



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

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## Overview



- Approach used
- Case study 1: Serbia
- Case study 2: Georgia

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In Georgia, ambient air is monitored through 8 automatic stations and numerous passive tube measurement campaigns in more than 25 sites.

The air quality network is following requirements of EU directives 2008/50 and 2004/107 (through Law on Ambient Air Protection amended in 2020)

In 2019, the largest PM<sub>2.5</sub> concentrations were observed in the most industrialised cities of Georgia

Average annual NO<sub>2</sub> concentrations resulted larger than the annual limit value, in Tbilisi and in some other cities

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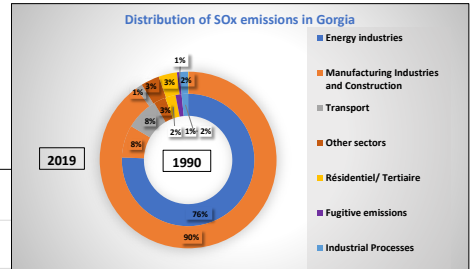
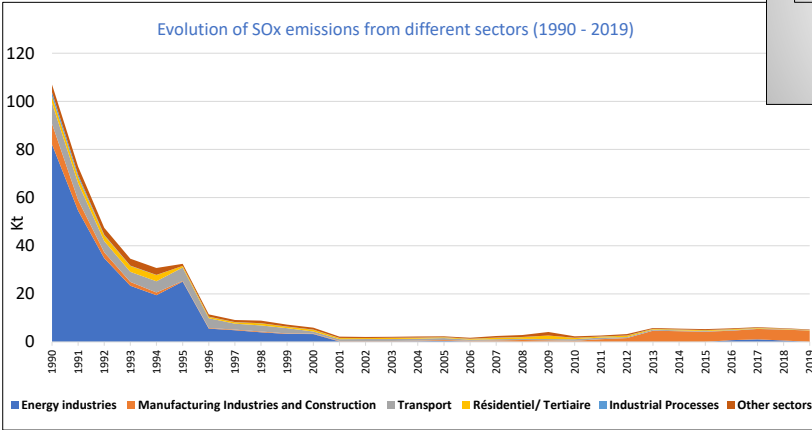
- Based on a study carried out in 2020 with UNDP funds, “Enhancing air quality management capacities in Georgia” expansion of the number of automatic stations is foreseen (spread over the cities of the territory to better assess air quality in different zones).
- Development of **ambient air quality management plans and short-term action plans** in the zones and agglomerations where the problem of pollution or the risk of a problem arises
  - A programme to reduce air pollution in Tbilisi was developed for the period 2017-2020
  - The programme for Rustavi (Industrial city) will be finalised by the end of 2022
  - Currently programmes are being developed for Tbilisi (a new one), the Black sea zone and the Central Zone. Other zones will be covered in 2023

Zones & Agglomerations	Population
Agglomeration of Tbilisi	1.108.717
Black Sea Zone	635.480
West Zone	431.834
Central Zone	743.019
East Zone	287.122
High Zone	806.494
	<b>4.012.666</b>



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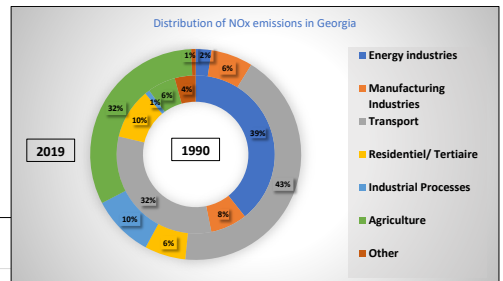
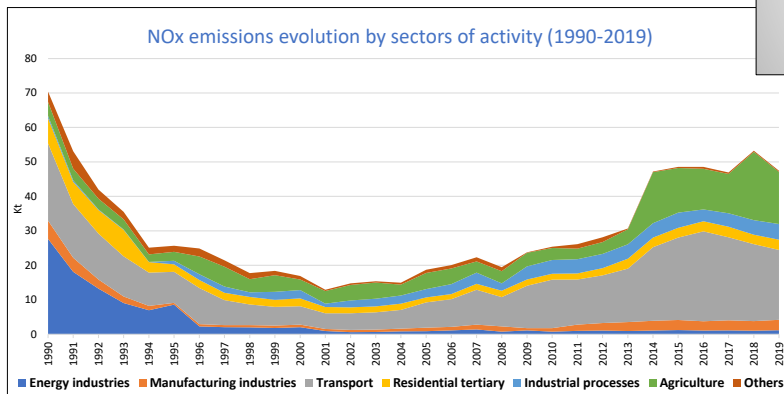
# Georgia: Main sources of SO<sub>2</sub>



Energy production is not more a source of SO<sub>2</sub>, power plants use natural gas. Combustion in industry is the largest source in 2019

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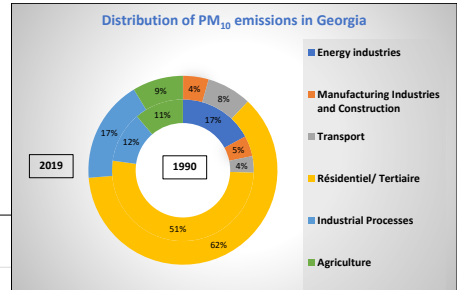
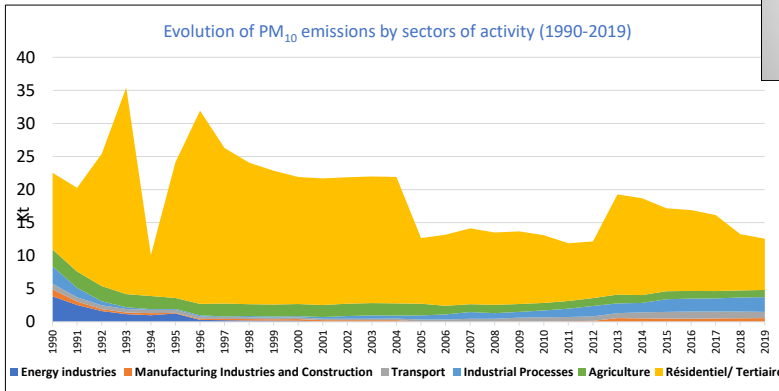
# Georgia: Main sources of NO<sub>x</sub>



Road traffic is the largest source of NO<sub>x</sub>. Industry remains quite small in terms of emissions

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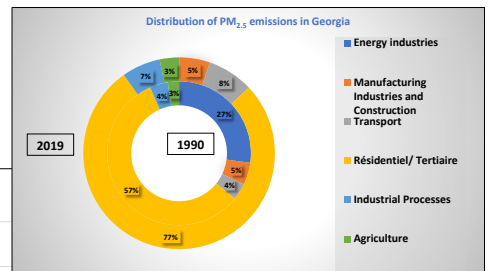
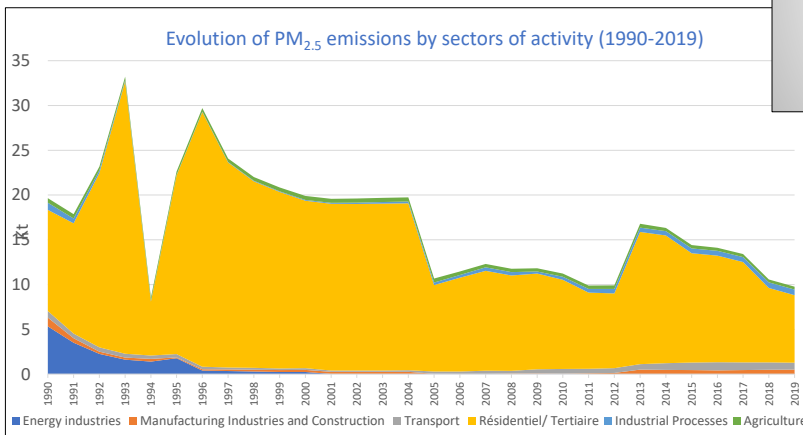
# Georgia: Main sources of PM<sub>10</sub>



Residential and tertiary activities are the largest source of PM<sub>10</sub>  
 Industry remains quite small in terms of emissions

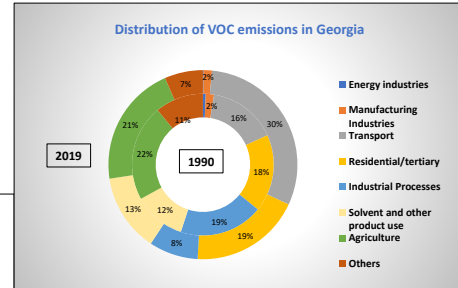
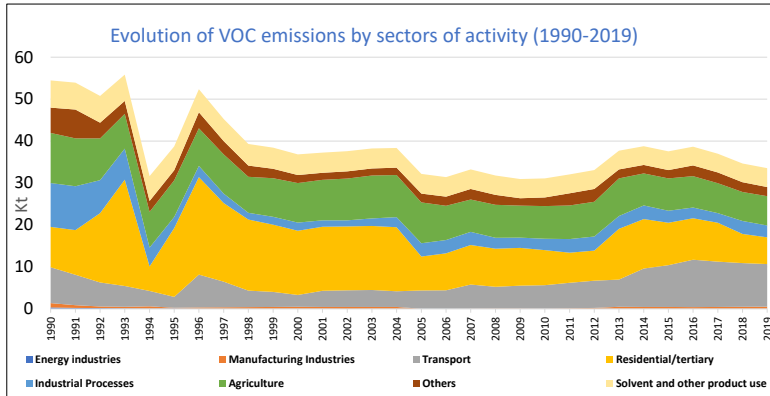
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# Georgia: Main sources of PM<sub>2.5</sub>



Residential and tertiary activities are the largest source of PM<sub>2.5</sub>  
 Industry remains quite small in terms of emissions

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Road traffic is the largest source of VOC  
 Residential and tertiary activities are the third source after agriculture  
 Industry remains quite small in terms of emissions  
 Emissions from solvent remain quite stable over the years

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## Main regulations applied in Georgia for industrial plants (for SO<sub>2</sub>, NO<sub>x</sub>, PM and VOC):

Regulatory framework for industrial activities set by the **Environmental Assessment (EA) Code of Georgia**

A list of industrial activities subject to an **environmental impact assessment (EIA)** as well as activities with significant effects on the environment are specifically defined (annex I of this Code)

ELVs are a significant part of the **environmental decision after approval by the National Environmental Agency (NEA)** and are mandatory for industrial installations.

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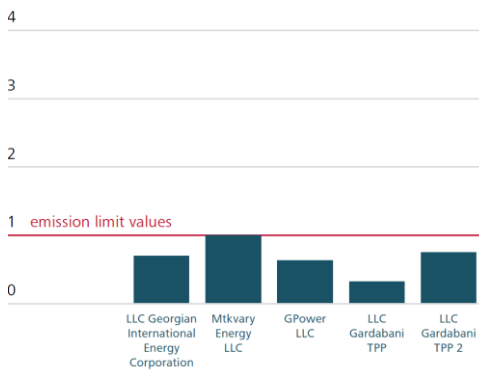
**For plants subject to an environmental impact assessment (EIA) :**

- Emission limit values are set individually to plants through the EIA procedure (an environmental decision made by the National Environmental Agency),
- **Drafts for calculating threshold limit values of emissions (ELV)** of harmful substances into the ambient air (but also other threshold limit values for the pollutants discharged in surface water along with wastewaters) shall be attached to an application for obtaining a **positive environmental decision**,
- **These ELVs are based on calculations taking into account different technical parameters such as stack height, flow rate (m<sup>3</sup>/s), distance to the nearby settlement points, air quality standards, etc and are set for each enterprise (installation) individually.**

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## Georgia: Situation for Large Combustion plants for electricity production

2020 emissions of NO<sub>x</sub> versus applicable emission limit values (ELV)



Estimated emission concentration of NO<sub>x</sub> in 2020  
 140,18 mg/Nm<sup>3</sup>    200,24 mg/Nm<sup>3</sup>    63,04 mg/Nm<sup>3</sup>    32,12 mg/Nm<sup>3</sup>    37,61 mg/Nm<sup>3</sup>  
 Energy Community: Georgia, annual report 2021

Five gas-fired installations falling under the scope of the EU Large Combustion Plants Directive, one of which started its operations in 2020.

Four plants are compliant with the provisions of the Directive Large Combustion Plants Directive and one plant with the Industrial Emissions Directive.

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**Limit values for the Sulphur content of gas oil**

Sulphur content (per cent by weight)

- Gas oil < 0.10%

*(The Government Resolution №256 (25.03.2017) on “Establishment of limit values of Sulphur content in certain liquid fuels” (such as heavy fuel, gas oil, and marine fuel)*

## Comments

The S content limit value applied for gas-oil in Georgia is consistent with the limit value of the AGP

## Georgia: Programmes for Stage I for terminals and service stations

**Programmes currently being implemented to comply the EU regulations on Stage I (annex VI of the AGP):**

Introduction of legal requirements on petrol storage and distribution:

Stage I petrol vapour recovery at petrol stations:

- All new stations with a throughput larger than 100 m<sup>3</sup>/y from 2023
- At least 90% of existing stations equipped in 2029

Relevant petrol vapor recovery systems in terminals:

- All new terminals from 2023
- Existing terminals in with a throughput larger than 25 000 tonne 2029
- All existing terminals in 2032

Relevant petrol vapor recovery systems in tankers:

- All road tankers equipped properly from 2023
- Rail tankers and vessels loading/unloading on a terminals with a throughput larger than 25 000 tonnes in 2029
- All rail tankers and vessels in 2032

## Georgia: Programmes for developing Integrated permits and reinforce limit values in industrial activities

In the scope of an EU funded project, Georgia is improving its own permit and control systems of industrial sources and developing the legal framework for the EU IED:

A draft Law on Industrial Emissions and relevant draft by-laws have been prepared:

- The **draft Law on Industrial Emissions is fully in line with the provisions of the IED** and sets a legal framework for their implementation: it introduces the IPPC principles and an integrated permit system, based on the concept of BAT and emission limit values for industrial activities (Annex I of the law (fully in line with the annex I of IED))
- The draft Law defines the procedure of integrated permitting/combined procedure of EIA and integrated permitting for which the NEA is responsible for, considering the BAT Conclusions as the integrated permit conditions, and sets requirements for monitoring/reporting and public participation
- The draft Law has been discussed and agreed upon with relevant ministries and representatives of the business sector (approximately, 200 IED operators identified) subject to the new IED requirements and should be submitted to the Parliament of Georgia by the Government for the autumn session of 2022

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## Georgia: Programmes for developing Integrated permits and reinforce limit values in industrial activities

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Draft by-laws to the IED draft Law of Georgia have been developed, which will be approved by the Government after approval of the IED draft law, including the draft by-laws setting special provisions for the following activities:

- For the large combustion plants: the technical regulation on combustion plants set operational conditions and emission limit values (ELV) for combustion plants with a total rated thermal input of 50 MW or more in accordance with the chapter III and annex V of the Directive 2010/75/EU on Industrial Emissions (IED);
- For the installations and activities using organic solvents: the technical regulation on the installations and activities using organic solvents set solvent consumption thresholds and emission limit values (ELV) for installations and activities using organic solvents in accordance with the chapter V and annex VII of the Directive 2010/75/EU on Industrial Emissions (IED).

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## Georgia: Programmes for developing Integrated permits and reinforce limit values in industrial activities

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### Calendar:

- Approval of by-laws foreseen in 2023
- The Integrated permitting system will enter into force gradually from March 1, 2024 to September 1, 2026
- It is likely that the full implementation of IED will be possible by 2031.

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## Georgia: Technological Pathway to comply with the AGP technical provisions

### NO<sub>x</sub> Annex V

#### Large combustion plant and industry

#### A combination of primary and secondary measures

- combustion optimisation
- combination of primary techniques for NO<sub>x</sub> reduction such as air or fuel staging, flue-gas recirculation, low-NO<sub>x</sub> burners (LNB)
- selective non-catalytic reduction (SNCR)
- selective catalytic reduction (SCR)

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## Georgia: Technological Pathway to comply with the AGP technical provisions

### PM (Annex X)

#### 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

## Georgia: Technological Pathway to comply with the AGP technical provisions

### PM (Annex X)

#### Domestic heating

A key sector in Georgia for which only recommended limit values are proposed by the AGP in the annex X, is domestic heating with solid fuels.

- Development of the use of most efficient appliances. The use of the Code of good practices for wood burning and small combustion installations developed by UNECE is recommended

## Georgia: 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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## Georgia: Main conclusions

- Air quality: PM concentrations quite high and NO<sub>2</sub> concentration high in cities
- Emissions: SO<sub>2</sub> drastically reduced; road transport main source of NO<sub>x</sub> emissions; for PM domestic heating is the largest source of emissions
- Programmes to apply main EU Directives in Georgia, especially the IED
- A technological pathway quite common for industrial plants
- For small domestic appliances, the techniques are also known but techniques are not sufficient. The use of Code of good practices for wood burning and small combustion installations developed by UNECE is recommended

**By the implementation of the provisions of key EU Directives, Georgia 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 2031-2035**

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## Useful links

Noe Megrelashvili: “Developments of Georgia in Ambient Air Quality Management”

UNECE Convention on Long-range Transboundary Air Pollution Joint Meeting of the EECCA Coordinating Group and the Task Force on Techno-Economic Issues (TFTEI) April 26, 2021

Air quality:

<https://www.air.gov.ge/en/>

Information about the “Georgia’s Air Quality Monitoring Network Development Plan (ROADMAP)”

<https://nea.gov.ge/Ge/Download/File/1212>

Energy Community: Georgia, annual report 2021

<https://www.energy-community.org/implementation/Georgia.html>

Reports on emission inventory: IIR and NFR tables of 2022

<https://www.ceip.at/status-of-reporting-and-review-results/2022-submission>

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# Thank you very much for your attention!

## Questions?

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