



Ministria e Mjedisit dhe Planifikimit Hapësinor
Ministry of Environment and Spatial Planning
Ministarstvo Sredine i Prostornog Planiranja



Air pollution from lignite- based electricity generation in Kosovo

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“SPACE TOOLS FOR MONITORING AIR POLLUTION
AND ENERGY USE FOR SUSTAINABLE DEVELOPMENT”

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Background

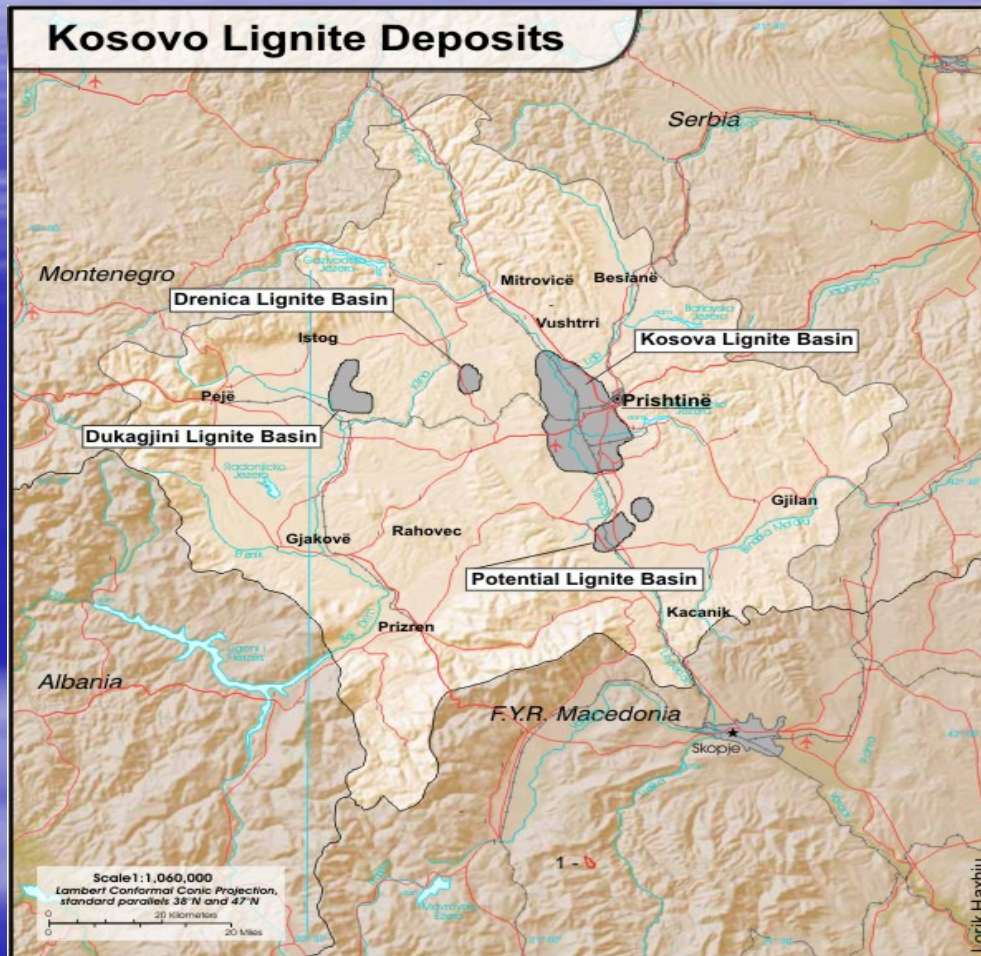
- The environmental status of Kosovo is dominated by a range of issues including polluted air, soil and water and poor infrastructure management generated mostly by the lack of an environmental protection regime in the past.
- The energy sector of Kosovo is an enormous polluter, especially in the wide region of Pristina but also in regional and global level.
- KEK, today faces structural problems and a low efficiency along all stages of value adding.

Current state of affairs in the relevant sector on KEK

The integrated power system consists of two lignite mines Bardh and Mirash, two Thermal Power Plants (TPP) Kosovo A (5 units) and B (2 units) with an overall effective capacity of 645 to 710 MW out of 1513 MW of installed capacity, the transmission and distribution networks, a dispatching centre and supply.

Currently these two lignite mines supply the two TPPs, with about 7 million tons/year of lignite

Lignite reserves



There are two major lignite basins: Kosova lignite basin and Dukagjini lignite basin and also smaller lignite basins like: Drenica, Malishevë, Babush i Muhaxherëve. lignite basin and one potential lignite basin in southern part of Kosovo

Thermal power plants

Table 1. Existing TPPs in Kosovo

TPP – Unit	TPP Unit Capacity (MW)			Fuel Type	Commissioned
	<i>Installed</i>	<i>Net</i>	<i>Net Available</i>		
Kosovo A					
<i>unit A1</i>	65	58	30 - 40	Lignite	1962
<i>unit A2</i>	125	113	0	Lignite	1964
<i>unit A3</i>	200	182	0	Lignite	1970
<i>unit A4</i>	200	182	0	Lignite	1971
<i>unit A5</i>	210	187	95 - 110	Lignite	1975
Kosovo B					
<i>unit B1</i>	339	309	260 - 280	Lignite	1983
<i>unit B2</i>	339	309	260 - 280	Lignite	1984

Source: KEK (as of May 2005)

KEK nowadays has a number of problems resulting from economical and political events in last decade. The main issues are:

- Old plants with exceeded lifetime.
- High commercial and technical losses.
- High operational cost (low production due to old equipment and a large number of outages.
- Lack of financial means for rehabilitation and dilemma which facilities should be rehabilitated, and which one closed down.

Environmental issues of Power Generation

The coal fires and combustion process leads to the generation of emissions to air, water and soil, of which emissions to the atmosphere are considered to be one of the main environment concerns. The most important emissions to air from the combustion of lignite are SO_2 , NO_x , CO_2 , particulate matter, heavy metals.

Environmental issues of Power Generation

Fires due to self combustion of lignite in coal reserves

Main environmental effects of lignite spontaneous combustion are;

- Greenhouse gas emissions(eg.CO₂, CH₄, NO_x etc)
- Emission of toxic gases and their emission in the area such as CO₂, N₂O, SO_x, etc.
- Destabilization of mines slopes

About 2 Mt of coal are likely to be burnt every year.

Power Plant Kosovo A

The problem with dust emissions is serious and apparently cannot be solved without major redesign of the boilers. An assessment of possible reduction in dust emission shows that the A units will not comply with current EU regulations even after recommended actions are taken. Units in Kosovo A are already at the end of their lifespan and further investment in these units may be questionable.

Environmental issues of Power Generation

Power Plant Kosovo B

Considering that the remaining lifetime of B units is quite long, bad operation of existing electrostatic precipitators and relatively low costs of dust control equipment, the rehabilitation of filters is proposed till 2008. The NO_x emission concentrations are in range of 600 - 950 mg/Nm³. From environmental point of view it is proposed to reduce higher B2's NO_x emissions at first.

Ash landfill

The relief of the territory in which stretches KEK and its sterile dumpsites of ashes changed 150ha with around 40 million tons of ashes, became insufferable source of air pollution.

For year 2002 based on the consumptions

- Lignite: 9,022,000 t of which 2,500,000 t was burned in the mines (self-ignited), 11,000 t sold, 100,000 t lost and 6,411,000 t supplied to the power plants for generation of power.
- Fuel oils: 11,300 t
- The useful output was 3,051 GWh to the grid and sale of 11,000 t of lignite. The overall energy efficiency was thus less than 17%.

The environmental impact of the activities in terms of air emissions was:

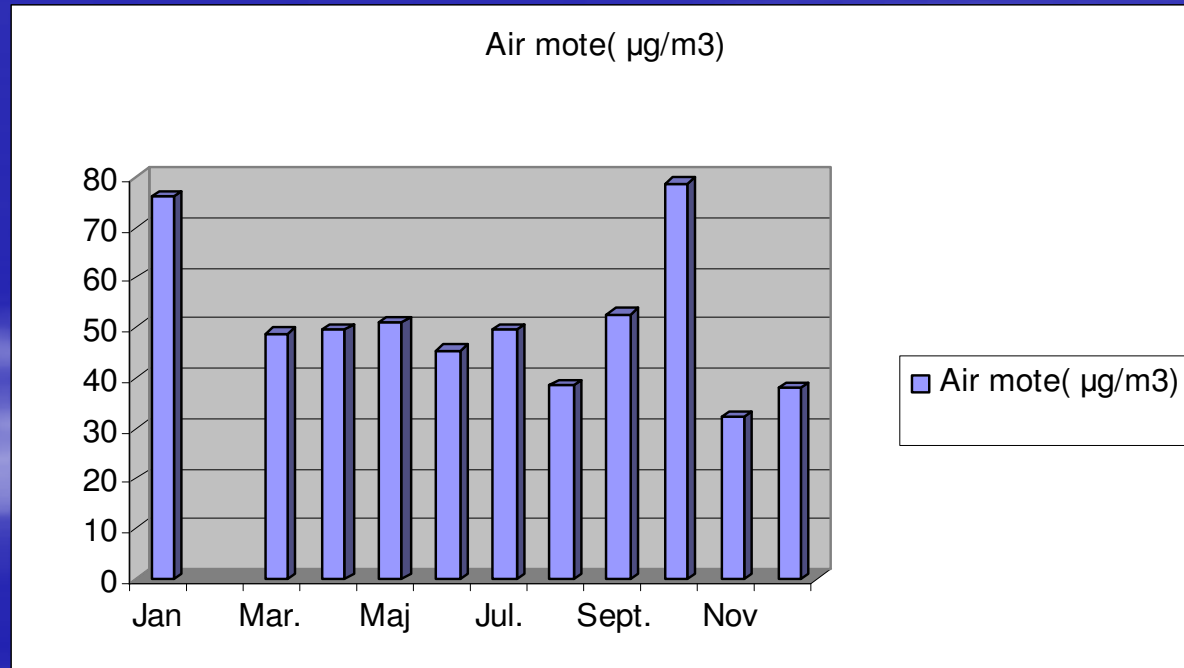
- Greenhouse gasses: 10,797,000 t of CO₂ and 425,000 t of CH₄
- CO emissions: 986,000 t
- Dust emissions: 167,000 t with specific values from 1,881 mg/m³ to 7,523 mg/m³ at Kosovo A and 250 mg/m³ at Kosovo B
- SO₂ emissions: 167,000 t with specific values of 895 mg/m³
- NO_x Emission: 20,000 t with specific values from 358 mg/m³ to 478 mg/m³ at Kosovo A and 735 mg/m³ at Kosovo B.

The worst polluted areas in terms of dust is 0– 3 km SW of the site due to dust from mines and ash disposals. The worst impact from the stacks is between 20 and 40 km SW of the plants. The wind direction is in more than 65% of the time to this direction and only about 18 days Prishtina had been serious effected by the dust.

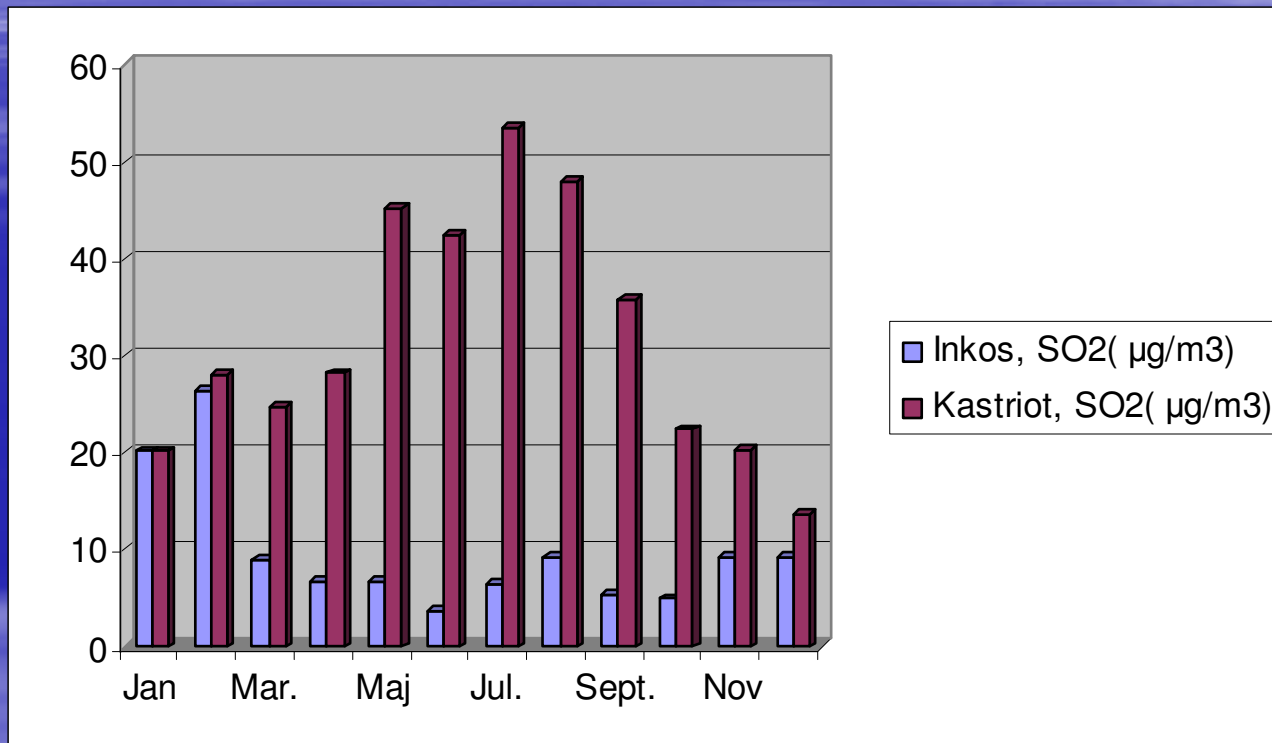
Air quality

- Measurement of emission concentration includes measurement of air mote, SO_2 , soot, and sediment

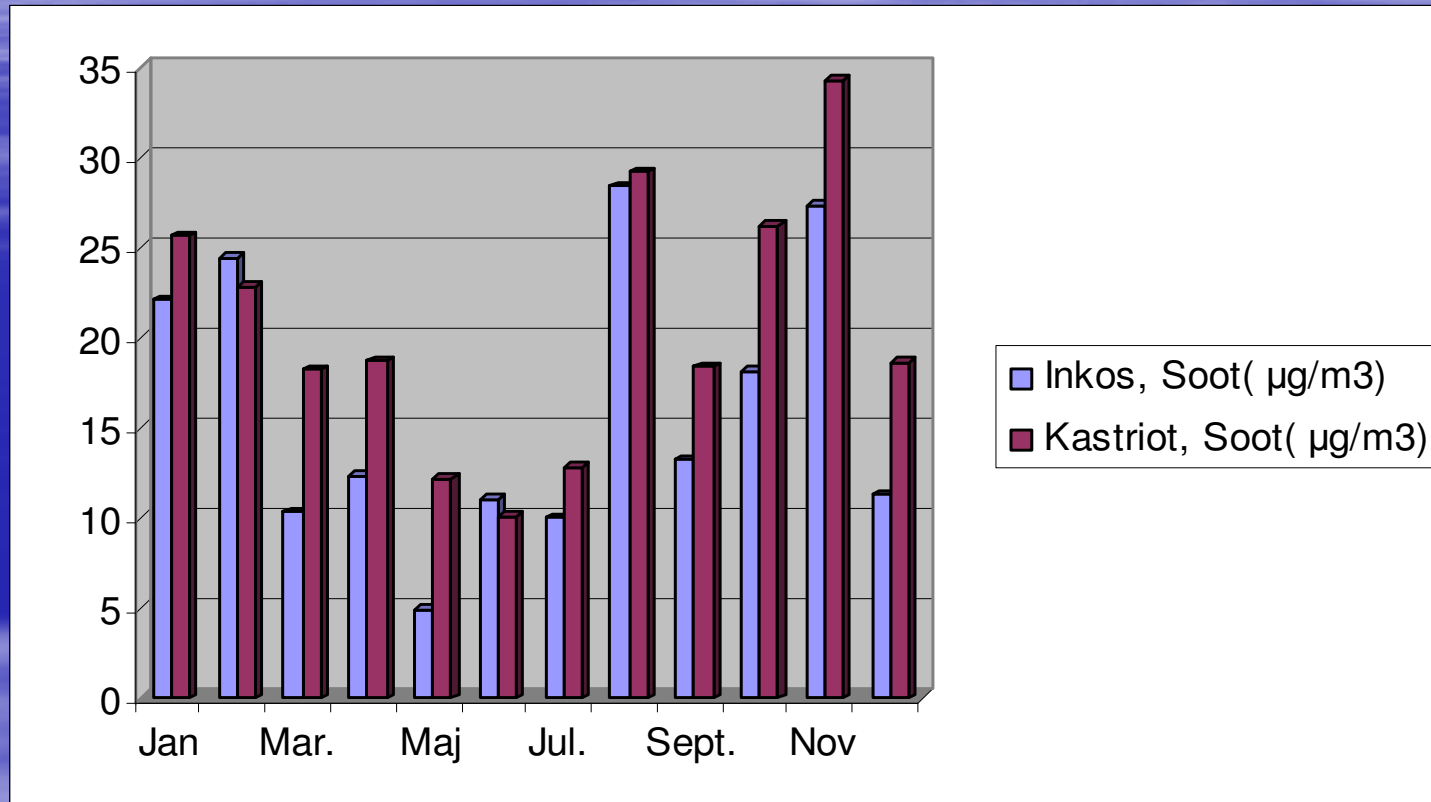
a) Air mote, 2005



b) SO₂, 2005



c) Soot, 2005



Since it's established, the MESP (2003) has concentrated primarily on establishing the necessary legal frameworks for supporting environmental sustainability:

- The Law on Environmental Protection
- Air Protection Law

In preparation are :

- Administrative instruction of norms for Air quality
- Administrative instruction on the rules and standards of the discharges on air by the stationary sources of pollution

Objectives

- To reduce environmental impacts of energy use and promote environmental awareness in the operation of the energy industry.
- Consist in the increase of energy efficiency, increase and improvement of energy savings, use of economic, regulatory and legal instruments for energy efficiency and saving.

The main strategic goals for mitigating pollution from the generation sector

- Establishment of monitoring system and electronic database
- Capacity building
- Reduction of emission in air,
- Increase of energy efficiency in generation, supply and consumption.
- Use of extraction and production methods that will enable sustainable use of natural resources
- Application of friendly environmental technologies for energy production.

Priorities should be given to the following actions:

- Completion of legal regulations and harmonization with EU standards.
- Setting of time limit framework for reduction of emissions in air
- To collect information about the extent of the fires by means of drill holes and to set –up an action plan for extinguishing the mines fires.
- Initiation of implementation of Environmental Monitoring at KEK's facilities according to the EU practices and standards.
- Preparation of a Position Paper on the Kyoto protocol and its implications for the energy sector of Kosovo.
- Reduction of energy losses in all fields of production and distribution.
- Replacement of old equipment in the energy sector.
- Encouragement of the use of combined heat and power.
- Drafting of operative plans in cases of ecological accidents.
- Control of burning fuel quality.
- Rehabilitation of the dust control equipment and the electrostatic filters in the Kosovo B power plant to 2008.
- National Plan for Energy Efficiency and Renewable Energy Sources

Conclusions

- Kosovo's prosperity, our standard of living and our quality of life will be greatly influenced by how we extract, transform, allocate, and consume our energy resources
- Environmental protection in Kosovo is facing big challenges. It is necessary to support economic and sustainable development, effective infrastructure and environmental balance and achieve effective and efficient use of land and natural resources in a way that will prevent conflicts of economic and ecological interests.

Thank you for your attention!

