



## Air Quality in Bishkek



This study is the first comprehensive analysis of the main sources of emissions and their influence on the concentration of pollutants in the ground layer of atmospheric air in Bishkek.

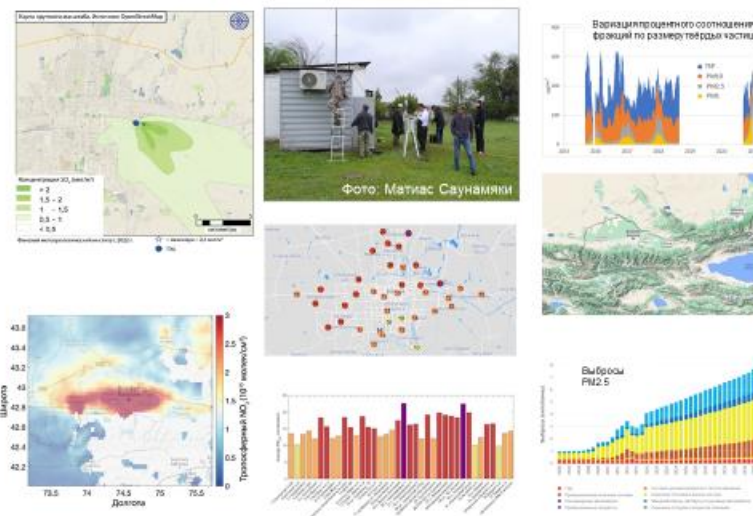


## Scientific basis

## Air Quality in Bishkek

### Air Quality Assessment Tools

- Air quality monitoring (continuous, modern AQ stations, low-cost sensors)
- Dispersion modeling
- Satellites
- Emission inventories (also Scenarios)
- Meteorological and Geographical data
- Objective assessment



- Bishkek experiences poor air quality throughout the year, with **extremely dangerous levels during the wintertime heating period** (approx. October – March).
- **Between 2010 and 2019, 12-13% (4100-5000) of deaths per year in the Kyrgyz Republic were related to air pollution.**
- **The health care costs associated with air pollution in the Kyrgyz Republic were estimated at US\$388 million or 6% of gross national income in 2015.**



# Air Quality in Bishkek

Reducing fine particulate matter (PM<sub>2.5</sub>) pollution is the highest priority.  
Particulate matter (PM) poses the most severe health risk of all air pollutants

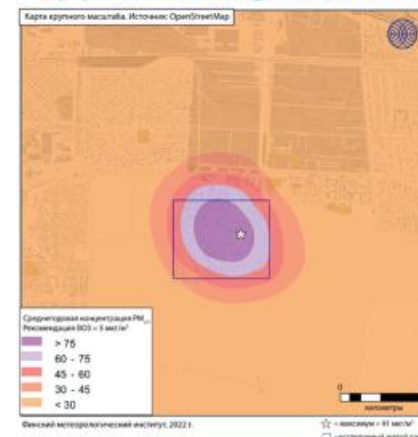


Average hourly PM<sub>2.5</sub> concentration | average daily PM<sub>2.5</sub> concentration | Average annual PM<sub>2.5</sub> concentration



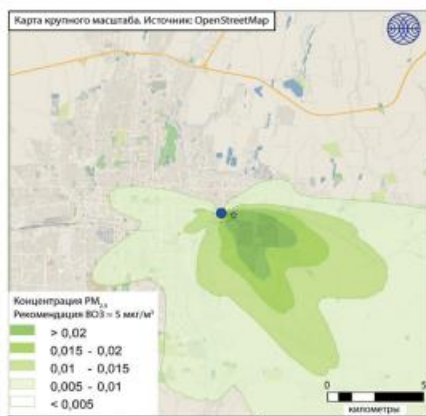
## What causes air pollution in Bishkek?

The most dangerous levels of PM<sub>2.5</sub> are caused by residential heating with (sulphur-rich) coal during the wintertime exacerbated by poor mixing conditions of the air.

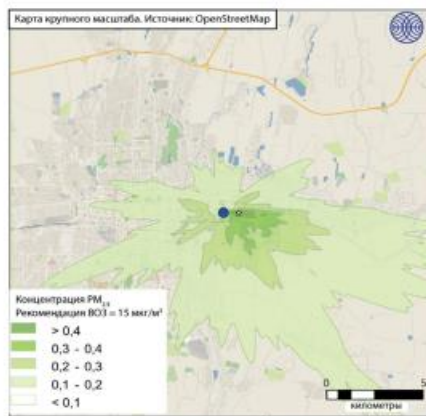


## What causes air pollution in Bishkek?

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



Среднегодовая концентрация  $PM_{2.5}$  ( $мкг/м^3$ )



Среднесуточная концентрация  $PM_{2.5}$  ( $мкг/м^3$ )



Фото: Роман Марат

## What causes air pollution in Bishkek?

**Transport** is another key source of air pollution in Bishkek.

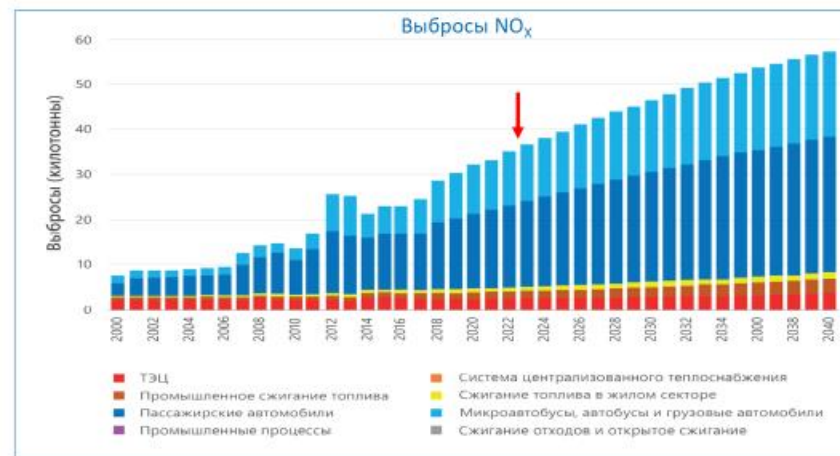


Фото: Матвеев Савдьян



## What causes air pollution in Bishkek?

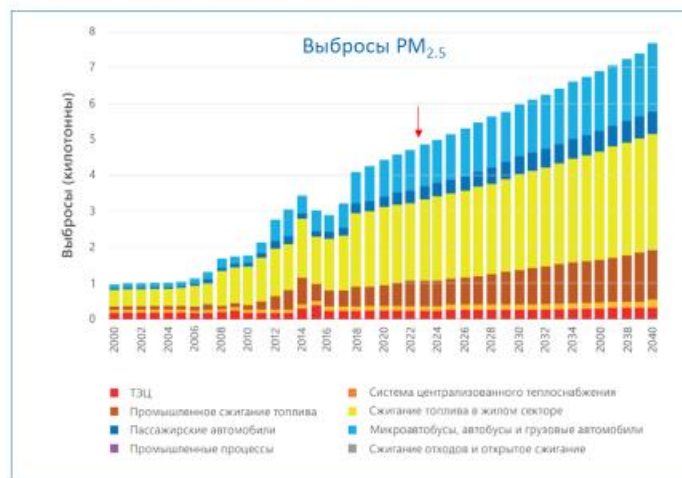
### Burning waste impacts air quality

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



## What about air pollution emissions in the future?

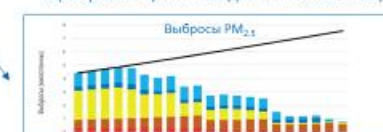
Emissions of all key pollutants are expected to grow significantly towards 2040 under a 'business as usual' scenario



Сценарий 1 с принятием дополнительных мер



Сценарий 2 с принятием дополнительных мер



Сценарий «Чистый ноль - 2050»

# What are the solutions to improve air quality?

Individuals have limited opportunities to control air pollution, thus action at the local, national, and regional level is needed.



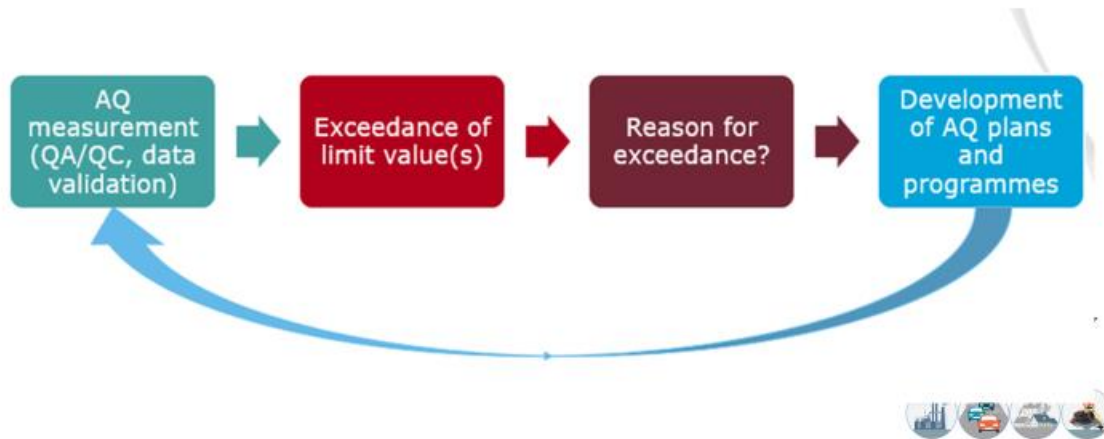
- Affordable access to clean household energy solutions and improvements in energy efficiency can be expanded
- Emissions from transport can be reduced through “Avoid, Shift, Improve” policies
- Emissions from power generation can be reduced through transitioning to low-emissions fuels and renewable combustion-free power sources
- Strategies supporting waste reduction and separation can reduce emissions from municipal and agricultural waste

# Road Map to enhancing air quality management

	2023				2024				2025	
	K1	K2	K3	K4	K1	K2	K3	K4	K1	K2
<b>A. Анализ институциональных механизмов</b>										
Распределение ролей/ ответственности за управление качеством воздуха										
Развитие и финансирование местного потенциала										
<b>B. Совершенствование сети наблюдения за качеством атмосферного воздуха</b>										
<b>C. Совершенствование инвентаризации выбросов и инструментов прогнозирования</b>										
<b>D. Проведение исследований по распределению концентрации источников</b>										
Карты выбросов										
Возможности моделирования рассеивания										
<b>E. Разработка и реализация мер политики</b>										
Воздействие политики и мер										
Экономическая оценка политики и мер										
Реализация краткосрочных и долгосрочных действий в рамках стратегии по улучшению качества воздуха										

## What are the solutions to improve air quality?

Air quality management in Bishkek needs to be strengthened to protect against the health and environmental impacts of air pollution.



## Air quality and climate change

Air pollution and climate change are interlinked, and improving air quality is part of the climate agenda

- The use of fossil fuels is by far the biggest source of air pollution → greenhouse gases (CO<sub>2</sub>)
- Investments in measures to combat climate change often pay for themselves in the short term through co-benefits





## Recommendations for poor / unhealthy air quality episodes

Thank you for your attention!



- Stay indoors as much as possible
- Provide a clean room to sleep in, especially for young children and the elderly
- Avoid prolonged and strenuous outdoor activity
- Prevent additional sources of indoor air pollution
- Pay particular attention to keeping the inside of houses clean
- Avoid unnecessary travel in cars, scooters and other motorised vehicles



Authors: Katja Loven, Salla Pykäri, Pia Anttila, Anu-Maja Sundström, Harri Pietarila, Gerard Berlioux, Chris Dore





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