

Reduction of air pollution in CA cities – approaches and solutions

9 November 2020

Dr Vladislav Bízek
WECOOP Key Expert
EU Acquis and Environment Enforcement



Funded by the
European Union

WECOOP

EU – Central Asia Cooperation on
Water – Environment – Climate Change



This project is implemented by the consortium led by Stantec, with ELLE (Estonian, Latvian & Lithuanian Environment), ACTED, and KommunalKredit Public Consulting as the consortium partners.

Air quality in CA cities - 1

Air quality in bigger CA cities is very poor, especially in terms of particulate matter $PM_{2.5}$ which is by far the most hazardous air pollutant



Source of photograph: Central Asian Bureau for Analytical Reporting



Funded by the
European Union

WECOOP

EU – Central Asia Cooperation on
Water – Environment – Climate Change



This project is implemented by the consortium led by Stantec, with ELLE (Estonian, Latvian & Lithuanian Environment), ACTED, and KommunalKredit Public Consulting as the consortium partners.

Air quality in CA cities - 2

The results of regular monitoring and of ad hoc measurements show that **annual average concentrations of PM_{2.5} in cities are fairly above international standards** (EU 25 µg/m³, WHO even 10 µg/m³):

- Almaty (more than 50 µg/m³ in 2019)
- Bishkek (more than 45 µg/m³ in 2012)
- Tashkent (more than 40 µg/m³ in 2019)

During the heating season daily concentrations sometimes reach several hundred µg/m³.

In the EU, annual standard for PM_{2.5} of 25 µg/m³ was not exceeded in any of capital cities in 2017; the highest value of 38 µg/m³ was measured in Slavonski Brod in Croatia (60 000 inhabitants).

International air quality standards are also being exceeded in the CA cities in the case of other pollutants (**nitrogen oxides, ground-level ozone, benzo(a)pyrene**).



Funded by the
European Union

WE COOP

EU – Central Asia Cooperation on
Water – Environment – Climate Change



This project is implemented by the consortium led by Stantec, with ELLE (Estonian, Latvian & Lithuanian Environment), ACTED, and KommunalKredit Public Consulting as the consortium partners.

Air quality in CA cities - 3

Similarly to all big cities elsewhere, **the main source of air pollution in the CA cities is road transport** – cars, light duty vehicles, buses (and to some extent also heavy duty vehicles provided that are allowed to enter the city centers).

This problem includes **non-favourable composition of vehicle fleet, insufficient road infrastructure and weak traffic management.**

Combustion of solid fuels for heating (households, commercial and public buildings) represents another important source of pollution.

Large air pollution sources (combustion plants, bigger industries) are responsible for the resting part of man-made air pollution.

Transfer of solid particles from deserts is a specific problem for many CA cities, however it can hardly be solved.



Funded by the
European Union

WECOOP

EU – Central Asia Cooperation on
Water – Environment – Climate Change



This project is implemented by the consortium led by Stantec, with ELLE (Estonian, Latvian & Lithuanian Environment), ACTED, and KommunalKredit Public Consulting as the consortium partners.

Inspiration: EU legislation – air quality assessment and management

Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe

(+ Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air)

- Air quality standards: suspended particulate matter PM₁₀ and PM_{2.5}, sulphur dioxide (SO₂), nitrogen dioxide (NO₂), nitrogen oxides (NO_x), ground-level ozone (O₃), carbon monoxide (CO), benzene, lead (Pb), arsenic (As), cadmium (Cd), nickel (Ni) and benzo(a)pyrene (BaP)
- Methodology of air quality assessment (monitoring)
- **Air quality improvement programs and short-term action plans for zones (regions) and agglomerations (big cities)**

Inspiration: EU legislation – reduction of air pollution

Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions + BAT Conclusions

Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants

+ legal acts laying down technical requirements on combustion plants below 50 MW, certain categories of products (fuels, vehicles,, paints and varnishes) or activities (petrol storage and distribution)

- Best available techniques (BAT) for the most polluting sectors
- Emission limit values / BAT associated emission levels (and energy efficiency levels)
- **National emission reduction commitments and air pollution control programs** for PM_{2.5}, SO₂, NO_x, volatile organic compounds (VOC) and ammonia (NH₃)



Funded by the
European Union

WE COOP

EU – Central Asia Cooperation on
Water – Environment – Climate Change



Stantec



ACTED



KOMMUNAL
KREDIT

This project is implemented by the consortium led by Stantec, with ELLE (Estonian, Latvian & Lithuanian Environment), ACTED, and KommunalKredit Public Consulting as the consortium partners.

Potential measures to improve air quality in cities – transport - 1

Improvement of vehicle fleet

- Public transport – purchase of low emission buses
- Public transport – support to / introduction of trolley buses or trams
- Other vehicles in public / municipal sector (low or zero emission cars and light duty vehicles)

Improvement / extension of infrastructure

- Roads
- Infrastructure for „wire-based“ mobility (trolley-bus routes, tram routes) and for underground (where applicable)
- Infrastructure for alternative mobility (cyclo-roads, pedestrian zones)



Funded by the
European Union

WECOOP

EU – Central Asia Cooperation on
Water – Environment – Climate Change



This project is implemented by the consortium led by Stantec, with ELLE (Estonian, Latvian & Lithuanian Environment), ACTED, and KommunalKredit Public Consulting as the consortium partners.

Potential measures to improve air quality in cities – transport - 2

Improvement in mobility management

- Sustainable Urban Mobility Plans
- Intelligent Transport Systems
- Optimization of traffic management system
- Regulation of taxis and mini-buses (marshrutkas)

Support for public transport

- Support for integrated transport systems (rail+bus, rail + metro,...)
- Introduction / extension of dedicated lines
- Optimization of public transport routes



Funded by the
European Union

WECOOP

EU – Central Asia Cooperation on
Water – Environment – Climate Change



This project is implemented by the consortium led by Stantec, with ELLE (Estonian, Latvian & Lithuanian Environment), ACTED, and KommunalKredit Public Consulting as the consortium partners.

Potential measures to improve air quality in cities – building sector

- Introduction of energy efficiency measures in public buildings
- Support for fuel switch in public sector (from coal to gas)
- Introduction of non-combustion renewable energy for heating in public sector (solar heating, heat pumps)
- Support for centralized heating system (development / refurbishment of infrastructure, fuel switch from coal to gas or non-combustion renewables)



Funded by the
European Union

WECOOP

EU – Central Asia Cooperation on
Water – Environment – Climate Change



This project is implemented by the consortium led by Stantec, with ELLE (Estonian, Latvian & Lithuanian Environment), ACTED, and KommunalKredit Public Consulting as the consortium partners.

Thank you!



Office 15
5 Dostyk street
Z05H9M3 Nur-Sultan, Kazakhstan
www.wecoop.eu
info@wecoop.eu

   @wecoopproject



Funded by the
European Union

WECOOP

EU – Central Asia Cooperation on
Water – Environment – Climate Change



This project is implemented by the consortium led by Stantec, with ELLE (Estonian, Latvian & Lithuanian Environment), ACTED, and KommunalKredit Public Consulting as the consortium partners.