Country Fact Sheet

2018 - 2020

ARMENIA

Introduction

This fact sheet was developed by the European Environment Agency under the air component of the EU funded ENI SEIS II East project with an objective to increase the use and public accessibility of air quality measurement data in the ENI East countries. The aim of this document is to describe the state of play of air quality monitoring and data management.

The EEA is grateful to the team of experts from the European Environment Agency (EEA), Norwegian Institute for Air Research (NILU), 4sfera and the national experts from Armenia for drafting this document.

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1.   Legal framework

- RA law on environmental policy ecological policy (*in approval phase*)
- RA NHO-121 law (October 11, 1994) on *"Atmospheric air preservation"*
- The RA Government N50-3 protocol decree (December 15, 2016) on *"Approving the concept of the law of the Republic of Armenia on atmospheric air preservation"*
- RA NHO-56-N law (March 1, 2017) on *"Making amendments and supplements to the law of the Republic of Armenia on atmospheric air"* (Official reference N19, 2017)
- The RA Government N1120-N decree (September 14, 2017) on *"Defining the composition of atmospheric emission standards and control methods"***.**
- N160-N Decree (February 2, 2006) on *"Approving norms of maximum permissible concentration (MPCS) of atmospheric air pollutants in settlements''*
- N1186-N Decree (October 16, 2008) on *"Approving the order of prediction, warning and response of hydrometeorological hazards with reference to over pollution of the atmosphere, climate change and the condition of ozone layer''*
- N762-N Decree (July 8, 2015) on *"Approving the order of monitoring over the areas with high levels of pollution in the republic of Armenia (in particular, the areas adjacent to mines)"*
- RA law on supervising self-control over execution of environmental legislative requirements (*in approval phase*)

Other regulations
- UNECE convention on Long rang transboundary air pollution, and its protocol on Long-term Financing of the Co-operative Program for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP)
- United Nations Framework Convention on Climate Change Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer
- Aarhus convention
- EU-Armenia Comprehensive and Enhanced Partnership Agreement (CEPA), signed 24 November 2017
- UN Sustainable development goals (SDG) of 2030 Agenda, SDG 3, SDG 13

2.   Institutional framework

1. Ministry of Nature protection RA
   a) Division of protection policy of climate change and atmosphere
   b) Waste and Atmosphere Emissions Management Agency
2. Ministry of Emergency Situations (meteorological)
3. Ministry of Health
4. Statistical Committee

5. Institute for Informatics and Automation Problems (National Academy of Sciences of the Republic of Armenia) agreement to cooperate with EMIC to realize forecast modelling of air emissions

Roles of the Institutions

a) Division of protection policy of climate change and atmosphere develops State Policies for Atmospheric Air Protection.
b) Waste and Atmosphere Emissions Management Agency provides emission permit.
c) Environmental Monitoring and Information Centre implements monitoring, performs measurement, creates databases and reports it on monthly and annual basis.

Organization structure

- Environmental Monitoring and Information Centre and Waste and Atmosphere Emissions Management Agency are reporting to Statistical Committee.
- Environmental Monitoring and Information Centre informs about supernormal pollution to Ministry of Health.

3. Ambient air quality management

National Reference laboratory
For financial reasons there is no reference laboratory, but in near future planned to have it.

Since 2008 EMIC has been participating to proficiency testing inter-laboratory comparisons.
1. Water Research institute of Bratislava (metals and inorganics)-once in year.
2. Global atmospheric watch- twice in year.
3. European Monitoring and Evaluation Program (EMEP)- once in year.

Instrument maintenance
The technical department and instrument operators of EMIC implement maintenance activities.
EMIC cooperates with National Institute of Standards for instrument performance testing.

Data acquisition
In the Republic of Armenia, the Ministry of Nature Protection of the Republic of Armenia, represented by the "Environmental Monitoring and Information Centre" SNCO, is the only organization that carries out state monitoring of air quality. Currently, the EMIC carries out monitoring of air quality through a hybrid network. It consists of 15 stationary stations and 229 mobile (passive) sampling points.

The average daily contents of sulphur dioxide, nitrogen dioxide, ozone (only in Yerevan) and dust are monitored. Due to the lack of PM10 and PM2.5 equipment, particulate matters, main and most important indicators of atmospheric air pollution, are not monitored.

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Monitoring is done by sampling and then with laboratory analysis. Consequently, the public is not timely informed about the air quality (delay of at least three days).

Allocated funds for air quality related activities (both for monitoring and research) are not sufficient. In generally, whole system from monitoring to the assessment and research needs development and modernisation in accordance to EU requirements.

Data management:
Data is collected in server and managed by some programs.

Quality control
The EMIC has introduce its own simplified QC system, which is applied by the staff of the laboratory, when performing the activities related to the air quality monitoring. There is special division in the laboratory in charge of QC, but calibration and testing of the equipment control of samples testing and internal quality control are conducted by the laboratory staff. The calibrations of each method are carried out individually.

Air quality analysis
Comparison with national guidance, monthly and annual statistical analysis, trend analysis, source apportionment.

Air quality data are published monthly and annually. Real-time reporting is not performed.

Dissemination:
1. EMIC- Monthly and Annual Reports with maps, statistic, graphs
   http://armmonitoring.am/

2. Ministry of Nature Protection- Monthly and Annual Reports with maps, statistic, graphs
   http://www.mnp.am/

3. Statistical Committee of RA- (data, graphs)
   http://www.armstat.am/en/

Other uses:
- National reports
- Scientific works
- Assessment studies
- International and national projects

4. Pollution source management related to air quality

- Industry: done by "Expertise" services.

- House-heating/cooling: done by Gas Exploitation Office.

5. Participation in air quality related research projects
- National: The air quality related research projected carried out in Armenia by scientific organizations mostly with usage of air quality monitoring database of EMIC.
- EU: would like to participate.
- International: Since 2008 Armenia has been involved in European Monitoring and Evaluation Programme (EMEP).

6. Monitoring network

Number of stations
- 211 passive points,
- 16 active stations,
- 5 stations to implement real-time measurements (not functioning)

Station meta data
- Geo coordinates
- Station type (i.e. urban, suburban, rural)
- Station height above sea level
- Dominant emission sources
- Approximate distance to emission source

Instruments
- SO2 - 4 automatic analysers
- CO - 4 automatic analysers
- NOx - 2 automatic analysers
- O3 - 1 automatic analyser

- 422 passive samplers
- Parameters measured: NO2, SO2, O3, PM total, Heavy metals

Instruments models
- ICS-1000 Dieonex, Analitik Jena-Specord 205,
- SHIMADZU – UV-1650PC,
- PerkinElmer – Lambda 35,
- PerkinElmer – Elan 9000

Software
- Data logger: Excel, EBAS
- Data acquisition: implemented on daily basis

Modelling
- EMIC has planned to realize modelling with Institute for Informatics and Automation Problems (National Academy of Sciences of the Republic of Armenia).
- Health exposure calculations are carried out by Ministry of Health.

7. Conclusions from Regional AQ Workshops (September 2018 and November/2019)

Status:
- Mixture automatic/passive monitoring
- No database
- No data in near real time

Need for assistance:
- Database
- Data acquisition & management
- Requires calibration/maintenance protocol
- Review existing data (both automatic/manual)

8. Conclusions from country visit (November 2019)

Status
- Armenia relies on traditional monitoring. Despite some automatic equipment was installed and operational, automatic measurements have been discontinued due to lack of proper management and spare parts.
- There is no IT infrastructure in place to centralize and gather data from existing and future automatic stations.
- Air quality monitoring currently takes place using manual equipment. Main networks are found around Yerevan and Gyumri.
- Monitoring is carried out using active and passive samplers.
- Key parameters measured are NO2 and SO2 using own developed passive samplers and NO2, SO2, O3 and TSP using active methods.

Training requirements
- AQ Data management
- Management of AQ monitoring network

- Standardization and modelling
- Data reporting
- Setting up Reference Laboratory for AQ monitoring

Data exchange with EEA
- Electronic reporting open source tool - Raven was installed on a personal PC for testing.
- Meta-data has been prepared by the team for all stations in Yerevan and Gyumri network.
- Currently, there is no automatic network. However, the data exchange could include historical automatic data for NOx-NO2, SO2, O3 and CO from Teledyne automatic equipment.

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