

Air quality and health in Central Asia: *Air quality standards, air quality assessment and data gaps*

United Nations Environment Programme (UNEP)

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Air Quality and Health in Central Asia



Country	Deaths attributable to air pollution (2019)*	
	Number	Percentage of total deaths
Kazakhstan	12,039	9
Kyrgyzstan	4,159	12
Tajikistan	7,455	15
Turkmenistan	3,608	11
Uzbekistan	30,096	15



Air Quality Standards in Central Asia



- Maximum Allowable Concentrations (MACs)
- Comprehensive index of atmospheric air pollution (IZA)
- Not in line with the latest science or international accepted standards



Air Quality Index (AQI)

US AQI

Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.

- AQI provides actionable information on air quality
- Based around concentrations of ozone, PM2.5, PM10, CO, SO2, and NO2
- Transitions in Central Asia (Kazakhstan, Kyrgyzstan?, Uzbekistan?)
- Real time monitoring of priority pollutants



Low cost sensors...?



- Actionable information
- Indicative information on air quality
- Dense networks provide a map of air quality
- Affordable



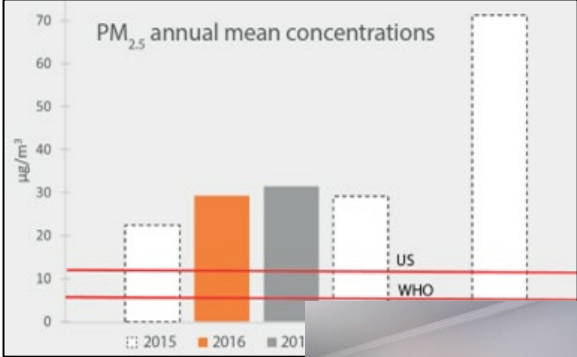
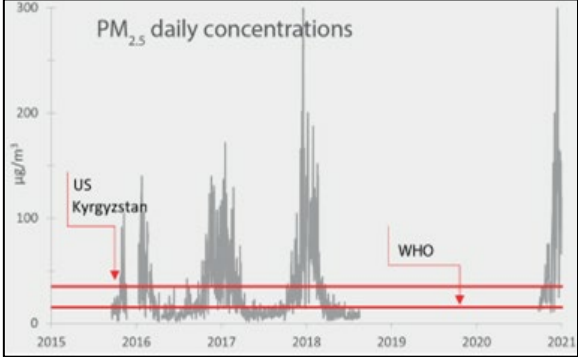
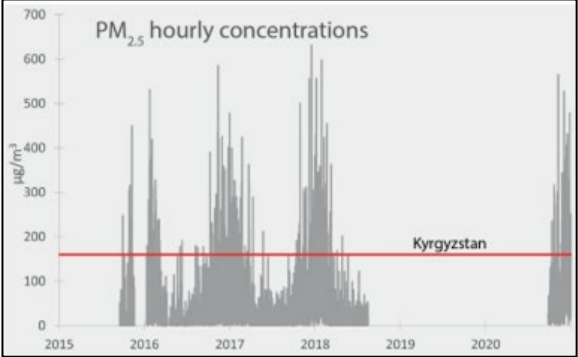
Air Quality in Bishkek: Assessment of emission sources and Roadmap for improving air quality management



Air quality in Bishkek

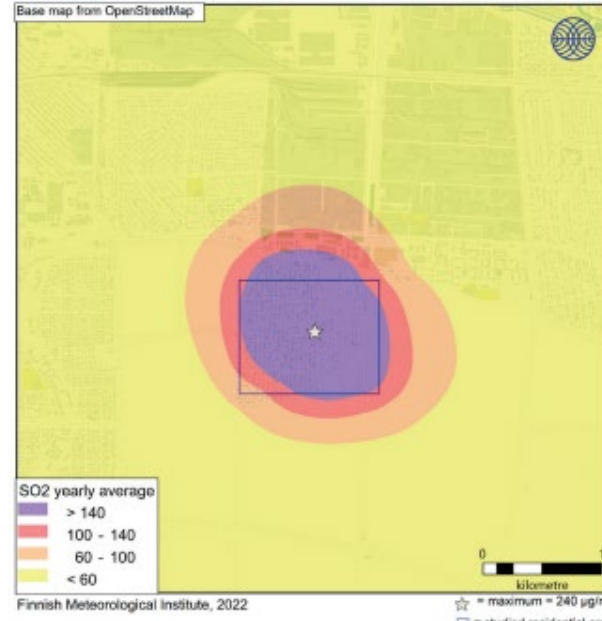
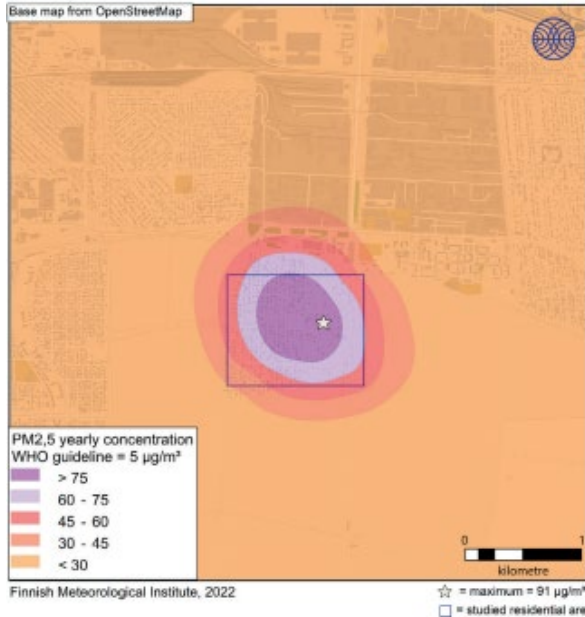
Reducing concentrations of fine particulate matter (PM_{2.5}) is the highest priority.

PM_{2.5} poses the most severe health risk of all air pollutants.



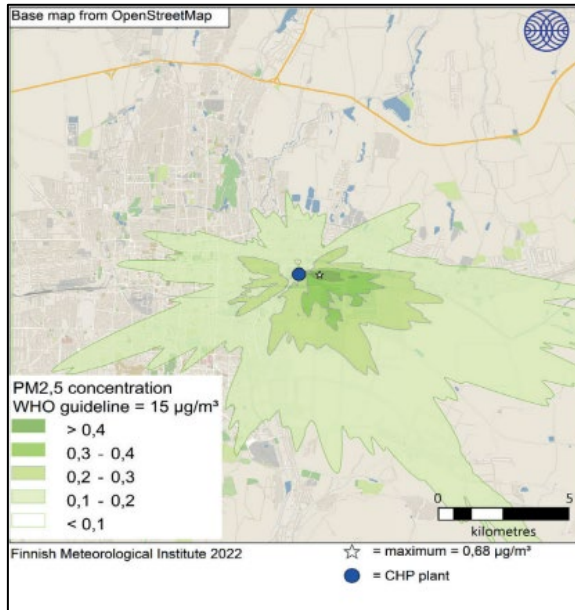
What causes air pollution in Bishkek?

The most dangerous levels of fine particulate matter (PM2.5) pollution are caused by residential heating with (sulphur-rich) coal during the wintertime exacerbated by poor mixing conditions of the air.

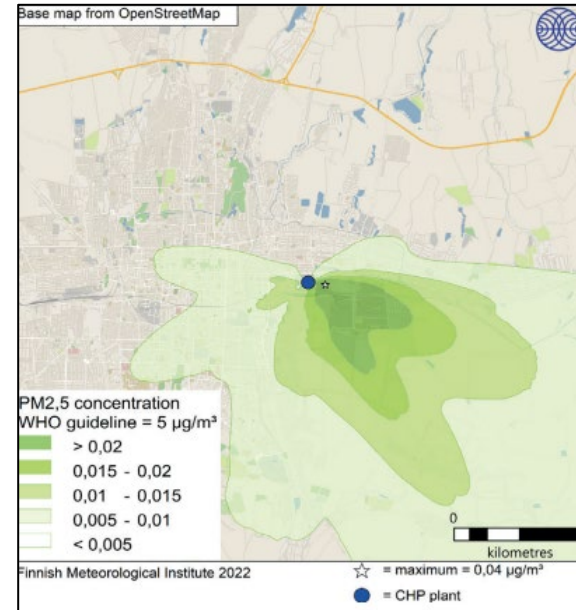


What causes air pollution in Bishkek?

Emissions from the CHP have a limited impact on ground-level air pollution in Bishkek



Average annual PM_{2,5} concentration

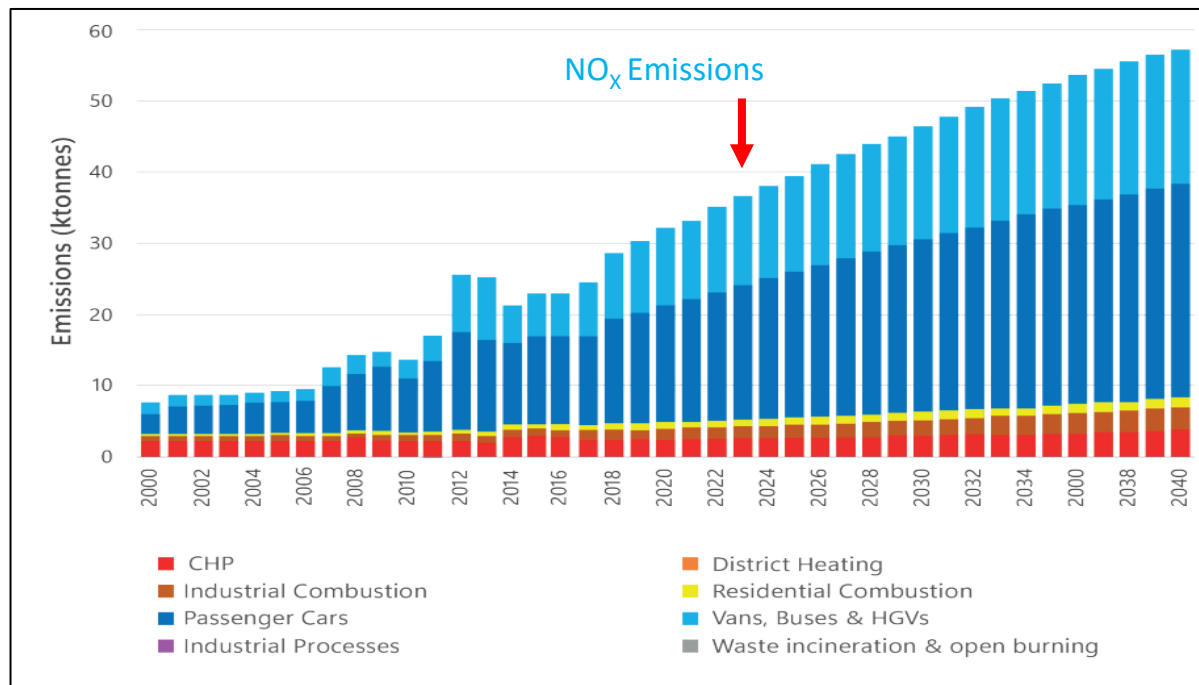


Average daily PM_{2,5} concentration



What causes air pollution in Bishkek?

Transport is another key source of pollution in Bishkek



What causes air pollution in Bishkek?

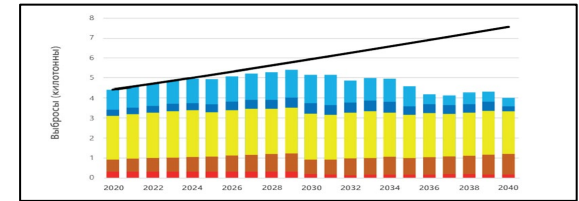
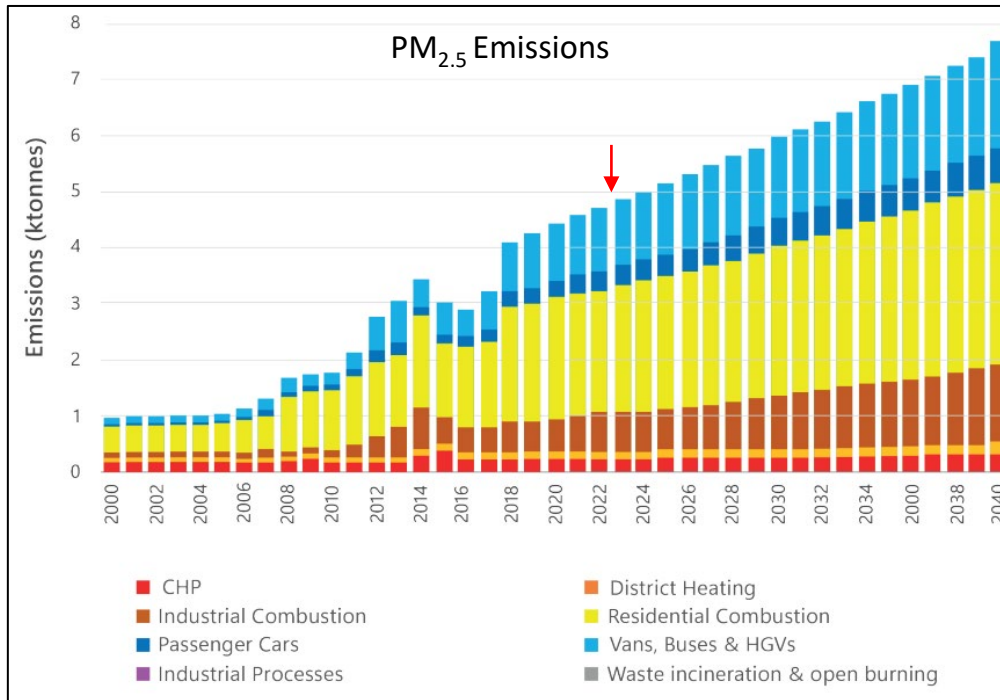
Burning waste impacts air quality

- Emissions from the Bishkek landfill
- Emissions from uncontrolled waste burning

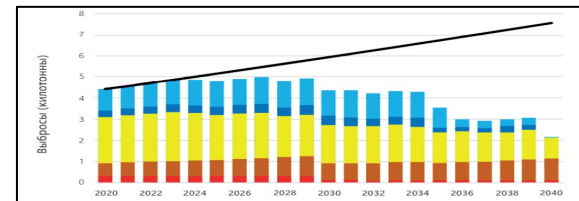


What about air pollution emissions in the future?

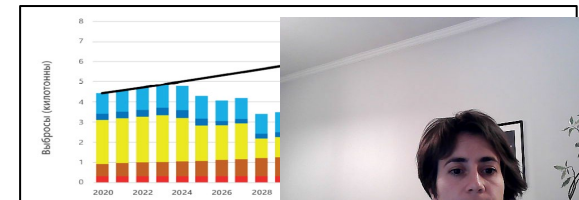
Emissions of all key pollutants are expected to grow significantly towards 2040 under a 'business as usual' scenario



Scenario 1: With additional measures



Scenario 2: With additional measures



Scenario 3: Net zero 2



Thank you!



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