

# Joint Task Force on Environmental Statistics and Indicators

Eighteenth session, Geneva and online, 18-19 October 2021

**Agenda Item 5. Ongoing developments with relevance for the work of the Joint Task Force**

**National developments in the implementation and sharing of environmental indicators and statistics, Armenia**



# Environmental Indicators-UNECE indicators

## Regularly updated environmental indicators

➤ 43 out of 49 UNECE environmental indicators are available and accessible per 2021.

<https://armstatbank.am/pxweb/en/ArmStatBank/?rxid=c09443bb-ca22-4914-aef8-4dac28535ba4>

➤ Producing and publishing new indicator- C9: Drinking water quality

[https://armstatbank.am/pxweb/en/ArmStatBank/ArmStatBank\\_8%20Environment\\_\(C\)%20Water%20resources/EE-c9.px/?rxid=758da92b-35c0-4417-91db-c63322a29222](https://armstatbank.am/pxweb/en/ArmStatBank/ArmStatBank_8%20Environment_(C)%20Water%20resources/EE-c9.px/?rxid=758da92b-35c0-4417-91db-c63322a29222)

	Armenia
<b>A. Air pollution and ozone depletion</b>	<b>3</b>
A1. Emissions of pollutants into the atmospheric air	x
A2. Ambient air quality in urban areas	x
A3. Consumption of ozone-depleting substances	x
<b>B. Climate change</b>	<b>3</b>
B1. Air temperature	x
B2. Atmospheric precipitation	x
B3. Greenhouse gas emissions	x
<b>C. Water</b>	<b>13</b>
C1. Renewable freshwater resources	x
C2. Freshwater abstraction	x
C3. Total water use	x
C4. Household water use per capita	x
C5. Water supply industry and population connected to water supply industry	x
C6. Connection of population to public water supply	x
C7. Water losses	x
C8. Reuse and recycling of freshwater	x
C9. Drinking water quality	x
C10. BOD and concentration of ammonium in rivers	x
C11. Nutrients in freshwater	x
C12. Nutrients in coastal seawaters	
C13. Concentrations of pollutants in coastal seawater and sediments (except nutrients)	
C14. Population connected to wastewater treatment	x
C15. Wastewater treatment facilities	x
C16. Polluted (non-treated) wastewaters	x
<b>D. Biodiversity</b>	<b>6</b>
D1. Protected areas	x
D2. Biosphere reserves and wetlands of international importance/place holder	x
D3. Forests and other wooded land	x
D4. Threatened and protected species	x
D5. Trends in the number and distribution of selected species	x
D6. Invasive alien species/place holder	x
<b>E. Land and soil</b>	<b>2</b>
E1. Land uptake	x
E2. Area affected by soil erosion	x
<b>F. Agriculture</b>	<b>4</b>
F1. Irrigation/place holder	x
F2. Fertilizer consumption	x
F3. Gross nitrogen balance	x
F4. Pesticide consumption	x
<b>G. Energy</b>	<b>6</b>
G1. Final energy consumption	x
G2. Total primary energy supply	x
G3. Energy intensity	x
G4. Renewable energy consumption	x
G5. Final electricity consumption/place holder	x
G6. Gross electricity production/place holder	x
<b>H. Transport</b>	<b>2</b>
H1. Passenger transport demand	x
H2. Freight transport demand	x
H3. Composition of road motor vehicle fleet by fuel type	
H4. Age of road motor vehicle fleet	
<b>I. Waste</b>	<b>3</b>
I1. Waste generation	x
I2. Management of hazardous waste	x
I3. Waste reuse and recycle	x
I4. Final waste disposal	x
<b>J. Environmental financing</b>	<b>1</b>
J1. Environment protection expenditure	x
<b>Total</b>	<b>43</b>

Statistical Committee of the Republic of Armenia

English

ArmStatBank >>> Environment >>> (C) Water resources >>> (C9) Drinking water quality by type of water supply, years and indicators

1 Choose table 2 Choose variable 3 Show table

(C9) Drinking water quality by type of water supply, years and indicators

Select variable:  Absent table

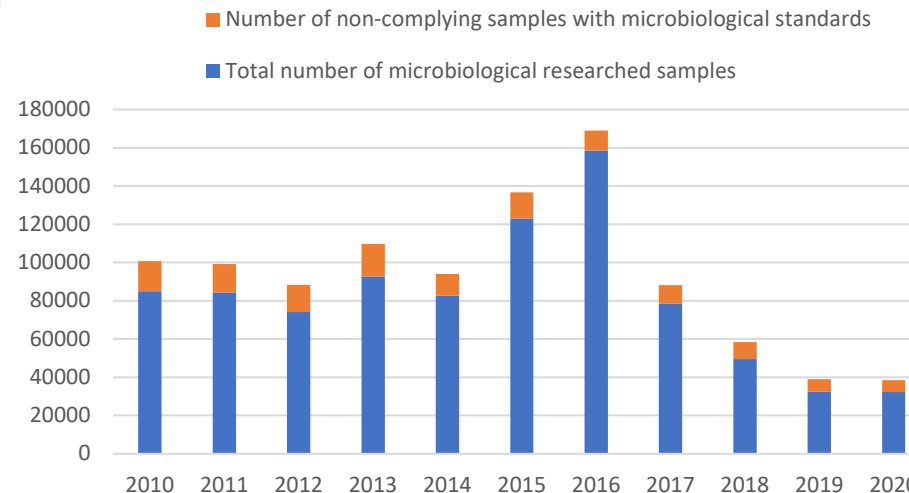
Mark your selections and choose between table on screen and file format. Marking tips: For variables marked with \* you need to select at least one value

type of water supply	years
Public water supply	2010
Depolluted rural municipal in public water supply	2011
Local water supply	2012
	2013
	2014
	2015

Search:    Beginning of row

Indicators:

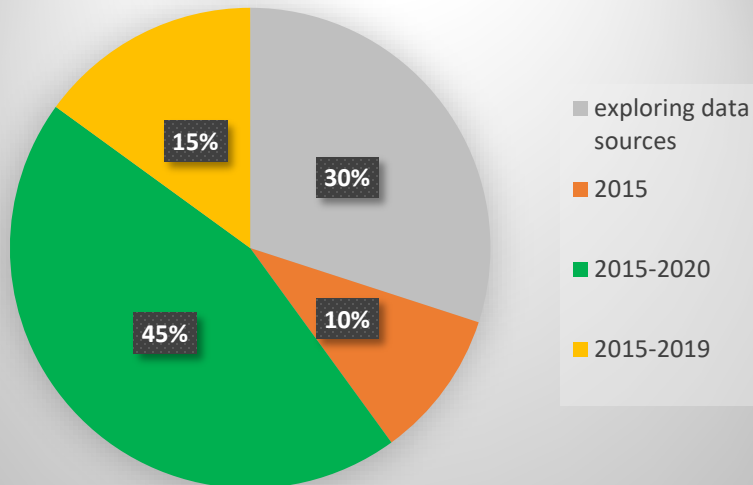
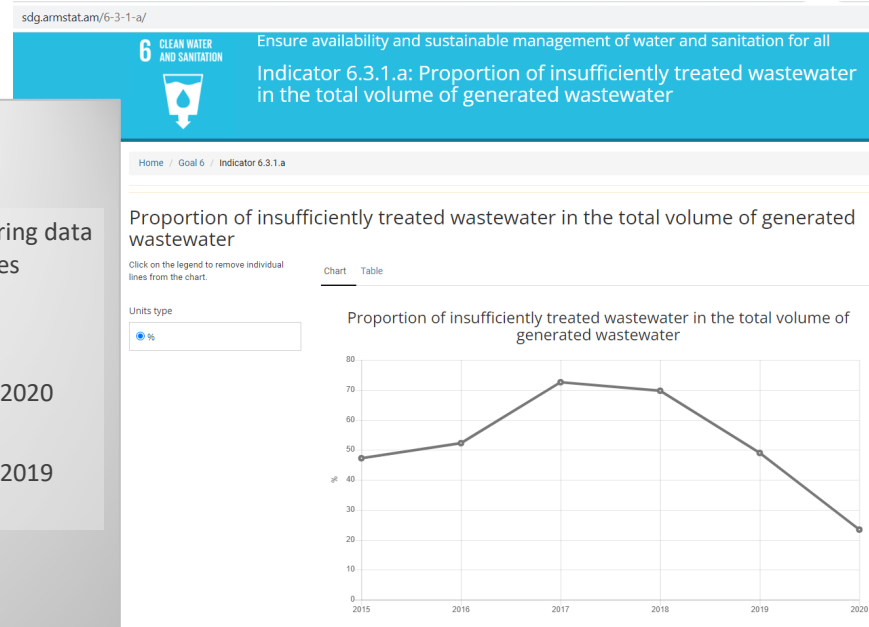
Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total number of sanitary chemical analysed samples											
Number of non-complying samples with sanitary chemical standards											
Total number of microbiological researched samples											
Number of non-complying samples with microbiological standards											
Number of samples non-complying with sanitary chemical and microbiological standards at the same time											



# Environmental Indicators-SDG

## Regularly updated SDG indicators

- A dedicated section on SDGs indicators is established on the website of the Statistical Committee <https://sdg.armstat.am/>
- 166 out of 322 SDG indicators are reported at the armstat
- 16 out of Environmental related 20 indicators are reported at the armstat



# Environmental economic accounts

## Regularly updated water account

➤ Water Account System developed, published and updated regularly

armstatbank.am/pxweb/en/ArmStatBank/?rxid=710c6cb9-314c-4b95-8fec-29ef0a24b6de

ArmStatBank

- 1. Economy and finances
- 2. Population and social processes
- 3. Industry (including Energy), construction, trade and services
- 4. Transport and tourism
- 5. Foreign trade
- 6. Agriculture, forestry and fishing
- 7. Food Security
- 8 Environment
  - (A) Emissions of pollutants into the atmospheric air
  - (B) Climate change
  - (C) Water resources
  - (D) Biodiversity
  - (E,F) Land and Agriculture
  - (H) Transport
  - (I) Waste
  - (J) Environmental financing
  - Mining of solid minerals by indicators and years
  - Environmental economic accounts
    - Water Accounts**
      - Physical water use and supply table by years, indicators and NACE categories and types
      - Physical water use and supply matrix inside economy by years, indicators and NACE categories and types
      - Hybrid water supply table by years, indicators and NACE categories and types
      - Hybrid water use table by years, indicators and NACE categories and types
      - Key Indicators by type and years

## Ongoing activities

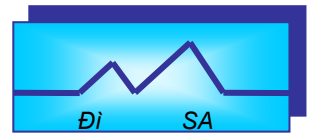
➤ Accounting air emission has been started to develop

# Climate change-related statistics

A road map for the development of climate change-related statistics in the Republic of Armenia has been developed with the support of the UNECE Statistical Division.

- The roadmap has been developed according to the following scheme:
  - • identification of priority actions,
  - • definition of sectoral activities,
  - • identification of ways to improve administrative registers,
  - • development and implementation of tools and mechanisms for actions,
  - • monitoring of implementation of works, evaluation of results,
  - • ensuring information quality, transparency, accessibility and continuous flow.
- <https://www.armstat.am/file/doc/99518228.pdf>

# Environmental indicators of life quality



- 19 indicators with relevant metadata have been developed according to OECD recommendations and requirements
- Methodological notes  
([https://www.armstat.am/file/ECASTAT/ECO/en/Annex%208\\_EN.pdf](https://www.armstat.am/file/ECASTAT/ECO/en/Annex%208_EN.pdf))
- Glossary  
([https://www.armstat.am/file/ECASTAT/ECO/en/Annex%209\\_EN.pdf](https://www.armstat.am/file/ECASTAT/ECO/en/Annex%209_EN.pdf))
- For 17 out of 19 indicators, the composite indicators by marzes and Yerevan city were calculated through the web application  
([https://fvidoli.shinyapps.io/compind\\_app/](https://fvidoli.shinyapps.io/compind_app/))
- Available in the ArmStatBank  
(<https://armstatbank.am/pxweb/en/ArmStatBank/?rxid=93ef0e74-b011-48dc-9104-4e6442c4ef74>)





Twinning Partnership with the Statistical Committee of the Republic of Armenia for the Project Implementation within the World Bank's Implementation of the National Strategy Program for Strengthening of the National Statistical System

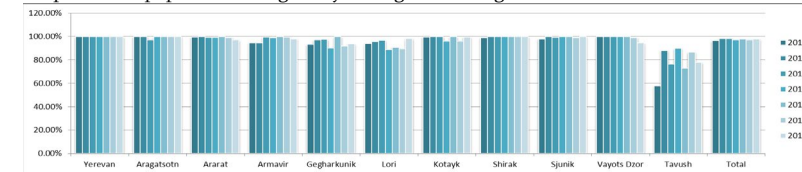
### Pre-selected environmental quality of life indicators list

Target concept	Indicator
<b>Impact of environmental hazards on human health:</b>	
<b>Environmental health</b>	1. Mortality rate attributed to household and ambient air pollution
	2. Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)
	3. Mortality rate attributed to unintentional poisoning
<b>Natural disasters impact</b>	1. Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
<b>Access to environmental services and amenities</b>	
<b>Intangible services and amenities</b>	1. Terrestrial protected areas (% of total land area)
	2. Forest area as a proportion of total land area
<b>Objective services and amenities</b>	1. Proportion of population using safely managed drinking water services
	2. Exceedance of air quality standards in urban areas
	3. Proportion of population using safely managed sanitation services
	4. Green area per 100,000 inhabitants
<b>Subjective services and amenities</b>	1. Satisfaction with the quality of water supply
	2. Satisfaction with the level of pollution
	3. Satisfaction with the level of noise
	4. Satisfaction with the quality of waste management
	5. Satisfaction with the level of traffic
	6. Satisfaction with the availability of green areas
<b>Quality of the environment</b>	1. Proportion of bodies of water with good ambient water quality
	2. Level of water stress: freshwater withdrawal as a proportion of available freshwater resources
	3. Annual mean levels of fine particulate matter in cities

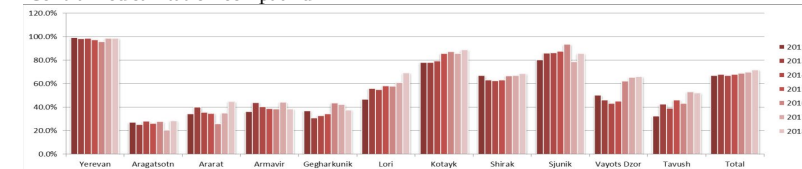
### Basic Set of Environment Statistics (BSES) of the Framework for the Development of Environment Statistics (FDES 2013)

It follows the hierarchical structure of the FDES and serves as a tool to assess the national relevance, importance, availability and sources of the individual statistics contained in the BSES. It also helps to identify relevant quantitative and qualitative data gaps, and to develop a plan for filling them in with a view to strengthen environment statistics according to national priorities, needs and available resources.

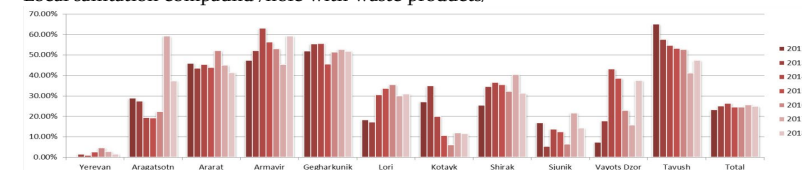
Proportion of population using safely managed drinking water services



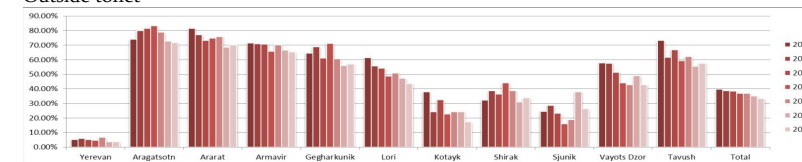
Proportion of population using safely managed sanitation services / Centralized sanitation compound



Proportion of population using safely managed sanitation services / Local sanitation compound /hole with waste products/



Proportion of population using safely managed sanitation services / Outside toilet

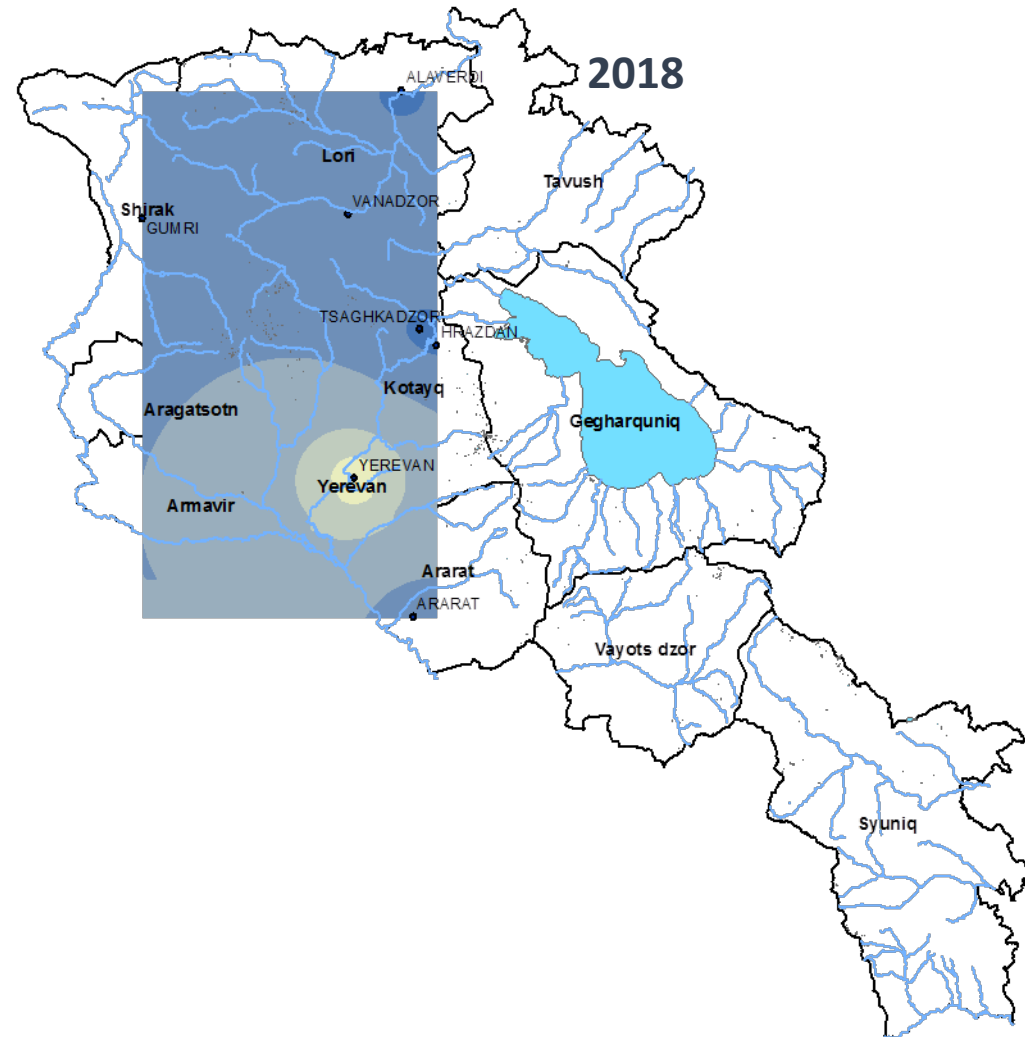


# GIS-CoKriging method for 2013 and 2018

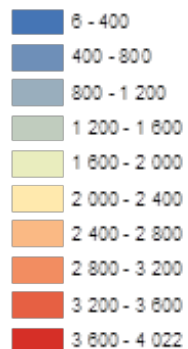
Mortality rate attributed to household and ambient air pollution  
Air Quality (mean value of Dust from monitoring stations of 7 cities)  
Elevation

**2013**

**2018**



Filled Contours



1. Alaverdi
2. Ararat
3. Gyumri
4. Hrazdan
5. Tsaghkadzor
6. Vanadzor
7. Yerevan



# Progress in ecoportal

Water Ecoportal of Armenia

Indicators

C1 - Renewable Freshwater Resources

C2 - Freshwater Abstraction in the Republic of Armenia

C3 - Total Water Use in the Republic of Armenia

C4 - Household Water Use Per Capita in the Republic of Armenia

C5 - Water Supply Industry and Population Connected to Water Supply Industry in the Republic of Armenia

C10 - Water Quality

C11 - Nutrients in Freshwater

D1 - Nationally Designated Protected Areas of the Republic of Armenia

ECO PORTAL Home Policy Topics Indicators Data Map

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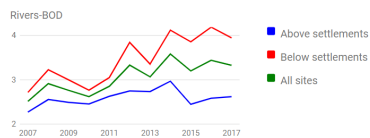
**Key message**

- The main source of organic matter emissions to rivers in Armenia is polluted wastewater (non-treated or not sufficiently treated), which, due to the lack of treatment plants, is emitted to the rivers
- The BOD and total ammonium concentration have increased at river sites below settlements in the period 2010-11 to 2017, due to emissions of untreated domestic wastewater from settlements and diffuse runoff from agriculture. For sites above settlements the levels have been more or less stable.
- Compared to 2008, the average ammonium concentration at Armenian river sites below settlements was 74% higher in 2017.
- The average BOD at Armenian river sites below settlements increased by 25% from 2008 to 2017.
- The current ammonium concentrations are high at many of the sites, giving cause for concern. Especially ammonium concentrations for sites above settlements are high in many cases. The largest proportion of sites with high ammonium concentrations are found in the Akhuryan, Hrazdan and Northern Water Basin Management Areas (WBMs). BOD levels are mainly too high in the Hrazdan and Akhuryan WBMs.

**Key figure(s)**

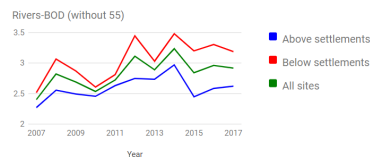
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Chart Table Export



Water resources management in Armenia is executed by the Ministry of Environment, through the Water Resources Management Agency (WRMA) and six basin management organizations (BMOs).

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**Basin Management Organizations (BMOs) and River Basins in Armenia**

BMO	River basin	Area (km <sup>2</sup> )	River flow (MCM/yr)
Northern BMO	Debed	3,895	1,203
	Aghstev	2,480	445
	Kura tributaries	810	199
Hrazdan BMO	Kasakh	1,480	329
	Hrazdan	2,565	733
	Sevan BMO	Lake Sevan	4,750
Ararat BMO	Azot	952	232
	Vedi	998	110
Akhuryan BMO	Apa	2,301	764
	Akhuryan	2,784	391
Southern BMO	Metsamor (Sevjur)	2,240	711
	Vorotan	2,476	725
	Voghji	1,341	502
Total	Meghritset	664	166
			<b>6,775</b>

Source: USAID 2008

Note: MCM = million cubic meters



Water Resources Atlas of Armenia

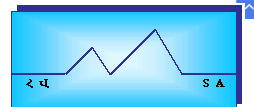
Water Resources Management in Armenia

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Araks

Ten Years of Experience in Reformatting Water Management Sector in

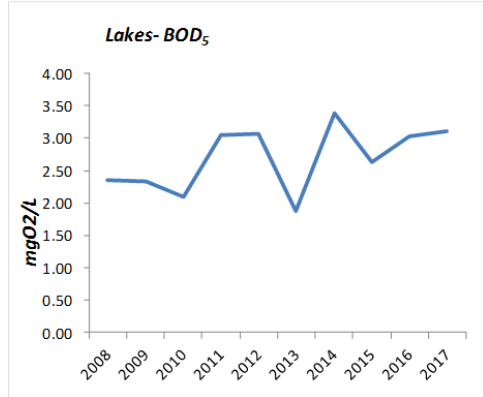
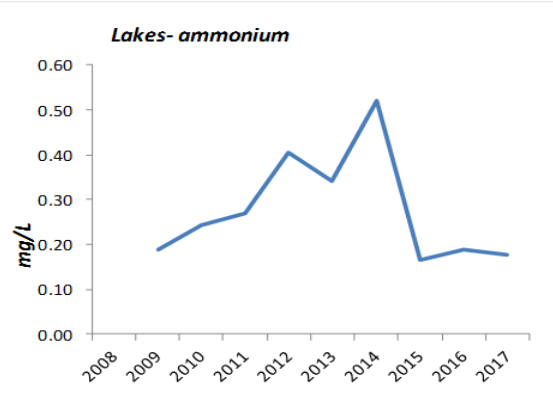
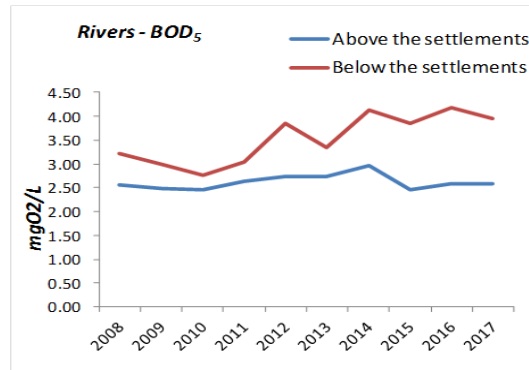
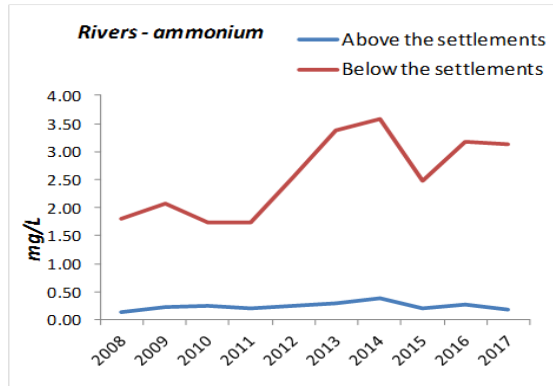


# Progress SEIS

## Water Indicator Specification and Assessment C1, C2, C3, C4, C5, C10, C11

### C10. BOD and concentration of ammonium in rivers and lakes

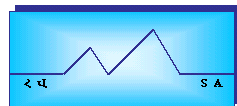
#### Key message



Biochemical oxygen demand (BOD) and ammonium are key indicators of organic pollution in water. BOD shows how much dissolved oxygen is needed for the decomposition of organic matter present in water. Concentrations of these parameters normally increase as a result of organic pollution caused by discharges from waste water treatment plants, industrial effluents and agricultural run-off. Severe organic pollution may lead to rapid de-oxygenation of river water, high concentration of ammonia and disappearance of fish and aquatic invertebrates.

- Concentration of BOD and total ammonium have increased in rivers in the period 2012 to 2017 due to the influence of not treated domestic wastewater of settlements and diffuse runoff from agriculture.

- Average concentrations of BOD<sub>5</sub> below and above settlements belong to the second class (good quality) assessed by Armenian water quality norms. Average concentrations of ammonium below settlements mainly belong to the fourth class (poor quality) or fifth class (bad quality), and before settlement - second class (good quality).



# Production of environmental reports, analyses and assessments based on environmental information and indicators, including through the use of SEIS



## ➤ National environmental reports, State of environment report

[http://mnp.am/uploads/1/1534773643report2007-2011\\_eng.pdf](http://mnp.am/uploads/1/1534773643report2007-2011_eng.pdf)

## ➤ Specialised reports – climate

[http://www.mnp.am/uploads/1/1594377030FNC\\_Eng.pdf](http://www.mnp.am/uploads/1/1594377030FNC_Eng.pdf)

## Specialised reports – air

<http://armmonitoring.am/public/admin/ckfinder/userfiles/files/ampopag/Odi%20Obzor%202020.pdf>

## Specialised reports - water

<http://armmonitoring.am/public/admin/ckfinder/userfiles/files/ampopag/Water%20report%202019.pdf>

## Specialised reports - biodiversity

<http://mnp.am/uploads/1/15840212196-N.REPORT-ARMENIA-revised-eng-05.03.2019.pdf>

## National Statistical yearbooks

<https://www.armstat.am/am/?nid=586&year=2020>

## Environment and Natural Resources in the Republic of Armenia for 2020 (Statistical publications)

<https://www.armstat.am/en/?nid=82&id=2301>

## Environmental Statistics of Armenia for 2019 and Time-Series of Indicators for 2015-2019

<https://www.armstat.am/en/?nid=82&id=2309>

## Reports on the state of the environment (Annual reports produced by Hydrometeorology and Monitoring Center SNCO)

<http://armmonitoring.am/public/admin/ckfinder/userfiles/files/texekanq/tarekan/Annual-19.pdf>

Report on the results of Environmental monitoring (Quarterly reports produced by Hydrometeorology and Monitoring Center SNCO, which has been expanded essentially and included the results of meteorological conditions, climate change, forests, and hydrological monitoring.)

<http://armmonitoring.am/public/admin/ckfinder/userfiles/files/texekanq/eramsjak/II%20Eramsyak%202020.pdf>

# Remaining challenges

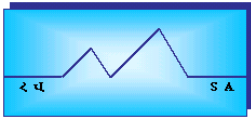


- Production of environmental reports, analyses and assessments based on environmental information and indicators, including through the use of SEIS.
- Lack of inventory of public information available for disclosure. Institutions publish their information on their website but very few datasets are published and no inventory of the total amount of data available exists.
- Improvements in data quality assurance and control, as well as management of data.
- Improvements in data policy & institutional and regulatory mechanisms & technical solutions for data exchange between various ministries and agencies & with other users, including the public.
- Lack of published data in machine-readable formats. Formats of data published by administration bodies differ from each other, which hampers usage. Procedures related to formats of data files and way of its dissemination should be unified to improve re-usability and digital processing.
- **Development at country level to enhance digitalization & digital transformation related to environmental information including through the use of new technologies, big data, artificial intelligence & Earth observation for environmental monitoring.**



**Thank you!**





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