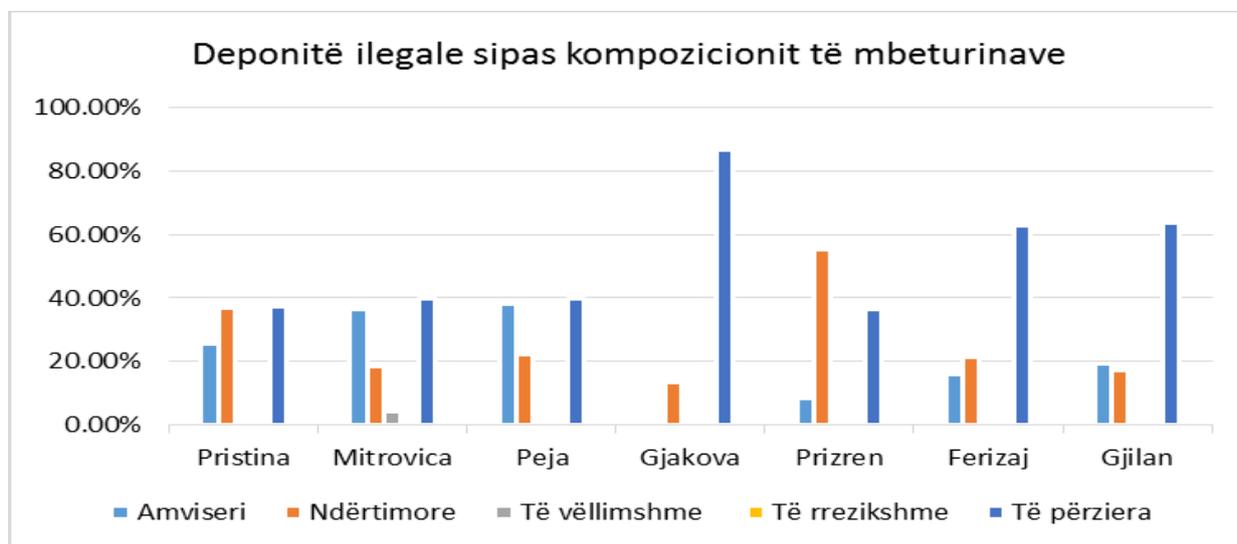


Figure 20: Illegal landfills by fractions 2021/2022

Another classification was made by the estimated size of the body of the illegal landfill recorded in the field. In this regard, the by-size illegal landfills are classified as large, medium and small, based on the bulk according to their visual assessment, during the field registration.

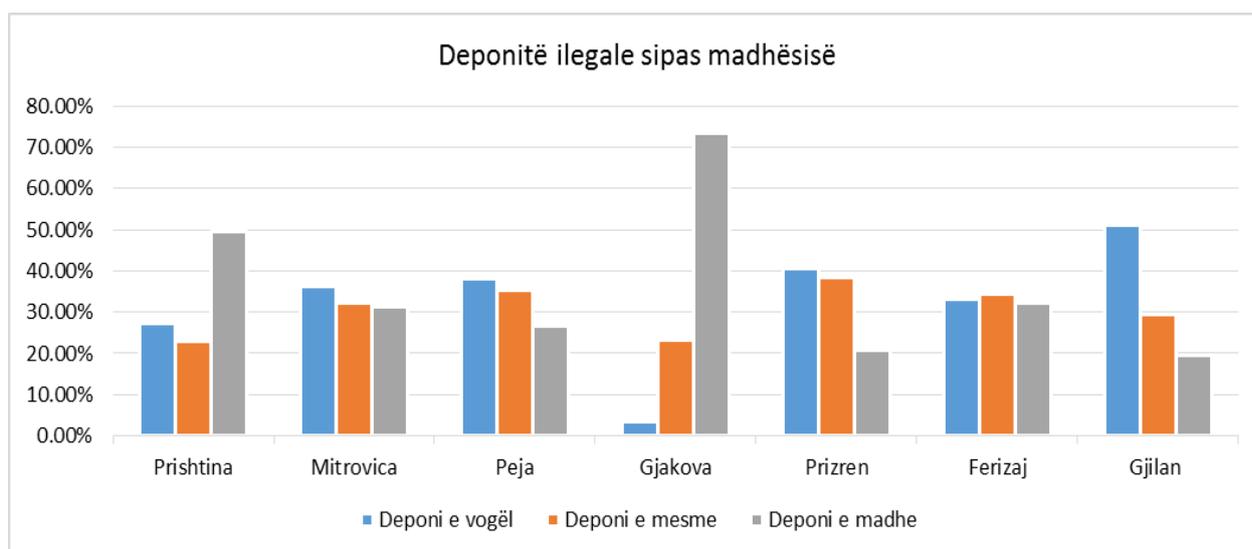


Figure 21: Illegal landfills by size 2021/2022

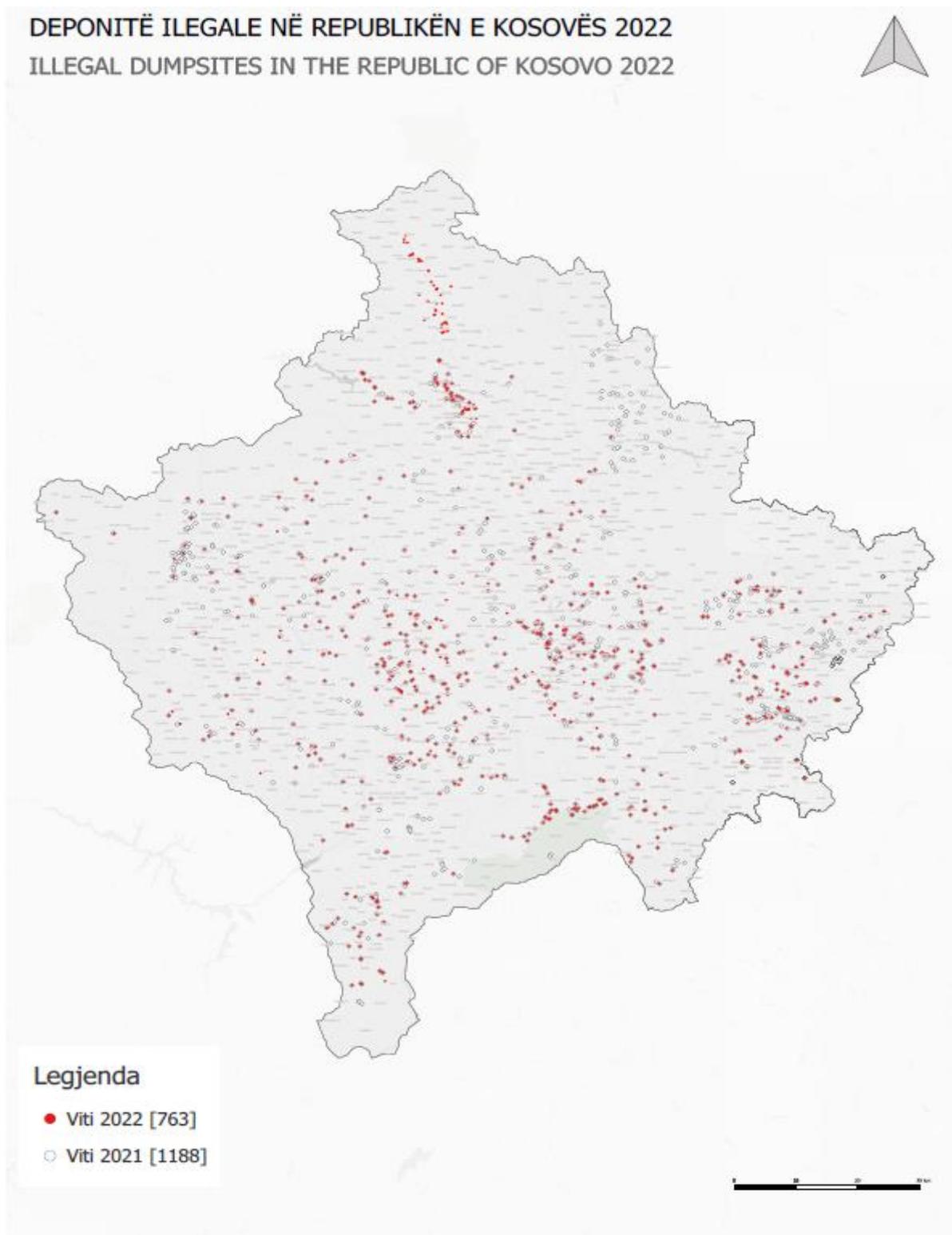


Figure 22: Comparative map of illegal landfills registered in June 2022 and those registered in May 2021

3.4.3. Municipal waste disposal in sanitary landfills

The amount of municipal waste generated and disposed of in sanitary landfills in Kosovo is always increasing, as shown in the following figure.

In 2021, there was an increase in waste disposal in the amount of 43,000 tons, or 8.9% more compared to the previous year 2020.

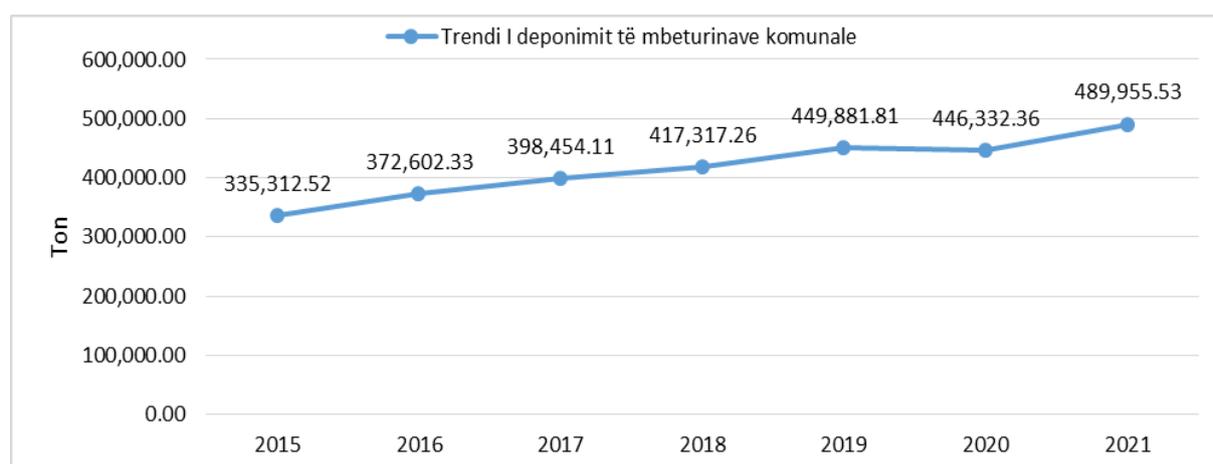


Figure 23: The trend of municipal waste disposal in Kosovo, 2015-2021

The largest amount of waste was disposed of in the sanitary landfill in Mirash (Prishtina) with 181,215.42 tons, while the smallest amount is disposed of in the sanitary landfill in Dragash with 7,193.00 tons.

In the sanitary landfills managed by KLMC: Mirashi (Prishtina), Dumnica (Podujeva), Velekinca (Gjilan), and Landovica (Prizren), waste disposal in 2021 compared to 2020 recorded an increase of 35,000 tons or 9.3%.

Meanwhile, in the regional sanitary landfill in Mitrovica (Gërmova) in 2021, 49,027.54 tons or 3.3% more waste was disposed of than in 2020, while in the sanitary landfill in Peja in 2021, 57,752.00 tons, or 9.10% more waste was disposed of than in 2020.

In sanitary landfills, Dragash and Podujeva, the only waste disposed of is that from the respective municipalities.

Thus, in the landfill of Podujeva, in 2021, we have an increase in disposal of 1,598.45 tons, compared to 2020, while in the sanitary landfill of Dragash, we have an increase in disposal of 1,563.00 tons.

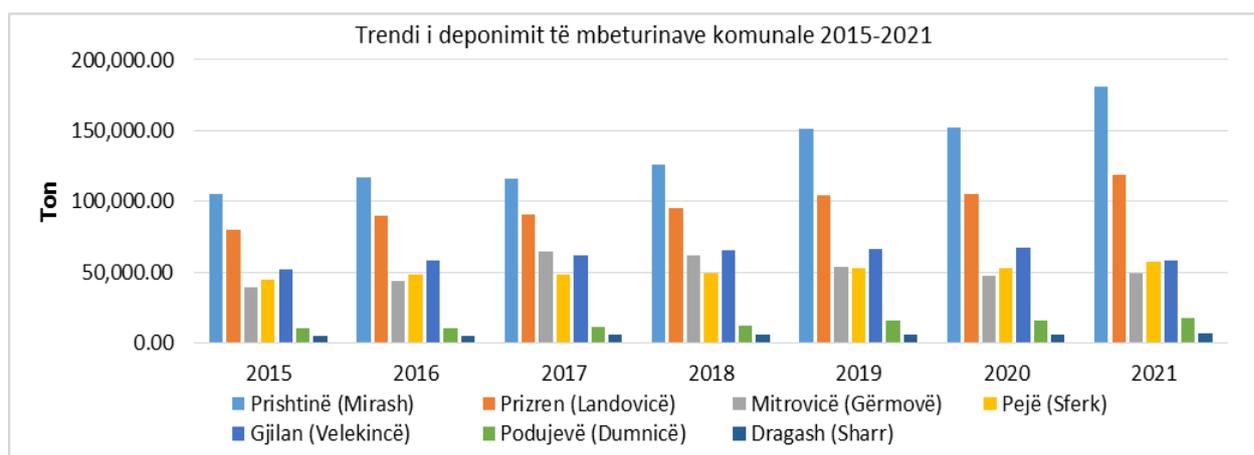


Figure 24: Municipal waste disposal in sanitary landfills in Kosovo, 2015-2021

3.4.4. Hospital waste

A part of the hospital waste generated in the hospital centres and other healthcare institutions in Kosovo is subjected to treatment through the sterilization process in sterilizers, which are located within 8

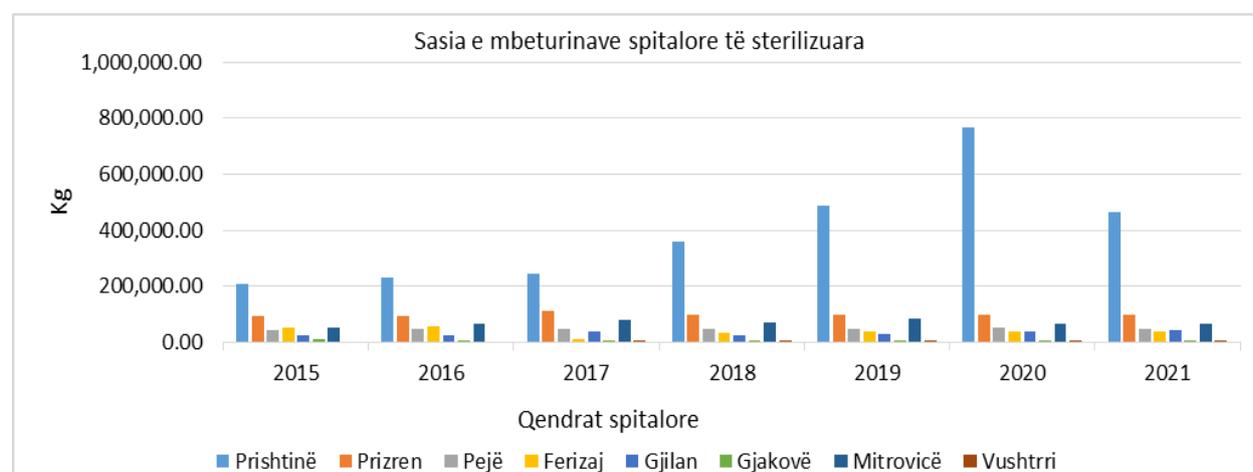
hospital centres. Based on the data reported and estimated by these hospital waste treatment centres, in 2021 we see a decrease of 300,663.07 kg or 28% compared to 2020. The largest amount of this waste 465,335.00 kg during 2021 as in previous years was treated in the plant which operates within the UCCK, followed by the plant in Prizren with 96,290.80 kg, while the smallest amount was treated in the plant located in the Hospital Centre in Vushtrri with only 1185.74 kg.

Another spectrum of hospital wastes such as pathological waste and expired drugs have undergone the process of their disposal according to the applicable legislation. However, due to the lack of reporting, we have not been able to provide the data.

It is worth mentioning that during 2020, as part of the protection measures against the Covid-19 Pandemic, based on customs data, single and multi-use protective masks in quantities of 95,136 kg were imported, as well as material for the production of protective masks protection in tin quantities of 44,880 kg, which means that this amount is included in the amount of generated waste.

Table 13: Amount of sterilized hospital waste in 8 regional hospital centres

Plant	2015	2016	2017	2018	2019	2020	2021
	kg	kg	kg	kg	kg	kg	kg
Prishtina	205,967.00	230,370.00	246,587.00	360,819.10	487,169.60	766,347.40	465,335.00
Prizren	91,760.00	93,981.80	110,541.36	100,175.70	97,195.20	96,227.50	96,290.80
Peja	44,418.00	49,403.00	49,351.00	49,215.00	45,720.00	50,480.00	47,560.00
Ferizaj	52,082.00	57,795.00	8,901.00	35,465.90	39,215.00	37,664.40	39,934.30
Gjilan	26,591.00	22,936.00	36,791.30	26,460.40	29,859.80	40,748.00	42,046.00
Gjakova	9,365.00	2,160.00	2,171.00	2,951.00	3,357.00	3,159.00	3,284.00
Mitrovica	51,192.00	66,000.00	79,359.00	72,323.00	85,149.00	68,214.00	67,174.00
Vushtrri	0.00	0.00	1,647.95	2,504.00	2,580.35	632.61	1,185.74
Total	481,375	522,645	535,349	649,914	790,245	1,063,472	762,809

**Figure 25:** Amount of hospital waste treated through sterilization during 2017-2020

3.4.5. Waste treatment

Based on the waste treatment survey, conducted by the Kosovo Agency of Statistics, and KEPA data¹⁰, which includes the waste treatment stakeholders, for 2020¹¹, the figure below reflects in percentage the amount of each category of waste treated.

The figure indicates that the largest amount of treated waste belongs to municipal waste, which has been treated through classic landfill, followed by plastic waste. The forms of treatment have been disposal, sterilization, recycling, respectively their separation and classification.

¹⁰ The hospital waste quantity treated and disposed of was obtained from the data provided by KEPA.

¹¹ KAS, Waste Treatment Survey, 2020

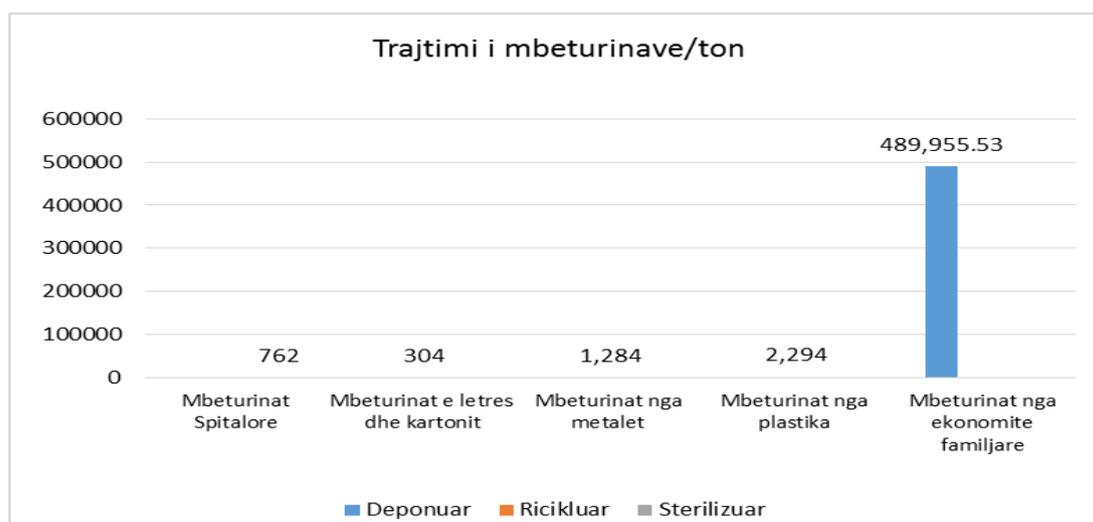


Figure 26: Waste treatment in Kosovo, 2020/2021

3.4.6. Industrial waste

The results from the industrial waste survey²⁰ show the declining trend of industrial waste generation. Thus, in 2020 there is a decrease of 10% and 8% respectively

compared to 2019 and 2018. The declining trend in a generation has also been followed by the trend of processing such waste. Thus, while in 2020 we have 2,137,015 tons of waste generated, only 180,022 tons were recycled¹².

The amount of industrial waste generated in 2020 was 2,137,015.00 tons, of which 1,918,022.00 tons were disposed of. A part of the amount of 453 tons was subjected to burning, while the rest of 38,163 tons was sent elsewhere.

The largest amount of industrial waste generated by sectors was from sector D (Electricity, gas, steam and air conditioning supply) with 1,361,595.00 tons, while the second sector in terms of waste generation was sector B (Ores and quarries) with 516,999.00 tons.

¹²KAS, *Industrial Waste Survey for 2020*.

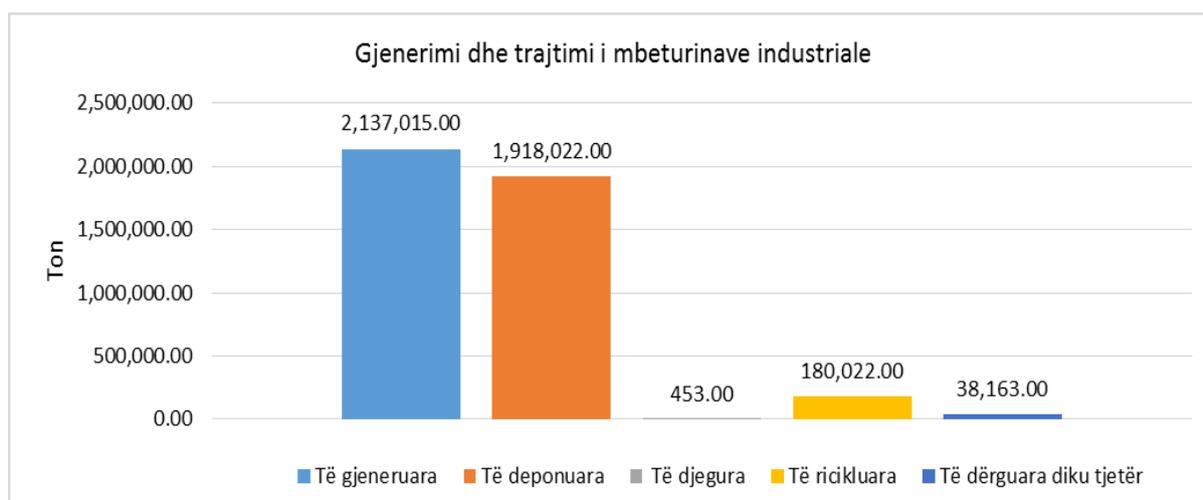


Figure 27: Industrial waste generation and treatment trend, 2020

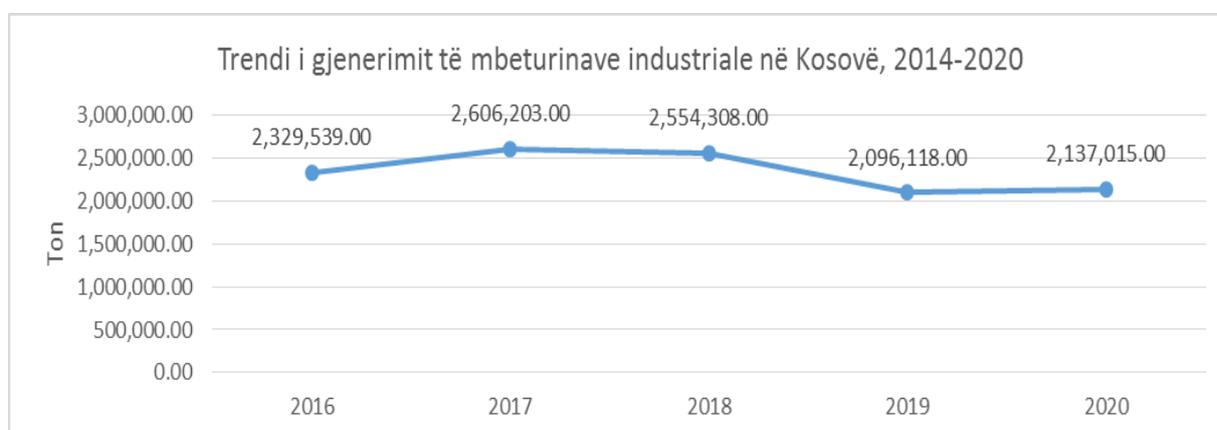


Figure 28: The trend of industrial waste generation in Kosovo

3.4.7. Import and export of plastic bags and sacks

The presence of bags everywhere in our surrounding environment has become a very serious phenomenon, and undoubtedly the import and large use of plastic bags and sacks also contributes to this negative phenomenon.

Of the total amount of municipal waste generated by households, as well as from economic and industrial activities, a large amount is caused by plastic bags and sacks.

Based on the data obtained from Kosovo Customs, the amount of plastic bags and sacks imported in 2021 is 1,007,935.80 kg, which indicates a significant increase of 7.6% compared to 2020, when the import was 931,447.75 kg.

On the other hand, 2,724,243.17 kg of plastic bags and sacks were exported in 2021, thus recording a high increase in export compared to 2020.

Recently, GIZ is supporting MESPI through an external consultant, who conducted a study-research on the use of plastic bags, their quantity, import and local production, etc., and gave three options as to how we should approach reducing the use of bags. The options are for citizens to voluntarily give up using plastic bags, the second option is to impose a tax on bags and the third option is to completely remove the bags from use.

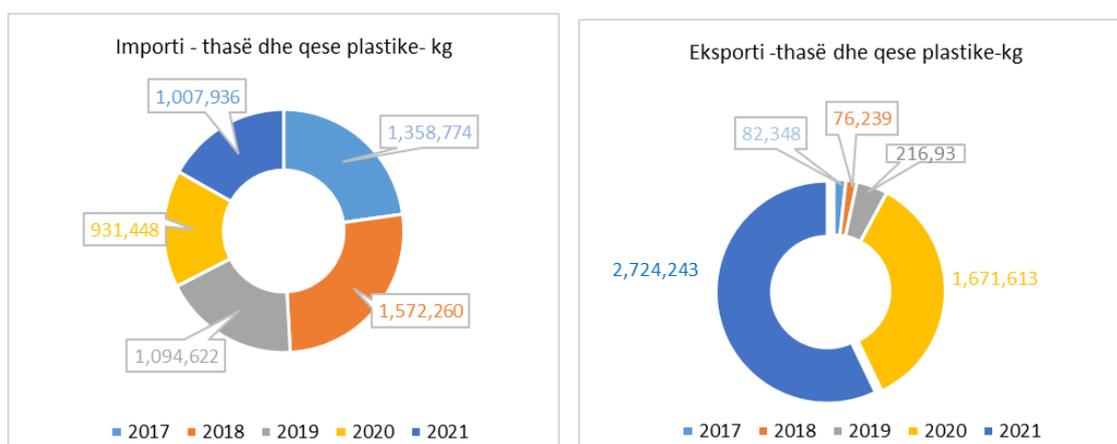


Figure 29: Amount of imported and exported plastic bags and sacks, 2017 - 2021

3.4.8. Circular economy

The circular economy is a model of production and consumption, which involves sharing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended. In practice, it implies reducing waste generation to a minimum.

When a product reaches the end of its life cycle, its materials are kept and used within the economy wherever possible, thereby creating further value.

The circular economy is a departure from the traditional, linear economic model, which is based on exploitation-production-consumption and waste generation.

The European Union is focused on and is calling for the practical application of this model of economy.

Even in Kosovo, recently there are several initiatives in the direction of the circular economy, giving hope that our country will be up to date with the trends of the European Union. These initiatives have been undertaken mainly by some companies in the private sector, with the organization of discussions by NGOs, as well as with several small pilot projects in some municipalities with the support of GIZ, and other donors.

In some municipalities of the country such as Prishtina, Drenas, Fushë Kosova, Vushtrri, Prizren, Gjakova, etc., concrete steps have been taken towards creating conditions for waste separation at source, as a prerequisite for waste recycling. Many families have access to this infrastructure through common collection points, individual containers and home composters.

The Ministry of Environment, Spatial Planning and Infrastructure, through the Kosovo Environmental Protection Agency, in 2018, in Mitrovica funded the project for the construction of a plant for the separation and classification of municipal waste which will serve the region of Mitrovica.

A project initiated by the Municipality of Gjakova and supported by MESPI, for waste separation and classification, is in the process of implementation. This project envisages the construction of a waste separation facility within the municipal waste transfer station before they are sent to the Landovica landfill. This facility will be completed ahead of schedule within 2021.

In the Integrated Waste Management Strategy (2021-2030) and the Action Plan (2021-2023) in Kosovo, the circular economy is set as a strategic objective, and the action plan envisages investments (euro) for the realization of this objective as follows.

Table 14: Strategic objective - circular economy

Strategic objective	2021-2023	2024-2030	Total
Strategic objective 4: Circular economy	3.053.737€	24.332.785€	27.386.523€

3.5. Nature protection and biodiversity

Owing to its geographical position, our country represents a very rich region in terms of biodiversity. The climate and ecological conditions have enabled the presence of many types of flora, vegetation and fauna, with special emphasis on endemic and stenoendemic species. The landscape diversity within the country derives from natural characteristics, as well as human society activity. Kosovo also stands out for its high diversity of genetic resources, species and ecosystems.

The reduction of the number of species of animals, plants, natural habitats and ecosystems, or even the possibility of their extinction, is a serious problem worldwide. According to a European Commission Report, there are a number of factors that threaten biodiversity, such as pollution, damage caused by industry or the discharge of oils into the environment, climate change, overexploitation of natural resources, indiscriminate hunting, use of agricultural land beyond its capacity, deforestation and habitat loss and invasive species.

Given the great importance of biodiversity, it is clear that its preservation, first of all, the undertaking of preventive measures, is a very important obligation affecting its protection. Conservation of biodiversity not only ensures the protection of organisms but also supports our expectation for a higher quality of life in the future.

There are no detailed data on the total number of species by categories of the living world, since the research does not cover the entire Kosovo territory and due to the fact that new species of plants and animals are constantly discovered during the research.

Table 15. Total number of species by major category and number of species participating in the IUCN Red List¹³

Group of species	Number of species	Number of species in the IUCN Red List
Algae	> 400	There is no assessment
Mushrooms	> 380	40
Flowering plants	> 2000	237
Insects	> 130	140
Fish	> 30	15
Amphibians	> 20	13
Reptiles	> 25	20
Birds	> 200	24
Mammals	> 100	39

¹³ KEPA 2021, *Environmental Indicators Report 2020*

3.5.1. Flora and vegetation

Our country's flora is prosperous with the presence of rare and endemic plant species, herbaceous, shrubby and woody forms. The endemic plants of Kosovo are widespread in certain places and mostly with a small spatial extent, being often few in number. It is in the interest of Kosovo that these are protected by law from extinction because they can be endangered by ignorance or careless use.

Endemic plants are floristic wealth, they are found mainly in the 'Albanian Alps' and the 'Sharr Mountains'. These plants are rare, but also the pride of Kosovo. Of them, eleven (11) species are included in the 'Kosovo Plant Atlas', Prishtina, 2021: *Stipa mayer*, *Bornmuellera dieckii*, *Achillea alexandri-regis*, *Potentilla dorefleri*, *Micromeria albanica*, *Wulfenia blecicii*, *Plantago dardanae*, *Tulipa kosovarica*, *Centaurea alberti*, *Solenanthus krasniqi* and *Centaurea neoscardicum*¹⁴. This Atlas contains one hundred and three (103) endemic plant species of the Balkans and eighteen (18) endemic species of Kosovo and Albania.

In addition to the above-mentioned forms, there are also aromatic medicinal plant species and wild fruit trees. The richest Kosovo regions in medicinal-aromatic plants and wild fruit trees are Sharr Mountains and the Albanian Alps of Kosovo¹⁵.

Blueberries, juniper and primrose dominate in these areas, especially in the subalpine area, as the most important and most valuable species in the foreign market. Shala region is also well known for the presence of primrose, which has good potential, while Llapi, Gollaku (including Gjilan and Vitia) as well as central Kosovo, have almost the same aromatic medicinal plants, due to the same altitude and pedological-geological composition.



Figure 30: Sanza (*Gentiana lutea*), an endangered type of flora of Kosovo

¹⁴ Kosovo Plant Atlas, Prishtina, 2021

¹⁵ Inventory of aromatic medicinal plants and wild fruit trees, prepared by Prof. Dr. Fadil Millaku

Table 16: Trend of qualitative and quantitative degradation of the habitats of some selected species and the factors that have influenced such degradation¹⁶

Species	The current trend of quantitative habitat degradation	Quantitative habitat change for the past 15 years (%) compared to the current trend	Type of degradation for the quantitative indicator	The current trend of qualitative habitat degradation	Major factors affecting habitat loss and degradation
<i>Achillea alexandri-regis</i>	Decline	1% decline	Abiotic, Biotic	Decline	Succession and fire
<i>Aristolochia merxmulleri</i>	Decline	2% decline	Non-biotic, Biotic	Decline	Human activities
<i>Cerastium neoscardicum</i>	Decline	3% decline	Non-biotic, Biotic	Decline	Succession, fire
<i>Crepis bertiscea</i>	Decline	1% decline	Non-biotic, Biotic	Decline	Climate change and succession processes
<i>Crepis macedonica</i>	Decline	3% decline	Non-biotic, Biotic	Decline	Human activities
<i>Fritillaria macedonica</i>	Decline	3% decline	Biotic	Decline	Succession
<i>Gentiana pneumonanthe subsp. nopcsae</i>	Decline	3% decline	Abiotic	Decline	Changing the water regime
<i>Linum elegans</i>	Decline	1% decline	Biotic	Decline	Human activities
<i>Senecio scopolii</i>	Decline	1% decline	Biotic	Stable	Human activities
<i>Sideritisscardica</i>	Decline	3% decline	Abiotic, Biotic	Decline	Human activities
<i>Silene pusilla subsp. candavica</i>	Decline	1% decline	Abiotic, Biotic	Decline	Human activities
<i>Silene pusilla subsp. nicolicii</i>	Decline	1% decline	Abiotic, Biotic	Decline	Human activities
<i>Solenanthes krasniqii</i>	Decline	10% decline	Abiotic, Biotic	Decline	Human activities, invasion of alien species, fires
<i>Stachys serbica</i>	Decline	30% decline	Abiotic, Biotic	Decline	Human activities
<i>Tulipa gesneriana (Syn.: Tulipa scardica)</i>	Decline	3% decline	Abiotic, Biotic	Decline	Human activities
<i>Tulipa serbica</i>	Stable	0.5% decline	Biotic	Stable	Human activities

Vegetation - The vegetation of our country is classified into 139 associations or firocensis, 63 alliances, 35 orders and 20 classes, which represent characteristic ecosystems, which are also habitats for many animal species. The vegetation of the lowland meadows is classified into 4 associations belonging to one alliance, one order and one class. While the vegetation of subalpine and alpine hilly meadows is classified into 65 associations, 33 alliances, 22 orders and 13 classes.

¹⁶ Conservation assessment of endemic plants from Kosovo, Millaku et al., Hacquetia

3.5.2. Fauna

In the course of regular activities for monitoring and inventory of biodiversity in protected nature areas, Kosovo Institute for Nature Protection - KEPA, despite the situation with the global pandemic COVID-19 during 2020 has continued to carry out wild fauna monitoring activity, albeit at a much lower intensity.

During this activity, carried out jointly with the officials of the two National Parks, cameras were set up - a trap mainly in the parts where it is believed that there are possible areas of movement of the largest number of wild animals.

In the places where these cameras were placed the common species of mammals were photographed and recorded such as Brown bear (*Ursus arctos*), Roe deer (*Capreolus capreolus*), Chamois (*Rupicapra rupicapra*), Wolf (*Canis lupus*), Fox (*Vulpes vulpes*), Pine marten (*Martes martes*), Badger (*Meles meles*), Wild boar (*Sus scrofa*), Brown hare (*Lepus europaeus*), Wild cat (*Felis sylvestris*) etc.

Data on the presence of wild fauna species reflect the factual situation in animal diversity research in Kosovo, where there are still substantial deficiencies for a large number of species in terms of data about populations, number of individuals, their trends and factors that threaten them. For this reason, the monitoring of such species should start as soon as possible, so that the species within the Red Book of Fauna could not be assessed for the categories of threat due to lack of data, can be assessed accurately, before they are irreversibly endangered by anthropogenic and other hazards.

The largest number of threats to the species assessed within the Red Book belong to these threat groups: use of biological resources, modifications of natural systems, climate change and severe weather, human intervention and disturbance, pollution and residential and commercial development. Logging and forest harvest, poorly managed recreational activities, surface water exploitation (especially for agricultural purposes), domestic and urban wastewater, habitat shifting and alteration, and tourism and recreation areas are the most common specific hazards that threaten the assessed species¹⁷.

A more specific assessment of the condition and density of populations of wild mammal species in the forest ecosystems of Kosovo through the methodology of camera traps was also made within the project "*Developing methods for measuring national distributions and densities of wild mammals using camera traps: A Kosovo study*". Table 17 presents data on the average density of some wild mammal populations in Kosovo, based on the results of measurements from 10 monitoring points of the above-mentioned project.

¹⁷ Red Book of Fauna of Kosovo ([http://ammk-rks.net/repository/docs/v2Libri_i_Kuq_-_6shtator_1_\(1\).pdf](http://ammk-rks.net/repository/docs/v2Libri_i_Kuq_-_6shtator_1_(1).pdf))

Table 17: Mean population density for some wild mammal species¹⁸

Species	Density (individual/km)		Forest population size	
	Mean	Range	Mean	Range
Red fox (<i>Vulpes vulpes</i>)	1.03	0.58-1.55	4935	2778-7433
Gray wolf (<i>Canis lupus</i>)	0.08	0.04-0.12	374	202-584
Wild boar (<i>Sus scrofa</i>)	1.34	0.78-1.97	6469	3754-9460
Roe deer (<i>Capreolus capreolus</i>)	3.19	1.90-5.00	15334	9126-24059
Badger (<i>Meles meles</i>)	0.08	0.03-0.14	364	146-656
Brown hare (<i>European rabbit</i>)	1.81	0.94-2.82	8728	4524-13572
Beech marten (<i>Marte foina</i>)	0.36	0.16-0.59	1720	789-2831
Wild cat (<i>Felis sylvestris</i>)	0.08	0.03-0.13	381	152-648
Brown bear (<i>Ursus arctos</i>)	0.25	0.12-0.41	1190	596-1966

3.5.3. Protected nature areas

The first steps of nature protection in Kosovo were initiated at the end of the 50s. In 1968, a nature protection unit was established within the 'Entity for the Protection of Cultural Monuments of Kosovo'. In 1974, a decision was issued on the separation of the 'Nature Protection' section from the 'Entity for the Protection of Cultural Monuments of Kosovo', establishing the 'Kosovo Entity for the Protection of Nature'.

In 2000, the former 'Kosovo Entity for the Protection of Nature and Environment' was registered with the UN Interim Civil Administration under the name "Institute for the Protection of Nature and Environment of Kosovo", with its seat in Prishtina, while as of 2002 known as "Kosovo Institute for Nature Protection" (Law on Environmental Protection No. 2002/8 (Reg. 2003/22)).

In the chronology of the declaration of protected nature areas in Kosovo, four time periods can be distinguished, which are related to the general developments in Kosovo. As in many other areas, significant results have been achieved in nature protection after the wartime of 1999 both in the increase of the total number of protected areas and in the expansion of protected nature surfaces of all categories.

The period 1950 - 1970 represents the initial phase of nature protection and the announcement of protected nature areas in Kosovo, which begins with the announcement of the first area in 1950, which was "Gazimestan".

¹⁸ *Developing methods for measuring national distributions and densities of wild mammals using camera traps: A Kosovo study; Sarah E. Beatham et al, 2020.*

By the beginning of the 70s, the number of protected areas reached 19. In this period, the following areas came under protection: ‘Gadhime Cave’ and some other monuments of botanical importance such as: ‘Rrapi in Marsh’, ‘Trungjet in Isniq’, etc.

The period 1970 - 1988 is characterized by the announcement of a significant number of protected nature areas. The reason for this success is related to the establishment of the ‘Kosovo Entity for the Protection of Nature’ in 1974 by the Assembly of Kosovo. In this period, a total of 32 nature areas were put under protection, of which the following should be pointed out: the nature reserve “Bifurcation of the Nerodime River”, the first National Park “Sharri Mountain” (1986), the source of Drin i Bardhë with the “Cave and Waterfall in Radavc” (1983) as well as several other natural monuments.

Likewise in other areas, nature protection during the period 1989-1999 recorded a complete stagnation in terms of protected areas. It is a period when, as a result of the dismissal of Albanian experts from the relevant nature protection institutions, and other related issues, we do not have even a single protected or proposed area for protection.

The post-2000 period is characterized by the re-establishment of Kosovo’s institutions, including the Ministry of Environment and Spatial Planning, respectively the Kosovo Institute for Nature Protection. During this period, about 200 different areas have been taken under legal protection and more than 30 areas have been proposed for protection. The following should be mentioned among the protected areas: National Park “Bjeshkët e Nemuna” (2013), NP “Sharri” (expanded), “Pashtrik Mountain” and “Vermica Lake”, “Wetland of Hence - Radeva”, etc., while most of them are natural monuments of botanical, hydrological, geomorphological, speleological character, etc.

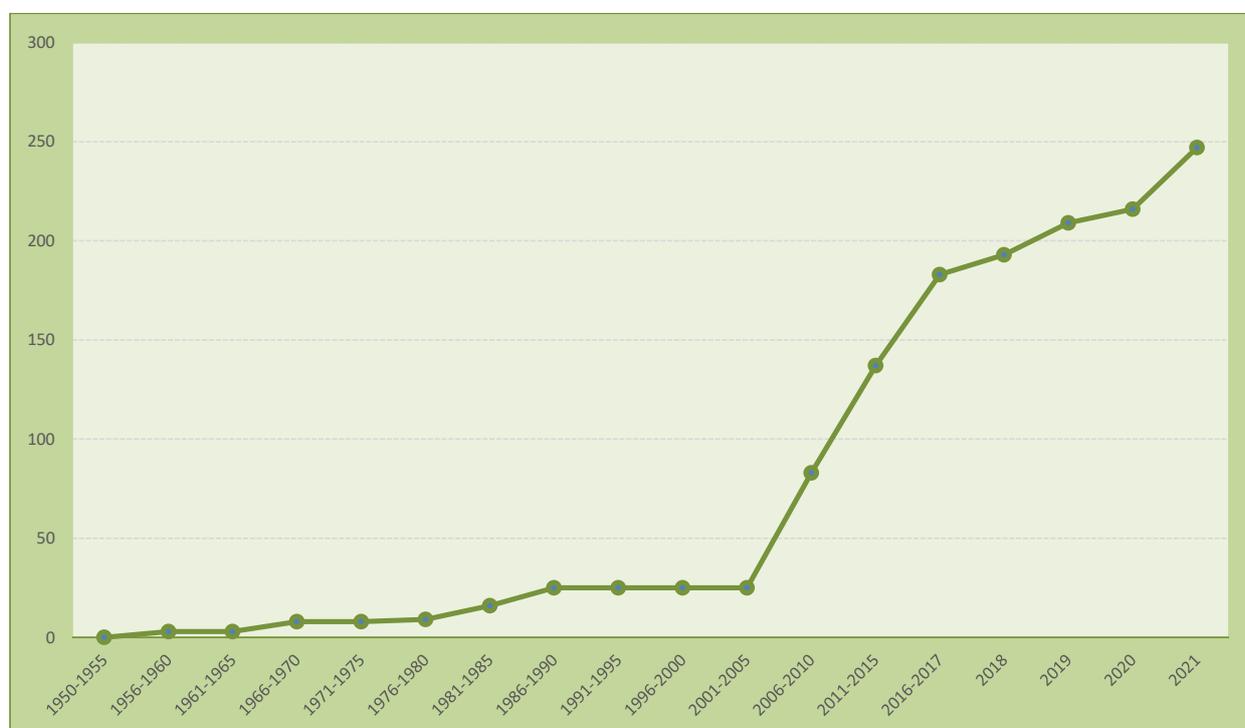


Figure 31: Number of protected nature areas 1950 – 2021

The total number of protected nature areas in Kosovo (2021) is 248, which cover an area of 126,023.2 ha, or 11.5% of the Kosovo's area. These areas include 19 Strict Nature Reserves ("Rezervati i Arnenit", "Maja e Ropsit", "Rusenica", "Kamilja", etc), 2 National Parks ("Sharri" and "Bjeshkët e Nemuna"), 219 Natural Monuments ("Spring of Drin i Bardhë with Radavci Cave", "Gadime Cave", "Mirusha Waterfalls", "Rugova Gorge", "Drini i Bardhë Canyon at Ura e Fshajtë", "Trungu i Rrapit in Marash" etc), one (1) Nature Park ("Pashtrik Mountain and Vërmica Lake"), six (6) Protected Landscapes ("Shkugëza", "Pishat e Deçanit" etc) and one (1) Special Protected Area of Birds ("Henc-Radeva wetland").

The largest surface area of protected areas consists of National Parks: "Bjeshkët e Nemuna" and "Sharri", Nature Park "Pashtrik Mountain and Vermica Lake", Protected Landscape "Germia" and MNRV "Mirusha Waterfalls", etc.

Table 18: Protected nature areas by category (2021)

IUCN Cat.	Name	No.	Surface area/ha	Participation in the total surface area of PA	Participation of PA in the
I	Strict Nature Reserves	19	10,882.96	7.7	0.99
II	National Parks	2	115.957	82.1	10.6
III	Natural Monuments	219	6,173.35	4.4	0.56
V	Nature Park	1	5.934	4.2	0.5
V	Protected Landscape	6	2,227.35	1.6	0.2
V	Special Protected Bird Area	1	109.5	0.08	0.01
	Total	248	126023.2¹⁹	100²⁰	11.55 %

¹⁹ Clarification: this surface of protected areas does not include the protected areas found within the "Sharri" and "Bjeshket e Nemuna" National Parks.

²⁰ Clarification: the percentage is derived from the total surface area, including the surface of protected areas within national parks.

4. Utilization of natural resources

4.1. Exploitation of stone and other mineral resources

Another frequent form of utilizing natural resources is the use of stone and other mineral resources realized through stone quarries (separations), where according to the data of the Independent Commission for Mines and Minerals in Kosovo, 232 licenses for stone exploitation and 170 licenses for research of stone reserves have been issued. Data on the utilized amount of mineral reserves for 2021 are presented in Table 19.

Table 19: The amount of exploited mineral reserves for 2021

Mineral materials	No. of licenses	Utilized reserves	Unit
Lignite	2	8,535,435.00	t
Andesite	7	150,191.05	m ³
Argil	15	495,161.20	t
Lime	190	6,730,525.97	m ³
Basalt	1	40,322.69	m ³
Sand and gravel	47	136,000.93	m ³
Quartz sand	5	17,594.00	m ³
Marl	5	182,020.32	m ³
Schist	2	0	m ³
Marble	8	2,925.00	m ³
Gabbro	2	0	m ³
Tuff (t)	1	351	t
Dunite	1	0	m ³

The municipalities in the regions in which there has been the largest number of licensing applications in quarry activities and where these licenses were issued are the municipalities of Malisheva, Klina, Kaçanik and Lipjan. Whereas, those with the largest number of applications and licensed issued for sand and gravel are: Peja, Gjakova and Kamenica.

The licensed economic operators fail to comply with the environmental criteria defined in the license, failing to recultivate or revitalize the area after the exploitation of construction and industrial minerals. Moreover, the conduct of illegal activities by many operators increases environmental pollution and its degradation and at the same time increases the hazard for citizens and animals. Figure 32 presents a map of the spatial extent of active quarries and those whose operating licenses have expired.

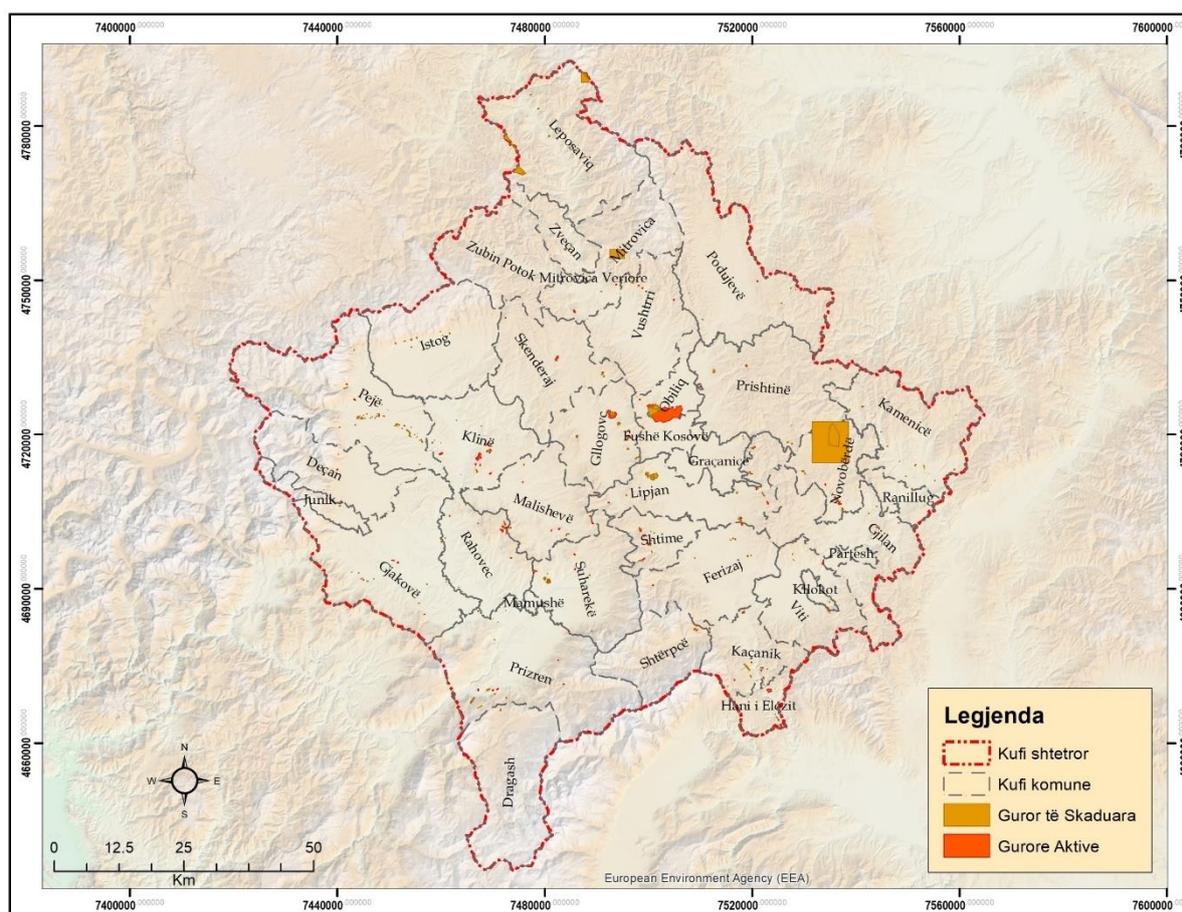


Figure 32: Spatial extent of active quarries and those whose operating licenses have expired

4.2. Riverbed aggregates exploitation

For years, our rivers have been subjected to the constant pressure of sand and gravel exploitation, and as a result, entire surfaces of the beds and the lands around them have been degraded. Degradation has occurred intensively in the last two decades, the challenge therefore lies in finding ways to meet our needs, without degrading the ecological balance of our rivers in general. The degraded surfaces from the exploitation of sand and gravel by 2018 are estimated to be 1421.06 ha. From 2009 to 2018, the degrading surface of rivers increased by 414.78 ha. After the re-vectorization of degradable surfaces for 2018, it has been estimated that this degraded surface has increased by 341.65 ha, which means that reached 1762.71 ha in total.

In the rivers identified as the most degraded, some forms of physical damage to the landscapes and banks of the river beds have been found.

The most frequent forms of degradation are accompanied by consequences such as:

- Lowering the height of the river bed;
- Expansion of beds;

- Changing the flow of water;
- Damage to the flora substrate along the river banks;
- The opening of large pits from the exploitation of aggregates;
- Damage to the substrate of flora and fauna;
- Damage to the river ecosystem.

The expansion of the river beds by these activities was preceded by the further expansion by the natural erosion process, as a result of erosion and removal of woody plants and shrubs. With this activity, human or nature triggered, the width of the banks and beds in some parts of the country's rivers has increased. Erosion appears in different forms, such as surface erosion of soil, riverbanks, streams, and transport of solid deposits of sand, gravel, silt, etc. Erosion in Kosovo with its erosive power creates ~12mil/m³/year of transport products a year. It is possible to transport about 5 mil/m³ per year, or about 460m³/km², or about 5m³/ha from this material eroded for transport.

Municipalities with the highest number of stone quarries are the municipalities of Peja, Klina, Istog, Suhareka, Rahovec, Prizren, Vitia, Gjilan, Mitrovica, Malisheva, etc. According to the list possessed by MESPI, there was a large number of operators operating or in the course of obtaining the Environmental Permit in these municipalities by the beginning of 2022.

Based on data for the period 2019-2021, the Inspectorate of the Ministry of the Environment, Spatial Planning and Infrastructure conducted about 200 inspections with minutes against natural and legal persons (operators), as exploiters who work and operate near the Kosovo rivers, see Table 20²¹.

Table 20: Activities conducted by MESPI Inspectorate during 2019-2021

Years	Activities	Number
2019-2021	Minutes	200
	Decisions on the prohibition of works	118
	Criminal charges	7
	Minor offence reporting	24
	Fines	93

²¹ MESPI/KEPA 2022; Report on the assessment of the state of rivers caused by sand and gravel exploiters

The state of rivers having sand and gravel exploited is not at all favourable for a natural renewal process. Rivers in some parts of them are in an irreversible natural state, as a result of relentless pressure and cruel exploitation by legal and illegal economic operators. Therefore, the following conclusions were drawn from the assessment of the state of the rivers:

- Environmental river protection policies are still of low priority by the responsible institutions;
- Rivers continue to be degraded without criteria, despite the existence of environmental legislation;
- Protective measures, whether at the central or local level, have not been very efficient against this environmental crime;
- Rivers such as Drini Bardh River, Lumëbardh of Peja, Erenik River, Morava e Binçës River, Desivojca River, Krivarek River and Iber River have been assessed as the most degraded by the sand and gravel exploitation;
- Despite the river degradation, the measures for their rehabilitation and return to their previous state are minimal;
- In different parts of the rivers, the river ecosystem has been completely destroyed, including flora and fauna.

4.3. Utilization of water resources

Another and at the same time the largest category of water resource utilization is its utilization for industrial needs. The largest consumers are large industrial enterprises such as "KEK", "NewCo Ferronikel", "Sharrcem", etc. Most of them are supplied with water from surface accumulation lakes (Table 22).

Table 22: Utilization of water 2020-2021 by large industrial enterprises

Users	Consumed amount of water (m ³ /year) 2020	Consumed amount of water (m ³ /year) 2021
KEK	18149550	17047390
New Co Ferronikel	1437763	1430948
Sharrcem	80112	70415
Total	19667425	18548753

Regarding the utilization of drinking and domestic water, there are seven Regional Water Companies (RWC) licensed by the Water Services Regulatory Authority (WSRA) providing such services, as well as 30 municipalities that benefit from the

services of these companies. The total production of water distributed by regional companies in 2021 was 156.4 million m³. About 65.97 million m³ have been used to supply drinking water to households, industries and institutions, while water losses are estimated to be around 85.61 million m³. Compared to previous years, there was an increase in the amount of water produced and used for drinking water supply (Table 23).

Table 23. Drinking water supply, water losses and water production (mil.m³/year) 2019-2021²²

Supplying households, industries and institutions with drinking water (mil.m ³ /year)			
Years	2019	2020	2021
Water supply - Households	49.01	50.7	53.13
Water supply - Industrial activities	6.11	5.7	6.38
Water supply - Institutions	6.93	6.0	6.46
Total	62.05	62.37	65.97
Water losses mil./m ³ in 2019-2021			
Years	2019	2020	2021
Total	87.64	84.44	85.61
Water production for the public sector mil./m ³ in 2019-2021			
Years	2019	2020	2021
Total	155.8	152.3	156.4

Table 24 presents data on the amount of water used for agriculture irrigation for the period 2019-2021. The amount of water used for agriculture irrigation in 2021 was 77.69 million m³ water, which is mostly provided through irrigation systems. Compared to 2020, there has been a decrease in water used for irrigation.

Table 24. Agriculture irrigation 2019 - 2021 mil. m³/year²³

Years	2019	2020	2021
Agriculture irrigation through the system	52.60	55.00	56.89
Agriculture irrigation through wells	18.44	27.50	20.80
Total	71.04	82.50	77.69

²² Water Statistics in Kosovo 2020-2021, KAS 2022

²³ Water Statistics in Kosovo 2020-2021, KAS 2022

4.4. Utilization of forest resources

According to assessments, reports and analyzes prepared by the Forestry Agency and competent bodies, it is concluded that the situation in the Forest Areas is stable. According to the KFA data, forests cover about 481,000 hectares or 44.7% of the total area of Kosovo. Of this total area of forest lands, 278,880 hectares are classified as public forests and 185,920 hectares as private forests. Kosovo's forests are a source of timber that is used as firewood, and various forest products that are used for industry and other activities. According to KFA, in 2021, 2653 ha of forests were burnt, of which 2080 ha in public forests and 573 ha in private forests. In 2021, around 309 ha of forested areas were reforested. According to data from the Kosovo Forestry Agency about 168 thousand m³ of wood were used from public and private forests in 2021. Gjilan region used the largest amount of timber, while Prishtina region used the smallest amount (Table 21). Illegal logging remains one of the main challenges of the forest management sector. In 2021, the municipal forestry units confiscated 1,524.26 m³ of wood mass, of which 139.45 m³ was technical wood and 1,384.81 m³ of firewood.

Table 21: The amount of wood mass (m³) used by regions and sectors in 2021²⁴

No.	Regional Coordination Directorate	Public forests (m ³)	Private forests (m ³)
1	Prishtina	1,235.23	21,886.20
2	Mitrovica	0	49,508.82
3	Peja	2,634.31	3,757.98
4	Prizren	3,840.87	2,530.23
5	Ferizaj	7,640.11	5,220.10
6	Gjilan	8,298.76	57,396.31
7	DMKE	3,572.14	294.81
Total		27,221.42	140,594.45
Total		167,815.87	

Another form of using natural resources is the use of non-timber forest resources. This is mainly done through the informal sector or even through certified companies. According to the MAFRD data, the areas for the collection of medicinal and aromatic plants that are considered organic cover 1,039.71 ha. Data on the export of medicinal and aromatic plants show a continuous increase in value, while a decrease in quantity. In 2020, the amount of medicinal and aromatic plants collected was 1,814 tons, while the export value was €8.9 million.²⁵

²⁴ Kosovo Forestry Agency, 2022

²⁵ MAFRD, Green Report, 2021.

5. Environmental impacts on public health

5.1. Public health

The World Health Organization (WHO) data show that air pollution kills around seven million people worldwide annually. Nine out of ten people breathe air that exceeds WHO guideline limits, containing high levels of pollutants. According to WHO, the population of low- and middle-income countries suffer from the highest exposure to air pollution. In some major cities around the world, air pollution went above the recommended levels on a daily basis, and for some days during the year, it can reach extremely dangerous levels for people's health. WHO claims that 56% of cities in high-income countries do not meet their air quality guidelines.

Exposure to high air pollution levels can cause a range of adverse health consequences, increasing the risk of respiratory infections, heart disease and lung cancer. Short-term and long-term exposures to air pollutants have been associated with health impacts. Children, the elderly, people with chronic diseases, pregnant women, etc. are the most affected population by air pollution. The most harmful pollutants to health, which are closely related to premature mortality, are the fine PM_{2.5} particles that penetrate deep into the lungs, enter the bloodstream and reach the organs, causing systemic tissue and cell damage. New evidence suggests that increased long-term exposure to air pollution (particularly PM_{2.5}) increases the risk of severe complications of COVID-19 due to its impact on respiratory and cardiovascular disease.

According to the Report published in 2021 by MCC entitled "Air pollution and health impact in Kosovo", it has been estimated that considering current exposures (compared to the limit value of 2.4 µg/ m³) and then the exposure assessment of the limit value according to WHO for the concentration of PM_{2.5} (10 µg/ m³), the results show that 1150 cases of death per year (121/100 000 inhabitants) are attributed to the current level of PM_{2.5} in Kosovo. This represents 12.1% of total mortality, from all causes of natural deaths.

The estimated number of attributable deaths that could be avoided (each year) if the WHO threshold values were reached is 758, representing 7.97% of total (natural) mortality in the 30+ age group. On average, 80 cases of death, calculated as a rate for 100,000 vulnerable inhabitants, are attributed to the cause of exceeding the limit value of this pollutant. The results show that 758 premature deaths each year caused by long-term exposure to PM_{2.5} could be avoided if the limit values according to WHO standards were reached.

The National Institute of Public Health (NIPH) is a Health Institution preparing and implementing the public health strategy, which in 2021 was mainly focused on prevention activities, early detection, response and control of the pandemic. The epidemiological situation has been monitored daily through case/contact tracing and

recovery/discharge from isolation of relevant cases. The epidemiological situation was also monitored on an ongoing basis, by following the progress of cases and deaths. NIPL also monitors environmental diseases on an annual basis, which we have presented in Table 1 for 2020-2021.

The NIPH data for the period January - December 2021 indicate a total of 226,054 cases of infectious diseases reported with Mb 12684.59 in 100.000 inhabitants. This number of diseases is higher compared to the same period in 2020 (157,849 cases of the disease or 8638.38 Mb/100.000 inhabitants). The COVID-19 pandemic had undoubtedly an impact on this increase in the number of cases reported in 2021.

Table 25: Environmental diseases 2020 and 2021

Diseases	2020		2021	
	Cases	Mb 100000/ b	Cases	Mb 100000/b
ITPR-Pneumonia/ARI	6187	338.60	8897	499.24
SARI (Severe Acute Respiratory Infections)	46	2.52	108	6.06
Influenza-like illness (ILI)	70809	3875.21	55720	3126.62
Influenza A	56	3.1	361	20.3
Influenza A H3	0	0	6	0.03
Influenza B	102	5.6	0	0
Acute diarrhoea	25104	1373.88	47621	2672.16
COVID-19	51502	2818.58	110029	6174.07
Varicella	2796	153.02	2494	139.95
Bloody diarrhoea syndrome	12	0.66	4	0.22
Meningitis syndrome	18	0.99	61	3.42
EHKK	1	0.05	0	0
EHSV	0	0	2	0.11
Lyme disease				
Leishmaniasis	0	0	0	0
Malaria	-	-	-	-
Legionellosis	-	-	-	-
Exanthematic fever syndrome	-	-	-	-
Pertussis	2	0.11	0	0
Typhoid fever	-	-	-	-
Epidemic parotitis	24	1.31	16	0.90
TBC	-	-	-	-
Intoxicatio alimentaris	304	16.64	-	-
Acute jaundice A	13	0.71	8	0.45
Jaundice B	68	3.72	19	1.07
Jaundice C	1	0.05	0	0
Toxic jaundice	-	-	-	-
Fulminant jaundice	-	-	-	-
Typhus abdominalis	-	-	-	-
Campylobacter	-	-	-	-
Adenovirosis	1	0.05	0	0
Salmonellosis	1	0.05	14	0.95
Shigellosis	1	0.05	0	0

Rota virus	39	2.13	0	0
Tularemia	1	0.05	2	0.11
Lymphadenitis	-	-	-	-
Leptospirosis	-	-	2	0.11
Measles	2	0.11		
Pathogenic E.coli	4	0.22	-	-
Brucellosis	6	0.33	6	6.34
Anthrax	-	-	-	-
Tetanus	-	-	-	-
Echinococosis	-	-	-	-
Toxoplasmosis	3	0.16	2	0.11
Q fever	-	-	-	-
Giardia sis	-	-	-	-
Viral conjunctivitis	2	0.11	-	-
Yersinia enterocolitica	-	-	-	-
Gastroenterocolitis	57	3.12	-	-
Lymphadenitis ac.coli	2	0.11	-	-
Vulnus morsumcani	-	-	-	-
Campylobacter	-	-	-	-
IST	538	29.44	-	-
Parasitosis	12	0.66	-	-
Giardiasis	-	-	-	-
Status post ictus ixodes	61	3.34	3	0.17
Status post morsum cani	-	-	-	-
Status post morsum viperi	1	0.05	1	0.6
Other contagious diseases	73	4.00	42	0.00
Total	157849	8638.70	226054	12684.59

Environmental diseases in 2020-2021, excluding COVID-19 cases, and cases with diseases of the aggregated form such as pneumonia, seasonal influenza, acute watery diarrhoea, as well as salmonellosis, are reported in higher numbers for 2021. Zoonosis (human brucellosis and tularemia) are reported in a low number of cases in 2020/2021. Even “vaccine-preventable” diseases (epidemic parotitis, pertussis) are reported in lower numbers compared to 2020. As for the varicella cases, a decrease in the number of cases is also observed from 2,796 in 2020 to 2,494 cases in 2021.

5.2. Drinking water quality

Drinking water quality refers to microbiological and physicochemical characteristics. The quality of drinking water is an important indicator of the population’s well-being and health. Kosovo has good legislation in place for the protection of drinking water. Administrative Instruction No. 16/2012, and Administrative Instruction No. 15/2017, are among the important instructions for the protection of drinking water and are in accordance with EU standards for drinking water.

RWCs have the responsibility to supply quality water to their consumers, they also have the obligation to do internal water quality monitoring/testing. On the other hand, NIPHK is an institution with the legal responsibility to control and monitor drinking water throughout the country. NIPHK ensures that the water distributed by RWCs is in accordance with the values according to the local standard on microbiological and physicochemical parameters. In this report, the quality assessment is based on the data reported by QU to WSRA.

Based on the results of water quality monitoring conducted by RWCs, the overall drinking water quality in Kosovo provided to consumers in the service areas of seven RWCs in 2021 has been in accordance with drinking water standards with compliance of 98.3% for bacteriological tests and 98.6% for chemical tests. As presented in Table 20, in 2021, the highest compliance in terms of microbiological parameter values was in RWCs Mitrovica and Gjakova with 100%, while the lowest compliance was in RWC Hidroregjioni Jugor with 91.3% and Bifurkacioni with 97, 5%. Regarding the physicochemical parameters, the highest compliance was in RWCs in Mitrovica, Gjakova, Prishtina and Hidroregjioni Jugor with 100%, while the lowest compliance was in RWCc Hidrodrini 71.3% and Bifurkacioni at 92.4%.

Table 26: Rate (%) of bacteriological and physicochemical tests in accordance with water quality standards by RWC 2021

Regional Companies	Microbiological	Physicochemical	Average for RWC
Prishtina	98.7%	100%	99.3%
Hidroregjioni Jugor	91.3%	100%	95.6%
Hidrodrini	99.3%	71.3%	85.3%
Mitrovica	100%	100%	100%
Gjakova	100%	100%	100%
Bifurkacioni	97.5%	92.4%	94.9%
Hidromorava	90.9%	100%	95.4%
Overall average	98.3%	98.6%	98.4%

Compared to the previous year, the overall drinking water quality in Kosovo provided to consumers in the service areas covered by the seven RWCs in 2021, was poorer. The overall average of microbiological compatibility in 2021 was 98.3%, compared to 99.5% in 2020, while the average of physicochemical compatibility in 2021 was 98.6% compared to 99.4% in 2020.

Coverage with water supply service - RWCs as licensed providers of water supply services provided water supply services to 79% of the population. This indicator represents the percentage of the population supplied by the RWC managed systems, in relation to the general population within the licensed service area.

Expressed in terms of settlements, out of a total of 1,238 settlements there are only 665 of them that have access to public water supply systems managed by RWCs. In 2021, 15 rural water supply systems were added under the management of all RWCs

compared to 2020. There are also 93 water supply systems already built in rural areas, which meet the infrastructural conditions to be managed by the respective RWCs. With the operationalization of these systems, about 95,029 inhabitants will be supplied with water, while the percentage of the population with access to public water supply systems managed by RWCs will increase to 84%²⁶.

According to KAS data, about 97% of the population is connected to the water supply network (Table 27).

Table 27. The percentage of households supplied by the public water supply network 2018 - 2020²⁷

Years	Population	The number of residents connected to the public water supply	The number of residents not connected to the public water supply	Connected to water supply %	Not connected to water supply %
2018	1.795.666	1.549.752	245.914	86,31	13,69
2019	1.782.115	1.644.920	137.195	92,30	7,70
2020	1.798.186	1.741.333	56.853	96,84	3,16

²⁶ WSRA 2022, *Level of services provided by licensed providers for 2021*

²⁷ *Water Statistics in Kosovo 2020-2021, KAS 2022*

6. The state of endangered environments

6.1. Environmental state in the KEK operating area

KEK J.S.C is the corporation generating most of the electricity in Kosovo (over 95%). In addition to electricity generation activities, this company has also invested in environmental protection and advancement. However, starting from the existing environmental situation and the impact on the environment that includes impacts on land, water and air, as well as legal obligations towards the environment, this company must make more efforts to take measures to improve the situation, as well as protect the environment in the areas where it conducts its activities.

The company is currently not complying to a large extent with the standards defined in the relevant environmental legislation, even though it monitors, oversees and acts in a preventive and continuous manner on the discharge of polluting emissions into the air, water and land, the noise level and the flora. The assessment of the environmental state in the KEK operating area was conducted based on the data of the 2021 monthly and annual reports prepared by this company. Some of the key KEK's operation indicators are presented in Table 28.

Table 28: Some of the key KEK operation indicators in 2021

Indicators	2021
Annual electricity generation from 'TPP Kosova A'	2350062 (MWh)
Electricity generation from 'TPP Kosova B'	4102478 (MWh)
Total consumption of lignite	8,723,575 (t)
Total amount of ash produced	1265266 (t)
Consumption of decarbonized and demineralized water 'TPPA' and 'TPPB'	18.027.716 (m ³)

Table 28 presents the annual air emissions for the SO₂, NO_x pollutants and total dust from all Power Plants 'Kosova A' and 'B'. In 2021, there was an increase in total dust emissions compared to 2020, while SO₂ and NO_x emissions in 2021 are lower compared to 2020. Higher emissions were recorded in the Power Plants 'Kosova B' (B1 and B2) compared to the Power Plants of 'Kosova A' (A3, A4 and A5).

Table 29: Annual air emissions for SO₂, NO_x pollutants and total dust from 'TPPA' and 'TPPB' in 2020-2021

TPP	SO ₂ (t)		NO _x (t)		Total dust (t)	
	2020	2021	2020	2021	2020	2021
TPP A3	1478	2366	1832	2867	138	235
TPP A4	2859	1147	3642	1180	236	96
TPP A5	2466	2764	2819	3097	179	222
TPP B1	6599	4956	7521	5378	2797	2801
TPP B2	6585	3398	7032	4925	2517	2639
Total	19987	14631	22846	17447	5867	5993

Table 30 presents a summary table for the environmental projects, implemented within the various operational units.

Table 30: Environmental projects implemented in the KEK area - in 2021

Department	Supervisory activities and Projects
Department of Environmental and Land Reclamation Projects	<ul style="list-style-type: none"> • Activities in the rehabilitation and recultivation of lands degraded by mining activities, • Activities in the treatment of materials and solid waste, liquid and hazardous waste, generated as a result of mining and industrial activities in KEK. • Opening of the channel for the removal of accumulated water of the TPP A and the adjustment of the entrance/exit road in DPRT-Dardhishte; • Cleaning of spaces, planning, levelling and flattening - KEK II Park; • Cleaning of the ravine bed on the upper and lower side of the pond in KEK II Park, L= 750 m; • Opening of the channel near KEK entrance 02.
Commissioning and Hazardous Materials Department	<ul style="list-style-type: none"> ▪ Continuous monitoring of the 60 ha surface of the decommissioning area in TPP "Kosova A"; ▪ Professional care for facilities containing hazardous waste; ▪ Cooperation with the EU Office in Kosovo for the decommissioning process; ▪ Drafting of design tasks and terms of reference for waste treatment projects containing asbestos, solid waste, liquid waste and oils containing BPK; ▪ Taking care of the radioactive waste bunker; ▪ The first stage of the project for the treatment of materials and waste containing asbestos and mineral wool has been completed; ▪ Complete inventory of materials and waste containing asbestos and mineral wool; ▪ The work plan for the collection, packaging and transportation to landfills of materials and waste containing asbestos and mineral wool; ▪ EIA for the landfill of materials and waste containing asbestos and mineral wool; ▪ Detailed project for the landfill of materials and waste containing asbestos and mineral wool, etc.

6.2. Environmental state in the Ferronikeli operating area

The assessment of the environmental state was conducted from the data of the 2021 monthly and annual reports, prepared by the "Environmental and Quality Control Department", which included all the data resulting from environmental monitoring. In 2021, the economic operator "Ferronikel" faced serious challenges. As a large consumer of electricity, in the second half of the year, there was an extraordinary increase in electricity for MWh, which forced the operator to stop production in its

entirety for an indefinite period at the beginning of October. In 2021, it operated only during the months of January-September.

Air quality and air emission monitoring - Some of the measurements foreseen according to the obligations from the “Integrated Environmental Permit”, mainly the measurements that are carried out with foreign companies have not been conducted since the company conducted the internal procurement procedures and concluded an agreement with the ECCAT company from Tirana, and the measurements were planned to be conducted during the months of October and November.

External monitoring of heavy metals (Fe, Ni, Hg, Cr, Co), PM10, and PM 2.5 and PCDDD/DF (dioxins and furans) at two discharge points: rotary kilns and converters were not conducted in 2021, and such monitoring did not take place since the operator was forced to stop all activities at the end of 2021.

As for aerosediment (deposited dust), from the results presented throughout the months of 2021, it can be seen that in no case the WHO standards have been exceeded.

Based on the measurements conducted, dust emissions throughout the months of January-September 2021 were recorded at lower values than the allowed limit at all three monitoring points (electric furnace, rotary kiln and converter). The table shows the total amount of dust emissions emitted into the air for 2020 and 2021, expressed in tons²⁸. The total amount of dust emitted in 2021 was about 70 tons, while in 2020 it was about 39 tons. The greatest discharge was measured in the rotary kilns.

Table 31: The total annual amount of dust emitted in 2021 from Ferronikeli

Year	Electric furnace	Converter	Rotary kiln	Total
2020	5.1t	33.6t	0.3t	39.1t
2021	0.6t	9.8t	59.6t	70.12t

Likewise, the gases monitored (CO, NO_x, SO₂) throughout the months of January-September 2021 recorded lower values than the allowed limit at both monitoring points (rotary tilt and converter).

Table 32 presents data on the total amount of CO, NO_x and SO₂ emissions discharged into the air in 2020 and 2021, expressed in tons. The total amount of CO emitted in 2021 was about 1667 tons, while in 2020 about 745 tons, the total amount of NO_x emitted in 2021 was about 166 tons, while 2020 about 105 tons, while the total amount of SO₂ emitted in 2021 was about 1097 tons, while in 2020 about 600 tons.

²⁸Explanation: In 2020, the factory operated for only 5 working months (152 days), while in 2021, the factory operated for 9 months (273 days).

Table 32: Total annual amount of CO, NO_x and SO₂ pollutants in 2021 from Ferronikeli

Gases	Converter A2.2		Rotary kiln A2.1		Total	
	2020	2021	2020	2021	2020	2021
CO	21.1t	46.3t	724.5t	1,621.1t	745.6t	1,667.4t
NO _x	13.7t	35.2t	91.8t	130.9t	105.5t	166.2t
SO ₂	4.0t	10.1t	596.9 t	1,087.3t	600.9 t	1,097.4t

Water quality - Results of measurements of parameters conducted in surface and underground water in 2021 show that all parameters are within the allowed standards. It can be seen that the allowed value for the measured parameters was not exceeded. The monitoring results of the heavy metals in 'Dushkaja 1' slag dump site and in 'Gllavica' mine measured in surface and underground waters are only traces and do not exceed the allowed values. The measurements were conducted by the INKOS Institute.

Waste management - Table 33 presents the waste and by-products generated from the production process as part of daily work and activities in 2021.

Table 33: Industrial waste generation from Ferronikeli in 2021

Indicators	2021
The slag generated by the electric furnace, deposited in the 'Dushkaja 1' slag dump site.	428997 tons
Slag generated by the converter deposited within the facility	31873 tons
Refractory materials used	3886 t/year.
Sludge from cleaning systems	1609 t/year.

6.3. Environmental state in Sharrcem operating area

The assessment of the environmental state was conducted from data of 2021 monthly and annual reports, prepared by the Economic Operator Sharrcem.

Air emissions - The company has been operating with the Continuous Emissions Monitoring System (CEMS) since the beginning of 2013. Since 2014, this requirement has also been defined by the terms of the Integrated Permit.

Since 2019, the existing software MEAC 2000 has been replaced by the most advanced software (MEAC 300) for the processing of emission data, a system that automatically and independently generates emission values at any time and ensures quality and independence. Sharrcem operates in accordance with the best available techniques (BAT) for the reduction of emissions for the cement industry, according to Directive 2010/75 /EU, and the IPPC Law - Integrated Permit.

Sources of dust emissions in the cement plant are dust emission sources from furnace chimneys, clinker coolers and cement mills. While the kiln of the raw material mill is the source of SO₂ and NO_x emission. Based on the measurements conducted, dust emissions in 2021 were recorded with lower values compared to the allowed limit at both monitoring points. Also, the SO₂ and NO_x emissions in 2021, based on the measurements conducted at the monitoring point, were lower compared to the allowed limit. Measures to reduce dust emissions from the main sources are made through bag filters. The transient dust reduction action plan has been completed with the closure of the clinker and raw material warehouse. The reduction of noise sources in the environment has been completed through the activities foreseen in the action plan.

CO₂ emissions and decarbonisation - For the first time since 2021, at the request of "TITAN Group", the emissions started to be monitored, the CO₂ emissions were reported and the data collection in 2020 was reported in the "Annual Integrated Group Report". Figure 34 presents the total annual CO₂ emissions for the period 2019-2020. As can be seen from the figure, there was no decrease in CO₂ emissions in 2021.

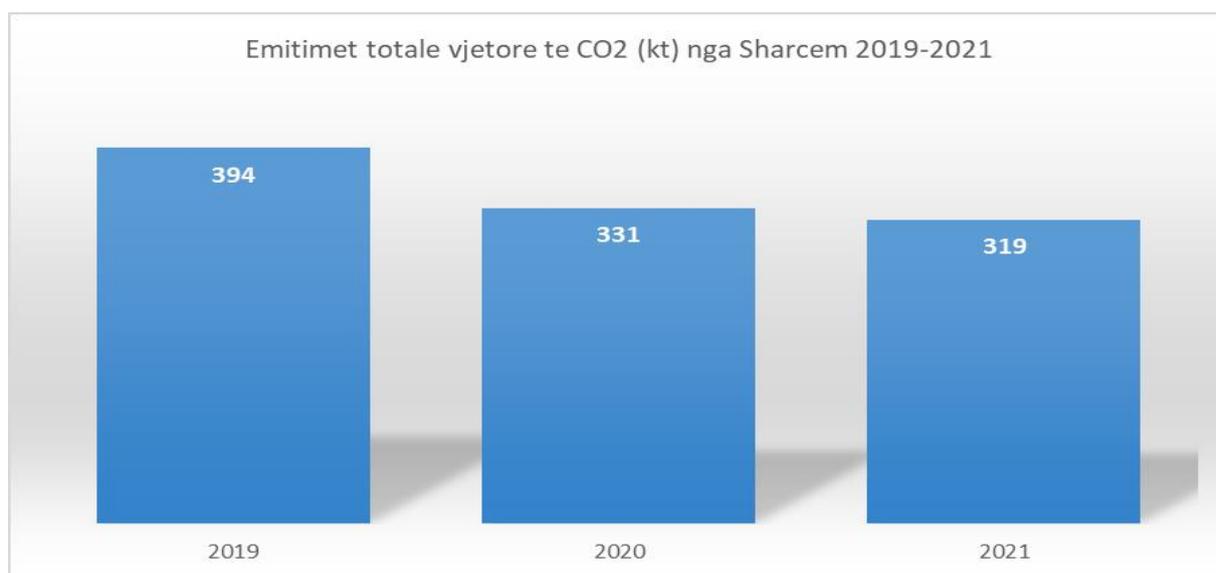


Figure 34: Total annual CO₂ emissions (kt) from Sharcem 2019-2021

Regarding decarbonization, efforts have been made to optimize the product portfolio, focusing on the production of products with lower clinker and the preparation of a new type of cement with lower clinker content, which has been technically tested successfully and has been on the market since July 2021. The full positive impact will be delivered during 2022.

Used and discharged waters - Water management investments in the water recycling system and the improvement of existing water networks have led to more efficient use of water, while the development and implementation of water management systems have improved the overall monitoring and enables reporting on use and utilization of water on a sustainable basis.

In 2021, Sharrcem used about 86149 m³ of water, which marks a decrease compared to 2020 (106342 m³) and 2019 (156271 m³). The wastewater treatment plant has been fully operational since March 2016. Sharrcem monitors the wastewater quality four (4) times a year through an accredited laboratory. The wastewater treatment plant has been in operation throughout 2021 and there have been no problems in its operation. The monitoring parameters of treated water discharge were below the allowed values in accordance with UA 30/2014. In 2021, 15,734 m³ of discharged water was treated.

Waste management - Waste is transported and removed from the plant by sub-contractors/licensed third parties. These sub-contractors provide services related to waste collection and transportation. Table 34 presents the annual amount of different categories of waste generated by the Sharcem plant.

Table 34: Waste generation by categories from Sharcem in 2021

Mixed municipal waste (t)	Scrap (t)	Kiln brick (t)	Ripped bags (t)	Paper and cardboard (t)	Demolition waste (t)	Wooden pallets (m ³)	Used oils (t)
46	281	78	18	2.5	559	20.2	0.5

6.4. Other endangered areas (environmental hotspots).

Nowadays, more than ever before, the anthropogenic factor is playing a major role in environmental pollution. As a result, Kosovo continues to face the problems created and faced year after year. Based on data from the “Environmental Hotspots in Kosovo” report, the total area of these hotspots continues to be approximately **9.94 km²** or **0.09 %** of Kosovo's territory.²⁹ The most sensitive environmental locations that we also call “hotspots”, or “environmental hotspots” have been created mainly as a result of past industrial activity, caused by mining activities from old unmanaged landfills, by chemicals deposited, from waste oils, pesticides, herbicides, etc. The most affected municipalities by these hotspots in Kosovo are *Gllogovc, Mitrovica, Suhareka, Zveçan, Graçanica, Novo Berdo, Obiliq, Lipjani, Gjakova, Stantergu and Leposaviç*, as a result of the industrial activities that have been performed in these areas.

²⁹ Hotspots - Areas with high pollution potential due to their impact on the environment and public health

Chemical waste in Kosovo has been deposited without any prior treatment, without complying with the permitted standards and applicable legislation, they have been accumulated in various places in Kosovo, such as warehouses, garages or basements, thus causing hazardous locations for the health of the population and the environment. The chemical waste of different compositions is a product of industrial generation. Warehouses with chemical waste are monitored throughout the year by KFOR, KSF, and the MESPI Environmental Inspectorate (Table 35).

Table 35: Industrial chemical waste dumpsites

No.	MUNICIPALITY	NAME OF LOCATION	ACTIVITY
1	Lipjan	GC Metal	Metal production
2	Obiliq	TPP Kosova A	Electricity generation
3	Obiliq	TPP Kosova B	Electricity generation
4	Graçanica	Kishnicë/Trepça	Flotation concentrate
5	Fushe Kosova	Sole Coral	Cooling machinery
6	Glllogoc	NewCo Ferronikeli Complex L.L.C	Foundry
7	Mitrovica	Stariterg	Flotation concentrate
8	Mitrovica	Tuneli i parë	Radioactive source
9	Leposavic	Trepça	Flotation concentrate
10	Mitrovica	PIM	Industrial Park
11	Zveçan	Trepça	Concentrate
12	Peja	Leather factory	Leather production (no activity)
13	Peja	Trepça	Battery production (reduced activity)
14	Peja	Eurostell	Production of parts and equipment for various machinery
15	Gjakova	Jatex	Textile production
16	Gjakova	Metaliku	Steel production sector (no activity)
17	Gjakova	Devolli Group	Textile production (no activity)

It is necessary to invest in drafting plans, programs and projects in order to rehabilitate these hotspots. These areas are contaminated due to the content of toxins, which have negative impacts on the population health, on the pollution of the soil, water, air, plant and animal life, on climate changes, damage to the ozone layer, on the cultural heritage and other environmental factors.

7. Measures taken to protect the environment

7.1. Level of environmental strategies and plans

Kosovo has satisfactorily developed a strategic and programmatic framework for the environment and its sectors, but the implementation level is still low. Table 36 presents the key strategic and program documents of the environmental sector and their implementation level.

Table 36: Implementation level of strategies and action plans in the environmental sector

Strategy/Plan	Validity period	Document status	Implementation level
Kosovo Environmental Strategy (KES)	2013-2022 (under review)	Approved by the Government of the Republic of Kosovo Decision No. 05/140 Date: 17.07.2013	Partially
Biodiversity Strategy and Action Plan	2011-2022 (under review)	Approved by the Government of the Republic of Kosovo (under review)	Partially
Air Quality Strategy	2013-2022 (under review)	Approved by the Assembly of the Republic of Kosovo,	Partially
Action Plan for the Implementation of the Air Quality Strategy	2018-2020 (under review)	Approved by the Assembly of the Republic of Kosovo,	Partially
Integrated Waste Management Strategy	2021-2030	Approved by the Government of the Republic of Kosovo	Applied on an ongoing basis
Waste Management Plan of the Republic of Kosovo	2021-2023	Approved by the Government of the Republic of Kosovo	Applied on an ongoing basis
Climate Change Strategy and Action Plan for Kosovo	2018-2027	Approved by the Government of the Republic of Kosovo Decision No. 05/90, dated 19.02.2019	Applied on an ongoing basis
State Water Strategy of Kosovo 2017-2036	2017-2036	Approved by the Government of the Republic of Kosovo and the Assembly of Kosovo Decision No. 16/20, dated 20.12.2017	Applied on an ongoing basis
Kosovo Spatial Plan - Kosovo Spatial Development Strategy	2010-2020+ (under review)	Approved by the Assembly of the Republic of Kosovo,	Partially - in the process of implementation, the zone map of Kosovo

Spatial Plan for “Sharri” National Park	2013-2022 (under review)	Approved by the Assembly of the Republic of Kosovo,	Partially - two regulatory plans are in the process of approval
Spatial Plan for the Natural Monument of Special Importance “Mirusha Waterfalls”	2014-2023	Approved by the Assembly of the Republic of Kosovo,	Implementation has not started due to the lack of a management body for this protected area
Management Plan for “Sharri” National Park	2015-2024	Approved by the Ministry of Environment and Spatial Planning	Partially

Based on this reporting at the local level, according to Table 36: 12 municipalities or 44% have “Local Environmental Action Plans” in place, while 15 municipalities or 56% of them do not have such plans. 19 municipalities or 70% have “Local Waste Action Plans” in place, while 8 municipalities or 30% of them do not have such plans. 4 municipalities or 15% have “Local Biodiversity Action Plans” in place, while 23 municipalities or 85% of them do not have such plans. 2 municipalities or 7% have “Local Air Quality Action Plans” in place, while 25 municipalities or 93% of them do not have such plans, 8 municipalities or 30% have “Local Mobility Plans” in place, while 19 municipalities or 70% of them do not have such plans.

Table 37: Environmental plans at the local level

Municipality	Local Environmental Action Plan	Local Waste Action Plan	Local Biodiversity Action Plan	Local Air Quality Action Plan	Local Mobility Plan
Prishtina	<i>Not reported</i>				
Obiliq	+	+	-	+	-
Drenas	+	+	+	+	-
Shtime	+	+	-	-	+
Hani i Elezit	-	-	-	-	-
Prizren	<i>Not reported</i>				
North Mitrovica	+	+	-	-	+
Deçan	<i>Under review</i>	+	-	-	-
Gjakova	+	+	+	-	-
Rahovec	+	+	-	-	+
Skenderaj	-	-	-	-	-
Kaçanik	-	+	-	-	-
Dragash	-	+	+	-	-
Klina	-	-	-	-	-
Gjilan	+	-	-	-	-
Fushe Kosova	<i>Not reported</i>				
Vushtrri	-	+	-	-	-
Peja	+	+	-	-	-

Podujeva	-	+	-	-	-
Junik	+	-	-	-	+
Kamenica	<i>Not reported</i>				
Istog	-	+	-	-	-
Malisheva	-	-	-	-	-
Lipjan	-	+	-	-	+
Suhareka	<i>Not reported</i>				
Ferizaj	-	+	-	-	-
Year	+	+	+	-	+
Mamusha	+	+	-	-	-
Zvečan	<i>Not reported</i>				
Leposaviç	<i>Not reported</i>				
Graçanica	-	-	-	-	+
Ranillug	<i>Not reported</i>				
Partesh	<i>Not reported</i>				
Kllokot	-	+	-	-	-
Zubin Potok	<i>Not reported</i>				
Shterpce	<i>Not reported</i>				
North Mitrovica	-	-	-	-	+
Novoberde	-	+	-	-	-

7.2. Inspection and control of implementation of the law

In the course of the implementation of environmental legislation in the area of environment, water, nature, spatial planning and construction at the central level the Inspectorate of Environment, Waters, Nature, Spatial Planning and Construction/Ministry of Environment, Spatial Planning and Infrastructure carried out ex officio in 2021: 578 inspection supervisions with minutes, 142 assistances in inspections, 218 decisions, 8 mandatory fines, 228 administrative fines, 3 legal actions to courts, 36 enforcement procedures and 20 recommendations, orders and warnings. Compared to 2019 and 2020, it is observed that the Central Inspectorate in 2021 was more concentrated on the imposition of mandatory and administrative fines. The enforcement procedure represents a novelty in this regard. Whereas more decisions have been made for the implementation of environmental legislation. Specific details are presented in Table 38.

Table 38: Inspections and other legal procedures 2021

Type of inspection activity in the area of environmental protection	Number of activities 2019	Number of activities 2020	Number of activities 2021
Inspection supervision with minutes	385	81	291
Assistance in inspections	-	183	-

Decisions	63	39	95
Mandatory fines	58	3	3
Administrative fines	-	6	101
Recommendations, orders and warnings	208	35	-
Legal actions to the Court	56	6	2
Type of inspection activity in the area of water protection			
Inspection supervision with minutes	272	95	172
Assistance in inspections	-	41	-
Decisions	50	10	88
Mandatory fines	72	7	1
Administrative fines	-	59	117
Recommendations, orders and warnings	162	18	-
Legal actions to the Court	53	19	-
Complaints and claims	-	24	-
Enforcement procedure	-	-	36
Type of inspection activity in the area of nature protection			
Inspection supervision with minutes	34	25	17
Assistance in inspections	-	142	142
Mandatory fines	20	-	4
Administrative fines	-	-	2
Decisions	1	7	7
Legal actions to the Court	2	-	-
Complaints and claims	-	20	-
Recommendations, orders and warnings	12	-	20
Type of inspection activity in the area of spatial planning and protection			
Inspection supervision with minutes	139	74	98
Assistance in inspections	-	65	-
Decisions	13	15	28
Mandatory fines	18	1	-
Administrative fines	150	2	8
Recommendations, orders and warnings	130	33	-
Legal actions to the Court	5	5	1

At the local level, out of the 38 municipalities of the Republic of Kosovo, in terms of the implementation of environmental legislation in the area of environment, water, nature, spatial planning and construction, 25 municipalities have reported, while 13 municipalities failed to do so. Reports have not been received by the municipalities of Prishtina, Zveçan, Fushë Kosova, Leposaviq, Zubin Potok, Theranda, Shterpce, Ranillug, Prizren, Partesh, South Mitrovica and Kamenica.

In 2021, at the local level, 2,056 inspections were carried out with minutes, 1,072 assistance in inspections, 153 decisions, 466 mandatory fines, 15 administrative fines, 478 recommendations, orders and warnings, as well as 44 legal actions to court according to Table 39.

Table 39: Inspections and other legal procedures at the local level 2021

Inspection activities planned for 2021	Inspection supervision with minutes	Assistance in inspections	Decisions	Mandatory fines	Administrative fines	Recommendations, orders and warnings	Legal actions to the Court
Junik	42	85	-	-	-	10	-
Obiliq	26	8	9	9	6	15	-
Rahovec	93	-	32	6	-	2	19
Podujeva	375	375	-	27	-	-	-
Shtime	40	-	4	4	-	-	-
Gjakova	222	-	3	32	-	48	-
Deçan	1	1	-	2	-	1	-
Dragash	48	-	8	-	-	48	-
Istog	51	8	8	4	2	9	-
Novoberde	22	40	-	-	-	90	1
Vushtrri	51	25	15	5	-	10	3
Drenas	129	129	-	11	-	118	-
Gjilan	78	105	1	16	-	30	8
Graçanica	43	-	-	-	7	3	-
Hani i Elezit	37	2	-	-	-	3	-
Kaçanik	25	5	44	44	-	26	2
Lipjan	153	-	3	3	-	-	8
Malisheva	156	8	-	10	-	22	3
Peja	152	-	26	47	-	23	-
Skenderaj	-	-	-	11	-	-	-
Klina	276	276	-	23	-	-	-
Klllokot	-	-	-	-	-	-	-
Mamusha	-	-	-	-	-	-	-
Ferizaj	36	5	-	212	-	20	-
North Mitrovica	The municipality has neither an inspection directorate nor an expert employed as an environmental inspector						

7.3. Permit issuance

According to data from MEE, during 2020, activities were carried out in all relevant areas. Based on authorizations under the environmental legislation, 9 environmental authorizations, 82 environmental consents for EIA, 82 environmental permits, 6 integrated environmental permits, 3 permits for conducting scientific research in nature, 132 licenses and permits in the area of waste, 154 water permits and consents, and other acts in the area of water. More detailed data on permit issuance activities in the environment, waste, nature and water sectors are presented in the following table.

Table 40: Activities related to permit issuance in 2021

Activities for environmental consent	
Applications for environmental consent for EIA received	149
Applications for environmental consent for EIA approved	82
Applications for environmental consent for EIA rejected	4
Completion of the procedure	17
Transfer of environmental consent for EIA	20
Suspension of procedure	4
Accepted	14
Under review	8
Applications for environmental consent for EIA received and approved	10
Activities for environmental permit	
Applications for environmental permits received	261
Applications for environmental permit approved	82
Applications for environmental permits rejected	98
Under review	81
Activities for integrated environmental permit	
Applications for integrated environmental permit received	24
Applications for integrated environmental permit approved	6
Applications for integrated environmental permit rejected	4
Under review	14
Activities for environmental authorization	
Applications for environmental authorization received	13
Accepted	9
Rejected cases	4
Activities of permit and license issuance in the area of nature	
Permit for conducting scientific research in nature 1	3
Activities of permit issuance in the area of waste	
Applications for waste management license	16
Waste management licenses issued	12
Applications for waste management license rejected	3
Waste management license applications under review	1
Applications for permit for import of biocidal products	54
Permits for import of biocidal products issued	53
Applications for permit for import of biocidal products rejected	1
Applications for permit for import of plastic bags	15
Permits for import of plastic bags issued	14
Applications for permit for import of plastic bags rejected	1
Applications for waste import permit	6
Waste import permits issued	3
Waste import permits rejected	2
Waste transit permit	2
Applications for waste transit permit	47
Waste transit permits issued	44
Applications for waste transit permit rejected	3
Applications for permit for import of chemicals	6
Permits for import of chemicals issued	5

Applications for permit for import of chemicals rejected	1
Activities of license issue in the area water	
Water conditions	0
Water consents	14
Water permits (utilization 74 – discharge 66)	140
Extensions of water permits	10

7.4. Institutional developments and setbacks

There was no significant development within the process of strengthening, affirming and building the technical capacities of environmental institutions in 2021. In the course of these actions, the changes in the organizational structure of the Government of the Republic of Kosovo should be mentioned, where the “Ministry of Environment and Spatial Planning” first merged with the “Ministry of Economy” and then with the “Ministry of Infrastructure”.

Among the other activities related to institutional development, the following ones should be pointed out:

- Implementation of several important donor-supported projects within environmental institutions. The Water Resources Integrated Management Project supported by the Swiss Government, which also included aspects of professional and organizational capacity building is to be mentioned as an example;
- Increasing the representation and membership of Kosovo’s environmental institutions in regional organizations, initiatives and projects. The performance of the Kosovo Environmental Protection Agency in the flow of data in the ‘European Environment Information and Observation Network (EIONET)’ is to be mentioned as an example, with 100% of the reporting obligations being fulfilled in 2021 (Figure 35);
- Advancing the municipal waste assessment process through developing indicators on performance reporting and monitoring of Kosovo's municipalities in the waste sector. A web application has been recently developed enabling online reporting;
- Capacity building of environmental institutions through training and programs at the national, regional and international levels;
- Enhancing public transparency and cooperation with NGOs and environmentalists, by increasing the number of responses to requests for access to public documents and information;
- The re-establishment of the “National Climate Change Council” by the decision of the Government of the Republic of Kosovo;
- The commencement of the process for the reorganization of environmental institutions and the definition of institutional responsibilities;
- Analysis of the needs and requirements for institutional development in some institutions, as is the case for the development of the strategic document for the institutional development of the Hydrometeorological Institute.

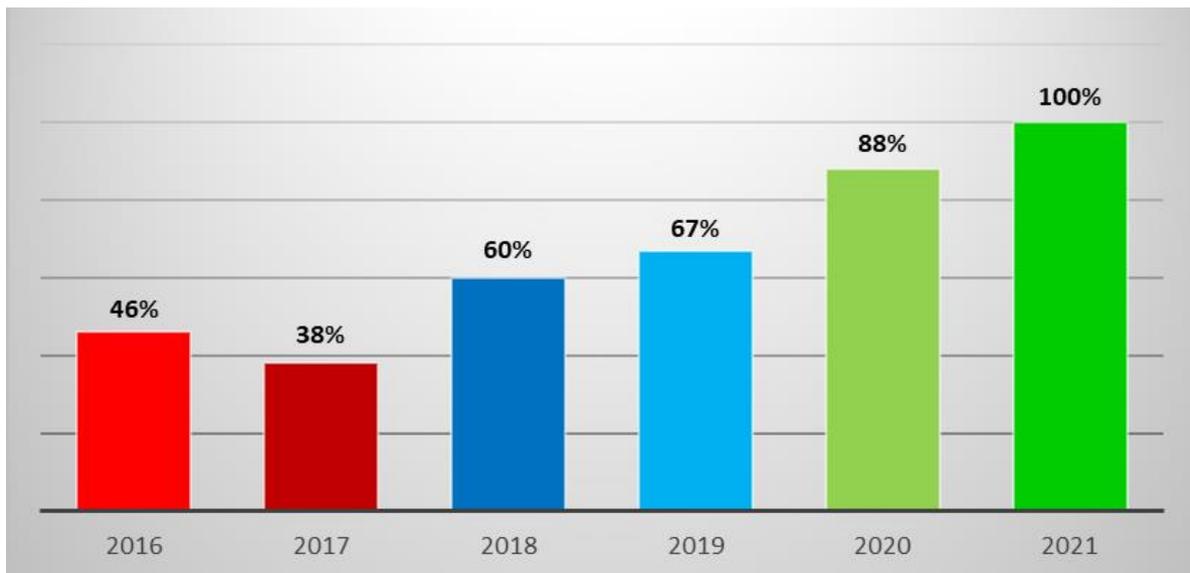


Figure 35: Performance of KEPA in 2016-2021 within EIONET³⁰

The following setbacks and obstacles in the strengthening of environmental institutions during this period have been pointed out:

- Lack of an underground water monitoring network as well as lack of monitoring of biological/ecological aspects of surface water;
- Lack of a special climate change sector within MESP;
- Lack of a special central-level institution for monitoring chemicals;
- Removal of trained and more experienced staff from the responsible institutions of the environmental sector.
- Limited capacities of municipalities in the environmental sector, with special emphasis on the small number of inspectors;
- The small number of environmental inspectors at the central level, the lack of coordination of environmental inspectors at the central and local levels and the lack of coordination of environmental inspectors with the ICMM inspectorate;
- The small number of officials in some KEPA directorates and sectors, such as: 'Nature Protection Institute', the 'Directorate for the Administration of "Sharri" and "Bjeshkët e Nemuna" National Parks, the 'Directorate for the Administration of Natural Monuments of Special Importance' and in the reporting and information sector;
- Non-certification of officials (nature guards) and the limited number of professional staff (nature supervisors) in the 'Directorates for the Administration of National Parks;' as well as the limited number of regular staff;
- Non-functioning of the 'Environmental Advisory Board'. The Board is still nonfunctional and there are no initiatives for its establishment even though it is foreseen according to the provisions of the Law on Environmental Protection;
- Failure to operationalize the 'Ecofund' or a special environmental program. The revenues collected from environmental protection are allocated to the Kosovo budget, but they are not used for environmental projects;

³⁰ <https://www.eionet.europa.eu/dataflows/2021/>

- Failure to fully implement Regulation (GRK) No. 05/2017 on Internal Organization and Systematization of Jobs in the Ministry of Environment and Spatial Planning;
- Lack of coordination among relevant institutions in proceeding with and approving the Spatial Plan for 'Bjeshkët e Nemuna' National Park;
- Very low level of implementation of the Law on Strategic Environmental Assessment nationwide, during the process of drafting strategies, plans and programs expected to have environmental impacts.

7.5. Investments in environmental protection

Environmental protection is an important factor that directly affects our well-being. Therefore, the increase in the budget by the Kosovo Government for the environmental protection sector is a factor showing the commitment to improving the environmental situation.

In 2020, the former Ministry of Environment and Spatial Planning merged with the Ministry of Economic Development', and they operated as a joint Ministry as the Ministry of Economy and Environment, while in 2021 the Ministry of Environment and Spatial Planning merged with the Ministry of Infrastructure. This means that the budget for this ministry was shared.

The Ministry of Environment, Spatial Planning and Infrastructure spent €124,975,779.01 in 2021 in investments in new and existing projects, based on the Medium-Term Expenditure Framework with the source of funding from the Kosovo Budget.

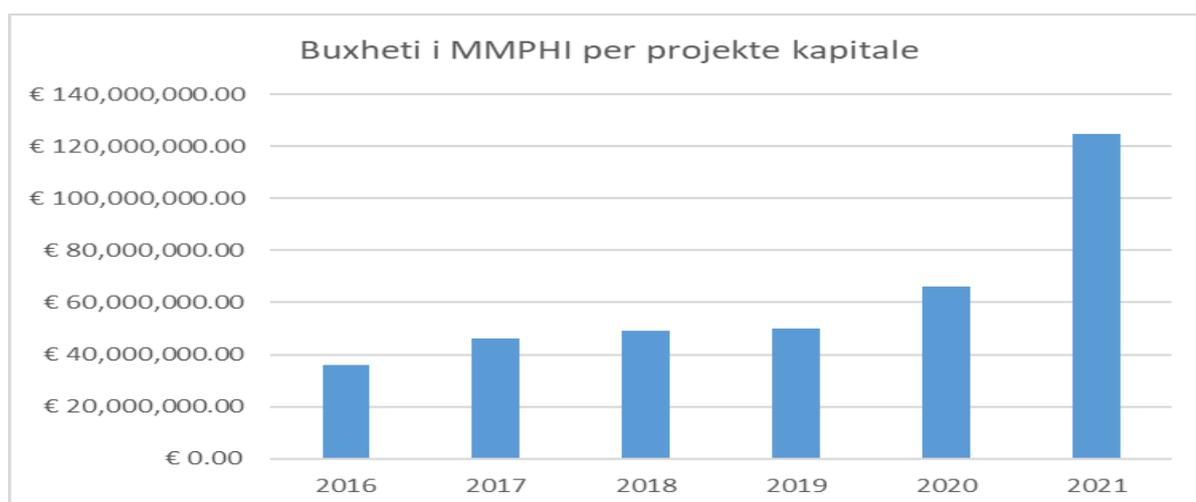


Figure 36: MESPI budget for capital projects 2016-2021

The environmental projects supported by the MESPI budget are mainly projects aimed at the regulation and cleaning of riverbeds, the erection of green spaces and recreational parks, the construction of bridges, overpasses and underpasses, the construction of water supply systems, the construction and expansion of sewerage networks, construction of plants, sanitary landfills, etc. All these projects have a direct impact on improving the state of the environment and public health. Most of these projects are priority capital projects and are included in the National Development Strategy (NDS).

Part of the environmental projects are also projects funded by the Kosovo budget through MESPI and are implemented by the municipalities through the relevant memorandums. Most of them are ongoing projects from previous years. Within these projects, those focused on improving the condition of rivers, drinking water supply, and the regulation of green spaces are pointed out. A list of some of these projects is presented in Table 41.

Table 41: Some of the environmental projects in the Kosovo municipalities 2021

No.	Municipality	Name of project	Expenditures 2021
1	Vushtrri	Expansion of the water supply network - Vushtrri	375,000.68 €
2	Vushtrri	Regulation of the Sitnica riverbed in Vushtrri	291,790.00 €
3	Gjakova	Wastewater plant construction in Gjakova	200,000.00 €
4	Dragash	Requalification of public spaces – square and sidewalks in Dragash	134,810.00 €
5	Vitia	Renovation and construction of protective infrastructure along the Morava e Binça river	388,793.02 €
6	Kamenica	The dam project in Hid. Nd.Hidro.Kike - Kremenata, municipality of Kamenica	107,520.00 €
7	Peja	Water supply for the villages of Lug i Berani - Peja	120,000.00 €
8	Mitrovica	Regulation of the Sitnica riverbed in Mitrovica	100,000.00 €
9	Skenderaj	Water supply Shipol-Brus Mitrovica	195,900.00 €

Donor support has not been lacking even in 2021, where some new projects have started to be implemented and at the same time projects from previous years have continued to be implemented. The following table presents data on some of the largest donor-supported projects in the water and environment sector.

Table 42: Some of the donor-supported projects in the environment and water sector 2021

Name of project	Donor	Estimated value	Implementation period
Improving the environmental performance of the Thermal Power Plant "Kosova B"	EU-IPA	76.400.000.00 €	2019-2022
Kosovo Environmental Program	SIDA-Swedish Government	6.810.000.00 €	2016 – 2021
Project "Performance grant for a clean environment"	EU, GIZ & KB	3,500,000.00 € EU - GIZ 3.500.000.00 € KB	2015-2021
"Capacity Development Project for Air Pollution Control in Kosovo" Phase 1	JICA-Japanese Government	4.000.000.00 \$	2017 – 2021
"Capacity Development Project for Air Pollution Control in Kosovo" Phase 2	JICA-Japanese Government	About 3,000,000.00 €	2021 – 2026
Japanese Grant Aid for the Economic and Social Development – Phase 1	JICA-Japanese Government	250,000,000.00 JPY (Japanese Yen)	2018-2021
Japanese Grant Aid for the Economic and Social Development – Phase 2	JICA-Japanese Government	250,000,000.00 JPY (Japanese Yen)	2020-2023
Environmental Data Collection (MCC Threshold Program)	MCC - USA	3.000.000.00 \$	2017-2021
Investment in efficient energy in the household sector (Threshold MCC Program)	MCC - USA	20.700.000.00 €	2017-2021
Investment in the central heating system (Threshold MCC Program)	MCC - USA	10.900.000.00 €	2017-2021
Revision of the Kosovo Waste Management Strategy 2013-2021 and the drafting of the Waste Management Plan	GIZ Gmb-German Government	200.000.00 €	2019-2021
Strengthening Spatial Planning and Land Management	GIZ Gmb-German Government	2.000.000.00 € Phase 1 2.500.000.00 € Phase 2	2017-2021
Capacity Development Project for Digital Topographic Mapping	JICA-Japanese Government	400.000.00	2019-2021
Preliminary Flood Risk Assessment for the Ibri, Lepenci and Plava River Basins of Kosovo	EU-WBIF	701.072.00 €	2017-2021
Construction of the urban water treatment plant for Southwest Kosovo-Gjakova	SDC, KFW, KB	SDC- 7,600,000.00 € KFW- 8.000.000.00 € Municipality of Gjakova - 6,800,000.00 €	2019-2022
Construction of the urban water treatment plant for Southwest Kosovo - Peja	KFW, KB	KFW - 8.000.000.00 € KB - 3,800,000.00 €	2019-2022

Construction of the urban water treatment plant for Southwest Kosovo - Prizren	KFW KB	KFW- 12.000.000.00 € Municipality of Prizren - 3.500.000.00 € KB - 5,000,000.00 €	2017-2021
Construction of the urban water treatment plant for Prishtina	French Government KB	French Government (loan) - 66,000,000.00 € KB- 20,000,000.00 €	2018-2022
Sustainable development of waste management - Peja Landfill	European Commission - IPA	10.900.000.00 €- EU 1.100.000.00 €- KB	2019-2021
Integrated Water Resources Management in Kosovo (IWRM-K)	SDC-Swiss Government	24,000,000 €	2020-2024
Drin Dialogue - Enabling cross-border cooperation and integrated management of water resources in the extended basin of the Drin River	GEF, GWP- Med	1.000.000.00 \$	2016-2021
Capacity building for the use of environmental data. Cooperation project between KEPA and the Swedish Environmental Protection Agency	SIDA	2.262.400.00 SEK (Swedish Krona)	2020-2023
Climate Change Adaptation through Transboundary Flood Risk Management in the Western Balkans (CCA WB II)	(GIZ) GmbH	Joint regional project budget	2012-2021
Participation in the work and program of the European Environment Agency (Regional Project)	EU-IPA	EU IPA - Multi- beneficiary IPA fund 2.480.202.00 €	2018-2022
Nature-based Solutions for Resilient Communities in the Western Balkans	AIDS/IUCN	EU IPA - Multi- beneficiary IPA fund	2019-2022
Environment Partnership Programme for Accession (EPPA)	EU-IPA	EU IPA - Multi- beneficiary IPA fund	2020-2022
Transition towards lower emissions and climate-resilient economy in the Western Balkans (TRATOLOW)	EU-IPA	EU IPA - Multi- beneficiary IPA fund	2021-2022
Enhancement of Pollutant Release and Transfer Registers (PRTRs) in the Western Balkan countries and Moldova	German Government	355.301.00 EUR	2021-2023

8. Recommendations

Air

- Implement objectives and projects of the Air Quality Strategy and Action Plan, approved by the Government of Kosovo and the Assembly of Kosovo;
- Increase efficiency of the implementation of environmental legislation through complementary mechanisms and instruments;
- Improve cooperation between monitoring institutions and operators, particularly in the process of information flow, processing and reporting and more efficient information to the public on air quality;
- Develop favourable policies for the use of fuels that have lower emissions into the environment and for the application of clean technologies in production processes;
- Favour the use of alternative transport that has lower emissions into the air and apply the time limit for the use of obsolete vehicles and those without catalytic converters;
- Implement bylaws on permitted air emission rates from mobile and stationary sources;
- Promote and implement clean technologies in industrial processes, in order to reduce air emissions;
- Increase the energy efficiency of buildings and increase green spaces.

Water supply

- Operationalize the underground water monitoring network and conduct regular monitoring of the undergroundwater situation;
- To monitor the biological parameters of surface waters to determine the quality index of surface waters;
- Continue investments in the establishment of water infrastructure with special emphasis on the construction of wastewater treatment plants.
- Address priority issues related to adaptation to climate change in the water sector,
- Build mechanisms and instruments that help implement the strategic objectives and projects provided for under the National Water Strategy;
- Draft Management Plans for water basins and monitor their implementation.

Land/soil

- Draft a program for permanent monitoring of agricultural and industrial lands;
- Draft more favourable policies for sustainable development and land management;
- Strengthen the implementation of the legal and programmatic framework for the sector of land protection from pollution and from changing its destination;
- Draft programs and projects for rehabilitation of lands identified as environmental hotspots;
- Monitor the use of pesticides and fertilizers on agricultural lands.

Protected areas and biodiversity

- Continue research, identification and monitoring of nature areas and inventory of plant and animal species and natural habitats;
- Establish management bodies for protected areas of special interest;
- Take measures for the protection of endangered species of fauna according to the recommendations and findings of the Kosovo Fauna Book;
- Carry out continuous monitoring of the condition of rare and endangered plant and animal species;
- Protect habitats of rare and endangered species as well as prepare professional justifications for the declaration of protected areas of birds and habitats according to the ecological network Nature 2000;
- Approval of the Spatial Plan for the National Park “Bjeshkët e Nemuna”, the Management Plan for the National Park “Bjeshkët e Nemuna” and the Regulatory Plans;
- Ensure that all activities that are carried out within the territory of protected areas are in accordance with the Law on Nature Protection (No. 03/L-233);
- MESPI Inspectorate must carry out a continuous inspection in protected areas;
- Increase the number of staff in the nature protection and biodiversity sector.

Waste

- Improve the management of Kosovo sanitary landfills, and implement monitoring of environmental discharges from landfills;
- Increase municipal waste collection service throughout the territory of Kosovo;
- Kosovo Municipalities must continuously be committed to the elimination of illegal landfills in their territory;
- Municipalities must designate locations for the treatment and disposal of construction and demolition waste;

- Develop programs and systems nationwide for waste separation at source and recycling.

Public health

- Conduct additional research examining short-term exposure to air pollution, focusing on exposure to PM_{2.5}, SO₂ and NO₂ during the winter period;
- Improve the urban environment to reduce negative environmental impacts;
- Invest in adding green areas in urban areas, in order to improve the state of the environment and public health;
- Invest in the improvement of drinking water quality and its regular monitoring;
- Invest in the improvement of water quality provided by Regional Water Companies;
- Increase the percentage of coverage of the population with the water supply service and the wastewater (sewerage) discharge service;
- Carry out research on the impact of the state of the environment on public health;
- Reduce urban acoustic pollution, installation of barriers and creation of quiet areas;
- Maintaining hygiene and sanitation in all public and private facilities;
- Improve the health information system with validated data;
- Improve cooperation between researchers working on Health Impact Assessment studies due to air pollution at the national level and at least at the local level.

Endangered areas

- Develop specific policies and strategies for the administration of environmental hotspots;
- Develop plans, programs and projects with the primary objective of rehabilitating hotspots, especially landfills with heavy metals, which release high toxicity into the environment and negatively affect the ecological balance and endanger the existence of the living world;
- Raise citizen awareness of environmental hotspots and the hazard coming from them;
- Deepen cooperation between governmental and non-governmental institutions, local and international universities, and local and international environmental experts, to solve the problem of environmental hotspots.

General

- Re-submit for approval to the Government of Kosovo and the Assembly of Kosovo, the State Strategy and Action Plan for Environmental Protection and Sustainable Development, in accordance with the provisions of the Law on Environmental Protection;
- Increase the budget of the Government of Kosovo for the environmental sector and especially for environmental capital projects;
- Establish an ecofund (environmental fund) and use its funds for subsidies and programs to improve the state of the environment;
- Strengthen the implementation of environmental principles and in particular the principles “polluter pays”, “user pays” and “principle of encouraging measures” for legal and natural persons who choose the best possible techniques and clean production;
- Strengthen the implementation of horizontal legislation with special emphasis on legal requirements from the Law on Environmental Impact Assessment and the Law on Strategic Environmental Assessment.

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30. KEPA Annual Report on air emissions according to CLRTAP requirements reported to the European Environment Agency(<https://cdr.eionet.europa.eu/xk/un/clrtap/inventories/envyfo8xa/>);
31. Annual Report on the State of the Environment for 2021
32. Administrative Instruction No. 02/2011 on Air Quality Standards;
33. Conservation assessment of endemic plants from Kosovo, Millaku et al., Hacquetia.

10. List of abbreviations, figures and tables

10.1. List of abbreviations

AKS1	Kosovo agglomeration 1
KEPA	Kosovo Environmental Protection Agency
AQI	Air Quality Index
RBRA	River Basin Regulatory Authority
WSRA	Water Services Regulatory Authority
CSA	Kosovo Agency of Statistics.
KFA	Kosovo Forestry Agency
WB	World Bank
EU	European Union
EBRD	European Bank for Reconstruction and Development
CLC	Coverage of Land according to the CORINE Methodology
CPD	Coal Production Department
ECRAN	Environment and Climate Regional Accession Network
EFAS	European Flood Awareness System
GHG	Greenhouse gases
GIZ	German Technical Cooperation
KHMI	Kosovo Hydrometeorological Institute
KINP	Kosovo Institute for Nature Protection
KNIPH	Kosovo National Institute of Public Health
IPA	EU Instrument for Pre-accession Assistance
IPCC	Integrated Environmental Permit
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
CoE	Council of Europe.
KEK	Kosovo Energy Corporation
KLMC	Kosovo Landfill Management Company
ICMM	Independent Commission for Mines and Minerals in Kosovo
RWMC	Regional Waste Management Company
RWC	Regional Water Company
KTOE	Kilo Ton Oil Equivalent.
MAFRD	Ministry of Agriculture, Forestry and Rural Development
MCC	Millennium Corporation Challenges
MF	Ministry of Finance
MEE	Ministry of Economy and Environment
MEI	Ministry of European Integration
MESPI	Ministry of Environment and Spatial Planning
NM	Natural Monument
NMSI	Natural Monument of Special Importance
MTI	Ministry of Trade and Industry
TSM	Total Suspended Matter.
MED	Ministry of Economic Development
WHO	World Health Organization

EO	Economic Operator
NGO	Non-Governmental Organization
NP	National Park
TD	Total Dust
KEAP	Kosovo Environmental Action Plan.
MWMP	Municipal Waste Management Plan
LEAP	Local Environmental Action Plan
KEP	Kosovo Environmental Program
UCCCK	University Clinical Center of Kosovo
FMC	Family Medicine Centre
NR	Natural Reserves
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
SIDA	Swedish International Development Agency
CCS	Climate Change Strategy
TPP	Thermal Power Plant
TPPA	Thermal Power Plant A
TPPB	Thermal Power Plant B
AI	Administrative Instruction
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
MAV	Maximum Allowed Values.
EIA	Environmental Impact Assessment
ZKS1	Kosovo Monitoring Area 1.
ERO	Energy Regulatory Office

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³¹ KEPA 2021, *Environmental Indicators Report 2020*

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11. Annexes

Annex 1: Air quality monitoring stations - AKS 1 Agglomeration and ZKS 1 Zone

Parameter	Limit values	Measuring unit	Limit value $\mu\text{g}/\text{m}^3$	Allowed exceedances within the year
NO ₂	Limit value for 1 hour, for the protection of human health	$\mu\text{g}/\text{m}^3$	200	18
	Annual limit value, for the protection of human health	$\mu\text{g}/\text{m}^3$	40	Not foreseen
	Annual limit value, for the protection of vegetation	$\mu\text{g}/\text{m}^3$	30	Not foreseen
SO ₂	Limit value for 1 hour, for the protection of human health	$\mu\text{g}/\text{m}^3$	350	24
	Limit value for 24 hours, for the protection of human health	$\mu\text{g}/\text{m}^3$	125	3
CO	Limit value for the daily average of of maximum 8 hours, for the protection of human health	$\mu\text{g}/\text{m}^3$	10	Not foreseen
PM10	Limit value for 24 hour, for the protection of human health	$\mu\text{g}/\text{m}^3$	50	35
	Annual limit value, for the protection of human health	$\mu\text{g}/\text{m}^3$	40	Not foreseen
PM2.5	Annual limit value, for the protection of human health	$\mu\text{g}/\text{m}^3$	25	Not foreseen
O ₃	Long-term objective, for the protection of human health	$\mu\text{g}/\text{m}^3$	120	Not foreseen

Annex 2: Air quality standards according to Administrative Instruction No. 02/2011

Parameter	Limit values	Measuring unit	Limit value (limit) $\mu\text{g}/\text{m}^3$	Allowed exceedances within the year
NO ₂	Limit value for 1 hour, for the protection of human health	$\mu\text{g}/\text{m}^3$	200	18
	Annual limit value, for the protection of human health	$\mu\text{g}/\text{m}^3$	40	Not foreseen
	Annual limit value, for the protection of vegetation	$\mu\text{g}/\text{m}^3$	30	Not foreseen
SO ₂	Limit value for 1 hour, for the protection of human health	$\mu\text{g}/\text{m}^3$	350	24
	Limit value for 24 hours, for the protection of human health	$\mu\text{g}/\text{m}^3$	125	3
CO	Limit value for the daily average of maximum of 8 hours, for the protection of human health	$\mu\text{g}/\text{m}^3$	10	Not foreseen
PM10	Limit value for 24 hours, for the protection of human health	$\mu\text{g}/\text{m}^3$	50	35
	Annual limit value, for the protection of human health	$\mu\text{g}/\text{m}^3$	40	Not foreseen
PM2.5	Annual limit value, for the protection of human health	$\mu\text{g}/\text{m}^3$	25	Not foreseen
O ₃	Long-term objective hours, for the protection of human health	$\mu\text{g}/\text{m}^3$	120	Not foreseen

Annex 3: Physical, chemical parameters and heavy metals monitored by HMIK³²

Indicators	Symbol	Unit	Frequency of measurements/year
PHYSICAL PARAMETERS			
Hour	h	0:00	11
Weather	M	observation	11
Water temperature	Wt	0C	11
Air temperature	At	0C	11
Scent	Sc	Smell	11
Colour	Col	Co/Pt	11
Blur	Bl	NTU	11
Electrical conductivity	χ	μScm^{-1}	11
Water soluble matter	Sol. m	mg/l	11
Concentration of hydrogen ion	pH	0-14	11
CHEMICAL PARAMETERS			
Dissolved oxygen	OT	mg/l O ₂	11
Oxygen saturation	NgO	%	11
Chemical Oxygen Demand	COD	mg/l O ₂	11
Chemical Oxygen Demand with dichromate	COD-Cr	mg/l O ₂	11
Biochemical Oxygen Demand	BOD5	mg/l O ₂	11
Biochemical Oxygen Demand	BOD7	mg/l O ₂	11
Total Organic Carbon	TOC	mg/l C	11
Total Suspended Matter	TSM	mg/l	11
Detergents	DET	mg/l	11
Ion Nitrates	NO ₃ -	mg/l	11
Nitrates Nitrogen	N-NO ₃ -	mg/l N	11
Nitric Ion	NO ₂ -	mg/l	11
Nitrates Nitrogen	N-NO ₂ -	mg/l N	11
Ammonium Ion	NH ₄ ⁺	mg/l	11
Ammonium Nitrogen	N-NH ₄ ⁺	mg/l N	11
Total inorganic nitrogen	TIN	mg/l N	11
Non-ionized ammonium	NH ₃	mg/l	11
Non-ionized ammonium nitrogen	N-NH ₃	mg/l N	11
Total organic + inorganic nitrogen	TN	mg/l N	11
Total organic nitrogen	TON	mg/l N	11
Orthophosphate	PO ₄ ³⁻	mg/l	11
Phosphorus orthophosphate	P - PO ₄ ³⁻	mg/l P	11
Total phosphorus (poly + ortho)	TotP.	mg/l	11
Sulfate Ion	SO ₄ ²⁻	mg/l	11
Total solidity	Ts	0dH	11
Calcium solidity	Cas	mg/l	11

³² Only the parameters highlighted in blue are assessed and presented in this report.

Magnesium solidity	Mgs	mg/l	11
Calcium Ion	Ca+	mg/l	11
Magnesium Ion	Mg+	mg/l	11
P-Alkalinity	Pa	ml 0.1 of HCl	11
M-Alkalinity	Ma	ml 0.1 of HCl	11
Total alkalinity	TA	mmol/l HCl	11
Bicarbonates	HCO ₃ ⁻	mg/l	11
Free chlorine	Cl ₂	mg/l	11
Chlorides	Cl ⁻	mg/l	11
Silicate	SiO ₃ ²⁻	mg/l	11
Silicon in silicate	Si - SiO ₃ ²⁻	mg/l Si	11
Chlorophyll a	Chlorophyll a	µg/l	11
Phenol	C ₆ H ₅ OH	mg/l	11
HEAVY METALS			
Chromium	Cr ³⁺	µg/l	2
Cadmium	Cd ²⁺	µg/l	2
Nickel	Ni ²⁺	µg/l	2
Zinc	Zn ²⁺	µg/l	2
Manganese	Mn ²⁺	µg/l	2
Copper	Cu ²⁺	µg/l	2
Iron	Fe ²⁺	µg/l	2
Lead	Pb ²⁺	µg/l	2

Annex 4: Codes of of physical-chemical monitoring stations of surface waters - rivers

Code	Location	River	Discharge
RV01_011	Radavc	Drini i Bardhë	Mediterranean Sea/Adriatic Sea
RV01_012	Klina	Drini i Bardhë	Mediterranean Sea/Adriatic Sea
RV01_013	Gjonaj	Drini i Bardhë	Mediterranean Sea/Adriatic Sea
RV01_014	Vermicë	Drini i Bardhë	Mediterranean Sea/Adriatic Sea
RV01_021	Istog	Istog	Mediterranean Sea/Adriatic Sea
RV01_022	Zllakuçan	Istog	Mediterranean Sea/Adriatic Sea
RV01_031	Stërnac i ulët	Klina	Mediterranean Sea/Adriatic Sea
RV01_032	Klina	Klina	Mediterranean Sea/Adriatic Sea
RV01_041	Drelaj	Lumbardhi i Pejës	Mediterranean Sea/Adriatic Sea
RV01_042	Peja exit	Lumbardhi i Pejës	Mediterranean Sea/Adriatic Sea
RV01_043	Grabanica	Lumbardhi i Pejës	Mediterranean Sea/Adriatic Sea
RV01_051	Banjë e Malishevës	Mirusha	Mediterranean Sea/Adriatic Sea
RV01_052	Volljaka	Mirusha	Mediterranean Sea/Adriatic Sea
RV01_061	Deçan entry	Lumbardhi i Deçanit	Mediterranean Sea/Adriatic Sea
RV01_062	Kralan	Lumbardhi i Deçanit	Mediterranean Sea/Adriatic Sea
RV01_071	Jasiq	Ereniku	Mediterranean Sea/Adriatic Sea

RV01_072	Ura e Terzive	Ereniku	Mediterranean Sea/Adriatic Sea
RV01_081	Zhdrella	Rimniku	Mediterranean Sea/Adriatic Sea
RV01_082	Xërxa	Rimniku	Mediterranean Sea/Adriatic Sea
RV01_091	Buqalla	Toplluha	Mediterranean Sea/Adriatic Sea
RV01_092	Pirana	Toplluha	Mediterranean Sea/Adriatic Sea
RV01_101	Prevalla	Lumbardhi i Prizrenit	Mediterranean Sea/Adriatic Sea
RV01_102	Vllashnje	Lumbardhi i Prizrenit	Mediterranean Sea/Adriatic Sea
RV02_011	Kushtova	Ibri	Black See
RV02_012	Mitrovica	Ibri	Black See
RV02_013	Kelmend	Ibri	Black See
RV02_021	Bablak	Sitnica	Black See
RV02_022	Lipjan	Sitnica	Black See
RV02_023	Vragoli	Sitnica	Black See
RV02_024	Plemetin	Sitnica	Black See
RV02_025	Nedakovc	Sitnica	Black See
RV02_026	Mitrovica	Sitnica	Black See
RV02_031	Marinca	Llapi	Black See
RV02_032	Podujeva	Llapi	Black See
RV02_033	Milloseva	Llapi	Black See
RV02_041	Bresje	Prishtevka	Black See
RV02_051	Vragoli	Graqanka	Black See
RV02_061	Pjetërshtica	Drenica	Black See
RV02_062	Vragoli	Drenica	Black See
RV02_062B	Drenica	Çikatova e Vjetër	Black See
RV02_071	Devetak	Shtime	Mediterranean Sea/Adriatic Sea
RV02_072	Vojnovc	Shtime	Black See
RV03_011	Korbulliq	Morava e Binçës	Black See
RV03_012	Kllokot	Morava e Binçës	Black See
RV03_013	Ranillug	Morava e Binçës	Black See
RV03_014	Domoroc	Morava e Binçës	Black See
RV03_021	Marec	Kriva reka	Black See
RV03_022	Domoroc	Kriva reka	Black See
RV04_011	Prevallë Subain	Lepenci	Mediterranean Sea/Aegean Sea
RV04_012	Kaçanik	Lepenci	Mediterranean Sea/Aegean Sea
RV04_013	Hani i Elezit	Lepenci	Mediterranean Sea/Aegean Sea
RV04_021	Jezerc	Nerodimja	Mediterranean Sea/Aegean Sea
RV04_022	Bifurkacioni	Nerodimja	Mediterranean Sea/Aegean Sea
RV04_023	Gërlica	Nerodimja	Mediterranean Sea/Aegean Sea
RV04_024	Kaçanik	Nerodimja	Mediterranean Sea/Aegean Sea

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