Case Study on EECCAs: Technological Pathway toward the Amended Gothenburg Protocol Ratification

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Overview

- Approach used
- Summary results
- General conclusions

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General approach used

For each country: Serbia, Georgia, Kazakhstan and Moldova

- Assessment of air quality
- Assessment of the main sources of SO2, PM, NOx and VOC
- Assessment of current regulations implemented for activities covered by annexes IV (SO2), V (NOx), VI (VOC) and X (PM), (mobile sources will be added later)
- Assessment of programmes to reduce air pollution and to develop policies and measures related to activities covered by Annex IV (SO2), Annex V (NOx), Annex VI (VOC) and annex X (PM)
- Recommendations for technological pathways

Work done in full transparency with help of the country experts from the Ministries in charge of environment

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Air quality in the four countries

Air quality:

- The four countries face air quality problems due to PM10 and PM2.5 concentrations still too high
- Two countries face air quality problems with SO2:
  - SO2 concentrations in ambient air are high in one industrial city of Serbia
  - in Kazakhstan, the SO2 concentrations are very high in several cities
- NO2 concentrations can be large in cities

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Mains emission sources in the four countries

Emissions:

- The energy production sector presents large emissions of SO2 and NOx in Serbia and in Kazakhstan (use of national coal and/or lignite, in some cases without efficient abatement options used up to now)
- Industrial activities are significant sources of emissions of SO2, NOx in Serbia and in Kazakhstan
- Road transport is the main source of NOx in Moldova and Georgia
- In the four countries, residential and tertiary activities (domestic heating using wood or coal) is one of the largest source of emissions of PM10 and PM2.5
- In the four countries, “solvent uses” is not the main source of VOC emissions

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National regulations and programmes to improve them

Regulations and programmes for their improvement and alignment with key EU directives:

- For industrial plants and LCP, each country has its own regulations but they are not yet fully accounted for control and ELVs not always similar to what the four technical annexes prescribe (different situations according countries)
- The four countries are in progress in the development of their national legislation to better control industrial emissions, They are in different state of progress to implement the EU Industrial Emission Directive in their national policy framework:
  - Kazakhstan is developing country specific BREFs to better consider the national state of industry
  - Serbia, Moldova and Georgia are using the EU BREFs

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National regulations and programmes to improve them

Regulations and programmes for their improvement and alignment with key EU directives:

- The sulphur content of gasoil is already 0.1% in Serbia and Georgia, not yet in Moldova and in Kazakhstan (but to be further confirmed)
- Three countries (Serbia, Georgia and Moldova) are in progress in the development of their national legislation to better control VOC emission from Stage I in petrol distribution (terminals and tanks in service-stations), Kazakhstan did not start yet (to be further confirmed)
- Serbia is in progress in the development of its national legislation to better control VOC emission from Stage II in petrol distribution (car refuelling in service-stations)
- In general, few actions are implemented to reduce PM emissions from domestic heating with solid fuels. A specific draft programme has been elaborated in Serbia

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Technological Pathway to comply with the AGP technical provisions

SOx Annex IV:

Large combustion plants and industrial plants (mainly for Serbia and Kazakhstan)

The following secondary measures can be used

- boiler sorbent injection
- dry sorbent injection (DSI)
- spray dry absorber (SDA)
- wet flue-gas desulphurisation (FGD)

possibly associated with the use of low Sulphur content solid or liquid fuels

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Technological Pathway to comply with the AGP technical provisions

NOx Annex V

Large combustion plants and industrial plants (mainly for Serbia and Kazakhstan but also in Georgia and Moldova)

A combination of primary and secondary measures

- combustion optimisation
- combination of primary techniques for NOx reduction such as air or fuel staging, flue-gas recirculation, low-NOx burners (LNB)
- selective non-catalytic reduction (SNCR)
- selective catalytic reduction (SCR)

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Technological Pathway to comply with the AGP technical provisions

PM (Annex X)

In all large combustion plants and industrial sectors covered:

Fabric filters and electrostatic precipitators are the techniques recommended to able compliance with limit values implemented by the Annex

- Fabric filters
- Electrostatic precipitators

When desulphurisation is also conducted, the following techniques are also available:

- wet flue-gas, desulphurisation (FGD),
- dry or semi-dry FGD system.

The proper sizing of the equipment is essential.

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Technological Pathway to comply with the AGP technical provisions

PM (Annex X)

A key sector in the four countries, for which only recommended limit values are proposed in the AGP, is the **domestic heating** with solid fuels.

- The techniques are used, they should be spread but techniques are note sufficient. The use of Code of good practices for wood burning and small combustion installations developed by UNECE, is recommended

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Technological Pathway to comply with the AGP technical provisions

VOC (Annex VI)

Industrial plants using solvents

Depending on activities using solvents, primary measures and end of pipe techniques such as adsorption, oxidation

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General conclusions

- The technological pathways to comply with the AGP technical provisions are known, quite similar for the countries
- Small domestic heating appliances using solid fuels remain a major challenge in the four countries:
  - Technical solutions for appliances exist but are not sufficient
  - The use of Code of good practices for wood burning and small combustion installations developed by UNECE is recommended
- Before envisaging the compliance with the limit values of the technical annexes, the national legal framework need to be modified. The four countries are working to align their policies with some EU Directives, mainly the Industrial Emission Directive, but with different state of progress according to countries and differences in EU directives considered
- By the implementation of the provisions of key EU Directives, the four countries would be in the condition to comply with the requirements of the four AGP technical annexes IV, V, VI and X, in particular their ELVs, tentatively between 2030-35, with different timelines according to countries

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Thank you very much for your attention! Questions?

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