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GENERAL SYSTEM GAP ANALYSIS

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SUMMARY

PROJECT TITLE:	AIR QUALITY GOVERNANCE IN THE ENPI EAST COUNTRIES
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Summary

The purpose of this document is **to provide an update on the air quality assessment and management systems existing in the ENPI East countries and the Russian Federation** (hereinafter to be referred to as "Partner Countries") in comparison with the relevant systems developed and implemented in the EU.

Gaps in the systems at policy, legislative, institutional, instrumental, operational and international levels and differences compared to the EU practice were identified preliminarily in 2011 and presented in the annex II to the Inception Report. Decision has been made during the first Project Steering Committee meeting in October 2011 that the findings of the gap analysis need to be reviewed on an annual basis so as to track progress in each area and ensure an up-to-date picture of the situation in each country.

According to the findings of the Gap Analysis performed in 2011, in all Partner Countries, air quality assessment and management systems were established and are operated, in particular:
- All Partner Countries have policy and legal background for air quality assessment and management
- All Partner Countries have competent authorities in the field of air quality assessment and management and supporting institutions
- All Partner Countries carry out air quality monitoring and collect emission data
- All Partner Countries have introduced air quality standards
- All Partner Countries have introduced certain command-and-control and economic instruments
- All Partner Countries have established permitting and enforcement procedures

In comparison with the previous report of 2011, changes (progress) has been observed only in three Partner Countries: Belarus and the Russian Federation have approved and enforced new legislation while in Georgia began to operate a new automatic monitoring station (Changes in the data appear in "red" throughout the report).

Major system gaps in air quality assessment remain as follows (with partial exception of Belarus and the Russian Federation):
- Underdeveloped systems of air quality monitoring (lack or insufficient number of automatic stations, no measurement of $PM_{2.5}$, very limited measurement of PM_{10} and ground level ozone)
- Not developed detailed rules for air quality assessment (with the exception of the Russian Federation)
- Insufficient air quality data gathering, treatment and interpretation (with the exception of the Russian Federation)
- Limited access to actual information on air quality
- Incomplete emission inventories (missing fugitive emissions from diffused sources)
- Almost missing automatic emission control measurements by plant operators. Often incomplete emission inventories (missing fugitive emissions from diffused sources with the exception of the Russian Federation)
- Often missing air quality projections and limited emission projections (with the exception of the Russian Federation).

Major system gaps in air quality management remain as follows:
- Missing specialized strategic documents for air quality management (with the exception of Russian Federation and Belarus)
- Lack of administrative capacities dealing with air quality management (with the exception of the Russian Federation)
- No air quality standards for PM_{10} (with the exception of Belarus and the Russian Federation) and for $PM_{2.5,}$ (with the exception of Belarus and the Russian Federation)
- No national emission ceilings (with partial exception of Belarus and the Russian Federation)
- No technology based emission limit values (with partial exception of Belarus, Ukraine and the Russian Federation)

- No generally binding requirements for operation of installations (with partial exception of Belarus and Ukraine)
- No integrated permitting (in the sense of Directives 96/61/EC and 2010/75/EU) with partial exception of Belarus and Ukraine)
- Almost zero-level of ratification of recent protocols to UNECE CLRTAP

Major differences in comparison with the EU air quality assessment and management system remain as follows:

- Air quality standards (very high number of pollutants observed, different limit values, in some cases different averaging periods
- Different fuel quality and emission standards for vehicles in some cases (more detailed information for transport sector - fleet, technical requirements for fuel, vehicles, and emissions - is provided in the Concordance table
- Different statistic approach and data format for collecting data
- Different philosophy of environmental permitting (mostly the old Soviet ad hoc approach of "state ecological expertise" in some cases complemented by EIA); no generally binding requirements setting the basic standard level

Recommendations: The focus for the project activities remains closely on the following items:

- Legal harmonization/approximation focusing on newly adopted directives (especially 2008/50/EC and 2010/75/EU); nevertheless experience with the implementation of the "previous" generation of directives (especially 96/62/EC and its "daughter directives and 96/61/EC) in the EU Member States is also important.
- Proposal of measures leading to ratification and implementation of recent CLRTAP protocols (HMs, POPs, the Gothenburg Protocol); gap analyses, road maps, cost-benefit analyses
- Detailed analysis of permitting procedures in Partner Countries and subsequent proposals to optimize them with respect to the concept of integrated permitting
- Identification of sectors for which national BATs and technology based emission limit values and other requirements could be defined,
- Introduction of advanced methodologies for the development of emission inventories (mobile sources, fugitive emissions from diffused sources)
- Transfer of know-how in monitoring (e.g. criteria for determining numbers of sampling points, data format, data treatment and transfer system) and data processing and interpretation (modelling tools)
- Introduction of advanced modelling tools for the development of emission inventories and emission projections (as support to considerations on ratification of the Gothenburg Protocol)

1. Air quality assessment and management systems in the Partner Countries

In this chapter, a structured basic screening is presented for the ENPI East Countries, the Russian Federation and the EU.

The updates from the previous Gap Analysis report of 2011 are highlighted in red in the following tables and are followed by brief descriptions of the progress made in the sector in the respective country. Detailed explanations of all changes, whether updates indicating progress in the period 2011-2012 or corrections of material mistakes, are provided in the summary table annexed to this report.

1.1. Air Quality Assessment

Table 1: ***Policy Level***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Special document on air monitoring	No	No	No	No	Yes	Yes	No	No
Special document on environmental monitoring	Yes	No	Yes	No	Yes	Yes[1]	Yes	No
Explicit provisions on air monitoring in environmental policy document	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Code: "Part" (partially), "Prep" (in preparation)

In January 2012, the Georgian government approved resolution No. 127 containing the National Environmental Action Plan of Georgia for the period 2012-2016.

Some Partner Countries adopted special program documents on environmental monitoring; others have relevant provisions into general environmental policy document.

There is no considerable system gap at the policy level (all countries have adopted or are preparing certain policy background for air monitoring)[2].

Table 2: ***Legislative level***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Special legal act on environmental monitoring	No	Yes	Yes	No	Yes	Yes	Yes	No
Special legal act on air monitoring	No	No	Yes	No	Part	Yes[3]	Yes	Yes
Provisions on air monitoring in the law on air protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Provisions on air monitoring in general law on environment	Prep	Yes	Yes	Yes	Yes	Yes	Yes	MS

Code: "Part" (partially), "Prep" (in preparation), "MS" (at the level of Member States).

All Partner Countries have legal background for monitoring of air quality and of emissions, mainly in the acts on protection of atmospheric air and almost all in general acts on the environment.

[1] Decree of the Government of the RF № 555 of 20 May 1999 (modified on 15 February 2011) on the Statute of the Federal Service for Hydrometeorology and Environmental Monitoring

[2] Special policy-level document on monitoring, as a part of the Ecological Doctrine of the Russian Federation (approved on 31 August 2002 by the Decree of the Russian Government No 1225-p)

[3] Federal Law no 96 on the Protection of Atmospheric Air, Article 23

There is no considerable system gap at the legislative level (legal background for air monitoring and assessment exists in all Partner Countries).

Table 3: ***Institutional level***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Air quality monitoring carried out by Hydromet	No	No	Yes	No	Yes	Yes	Yes	MS
Air quality monitoring carried out by the department of ministry	Yes	Yes	Yes	Yes	Yes	Yes[4]	No	MS
Air quality monitoring carried out also by other institutions (e.g. public health protection service)	Yes	Yes	Yes	No	Yes	Yes	Yes	MS
Air quality monitoring carried out by municipalities	No	No	No	No	No	Yes	Yes	MS
Air quality monitoring carried out by enterprises	Yes	No	Yes	No	Part	Part	Yes	MS
Data on air quality collected by the ministry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	MS
Data on air quality collected by other institution	Yes	Yes	Part	No	Yes	Yes	Yes	MS
Data on emissions collected by the ministry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	MS
Data on emissions collected by other institution	Yes	Yes	Yes	No	Yes	Yes	Yes	MS
Centralized national air quality database exists	Part	Yes	Yes	Yes	Yes	Yes	Yes	MS
Centralized national emission database exists	Part	Yes	Yes	Yes	Yes	Yes	Yes	MS

Code: "Part" (partially), "Prep" (in preparation), "MS" (at the level of Member States).

Following the adoption of new legislation in Belarus and Ukraine (end of 2011), air quality monitoring and self monitoring of emissions are now carried out by enterprises themselves.

In all Partner Countries, there are institutions responsible for air quality monitoring (hydromets or specialized departments of the ministries responsible for the environment) and for collection of emission data. Often, air quality monitoring in residential and working areas is being carried out by public health protection services. In all countries, data on air quality and on emissions are also collected by statistical services. The big municipalities in the Russian Federation (e.g. Moscow and St Petersburg) operate their own municipal air quality monitoring systems. Monitoring of emissions by enterprises with automatic measurements is still rather rare.

There is no considerable system gap at the institutional level (all countries have institutions responsible for air quality monitoring and for the monitoring of emissions; all countries have databases on emissions and on results of air quality monitoring).[5]
However, in certain countries considerable part of the data only exists in "hard copy". Moreover, self-monitoring by enterprises is rather missing.

[4] In the Russian Federation, Hydromet is subordinated to the Ministry of Environmental Protection

[5] Capacities of central competent authorities and of supporting institutions are not assessed at this stage.

Table 4: ***Operational level – air quality monitoring***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Total number of monitoring stations	21	26	61	9	19[6]	696	171	
From this total: Automated stations	7	0[7]	14	1	1	57	5	
From this total: Manual stations	14	26	47	8	17	639	163	
From this total: EMEP stations	1	0	1	1	1	7	1	
Parallel measurement of meteorological parameters	Yes	Yes	Yes	Yes	Part	Part	Yes	Yes
Measurement of PM_{10}	No	Prep	Yes	No	Part	Part	No	Yes
Measurement of $PM_{2.5}$	No	Prep	Prep	No	No	Part	No	Yes
Measurement of ground level ozone	Yes	Prep	Yes	Yes	Yes	Part	No	Yes
Measurement of sulphur dioxide	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Measurement of nitrogen dioxide	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Measurement of nitrogen oxides	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Measurement of carbon monoxide	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Measurement of benzene	Yes	?	Yes	No	No	Part	Part	Yes
Measurement of lead	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Measurement of nickel	No	?	No	No	Yes	Yes	Yes	Yes
Measurement of cadmium	No	?	Yes	No	Yes	Yes	Yes	Yes
Measurement of arsenic	No	?	No	No	Yes	Part	Part	Yes
Measurement of mercury	No	?	No	No	Yes	Part	Part	Yes
Measurement of benzo(a)pyrene	No	?	Yes	No	Yes	Yes	Yes	Yes
Measurement of other pollutants	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Code: "Part" (partially), "Prep" (in preparation)

Georgia has installed an automated monitoring station in Tbilisi, measuring PM_{10}, $PM_{2.5}$ and ground level ozone.

Monitoring systems in Partner Countries are mostly fully based on manual stations sometimes supplemented by passive sampling. Higher number of automated monitoring stations can only be found in Armenia, Belarus and Russian Federation. At the manual stations, probes are taken 3 or 4 times per day for 20 minutes. PM_{10} and ground level ozone are only monitored in Belarus and in big Russian cities (Moscow, St Petersburg). At the other hand, certain other pollutants are being monitored regularly (e.g. ammonium, formaldehyde or hydrogen sulphide).

Major system gap at the operational level lies in the absence of automated monitoring stations (with the exception of Armenia, Belarus, Georgia and the Russian Federation) and in lacking measurement of PM_{10}, $PM_{2.5}$ and ground level ozone (with the exception of Belarus and partially Russian Federation, the Republic of Moldova, Georgia and Ukraine). Concentrations of arsenic and nickel almost are not measured on a regular basis with exception of the Russian Federation[8].

[6] In addition, 12 stations (sampling points) are operated by the National Health Care Centre in the Republic of Moldova.

[7] The plans for 2012 include the installation of 15 automatic stations in 4 big cities

[8] Arsenic and mercury are measured in the Russian Federation on a regular basis but only in the cities where their high level could be expected because of existence of significant emissions of these pollutants.

Table 5: ***Operational level – national emission inventories***

	ARM	AZE	BEL	GEO	MDA	RUS	UKR	EU
Data on emissions from registered stationary sources collected	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data on emissions from diffused (non-registered) sources estimated	No	No	Yes	Part	No	Part	Part	Yes
Data on emissions from mobile sources calculated	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Annual emission inventory – sulphur dioxide	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Annual emission inventory – nitrogen oxides	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Annual emission inventory – VOC	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Annual emission inventory – ammonium	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Annual emission inventory – other pollutants	Yes	Yes	Yes	Yes	Yes	Yes	Yes	MS

Code: "Part" (partially), "Prep" (in preparation)

All Partner Countries collect data on emissions from registered (permitted) stationary sources based on annual statistical forms. Continuous or regular measurements done by operator of installations are rather rare, reported data on their emissions are based mainly on calculations. Data on national fugitive emissions from diffused stationary sources are sometimes not included (with exception of the Russian Federation). Data on emissions from mobile sources are calculated on the basis of the consumption of fuels, taking into account the composition of vehicle fleet.

Main system gaps lie in the absence of fugitive emissions from diffused stationary sources in national emission inventories (with exception of the Russian Federation) **and in almost missing self-monitoring of emissions** with automatic measurements **by the operators of large installations.**

Table 6: ***Operational level – data processing***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Analytical centre exists	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dispersion models at national level	Yes	No	No	No	No	Yes	No	Yes
Dispersion models at sub-national level	No	Yes	Yes	Prep	Yes	Yes	Yes	Yes
Air quality projections	Part	No	Yes	No	Yes	Yes	Yes	Yes
Emission projections	Part	No	Yes	No	Yes	Yes	Yes	Yes

Code: "Part" (partially), "Prep" (in preparation)

Georgia is preparing an air quality model ADMS-Urban for Tbilisi and it is expected to be ready by the end of 2012.

All Partner Countries have established analytical centres. Data on air quality are presented for the sampling sites in terms of exceeding the MACs (maximum allowable concentrations). Dispersion models are regularly applied at the stationary source level in calculations MAEs (maximum allowed emissions). Emission projections are assessed for several pollutants for the purposes of National Communications to UN FCCC. Air quality projections are often not available.

Major system gap lies in limited application of advanced modelling techniques and in resulting absence of air quality projections and (partially) emission projections, with the exception of Belarus and the Russian Federation.

Table 7: ***Operational level – air quality and emission data publication***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Annual reports on air quality	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Annual report on the environment	No	No	Yes	Yes[9]	Yes	Yes	Yes	MS
Specialized annual statistical year-book	Yes	Yes	Yes	Yes	Yes	Yes	Yes	MS
General statistical yearbook	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly bulletins	No	No	Yes	Yes	Yes	Part	Yes	MS
Monthly bulletins	Yes	Yes	No	Yes	Yes	Part	Yes	MS
Weekly bulletins	No	Yes	No	No	Yes	Part	No	MS
Daily bulletins	No	Yes	Yes	No	Yes	Part	Yes	MS
Website (annual data available)	Yes	No	Yes	Yes	Yes	Part	Yes	MS
Website (on-line / near-to-real time data)	No	No	Yes	No	Part	Part	Part	MS

Code: "Part" (partially), "Prep" (in preparation), "MS" (at the level of Member States).

In all Partner Countries, certain information on air quality is available as well as annual values of emissions of basic pollutants. Air quality on-line data on is only available in Belarus and for big Russian cities (Moscow, St Petersburg) as this depends on automated monitoring stations which don't exist elsewhere.

Major system gap lies in absence of on line information on air quality.

1.2. Air Quality Management System

Table 8: ***Policy Level***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Special document on air protection	No	No	No	No	No	Yes[10]	No	Yes
Explicit provisions on air protection in general environmental policy document	Yes	Part[11]	Yes	Yes	Part	Prep	Yes	Yes
Specific document (policy, action plan) on particular issues (e.g. POPs or Heavy metals)	Yes	Yes	Yes	Yes	Yes	Yes	Part	MS

Code: "Part" (partially), "Prep" (in preparation), "MS" (at the level of Member States).

The majority of the Partner Countries already have, or are preparing, a version of a national environmental policy document which includes air quality management. However none of them have adopted a specific policy document on air quality management.

Major system gap at the policy level can be seen in the absence of special strategic or policy document on air quality management and in some countries of general environmental policy document.

[9] National State of the Environment Reports prepared once every 3 years.
[10] Ecological doctrine of the Russian Federation adopted by the government in August 2002 and covering a broad spectrum of problems, air included
[11] Expired in 2010

Table 9: ***Legislative level***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Special legal act on air protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Provisions on air protection in general law on environment	Prep	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Explicit provisions on air protection in other laws	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Code: "Part" (partially), "Prep" (in preparation)

All Partner Countries have legislation on air quality management, air protection, the environment, ecological expertise and/or EIA.

There is no serious system gap at the legislative level (all countries have legislation on air quality management).

Table 10: ***Institutional level***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Main central competent authority	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other central authority with competencies in air quality management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supporting institutions specialized in air quality (hydro-meteorological, scientific research institutes, institutes of academies of sciences)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Code: "Part" (partially), "Prep" (in preparation)

All Partner Countries have ministries responsible for air quality management (ministries of environment, ministries of natural resources). Air quality standards are issued by the ministries of health and fuel quality standards and emission standards for vehicles by the ministries of transport or energy. Supporting institutions exist in all Partner Countries.

There is no system gap at the institutional level (all countries have central competent authorities explicitly responsible for air quality management as well as supporting institutions)[12].

[12] Capacities of central competent authorities are not being assessed at this stage.

Table 11: ***Instrumental level - Air quality standards***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
PM_{10}	No	No	Yes	No	Yes	Yes	No	Yes
$PM_{2.5}$	No	No	Yes	No	No	Yes	No	Yes
Ground level ozone	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sulphur dioxide	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nitrogen dioxide	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nitrogen oxides	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Carbon monoxide	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Benzene	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lead	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nickel	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cadmium	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arsenic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mercury	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Benzo(a)pyrene	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other pollutants	Yes	Yes	Yes	Yes	Yes	Yes	Yes	MS
Alert thresholds	No	No	No	No	No	No	No	Yes
Standards for protection of vegetation/ecosystems	No	No	Yes	No	No	Yes[13]	No	Yes
Compliance deadlines	No	No	No	No	No	No	No	Yes
Zones/agglomerations	No	No	No	No	No	No	No	Yes

Code: "Part" (partially), "Prep" (in preparation), "MS" (at the level of Member States).

In Russia, the Ministry of Natural Resources and Ecology has issued a decree (No 863) dealing with the approval of the state registration of legal entities and individual entrepreneurs with sources of emissions of harmful substances (pollutants) into the air, as well as the amount and composition of emissions of harmful substances (pollutants) and introduced emission limit values and pressures on ecological systems. The decree entered into force on 26 October 2011.

In the Partner Countries, air quality standards have been inherited from the Soviet Union[14] which were solely based on hygienic limits without assessing practical achievability. MACs (maximum allowable concentrations) are set for very high number of pollutants (often several hundred) and no compliance deadlines are set. A huge majority of these pollutants are not monitored on a regular basis. MACs are obviously defined in terms of daily means and the highest values, sometimes also in terms of annual means. During the permitting procedure, MACs are being used to calculate "maximum allowable emissions" (MAE). Limit values for $PM_{2.5}$ are missing with the exception of Belarus the Russian Federation; limit values for PM_{10} have only been introduced in Belarus and the Russian Federation. There are no separate standards for the protection of ecosystems/vegetation in place for sulphur and nitrogen oxides, with exception of Belarus and the Russian Federation. MACs for the pollutants controlled by the **Directives 2008/50/EC** and **2004/107/EC** are presented from Box 1 to Box 6.

[13] The decree of the Ministry of Natural Resources and Ecology "On approval of the state registration of legal entities and individual entrepreneurs with sources of emissions of harmful substances (pollutants) into the air, as well as the amount and composition of emissions of harmful substances (pollutants) into the air" will introduce emission limit values and pressures on ecological systems, which will enter in force till the end of 2011.

[14] In several Partner countries, the lists of MACs have been revised and or supplemented by MACs for PM (Belarus, Russian Federation).

Air quality is assessed by comparing the concentrations of pollutants at particular monitoring stations with respective values of MACs. Interpretation of the monitoring data by dispersion or chemical transport models, which take into account spatial distribution of emissions and meteorological parameters, is not carried out.

Air quality standards are in place for all EU regulated pollutants with the exception of PM which represents the major gap together with the absence of compliance deadlines. (Belarus and the Russian Federation are the only countries which have introduced standards for PM_{10} and $PM_{2.5}$) From the system point of view, the "philosophy" of air quality standards is similar to that applied in the EU before 1996 (i.e. before the adoption of Directive 96/62/EC and its "daughter directives").

Box 1: Maximum allowable concentrations (MACs) for major pollutants in Azerbaijan

Pollutant	MAC (µg/m^3)	
	24-hours average	Maximum
Dust	100	300
Sulphur dioxide	50	500
Carbon monoxide	3000	5000
Nitrogen dioxide	40	85
Nitrogen oxide	60	400
Soot	50	150
Benzo(a)pyrene	0.001	-
Benzene	100	1 500
Cadmium nitrate (calculated according to Cadmium)	0.3	-
Lead and its compounds (calculated as lead)	0.3	1
Ozone	30	160
Chlorine	30	100
Mercury	0.3	-
Fluorides	30	200
Formaldehyde	3	35
Hydrogen sulphide	-	8
Ammonium	40	200

Source: Ministry of Ecology and Natural Resources, 2010

Box 2: Maximum allowable concentrations (MACs) for major pollutants in Armenia

Pollutant	MAC (µg/m^3)	
	24-hours average	Maximum
Dust	150	500
Ground level ozone	30	160
Sulphur dioxide	50	500
Nitrogen dioxide	40	85
Nitrogen oxides	60	400
Carbon monoxide	3000	5000
Benzene	100	1500
Lead compounds (recalculated in lead)	3	-
Nickel compounds (recalculated in nickel)	1	-
Cadmium compounds (recalculated in cadmium)	0.3	-
Arsenic inorganic compounds (recalculated in arsenic)	3	-
Mercury compounds (recalculated in mercury)	0.3	-
Benzo(a)pyrene	0.001	-

Source: Decision of RA Government N 160N, February 2, 2006

Box 3: Maximum allowable concentrations in Belarus (MACs) for the pollutants controlled by the EU Directives 2008/50/EC and 2004/107/EC

Pollutant	MAC (µg/m^3)		
	24-hours average	Maximum	Annual average
PM_{10}	50	150	40
$PM_{2.5}$	25	65	15
Sulphur dioxide	200	500	50
Nitrogen dioxide	100	250	40
Carbon monoxide	3000	5000	500
Benzene	40	100	10
Ozone	90	160	-
Lead	0.3	1	0.1
Arsenic	3	8	0.8
Cadmium	1	3	0.3
Nickel	4	10	1
Benzo(a)pyrene	0.005	-	0.001

Source: Hygiene Norms GN No 186 of 30.12.2010 "Maximum Allowable Concentrations (MAC) of Pollutants in Ambient Air

Box 4: Maximum allowable concentrations in Georgia (MACs) for the pollutants controlled by the EU Directives 2008/50/EC and 2004/107/EC

Pollutant	MAC (µg/m^3)		
	24-hours average	Maximum	Annual average
Dust	150	500	-
Sulphur dioxide	50	500[15]	20
Nitrogen dioxide	40	200/85[27]	-
Carbon monoxide	3000	5000[27]	-
Ozone	30	160[27]	-
Lead	0.3	1[27]	0.06
Arsenic			
Cadmium			
Nickel			
Benzo(a)pyrene			

Total: 589 pollutants
Source Order #38/N of the Minister of Labour, Health and Social Affair, February 24, 2003

Box 5: Maximum allowable concentrations (MACs) for major pollutants in Moldova

Pollutant	MAC (µg/m^3)	
	24-hours average	Maximum
PM10*	-	-
PM2,5	-	-
Ground level ozone	30	160
Sulphur dioxide	50	500
Nitrogen dioxide	40	85
Carbon monoxide	3000	5000
Benzene	100	1500
Lead Excluding tetraethyl	0.3	-
Lead sulfide	1.7	-
Nickel metallic	1	-
Cadmium	0.3	
Arsenic	3	
Benzo(a)pyrene	0.001	

Total: 395 pollutants
Source: Guidelines for the control of air pollution from RD 52.04.186-89 01.07.1991

[15] For 30 min

Box 6: Maximum allowable concentrations in the Russian Federation (MACs) for the pollutants controlled by the EU Directives 2008/50/EC and 2004/107/EC

Pollutant	MAC (µg/m^3)		
	24-hours average[16]	Maximum	Annual average
PM_{10}	60	300	40
$PM_{2.5}$	35	160	25
Sulphur dioxide	50	500	-
Nitrogen dioxide	40	200	-
Carbon monoxide	3000	5000	-
Benzene	100	300	-
Ozone	30	160	-
Lead	0.3	1	-
Arsenic	3.0	-	-
Cadmium	0.3	-	-
Nickel	1	-	-
Benzo(a)pyrene	0.001	-	-

Source: Hygiene Norms GN 2.1.6.1338-03 "Maximum Allowable Concentrations (MAC) of Pollutants in Ambient Air, as amended

Box 7: Maximum allowable concentrations in Ukraine (MACs) for the pollutants controlled by the EU Directives 2008/50/EC and 2004/107/EC

Pollutant	MAC (µg/m^3)		
	24-hours average	Maximum	Annual average
PM_{10}	-	-	-
$PM_{2.5}$	-	-	-
Ozone	30	160	-
Sulphur dioxide	50	500	-
Nitrogen dioxide	40	200	-
Nitrogen oxides	60	400	-
Carbon monoxide	3000	5000	-
Benzene	100	1500	-
Lead	0.3	1.0	-
Nickel	1.0	-	-
Arsenic	3.0	-	-
Cadmium	0.3	-	-
Mercury	0.3	-	-
Benzo(a)pyrene	0.001	-	-

Source: State sanitary rules on atmospheric air protection from pollution in populated places (chemical and biological agents). Approved by the Ministry of Health on 09.07.1997 № 201

[16] 24-hours MAC for all pollutants except PM correspond in fact to the long-term average period (over the year or the season).

Table 12: ***Instrumental level - Command and control instruments***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Technology based emission limit values for stationary sources	No	No	Part	No	Part	Prep	Yes	Yes
Generally binding technical requirements for operation of particular categories of stationary sources	No	No	Part	No	Part	Part	Part	Yes
Best available techniques defined	No	Part[17]	No	No	No	No	Part	Yes
Fuel quality standards	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Emission standards for vehicles	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Emission standards for non-road mobile machinery	Yes	?	Yes	No	No	No	Yes	Yes
Ban on import of obsolete vehicles	Yes	Yes	Yes	No	Yes	Yes	Yes	MS
Administrative measures in the case on non-compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Self-monitoring by enterprises	Prep	No	Yes	No	No	Part	Yes	Yes
Reporting by enterprises	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Code: "Part" (partially), "Prep" (in preparation)

In the Partner Countries, technology based emission limit values and other generally binding technology based requirements are missing (with partial exception of Belarus and Ukraine). Recently, several Partner Countries have expressed their willingness to introduce this type of instruments in coming years (Armenia, Belarus, Georgia and Russian Federation). Best available techniques are not defined, but there can be seen political will to introduce the best technologies available to the market (e.g. Azerbaijan). Fuel quality standards and emission standards for vehicles are in place in all Partner Countries, but sometimes those based on the old Soviet GOST standards. Certain countries are introducing measures to implement Euro standards (e.g. Azerbaijan). Import of obsolete cars is controlled in the majority of countries. Legal background for measures against polluters non-complying with legal requirements exists in all countries. Evaluation of emissions done by operators of installations is required by legislation in all countries but it is often not supported by the measurement of emissions. All registered (permitted) polluting enterprises report on their emissions using detailed statistical forms.

Major system gaps in the field of command and control instruments can be found in:
- Absence of technology based emission limit values
- Absence of generally binding technical requirements for stationary emission sources operation
- Absence of definition of the best available techniques
- Absence of automatic emission control measurements made by installation' operators
Differences comparing to the EU practice can be found in fuel quality standards and emission standards for vehicles.

Table 13: ***Instrumental level - Economic instruments***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Air pollution charges	Yes	Yes	Yes	No	Yes	Yes	Yes	MS
Import duty on obsolete cars	Yes	Yes	Yes	Yes	Yes	Yes	Yes	MS
Penalties	Yes	Yes	Yes	Yes	Yes	Yes	Yes	MS
Environmental fund(s)	No	No	Yes	No	Yes	Part	Yes	MS
Incentives	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Code: "Part" (partially), "Prep" (in preparation), "MS" (at the level of Member States).

[17] General decision by the President of country

Within the Partner Countries, emission charges (with the exception of Georgia), penalties and import duties on cars represent the most common economic instruments. In certain Partner Countries, state environmental funds are in place while in other ones, the environmental projects are supported from the national budgets directly.

There is no considerable system gap in the field of economic instruments (all countries have legal background for different types of economic instruments for both negative and positive stimulation).[18]

Table 14: ***Instrumental level - Voluntary instruments***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
ISO 14 000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Eco-labelling	No	No	Yes	No	Part	No	Prep	Yes
Voluntary agreements	No	No	Yes	Yes	?	No	No	MS

Code: "Part" (partially), "Prep" (in preparation), "MS" (at the level of Member States).

On 18 May 2011, Ukraine issued a decree (No. 529) introducing technical regulations for ecologic labelling, however tit is not yet in force.

In the Partner Countries**, the application of voluntary instruments is in a very early stage** (with the exception of ISO 14 000, which is considered necessary by the companies exporting their products to mature markets).

Table 15: ***Operational level - Permitting and enforcement***

	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
Integrated permitting in place	Prep	No	Yes	Part	No	No	Prep	Yes
Permitting	Yes	Yes	Yes	Yes	Yes	Yes	Yes	MS
Enforcement [19]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	MS

Code: "Part" (partially), "Prep" (in preparation), "MS" (at the level of Member States).

On 17 November 2011, Belarus adopted the presidential decree (No. 528) on integrated environmental permit system.

In the Partner Countries, permitting is covered by the process of "State Environmental Expertise" which in certain cases, may be complemented by Environmental Impact Assessment. In Russia the procedure of the emission permits issue is administrative and based on approved emission standards. Integrated permitting has not been introduced but certain elements of integrated approach can be found in existing permitting procedures (e.g. flexibility of requirements or preparation of environmental passports).Typical permitting procedure, as applied in the Partner Countries, is presented (in generalized form) in *Box 7*. It can be seen, that this permitting procedure is very flexible as regards particular stationary emission sources. On the other hand, generally binding requirements, applicable to each emission source in a specified category (e.g. large combustion plants, waste incinerators) regardless its location are not in place (with the exception of Belarus and Ukraine). Recently, several countries have made the first steps to introduce integrated permitting and technology based requirements (e.g. Armenia, Belarus, Russian Federation or Ukraine).

[18] The effectiveness of economic instruments is not being assessed at this stage.

[19] The effectiveness of enforcement is not being assessed at this stage.

All countries have implemented permitting procedures as well as enforcement. Major system gap at the operational level lies in the absence of generally binding technology based requirements (emission limit values, rules of operation, best available techniques) and in absence of integrated permitting procedure (as provided for by Directive 2010/75/EU on industrial emissions).

Box 7: Typical environmental permitting procedure in Partner Countries (generalized):

Each installation, which is expected to have impacts on the environment, is subject to a permit issued by the Competent Authority (the ministry responsible for the environment). The Competent Authority decides whether the investment proposal (IP) should pass through the environmental impact assessment (EIA) process and whether full or limited EIA is to be carried out. In the case of IP with low environmental impacts, only technical documentation is required. Based on the results of EIA process or of the assessment of technical documentation, the permit is then issued. Together with the permit, two normative documents are being prepared and approved:

- Maximum allowable emissions into the air with validity of 5 years,
- Maximum allowable discharges of waste water with validity of 3 years.

After the expiry of these permits or in the case of substantial change, the operator has to apply for a new permit (which may be either identical to the previous one may include new requirements reacting to the changes implemented).

The maximum allowable emissions (MAE) for each relevant pollutant, expressed in mass units per time (tons per year or grams per second) are calculated on the basis of maximum allowable concentrations (MACs) using the OND-86 regulatory guideline with a description of the officially accepted dispersion model[20]. Pollutants are divided among several classes depending on their health and environmental impacts. When the maximum allowable emissions cannot be achieved for some objective reasons, the enterprise is requested to decrease concentrations in stages until the maximum allowable emissions are reached.

Before starting the operation of the installation, an environmental passport must be developed. The environmental passport shows a suite of all relevant environmental information: emissions into the air, waste water discharges, solid waste generation and also resource consumption, waste management, recycling or effectiveness of pollution abatement techniques. The draft environmental passport is submitted to the Competent Authority for approval. The validity of the environmental passport is five years but a new passport must also be prepared and submitted in case of changes. As a part of permitting procedure, charges for air and water pollution are calculated and laid down by the Competent Authority.

Note: MACs are the old Soviet hygienic limit values set for many dozens of air and water pollutants; the majority of them not being monitored on a regular basis.

Source: Environmental Performance Reviews of Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine

[20] EKOLOG is just a commercial name ("brand") of the computer code that is based on the algorithm described in OND -86. This code was tested by the developers of OND-86 and approved for its usage. There are several other computer codes with different commercial names (for example, PRISMA, LOGUS, LIDA etc) that are also based on the algorithm from OND-86 and approved for dispersion calculations.

Table 16: ***International level - Participation in relevant global and regional MEAs and programmes***

MEA/programme	ARM	AZE	BLR	GEO	MDA	RUS	UKR	EU
UN Framework Convention on Climate Change (UNFCCC)	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
Kyoto Protocol	R	R	R	R	R	R	R	R
Convention on Persistent Organic Pollutants (POPs) (Stockholm Convention)	**R**	**R**	**R**	**R**	**R**	**S**	**R**	**R**
Convention on Long-range Trans-boundary Air Pollution (CLRTAP)	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP)			R			R	R	R
1985 Protocol on the Reduction of Sulphur Emissions			R			R	R	R
Protocol concerning the Control of Nitrogen Oxides			R			R	R	R
Protocol concerning the control of emissions of Volatile Organic Compounds (VOCs)							S	R
1994 Protocol on Further Reduction of Sulphur Emissions						S	S	R
Protocol on Heavy Metals	S				R		S	R
Protocol on Persistent Organic Pollutants	S				R		S	R
Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol)	S				S			R
(Espoo) Convention on Environmental Impact Assessment in a Trans-boundary Context	**R**	**R**	**R**		**R**	**S**	**R**	**R**
(Aarhus) Convention on Access to Public Information in Decision-making and Access to Justice on Environmental Matters	**R**	**R**	**R**	**R**	**R**		**R**	**R**

Source: UNECE; Code: P – participation, S – signature, R – accession, acceptance, approval or ratification

At the EU level, all Member States as well as the EU as a whole are parties to all relevant conventions and protocols.

In the case of Partner Countries**, the major system gap lies in low level of ratification of CLRTAP and its protocols (especially the Gothenburg Protocol).**

Annex 1: List of Abbreviations

AQ	Air Quality
AQAMS	Air Quality Assessment and Management System
BAT	Best Available Technique
BREF	Best Available Techniques Reference Document
CLRTAP	Convention on Long-range Transboundary Air Pollution
DG	Directorate General
EC	European Commission
EEA	European Environment Agency
EIA	Environmental Impact Assessment
EMAS	Eco-management and Audit Scheme
EMEP	UNECE CLRTAL Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe
ENPI	European Neighbourhood Policy Initiative
EU	European Union
FCCC	Framework Convention on Climate Change
GAINS	Greenhouse Gas and Air Pollution Interactions and Synergies
GOST	Russian Technical Standard
IMPEL	European Union Network for the Implementation and Enforcement of Environmental Law
IPPC	Integrated Pollution Prevention and Control
MEA	Multilateral Environmental Agreement
MAC	Maximum Allowable Concentration
MAE	Maximum Allowable Emission
NEC	National Emission Ceiling
PM	Particulate Matter
PAH	Polycyclic Aromatic Hydrocarbon
POP	Persistent Organic Pollutant
PRTR	Pollution Release and Transfer Register
UN	United Nations
UN ECE	United Nations Economic Commission for Europe
VOC	Volatile Organic Compounds

Annex 2: References

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- AR Law “On Specially Protected natural territories and objects”
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Annex 3: Summary of changes

PAGE	WHERE	WHAT	UPDATES	REASON
Armenia				
7	Table 2	Special legal act on environmental monitoring	*No*	There is no legislation on environmental monitoring in Armenia
8	Table 3	Air quality monitoring carried out by municipalities Air quality monitoring carried out by enterprises Centralized national air quality database exists Centralized national emission database exists	*No* *Yes* *Part* *Part*	Many businesses are monitoring air quality There is no centralized database, but the monthly newsletter on environment, published on the website of the Ministry of Natural Resources includes analyses of the state of the air in the five cities where there are stationary monitoring stations. The websites of the Ministry and of the statistical office include summarized data on urban emissions
9	Table 4	Measurement of ground level Ozone Measurement of Nitrogen oxides Measurement of Benzene	*Yes*	Certain stationary monitoring stations in the center of Yerevan measure benzene, but the values are not included in the bulletin, as the concentration is very small compared to the MAC. The value of the concentration of benzene is reported as background.
10	Table 6	Dispersion models at national level Dispersion models at sub-national level Air quality projections Emission projections	*Yes* *No* *Part* *Part*	The "Rainbow" programme developed in the USSR for the calculation of dispersion of emissions is used. Other programs (models) are not used. There are no special programs on projections of air quality and emissions, despite that some environmental programs comprise air protection modules
12	Table 9	Provisions on air protection in general law on environment	*Prep*	A working group was established in the Ministry of Natural Protection to develop a new environmental codex. The activity has not yet begun.
15	Box 2	Maximum allowable concentrations (MACs) for major pollutants in Armenia	Inserted entries and data	Data according to the Government Decree N 160 of 2 February 2006 on the approval of maximum allowable concentrations of pollutants in the air of populated areas and maximum permissible limits of harmful substances in the exhaust gases of vehicles on the territory of the Republic of Armenia.
18	Table 12	Technology based emission limit values for stationary sources	*No*	Specific indicators, based on advanced technologies, are used in some projects, but there are no legislative regulations governing this.
18	Table 13	Incentives	*No*	There are legislative regulations governing payments for using natural resources and creating environmental pollution, but as they are unified, they do not stimulate environmental behavior or investments.
Azerbaijan				
9	Table 4	Automated stations Parallel measurement of meteorological parameters	*0* *Yes*	There are no automated stations currently.
14	Box 1	Dust Fluorides Ammonium	*100, 300* *30, 200* *40*	
14	Box 1	Benzo(a)pyrene, Benzene, Cadmium nitrate, Lead and its compounds, Ozone	Inserted entries and data	Pollutants controlled by the EU Directives 2008/50/EC and 2004/107/EC
23	Annex 2	References	Inserted entries	Law on Environmental Protection, Law on Ambient Air Protection, Law on Hydrometeorologycal Activity Law on Environmental Safety, Law on Industrial and Domestic Wastes Law on Specially Protected natural territories and objects, Hydrometeorology Development Program, Law on use of Energy resources, Law on Electrical and thermal power stations, Law on Energy, Code of administrative violations, National Program on Sustainable Socio-economic Development, Improving the Environmental situation for 2006-2010

PAGE	WHERE	WHAT	UPDATES	REASON
				Calculation Methodology for Air Pollution with Vehicle Exhaust Gas. Moscow, 1984, State Committee for Hydrometeorology and Nature Protection, USSR Manual No 2, TG for Air Protection Activities Report. 18 Aug. 2002, State Statistics Committee Resolution No. 122, on Payments, 3 Mar. 1993, Cabinet of Ministers. The methodology for identifying polluting substances into atmosphere in fluid combustion in boilers with productivity not less than 30 tons of steam an hour or less than 20 Gkal an hour., 1999 Methodological instructions on the calculation of wastes of polluting substances into atmosphere with steam gases of heating and heating-production boilers, M., 1991 Methodological instructions on the calculation of wastes of polluting substances during fluid combustion in boilers the productivity until 30 h., M., 1985 RD 153-34. 0-02. 318-2001. Methodological instructions on the calculation of gross wastes of dioxide carbon into atmosphere from boilers of heating power stations and boiler ones RD 153-34. 0-02. 316-99. Methodology for calculating wastes of benz(a)pyerene into atmosphere with steam boilers of power stations Rd 34.02. 304-95 Methodological instructions on the calculation of wastes of nitrogen oxides with steam gases of boilers of thermal power stations. RD 34. 02. 305.-98. Methodology for determining the gross wastes of polluting substances into atmosphere from boiler installations of TPS CO 153-34.02.304.-2003 Methodological instructions on the calculation of wastes of nitrogen oxides with steam gases of thermal power stations. CO 153-34.02.317.-2003 Methodological recommendations on the assessment of wastes of polluting substances into atmosphere from secondary productions of thermal power stations and boilers
Belarus				
8	Table 3	Air quality monitoring carried out by enterprises	***Yes***	According to the Law on air protection from 16 December 2008, article 21, paragraph 2.9 and the ordinance of the Ministry of Natural Resources and Environmental Protection of 1 February 2007 N 9 (as amended on 15 December 2011) on Approval of the Procedure for execution of the local environmental monitoring by legal entities engaged in economic and other activities that have harmful effects on the environment, including environmentally hazardous activities.
9	Table 4	Total number of monitoring stations From this total: Manual stations From this total: EMEP stations Parallel measurement of meteorological parameters	***61*** ***47*** ***1*** ***Yes***	According to the website of the Republican Center for Radiation Control and Environmental Monitoring
11	Table 7	Monthly bulletins	***No***	According to the website of the Republican Center for Radiation Control and Environmental Monitoring
13	Table 11	Standards for protection of vegetation/ecosystems	***Yes***	Ordinance of the Ministry of Natural Resources and Environmental Protection of 24 January 2011 № 5 on the establishment of standards of environmentally safe air concentrations of pollutants in special protected areas, some natural protected systems, special protected territories as well as natural areas, which are subject to special protection
18	Table 12	Self-monitoring by enterprises	***Yes***	Ordinance of the Ministry of Natural Resources and Environmental Protection of 17 March 2004 № 4 on approval of the instruction on the organization of the production control in the field of environmental protection and directions for the development and approval of instructions for the implementation of the production control in the field of environmental protection

PAGE	WHERE	WHAT	UPDATES	REASON
18	Table 13	Environmental fund(s)	*Yes*	The Global Environmental Facility
19	Table 15	Integrated permitting in place	*Yes*	Presidential Decree of 17 November 2011 № 528 on the integrated environmental permit
Georgia				
7	Table 1	Explicit provisions on air monitoring in environmental policy document	*Yes*	National Environmental Action Plan of Georgia 2012-2016, approved by the Resolution of the Government #127 of 24 January 2012
8	Table 3	Air quality monitoring carried out also by other institutions (e.g. public health protection service)	*No*	
9	Table 4	Total number of monitoring stations From this total: Manual stations	*9* *8*	
10	Table 6	Dispersion models at sub-national level	*Prep*	Air quality model ADMS-Urban for Tbilisi is under preparation and will be ready at the end of 2012.
11	Table 8	Explicit provisions on air protection in general environmental policy document	*Yes*	The Georgian Law on Environment Protection provides some concrete measures regarding ambient air protection.
16	Box 4	Maximum allowable concentrations in Georgia (MACs) for the pollutants controlled by the EU Directives 2008/50/EC and 2004/107/EC	Inserted entries and data	
19	Table 15	Integrated permitting in place	*Part*	Environmental Impact Assessment Report, which is developed for activities that are subject to ecological expertise for obtaining Environmental Impact Permit, is a complex document that includes assessment of different media of environment and the impact on human health and environment. Permit conditions are somehow integrated.
23	Annex 2	References	Inserted entries	National Report on the State of the Environment of Georgia, 9 Dec 2011 National Environmental Action Plan of Georgia, 24 January 2012 Order #38/n of the Minister of Labour, Health and Social Affairs of Georgia on approval of Environment Quality Norms, 24 February 2003, Order #297/n of Minister of Labour, Health and Social Affairs, 16 August 2001 Law on Environment Protection, 10 December 1996 Law on Ambient Air Protection 22 June 1999
Republic of Moldova				
7	Table 1	Special document on air monitoring Special document on environmental monitoring	*Yes* *Yes*	Guide to the air pollution monitoring RD 52. 04. 186-89 the USSR State Committee for Hydrometeorology. M., 1991.
7	Table 2	Special legal act on air monitoring	*Part*	Law 1422 of 17 December 1997 on atmospheric air protection Art.3,4, 5(e), 29 (1,2)
8	Table 3	Air quality monitoring carried out by the department of ministry	*Yes*	State Ecological Inspectorate
8	Table 3	Air quality monitoring carried out by enterprises	*Part*	Instruction on the inclusion of enterprises (units) in the list by category depending on the level of the impact on the air (order of the Ministry of Environment № 110 of 17 December 2010)
9	Table 4	Total number of monitoring stations From this total: Automated stations	*19* *1*	According to the data of State Hydro meteorological Service (SHS)
9	Table 4	Measurement of ground level ozone	*Yes*	According to the data of SHS

PAGE	WHERE	WHAT	UPDATES	REASON
11	Table 7	Weekly bulletins Website (on-line / near-to-real time data)	***Yes*** ***Part***	According to the data SHS (except weekends for the online)
11	Table 8	Explicit provisions on air protection in general environmental policy document	***Part***	National action plan related to environmental health,ch.4, 4.2 Atmospheric air
13	Table 11	PM10	***Yes***	According to the data of SHS
16	Box 5	Maximum allowable concentrations (MACs) for major pollutants in Moldova	Inserted entries and data	
18	Table 12	Technology based emission limit values for stationary sources Generally binding technical requirements for operation of particular categories of stationary sources	***Part*** ***Part***	Appendix 2 to the law on payment for environmental pollution, Nr. 1540 of 25 February 1998. The law on industrial safety of dangerous industrial facilities No. 803 of 11 February 2000, Law.2, art.10, item 4 (a,e,f,g,h)
19	Table 14	Eco-labeling	***Part***	
23	Annex 2	References	Inserted entries	Guide to the air pollution monitoring RD 52. 04. 186-89 the USSR State Committee for Hydrometeorology. M., 1991.
Russian Federation				
5	Summary	Major system gaps in air quality management	Inserted text	The emission limits values (ELV) are established in the form of state standards (GOST) for a number of heating power plants: GOST 50831-95: Boiler plants, Heat-mechanical equipment., General technical requirements., Moscow, 1995
7	Table 1	Special document on air monitoring	***Yes***	FZ No 96, Article 23 etc. Decree of the Government of the RF № 555 of 20 May 1999 (modified on 15 February 2011) on the statute of the Federal Service for Hydrometeorology and Environmental Monitoring
7	Table 2	Special legal act on air monitoring	***Yes***	
8	Table 3	Air quality monitoring carried out by the department of ministry Air quality monitoring carried out by enterprises	***Yes*** ***Part***	Russian Hydromet is subordinated to the Ministry of the Environmental Protection Only individual enterprises with prevailing number of fugitive emission sources carry out monitoring of the air quality for compliance with the established emission standards in the area affected by the emission of the enterprise
8	*Penultimate para before Table 4*	Monitoring of emissions by enterprises is rather rare	Monitoring of emissions by enterprises ***with automatic measurements*** is still rather rare	The enterprises organize self-monitoring of emissions with the automatic measurement analyzer (s) only on their own initiative, as yet no provisions requiring the use of analyzers

PAGE	WHERE	WHAT	UPDATES	REASON
9	Table 4	Measurement of $PM_{2.5}$ Measurement of Benzene Measurement of Lead Measurement of Nickel Measurement of Cadmium Measurement of Arsenic	***Part*** ***Part*** ***Yes*** ***Yes*** ***Yes*** ***Part***	Arsenic and mercury are measured on a regular basis but only in the cities where their high level could be expected because of "existence" of significant emissions of these pollutants. The same is true for all other pollutants except five "basic ones" (NO, NO2, CO, SO2 and TSP)
10	Table 5	Data on emissions from diffused (non- registered) sources estimated	***Part***	Methods to define and calculate emissions do not exist for a number of fugitive sources.
9	*Text in frame*	Conclusions to Table 4	Inserted text	Emissions from a large number of fugitive sources are subject of the national reporting on emissions. Emissions from these sources are controlled, but without the use of gas analyzers
11	Table 7	Quarterly bulletins Monthly bulletins Weekly bulletins Daily bulletins	***Part***	Emissions data are not published in the bulletins.
11	Table 8	Explicit provisions on air protection	***Yes***	Ecological doctrine of the Russian Federation, approved by the government in August 2002 and covering a broad spectrum of problems - air included.
13	Table 11	Standards for protection of vegetation/ecosystems	***Yes***	In Russia, the Ministry of Natural Resources and Ecology has issued a decree (No 863) dealing with the approval of the state registration of legal entities and individual entrepreneurs with sources of emissions of harmful substances (pollutants) into the air, as well as the amount and composition of emissions of harmful substances (pollutants) and introduced emission limit values and pressures on ecological sys-tems. The decree entered into force on 26 October 2011.
17	Box 6	PM_{10} Lead Arsenic Nickel	***40*** ***1*** ***3*** ***1***	Dispersion calculations are used in air quality assessment, establishing the emission projections, risk analysis etc. These calculations allow for estimating both the maximum short-term concentrations (for comparisons with short-term MAC) and average annual concentrations (for comparisons with long-term MAC as well as for risk analysis). In scientific institutions, more sophisticated models are actively used in both theoretical and applied studies (for example computational fluid dynamics CFD models using well-known meteorological drivers like WRF, MM5 etc). Partially these models are transferred to the end-users. The main limiting factors are related to the lack of required reliable emission datasets covering all major pollutants and the deficit of the qualified personnel for running the models and analyzing the results obtained.
17	Box 6	24-hours average	Inserted footnote	24-hours MAC for all pollutants except PM correspond to long-term average period (over the year or season)
18	Table 12	Self-monitoring by enterprises	***Part***	Only individual enterprises with prevailing number of fugitive emission sources carry out monitoring of air quality for compliance with the established emission standards in the area affected by their emissions
23	Annex 2	References	Inserted entries	Decree of the Government of the RF № 183 on 2 March 2000 (modified on 15 February 2011) on standards of pollutant emissions into the atmosphere air and harmful physical impacts on the atmosphere air The Decree of the Ministry of Natural Recourses of RF №579 of 31 December 2010 on determination method of the pollutant emission sources into the atmosphere air, which are subject to state recording and rate setting Decree of the Government of the RF №609 of 12 October 2005 on approval of the technical regulations on requirements to emission pollutants from automotive vehicles, produced in RF (with amendments on 27 November 2006 and 26 November 2009) Decree of the Government of the RF №87 of 16 February 2008 (modified on 15 February 2011) on section structure of the design documents and requirements to their content.

PAGE	WHERE	WHAT	UPDATES	REASON
				Decree of the Ministry of Natural Recourses of RF №650 of 25 July 2011 on approval of the administrative procedure of the state services provision by the Federal Service for Supervision of Nature Resources on the pollutant emissions permits into the atmosphere air (excluding radioactive materials). Decree of the Federal State Statistics Service № 336 of 29 July 2011 on approval of the form №2-ТП (air) of the federal statistic supervision Decree of the Ministry of Natural Recourses of RF №863 of 26 October 2011 on approval of the state accounting procedure for the legal bodies, individual entrepreneur, which have the pollutant emissions sources into the atmosphere air, and on approval of the quantity and composition of the pollutant emission
Ukraine				
7	Table 2	Special legal act on air monitoring	***Yes***	CMU decree of 9 March 1999 №343 on approval of the procedure of organization and execution of monitoring in the domain of air protection
8	Table 3	Air quality monitoring carried out by enterprises	***Yes***	CMU decree of 9 March 1999 №343 on approval of the procedure of organization and execution of monitoring in the domain of air protection. In 2012, the CMU will introduce a new procedure on environmental monitoring on enterprises.
9	Table 4	Total number of monitoring stations From this total: Automated stations From this total: Manual stations From this total: EMEP stations Parallel measurement of meteorological parameters Measurement of ground level Ozone Measurement of Benzene Measurement of Nickel Measurement of Cadmium Measurement of Arsenic Measurement of Mercury	***171*** ***5*** ***163*** ***1*** ***Yes*** ***No*** ***Part*** ***Yes*** ***Yes*** ***Part*** ***Part***	
10	Table 5	Annual emission inventory – VOC	***Yes***	
10	Table 6	Air quality projections	***Yes***	Air quality and pollutant emission predictions are carried out on enterprise, group of enterprises and urban scales. They are performed during the following activities: development of the programs on protection and sanitation of urban air; issue of permissions for emissions; estimation of background concentrations etc. Law on state prediction and development of economic and social growth programs for Ukraine Law on air protection MENR order № 286 of 30 July 2001 on approval of procedure for determining values of background concentrations of pollutants in atmospheric air MENR order № 108 of 9 March 2006 on approval of the instruction on general requirements for execution of documents that justify emission volumes for obtaining permission on the emissions of pollutants into the atmosphere by stationary sources for enterprises, institutions, organizations and private entrepreneurs
11	Table 7	Annual reports on air quality Specialized annual statistical yearbook Quarterly bulletins Monthly bulletins Weekly bulletins	***Yes*** ***Yes*** ***Yes*** ***Yes*** ***No***	

PAGE	WHERE	WHAT	UPDATES	REASON
		Daily bulletins Website (annual data available) Website (on-line / near-to-real time data)	***Yes*** ***Yes*** ***Part***	
11	Table 8	Specific document (policy, action plan) on particular issues (e.g. POPs or Heavy metals)	***Part***	CMU decree № 610-p of 15 October 2003 the concept of state policy implementation of emissions of pollutants reduction into the atmosphere which lead to acidification, eutrophication and ground-level ozone formation. The document concerns emissions of dust, sulfur dioxide and nitrogen, ammonia, hydrocarbons and light organic compounds. There are no analogous documents on heavy metals and persistent organic compounds.
17	Box 7	Maximum allowable concentrations in the Ukraine (MACs) for the pollutants controlled by the EU Directives 2008/50/EC and 2004/107/EC	Inserted entries and data	
18	Table 12	Technology based emission limit values for stationary sources Best available techniques defined Emission standards for non-road mobile machinery Self-monitoring by enterprises	***Yes*** ***Part*** ***Yes*** ***Yes***	MENR order № 309 of 27 June 2006 on approval of standards for allowable emissions of pollutants from stationary sources MENR order № 541 of 22 October 2008 on approval of the technological standards for allowable EOP from thermal power plants with nominal thermal power exceeding 50 MW MENR order № 524 of 5 October 2009 on technological standards for allowable emissions from installations of fused corundum production MENR order № 507 of 29 Sept 2009 on technological standards for allowable emissions from coke ovens etc. Currently technological standards are developed for blast steel-smelting productions. Methodical document: Methodology for calculating emissions of pollutants from mobile sources – Donetsk: UkrSCTE, 1999 – 107 pp. The CMU decree of 9 March1999 № 343 on approval of procedure of organization and execution of monitoring in the domain of air protection. In 2012, the CMU will introduce new procedure on environmental monitoring for enterprises
18	Table 13	Import duty on obsolete cars	***Yes***	MENR order № 309 of 27 June 2006
19	Table 14	Eco-labeling	***Prep***	CMU decree on 18 May 2011 № 529 on approval of technical regulation for ecologic labelling
23	Annex 2	References	Inserted entries	Concept of the State Program on Environmental Monitoring of 2004 National Action Plan for Environmental Protection for 2011-2015 (Resolution №577 of 25 May 2011) Decree №391 of 30 March 1998 on approval of the State Environmental Monitoring System Decree of the Cabinet of Ministers №343 on 09.03.1999 on approval of the procedure of organization and execution of monitoring in the domain of air protection GD 52.04.186-89 "Guidelines for atmospheric pollution control", Moscow: 1991. - 698 p. State sanitary rules of air protection from pollution (with chemical and biological agents) in human settlements approved by the Ministry of Health of 9 July 1997 № 201 Law of Ukraine on air protection Order of the Ministry of Ecology and Natural Resources of 27 June 2006, № 309 on approval of standards for maximum allowable emissions of pollutants from stationary sources