



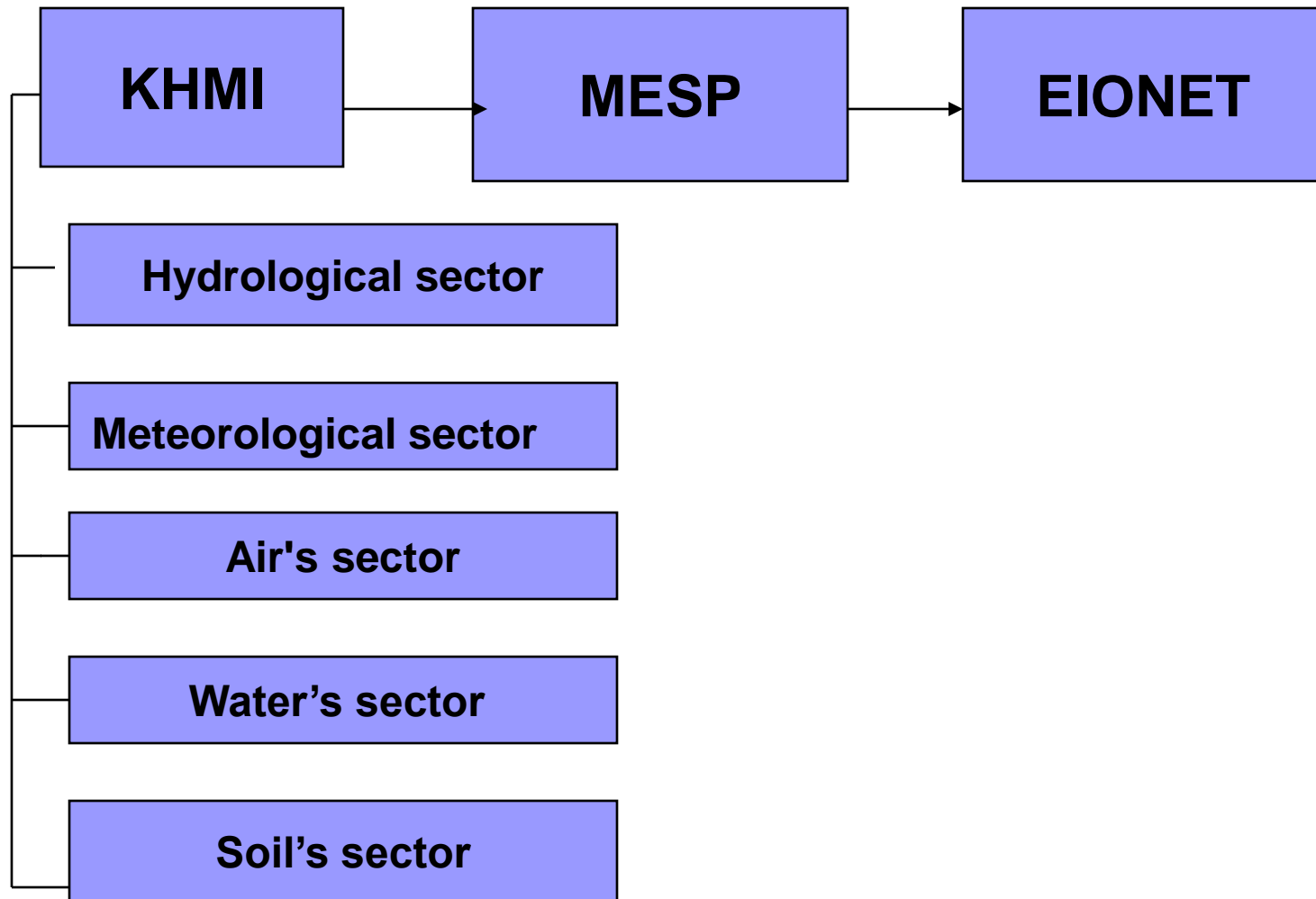
# *Environmental monitoring in Kosovo*

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# *Environmental Monitoring*

According to the law of Hydro meteorological Activity in Kosovo and Law for Environment Protection, Kosovo Hydro Meteorological Institute, is in charge of monitoring natural resources, superficial and underground water and quality of air and soil.

# *Monitoring organization in KHMI*



# *Backgrounds and training*

- Training of sampling, preparing, securing and transport of samplings of soil from contaminated zones in Mitrovica; supported by WHO
- Training for capability for using of equipment: Spektrophotometer SECOMAM prim light, PASTEL UV, fotometer WTW S12, equipment WTW 340 for pH measuring and quantity of wasted oxygenous and termoreaktor WTW 2000; Dusseldorf Germany
- Training in Italy in three different labors- sector of air, water and soil
- Training of two specialists of KHMI for using of XRF, for determining of heavy metals in the soil; organized from WHO
- Training for management of analytical quality

# *Tools, equipment and approaches used for environmental monitoring and field surveillance*

## **Tools**

- KHMI labor is equipped with all equipment which are needed for different laboratory analyses

## **Equipment**

- For outside using: thermometer, pH meter, conductor meter, oxygenous meter, turbidimeter, refractometer, fotometer, WTW and NANOCOROR-VISOCOLOR, spectrophotometer UV and VIS, ion chromatograph, gas chromatograph, spectrophotometer,

# *Thresholds and standards and laboratory capability*

## *Air quality monitoring*

### ■ **Monitoring points**

- 1 monitoring point in KHMI and 18 monitoring points in Mitrovica (WHO project in cooperation with MESP) and
- 5 monitoring points in the industrial area of smelter Fe-Ni and urban area in Glogoc.
- 1 monitoring point in Prishtina

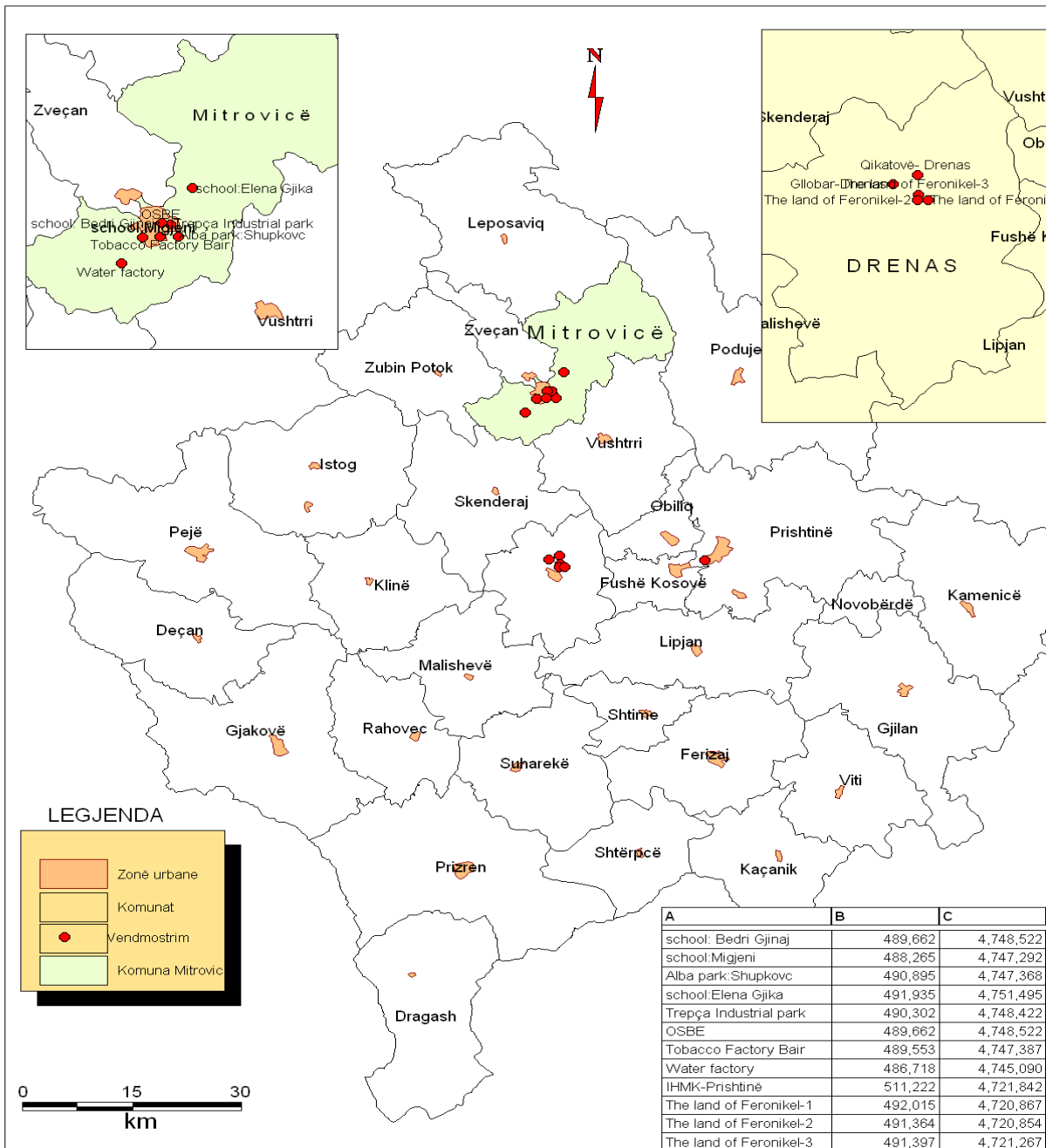
### ■ **Analysed parameters**

- Dust deposition (soluble particles, insoluble and total particles), SO<sub>2</sub>, soot at KHMI
- Lead and heavy metals, dust deposition at 18 monitoring points in Mitrovica
- Lead and heavy metals, dust deposition and ions in aero sediment on 5 monitoring points in Glogoc.

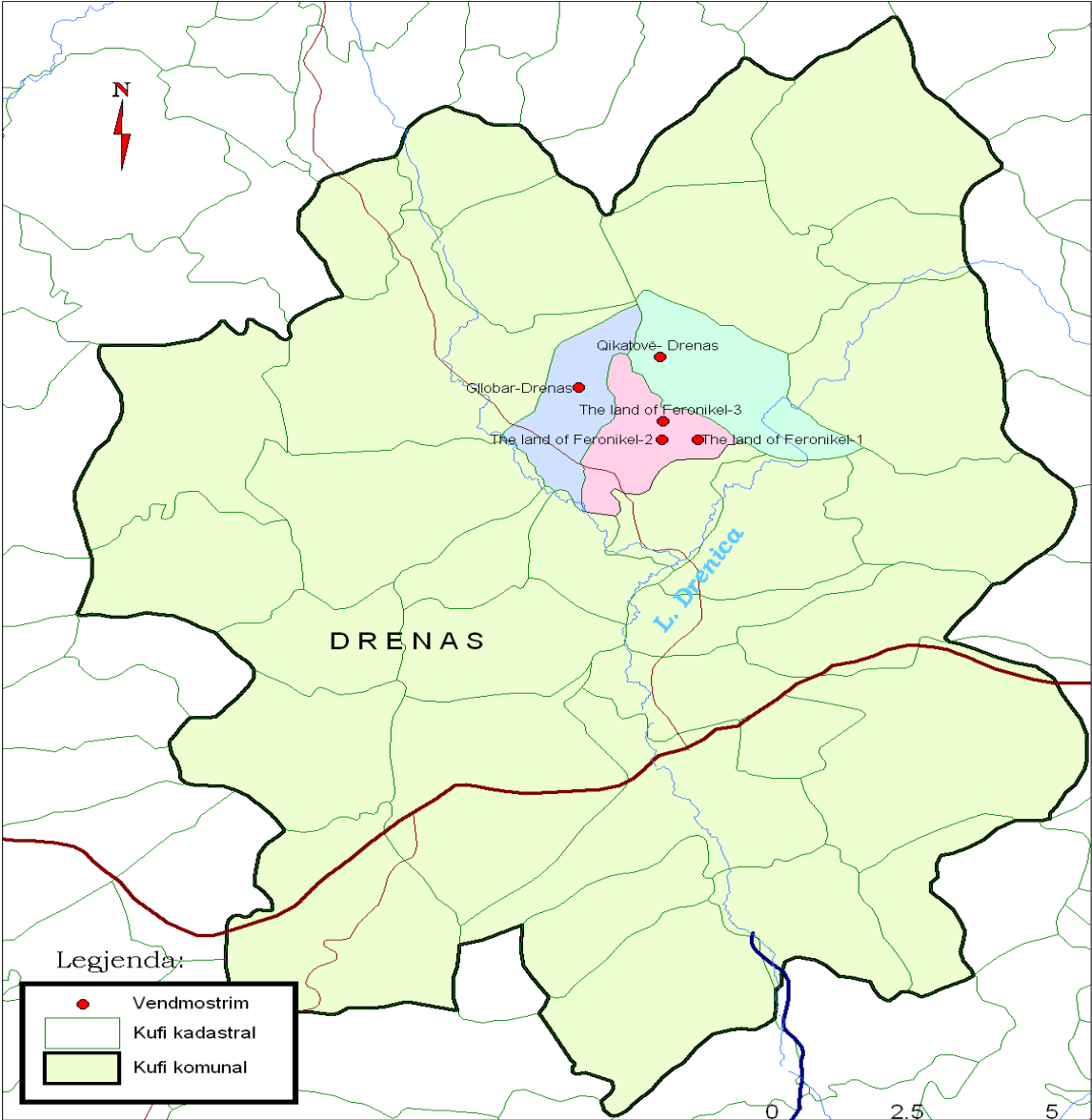
### ■ **Human resource**

- qualified,
- finished training for air monitoring and laboratory analysis for air in Italy
- 1 specialist for air quality, 1 technicians for air analysis
- Data base

# HARTA E PIKAVE MONITORUESE TË IHMK



PIKAT E MONSTRIMIT NË KOMUNËN E DRENASIT



# *Methods, guidelines or approach used in relation to environmental monitoring and field surveillance*

## ▪ **Sampling methods**

- Active method (SO<sub>2</sub>, soot)
- Gravimetric method- passive (dust deposit)

## ■ **Analysis methods**

- Reflectometric- soot
- Peroxide hydrogen method 704 C (Methods of air sampling and analysis), titrimetric- SO<sub>2</sub>
- Gravimetric- 502 (methods of air sampling and analysis)- dust deposition and
- AAS-F (atomic absorption spectrometer with flame and furnace graphite) – heavy metals in aerosol sediment.

# *Soil monitoring*

- **Identification of contaminated lands**

In total 6 regions in whole Kosova: Mitrovica, Obiliqi, Kizhnica, Hani i Elezit, Gjilan, Drenas)

- **Analysed parameters**

- ❖ No laboratory analysis
- ❖ Lack of laboratory equipments.

- **Humans resource**

- ❖ finished training for soil analysis
- ❖ 1 specialist for soil quality,
- ❖ 2 technicians for soil analysis

# *Surface water monitoring*

KHMI of Kosova is responsible for estimation of quality and quantity of surface and underground water and providing users with information's

**Tab 1: List of surveillance of monitoring points for quantity of surface water**

Lumi	Stacioni	Koordinata -X	Koordinata -Y	Master plani për ujëra sipërfaqësor (km <sup>2</sup> )	GIS Sipërfaqja (km <sup>2</sup> )
ISTOG	Berkovë	460855.0	4725267.0	432	438.4
BISTRICA E PEJËS-STATION	Drelaj	429730.0	4727908.0	120	166 (120 km <sup>2</sup> në Kosovë)
BISTRICA E PEJËS	Grykë	438634.0	4723526.0	264	254.2
BISTRICA E DEÇANIT	Deçan	438298.0	4711160.0	114	118.9
ERENIK	Gjakova	452286.0	4690940.0	455	455
ERENIK	Ura e Terezive	459402.4	4689782.0	519	510.5
KLINË	Klinë	465254.0	4718136.0	423	430.1
MIRUSHË	Mirusha			126.5	
MIRUSHË	Kpuzaj	464237.0	4707808.0	336	332.5
MLIKA	Brod	473487.0	4650410.0	75.3	75.3
TOPLLUHA	Piranë	473403.0	4681841.0	512	501
TOPLLUHA	Zoiz		?	?	?
DRINI I BARDHË	Radavc	445847.8	4731044.2		142.6
DRINI I BARDHË	Rakovinë	459980.0	4704400.0	18.5	2347
DRINI I BARDHË	Vërmic	463646.8	4668718.6	4368	4320
DRINI I BARDHË	Gjonaj	471050.0	4678040.0	3904	3904
DRINI I BARDHË	Kpuzë	463233.6	4707269.4	2116	2050
DRINI I BARDHË	Krajk		3391	3391	3391
DRINI I BARDHË	Ura e Fshej	462514.5	4688745.8		?
BISTRICA E PRIZRENIT	Prizren	481305.0	4671363.0	158	167.9
BISTRICA E PRIZRENIT	Vllashnje	471225.0	4671466.0		247.5
PLAVA	Orqushë	466673.1	4655980.7	252	253.4

**Tab. List of basic fisical-chemical parameters**

Parametri	Simbol	Njësia
Ora	h	00:00
Temperatura e ujit	$T_u$	$^{\circ}\text{C}$
Aroma	Ar	nuhatje
Turbullira	Tur	NTU
Peq.Elekrike	$\chi$	$\mu\text{Scm}^{-1}$
Materjet e tretshme në uj	M.tre.	mg/L
Përqendrimi i jonit hidrogjen	pH	0-14
Oksigjeni i tretur	$\text{O}_2$	mg/L
Ngopshmëria me $\text{O}_2$	ng. $\text{O}_2$	%
Shpenzimi biokimi. i oksigj.	SHBO <sub>5</sub>	mg/L
Joni fosfat	$\text{PO}_4^{3-}$	mg/L
Fosfori total	P	mg/L
Joni amonikut	$\text{NH}_4^+$	mg/L
Joni nitrat	$\text{NO}_3^-$	mg/L
Joni nitrit	$\text{NO}_2^-$	mg/L
Joni sulfat	$\text{SO}_4^{2-}$	mg/L
Fortësia e përgjithshme	FP	$\text{d}^{\circ}\text{H}$
Fortësia e Kalciumit	$F_{\text{Ca}}$	$\text{d}^{\circ}\text{H}$
Fortësia e Magnezit	$F_{\text{Mg}}$	$\text{d}^{\circ}\text{H}$
P-alkaliteti	$P_A$	mlHClO.1M
M-alkaliteti	$M_A$	mlHClO.1M
Jonet e Kalciumit	$\text{Ca}^{2+}$	mg/L
Jonet e Magnezit	$\text{Mg}^{2+}$	mg/L
Bikarbinatet	$\text{HCO}_3^-$	mg/L
Materjet totale te suspenduara	TSS	mg/L
Shpenzimi kimik i oksigjenit	COD	mg/L
Karboni total inorganik	TOC	mg/L

06 Maj, Becici

## *List of metals measured in surface water*

Parameter	Simbol	unit
Chrome	Cr <sup>3+</sup> / Cr <sup>6+</sup>	mg/l
Cadmium	Cd <sup>2+</sup>	mg/l
Nickel	Ni <sup>2+</sup>	mg/l
Zink	Zn <sup>2+</sup>	mg/l
Mangan	Mn <sup>2+</sup>	mg/l
Cuprum	Cu <sup>2+</sup>	mg/l
Iron	Fe <sup>2+</sup>	mg/l
Lead	Pb <sup>2+</sup>	mg/l

	Parametrat	Njesia m a t e s e	Metodologjia	Kodet e Metodave standarde
1	Ora	h		
2	Temperatura e ujit	C	Termometer	DIN 38.404-2   C4
3	Turbullira	NTU	Turbiditet	DIN38404-2/C2
4	Perqeshm.elektrike	/cm	Konduktometri	DIN 38404-8/C 8
5	Materjet e tretshme	mg/L	Konduktometri	DIN 38409-1/H1
6	Vlera e pH	0 - 14	Voltometri	DIN 38404 - 5/C5
7	Oksigjeni i tretur	mg/L	Titrimetri(Winkler)	DIN 38409 - 22/G21
8	Ngopshmeria me oksigjen	%	Njehs.matematikor	DIN 38408 - G23
9	Shpenzimi biokimik i oksigjenit	mg/L	Titrimetri(Wnkler)	DIN 38409 -H 51
10	Shpenzimi kimik i oksigjenit	mg/L	Tutrim	DIN 38409-H41-1
11	Nitritet	mg/L	Spektrofotometri	EN 26777(ISO677)
12	Sulfatet	mg/L	Spektrofotometri	DIN 38405 - 5 /D5
13	Fosfori total	mg/L	Spektrofotometri	DIN 38405 - 11 /D 11
14	Fosfatet	mg/L	Spektrofotometri	DIN 38405-D11
15	Amonijaku	mg/L	Spektrofotometri	C.N.R. 4010
16	Materjet e suspenduara	mg/L	Gravimetri	DIN 38409 - 2 /H2
17	Sedimenti pas 2 ore	ml/L	Sipas Inhoff-it	DIN 38409 - 10 / H 10-
18	Fortësia e pergjithshme	d <sup>o</sup> H	titrim	DIN-38 409-H7
19	Fortësia e kalciumit	d <sup>o</sup> H	titrim	DIN-38 409-H7
20	Nitratet	mg/L	Spektrofotometri	DIN 38405-D(ISO 7890-3)
21	Kobaldi	mg/L	AAS	MI/C/10/030
22	Kromi	mg/L	AAS	MI/C/10/018
23	Plumbi	mg/L	AAS	MI/C/10/019
24	Bakri	mg/L	AAS	MI/C/10/022
25	Zingu	mg/L	AAS	MI/C/10/021
26	Nikli	mg/L	AAS	MI/C/10/023

**Tab. Used Standard methods for valuation of environmental parameters**

## *Strengths/ weaknesses in environmental monitoring and field surveillance*

- ✓ Lack of Air quality monitoring System for Kosovo
- ✓ Supplying with equipments
- ✓ For emergency cases
- ✓ Forming of group in emergency cases. Mobile laboratory for this cases



***Needs to continue and improve monitoring and field surveillance in accordance with available resources***

- ◆ Increase laboratory capacities
- ◆ Accreditation and certification of the laboratory
- ◆ Preparing of strategy for Environmental Monitoring where will be determined all laboratory activities
- ◆ Complete human and financials sources and implementation of new concept of surface and underground, water monitoring



**Thank you for your attention**