

TFTEI

Under the Convention on Long Range Transboundary Air Pollution

*Case Study on EECCAs: Armenia and Montenegro
Technological Pathway toward the Amended Gothenburg
Protocol Ratification*

TFTEI technical secretariat
Nadine Allemand (Citepa)
Natalia Sirina-Leboine (Citepa)

Overview

- Approach used
- Summary of results obtained in Serbia, Moldova, Kazakhstan and Georgia
- Case study 5: Armenia
- Case study 6: Montenegro
- General conclusions for the 6 case studies

- Approach used

General approach used

- Status of ratification of the Convention and its Protocols, and strategic plans
- Assessment of air quality
- Assessment of the main sources of SO₂, PM, NO_x and VOC
- Assessment of current regulations implemented for activities covered by annexes IV, V, VI VIII, X and XI
- Assessment of programmes to reduce air pollution and to develop policies and measures related to activities covered by Annex IV (SO₂), Annex V (NO_x), Annex VI (VOC/solvents), annex VIII (mobile sources), Annex X (PM) and Annex XI (solvent in paints and varnishes)
- Recommendations for technological pathways

All the work based on exchange of information and discussions with the country experts from the Ministries of environment

Activities covered by the technical annexes IV, V, VI, VIII, X and XI

IV: Limit values for emissions of sulphur from stationary sources

1. Limit values for SO₂ emissions from **combustion plants**
2. Limit values for the **sulphur content of gas oil**
3. Limit value expressed as a minimum sulphur recovery rate of **sulphur recovery units**
4. Limit values for SO_x emissions released from **titanium dioxide production**

V: Limit values for emissions of nitrogen oxides from stationary sources

1. Limit values for NO_x emissions released from **combustion plants**
2. Limit values for NO_x emissions released from **onshore combustion turbines** (including Combined Cycle Gas Turbine CCGT)
3. Limit values for NO_x emissions released from **cement clinker production**
4. Limit values for NO_x emissions released from **new stationary engines**
5. Limit values for NO_x emissions released from **iron ore sinter plants**
6. Limit values for NO_x emissions from **nitric acid production** excluding acid concentration units

Activities covered by the technical annexes IV, V, VI, VIII, X and XI

VI: Limit values for emissions of volatile organic compounds from stationary sources

1. Limit values for VOC emissions from **storage and distribution of petrol**, excluding the loading of seagoing ships (stage I)
2. Limit values for VOC emissions for **car refueling at service station** (stage II)
3. Limit values for **adhesive coating**
4. Limit values for **wood and plastic lamination**
5. Limit values for **coating activities in the vehicle industry**
6. Limit values for **coating activities in various industrial sectors**
7. Limit values for **leather and winding wire coating**
8. Limit values for **coil coating**
9. Limit values for **dry cleaning**
10. Limit values for **manufacturing of coatings, varnishes, inks and adhesives**
11. Limit values for **printing activities**
12. Limit values for **manufacturing of pharmaceutical products**
13. Limit values for **conversion of natural or synthetic rubber**
14. Limit values for **surface cleaning**
15. Limit values for **extraction of vegetable and animal fat and refining of vegetable oil**
16. Limit values for **impregnation of wood**

Activities covered by the technical annexes IV, V, VI, VIII, X and XI

VIII: Limit values for fuels and new mobile sources

1. Passenger cars and light duty vehicles
2. Heavy duty vehicles,
3. Non road mobile machineries
4. Engines used for propulsion of rail cars and locomotives,
5. Engines used for propulsion of in-land Water ways,
6. Recreational crafts
7. Mopeds and motorcycles
8. Environmental specifications for marketed fuels to be used for vehicles equipped with positive-ignition engines
9. Environmental specifications for marketed fuels to be used for vehicles equipped with compression-ignition engines

Activities covered by the technical annexes IV, V, VI, VIII, X and XI

X: Limit values for emissions of particulate matter from stationary sources

1. Limit values for dust emissions from **combustion plants**
 2. Limit values for dust emissions released from **mineral oil and gas refineries**
 3. Limit values for dust emissions released from **cement production**
 4. Limit values for dust emissions released from **lime production**
 5. Limit values for dust emissions released from **primary iron and steel production**
 6. Limit values for dust emissions released from **iron foundries**
 7. Limit values for dust emissions released from **non-ferrous metals production and processing**
 8. Limit values for dust emissions released from **glass production**
 9. Limit values for dust emissions released from **pulp production**
 10. Limit values for dust emissions released from **waste incineration**
 11. Limit values for dust emissions released from **titanium dioxide production**
- Recommended limit values for dust emissions released from:
12. **New solid fuel combustion installations with a rated thermal input < 500 kWth to be used with product standards**
 13. **Boilers and process heaters with a rated thermal input of 100 kWth–1 MWth**
 14. **Boilers and process heaters with a rated thermal input of 1 MWth–50 MWth**

Activities covered by the technical annexes IV, V, VI, VIII, X and XI

XI: Limit Values for Volatile Organic Compound content of products

1. Maximum solvent content from paints and varnishes
2. Maximum VOC content for vehicle refinishing products

Overview

- Approach used
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General conclusions for the first four countries

- The technological pathways to comply with the AGP technical provisions of annexes IV, V, VI, X and XI are based on well known reduction techniques and solutions, having made their proofs. They are quite similar for the countries. Only the priorities in terms of activities, may be different according to 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 role of policies related to energy efficiency and energy saving is crucial
 - The use of Code of good practices for wood burning and small combustion installations developed by UNECE may be recommended

General conclusions for the first four countries

- For stationary sources, the national legal framework is being updated in the four countries:
 - The four countries are working to align their policies with some EU Directives, mainly the Industrial Emission Directive, the Directives on sulphur in fuels but with different state of progress according to countries and differences in EU Directives considered
 - The adaptation of the legal framework is a long process. In the countries, it can be facilitated through international cooperation programmes, as often the administrative capacity of the countries is not sufficient
- Compliance of industrial installations with limit values of the AGP technical annexes may also be a long process when the legislative framework has been prepared

General conclusions for the first four countries

- The modifications of the national legislative framework should enable the consistency with limit values of the AGP technical annexes for stationary sources IV (SO₂), V (NO_x), VI (VOC industry), X (PM) and annex XI (VOC paints), in the four countries tentatively between 2024 to 2028, with different timelines according to countries (however no actions identified up to now for VOC from petrol distribution, from industrial plants and products in Kazakhstan)
- The four countries could be in the conditions to comply with the limit values of the AGP technical annexes for stationary installation IV (SO₂), V (NO_x), VI (VOC industry), X (PM) and annex XI (VOC paints), tentatively between 2030-35, with different timelines according to countries

General conclusions for the first four countries

- For mobile sources, some countries have no production of road vehicles and non road mobile machineries (Georgia, Moldova). Serbia implements the EU directives but with some delay. Kazakhstan applies rules of the Eurasian Economic Union (EEU) (currently the fifth ecological class for road vehicles (similar to Euro 5))
- For annex VIII, not enough information on the Eurasian Economic Union development process of regulations, to know if similar rules as the Euro 6 standards could be foreseen in a near future in Kazakhstan

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