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

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Moldova: air quality situation

- Moldova has transposed the Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe and the Directive 2004/107/EC on Arsenic, Cadmium, Mercury, Nickel and PAH in ambient air
- In the Republic of Moldova, currently, the air quality is monitored in a network of 17 old stationary stations
- They are not recognized at the international level and their results are not shared with the European data system
- Air samples are taken manually for several pollutants (solid suspended matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, soluble sulphates, nitrogen oxide, phenol, formic aldehyde)
- The stationary posts are located in 5 industrialized centers of the Republic of Moldova (Chisinau-6 posts, Balti-2 posts, Bender-4 posts, Tiraspol-3 posts, Ribnita-2 posts)

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Moldova: Current emission regulations

- *Directive 2008/50/EC on ambient air quality and cleaner air for Europe*
- *Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air*

These two Directives are transposed to the Air quality law of the Republic of Moldova (LP98/2022 of 14/04/2022) and will come in force from 13/05/2024

The main objective of the Law is developing Air Quality Monitoring Network and realizing the analyses and assessments based on reliable data regarding air pollutants and share information and indicators of air quality to public in real time

The law establishes the framework on the national emission inventory system for internationally binding reporting. The law is also establishing air quality standards considering human health protection:

- 25 µg/m^3 daily and 20 µg/m^3 yearly value for $PM_{2.5}$
- 200 µg/m^3 hour value for NO_2 (not to be exceeded 18h per year), and 40 µg/m^3 yearly value for NO_2
- 125 µg/m^3 daily and 30 µg/m^3 yearly value for SO_2

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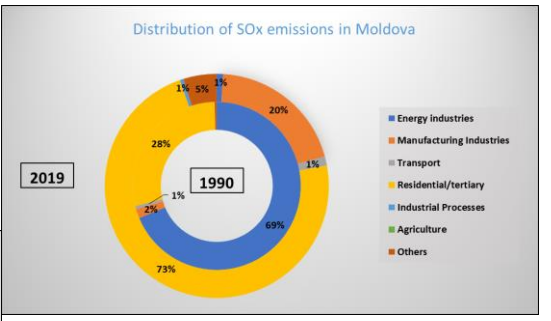
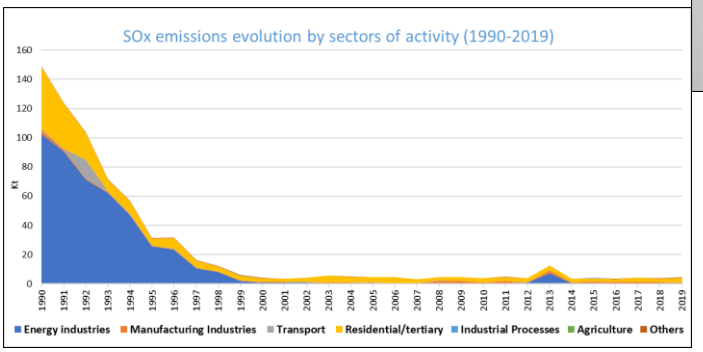
Moldova: main sources of SO_2





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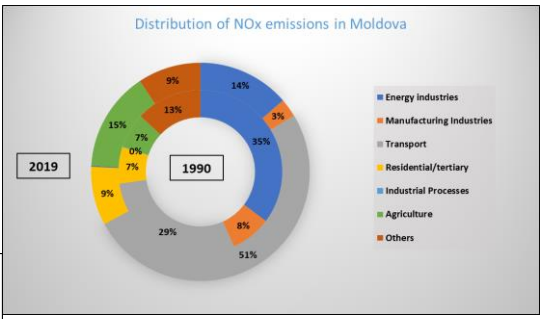
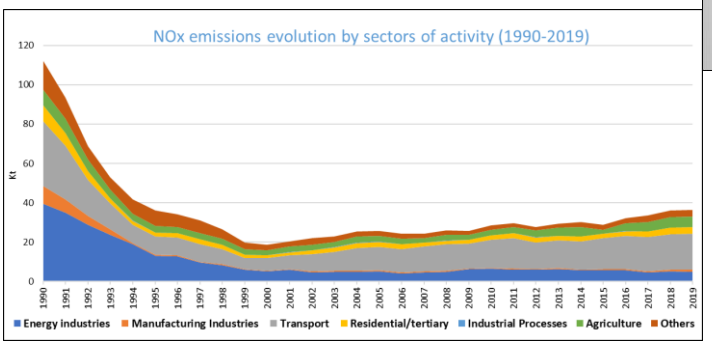
Moldova: main sources of NOx





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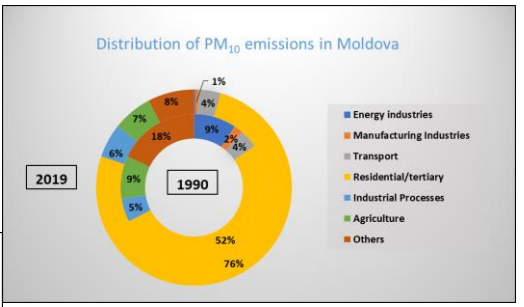
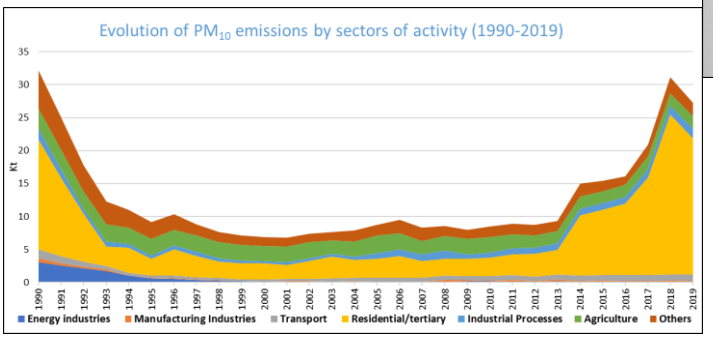
Moldova: main sources of PM_{10}





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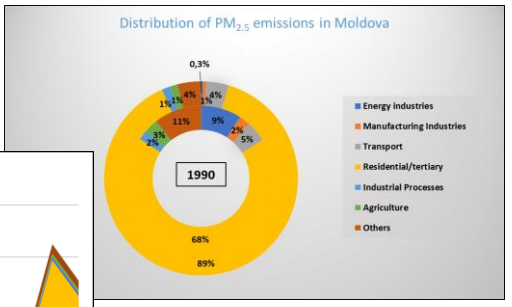
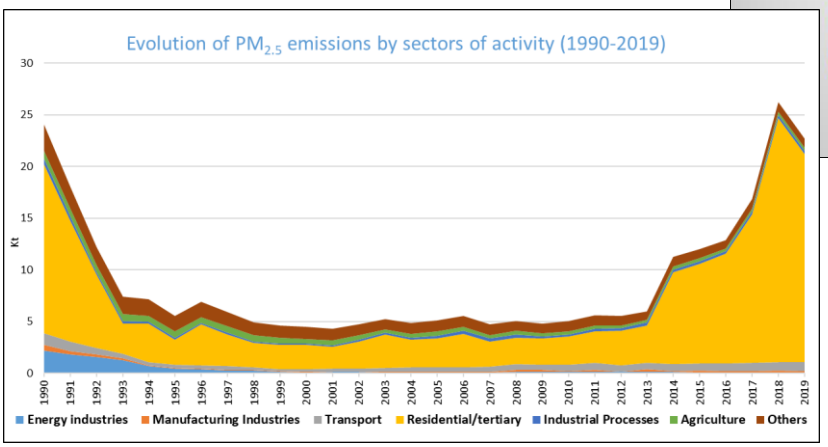
Moldova: main sources of $PM_{2.5}$





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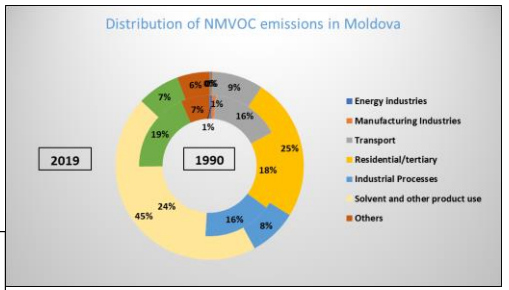
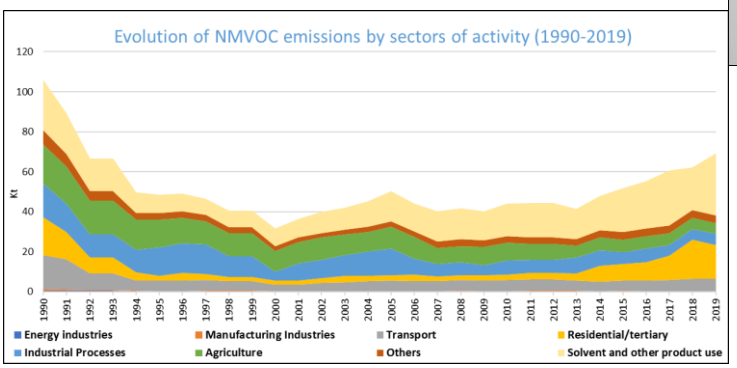
Moldova: main sources of VOC





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Moldova: Current emission regulations

- Since more than ten years, Moldova started to align its policies and regulations with the EU Directives, by transposition
- Until now, the following Directives were transposed:
  a) Directive 2004/42/EC on the limitation of emissions of VOC due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products
  b) Directive 1994/63/EC, Stage I on the control of VOC emissions resulting from the storage of petrol, and its distribution, from terminals to the service stations
  c) Directive 2016/802 on reduction in the sulphur content in fuels
  d) Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC

The Directive 2010/75/EU on Industrial Emissions (IED) is currently under transposition, as well as the Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutants

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Moldova: Current emission regulations

EPRTR:

- *Since 2018 National Pollutant Release and Transfer Registry to collect information on pollutant releases and transfers was established by the Government decree Nr. 373 of 24/04/2018.*

VOC in products:

- *Directive 2004/42/EC on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing product*

Directive provisions are transposed through Regulation on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing product (GD no. 914/2020)

Stage I

- *Directive 1994/63/EC on Stage I on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations.*

Directive provisions are transposed through Regulation on the control of emissions of volatile organic compounds resulting from the storage and distribution of petrol from terminals to service stations (GD no. 587/2020).

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Moldova: Current emission regulations

Sulphur content in fuels

- ***Directive 2016/802 on reduction in the Sulphur content in fuels***

Directive provisions are transposed through Regulation on reducing the sulfur content of certain liquid fuels (GD no. 414/2016)

- *Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC*

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Moldova: Regulation improvment

Programmes for emission reduction

- *Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants*

National air pollution control programmme will be followed by the Directive (EU) 2016/2284 transposition, that is currently under alignments. The draft of the Regulation has been developed.

Stage II

However, no information on the transposition of the Directive 2009/126/EC on Stage II petrol vapour recovery during refuelling of motor vehicles at service stations is available.

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Moldova: Regulation improvement

- **Industrial Emission Directive (IED)**

The very recent Government Decree N437 of 29/06/2022 resolves to approve and submit to Parliament for consideration the draft law on industrial emissions that is under approval by the end of 2022.

The draft law on industrial emissions partly transposes Directive 2010/75/EC on industrial emissions and transposes Directive (EC) 2015/2193 on the limitation of emissions of certain air pollutants from medium-sized combustion installations.

The draft law establishes the approach of public participation in decision making, the criteria to define BAT, the general list of pollutants in air and water, lists the conditions to obtain environmental permits, the conditions to determine emission limits, and emission limits themselves for existing and new installations, but also baseline report before the launching activity. It also defines the rules for periodic and continuous industrial monitoring of emissions.

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The draft law follows EU regulation on the:

- BAT
- Integrated emission permits
- Emission limit values
- Inspections

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Moldova: Regulation improvement

The draft law follows EU regulation on the:

- BAT: BREFs published in Romanian in the Official Journal of the European Union, by order of the Minister of Environment are accepted as national BREFs and published in the Official Gazette of the Republic of Moldova (1). The Environment Agency shall apply the conclusions of the BAT when setting permit conditions (3) (Article 29)

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Moldova: Regulation improvement

The draft law follows EU regulation on the:

- Integrated emission permits:

Industrial and economic activities subject to Annex 1 shall be carried out on the basis of an integrated environmental permit, and industrial and economic activities subject to Annex 2 on the basis of an environmental permit issued by the Environment Agency (Article 12, (1))

An integrated environmental permit shall be issued for a period of 12 years (1) and an environmental permit for a period of 6 years (2) with the right of suspension, revocation and withdrawal in case of non-compliance with permit conditions or non-compliance (Article 23)

Holders of a permit for the emission of pollutants into the atmosphere from stationary sources of pollution, issued pursuant to Act No. 1422/1997 on atmospheric air protection, prior to the entry into force of this Act shall:

(a) Comply with the emission limits of pollutants (PDV)

b) observe the schedule and procedures for checking emissions into the ambient air, agreed upon with the Environmental Agency

c) implement pollution mitigation and environmental protection measures

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Moldova: Regulation improvement

The draft law follows EU regulation on the:

- Emission limit values:

ELV for pollutants apply at the point at which the emissions are released from the installation, and any dilution up to that point is not taken into account in determining such values (Article 30 (1))

The Environment Agency sets emission thresholds so that, under normal operating conditions, emissions do not exceed emission levels approved in accordance with Best Available Techniques, as stated in BAT conclusions (Article 30 (4))

Emission limit values for LCP (Annex 10) correspond to IED Annex V (Parts 1-3)

Emission limit valued for MCP (Annex 8) correspond to Annex II of MCPD

Chapter VI is devoted to the special conditions for installations of incineration and co-inceneration of waste. However, there no emission limit values are outlined within the draft law

Chapter VII is devoted to the special conditions for installations and activities that use organic solvents. The Annex 12 describes technical provisions for installations and activities with the use of organic solvents. ELVs correspond to IED Annex VII (Part 2)

Chapter VIII is devoted to the special conditions for installations producing titanium dioxide with specifications in Annex 13. It corresponds to the IED Annex VIII.

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Moldova: Regulation improvement

The draft law follows EU regulation on the:

- Inspections:

The inspections of the industrial and economic activities with significant and low environmental risk are previewed by the Environmental Protection Inspectorate (Article 8) and could be distinguished on announced and unannounced inspections

Scheduled environmental inspections are carried out on the basis of an annual inspection plan prepared by the Environmental Inspectorate in accordance with the provisions of Act No. 131/2012 on state control of business activities (Article 56 (2))

Unannounced environmental controls shall be carried out in accordance with Article 19 of Act No. 131/2012 on the State Control of Business Activities. It shall be conducted to investigate as soon as possible and, if necessary, before issuing, revising or renewing the permit, relevant environmental complaints, industrial accidents, serious incidents, when emission thresholds are exceeded, and serious cases of non-compliance are recorded (Article 58 (1-2))

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Moldova: Technological Pathway to comply with the AGP technical provisions

PM (Annex X)

A key sector in Moldova for which only recommended limit values are proposed by the AGP is **domestic heating** with solid fuels

- Development of the use of efficient appliances, based on the Code of good practices developed by UNECE

In all 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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Moldova: Technological Pathway to comply with the AGP technical provisions

NOx Annex V

A combination of primary and secondary measures in industry

- 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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Moldova: Technological Pathway to comply with the AGP technical provisions

VOC (Annex VI)

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

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Moldova: Main conclusions

- Air quality: there is lack of reliable information on concentration of PM, SO_2, and NOx concentrations in term of air quality
- Residential heating is the major source of SO_2, $PM_{2.5}$ and VOC emissions driven by the use of solid and liquid fuels The road transport is the main source of NOx emissions. The emissions from industrial sources are much less significant due to the few existing installations and the wide use of natural gas. The few existing LCPs burn natural gas
- The implementation of the draft law on industrial emissions would allow Moldova to be in compliance with some of the requirements of AGP Technical Annexes IV, V and X, for the industrial sources covered, however, only if the BAT AELs implemented will be the same as in the AGP Technical Annexes. The compliance could be achieved around 2030-2035
- A technological pathway quite common for industrial plants covered by the technical annexes
- For small domestic appliances, the techniques are also known. Action plan should be developed and implemented to promote the efficient appliances

By the implementation of the provisions in key EU Directives, the Republic of Moldova 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 around 2030-35

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Thank you very much for your attention!

Questions?

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