

Technical Implementation of Water Accounts

Naira Mandalyan

Statistical Committee of Armenia
Social Sphere and Nature Protection
Statistic Division

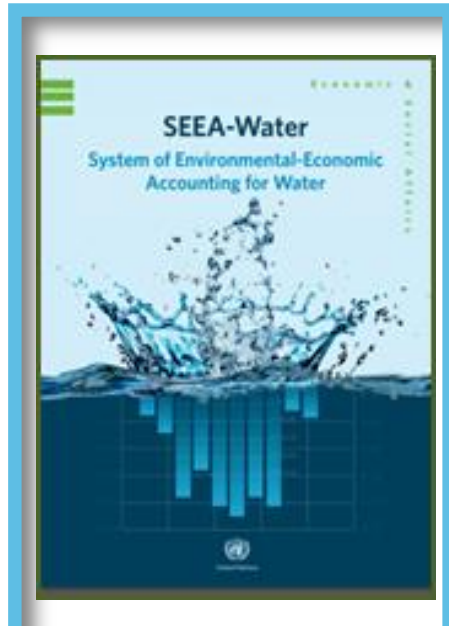


Twinning - Phase II

08.2015-08.2017



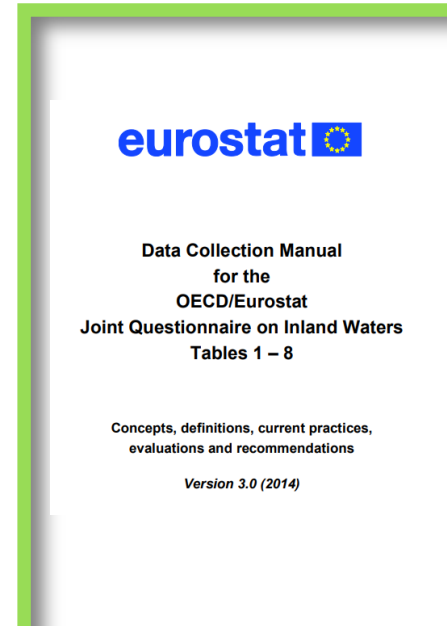
References



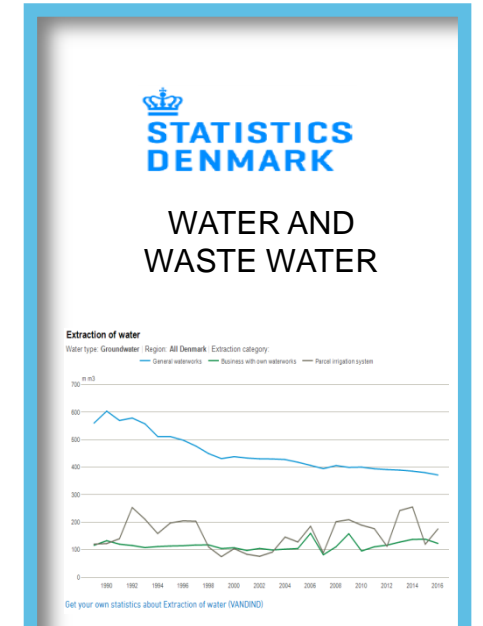
System of Environmental-Economic Accounting for Water (SEEA-Water)



OECD-ESTAT JQ Manual version 2-21



Data Collection Manual for the OECD-Eurostat Joint Questionnaire on Inland Waters version 2014



Documentation of statistics for Water and Waste Water 2014, Statistics Denmark

Physical water flow

Ministry of Nature Protection of RA

- *Water resources management agency*
<http://wrma.am>

Environmental protection and mining inspection body of RA

- <http://www.gov.am/en/bodies-under-government/42/>
economic units

Ministry of Energy Infrastructures and Natural Resources of RA

- **Water committee**
<http://www.scws.am/en>
public water supply and sewerage companies

RA State Revenue Committee

<http://www.gov.am/en/bodies-under-government/230/>

ARMSTATBANK.am

C. Water indicators
C1. Renewable freshwater resources
C2. Freshwater abstraction (surface and groundwater)
C3. Total water use
C4. Household water use per capita
C5. Water supply industry and population connected to water supply industry
C6. Connection of population to public water supply
C7. Water losses
C8. Reuse of freshwater
C9. Drinking water quality
C10. BOD and concentration of ammonium in rivers
C11. Nutrients in freshwater
C12. Nutrients in coastal seawaters
C13. Concentrations of pollutants in coastal seawater and sediments (except nutrients)
C14. Population connected to wastewater treatment
C15. Wastewater treatment facilities
C16. Polluted (non-treated) wastewaters

Monetary flow

RA Statistical Committee

- *Social Sphere and Environmental Statistics*
- *National Accounts*
<https://www.armstat.am/en/?nid=202>
- *Household Surveys Division*

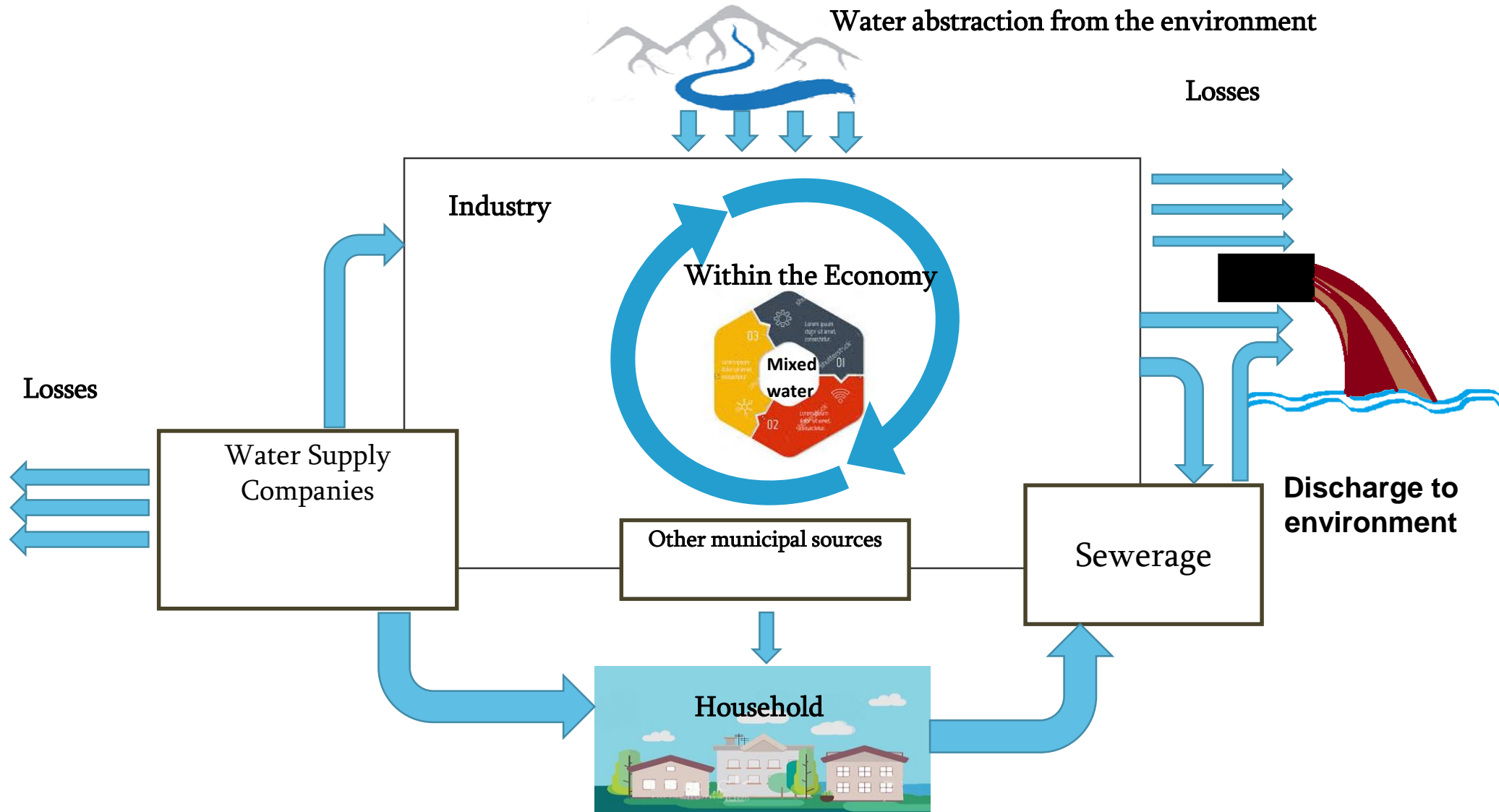
Environmental protection and mining inspection body of RA

Ministry of Nature Protection of RA

RA State Revenue Committee

<http://www.gov.am/en/bodies-under-government/230/>

Physical Water Flow



Water Accounts

Physical Water Supply and Use Tables

- By types of water sources
- Years
- Indicators
- NACE categories



National Accounts

- Product output and supply
- Intermediate consumption
and use

Formation of the System of Water
Satellite Accounts in Armenia
(arm. version)

Physical use table 1
(millions of cubic meters), by NACE categories and households

1. Total abstraction from the environment (= 1.a + 1.b = 1.1 + 1.2)
1.a. Abstraction for own use
1.b. Abstraction for distribution
1.1. Surface water
1.2. Groundwater
2. Use of water received from other economic units
3. Total use of water (= 1 + 2)
3.1. Total abstraction from the environment (= 1.a + 1.b = 1.1 + 1.2)

Physical supply table 2
(millions of cubic meters), by NACE categories and households

4. Supply of water to other economic units of which:
4.1. Wastewater to sewerage
5. Total returns into the environment (= 5.a + 5.b)
of which:
5.a.
5.b.
5.b.
5.c.
5.d.
5.e.
5.f.
5.g.
5.h.
5.i.
5.j.
5.k.
5.l.
5.m.
5.n.
5.o.
5.p.
5.q.
5.r.
5.s.
5.t.
5.u.
5.v.
5.w.
5.x.
5.y.
5.z.
6. Total
7. Consumption (= 3 - 6)

The matrix table 3

A. Physical use table (millions of cubic metres)	Industries (by NACE)	House holds	Supply of water to other economic units (row 4 of table 2)
Industries (bv NACE)	X	X	X
		X	X
Other economic units (row 2 of table1)	X	X	X

UNSD/United Nations Environment Programme Questionnaire on Environment Statistics

18 Total volume of available freshwater (=abstracted+desalinated+recycled+import-export) mln. m³/year

19 Losses during transportation mln. m³/year

20 Total freshwater use (=18-19) mln. m³/year

5. ?

UNSD/United Nations Environment Programme Questionnaire on Environment Statistics

Таблица W2: Забор и использование пресной воды

• Пожалуйста, проверьте верность данных, если цвет шрифта переменялся на красный.

№ строки	Категория	Единица измерения	1990	1995	1996	1997	1998	1999	2000	2001	2002	2003
1	Забор пресных поверхностных вод	млн. м³/год	2616.6	1480	1461	1730.7	1614	1610	1638.2	1495.7	1417.5	1401.7
2	Забор пресных подземных вод	млн. м³/год	1325.4	851	616	520	530	536	533	530	675	674
3	Забор пресной воды (=1+2)	млн. м³/год	3942	2331	2077	2250.7	2144	2146	2171.2	2025.7	2092.5	2075.7
из которого забор осуществили:												
4	предприятия водоснабжения (МСОК 36)	млн. м³/год	1022	555	530.8	456.4	329.3	444	603	569	552.2	585.5
5	домашние хозяйства	млн. м³/год										
6	сельское хозяйство, лесоводство и рыболовство (МСОК 01-03)	млн. м³/год										
7	из которого использовано в целях сельскохозяйственной ирригации	млн. м³/год										
8	Горнодобывающая промышленность и разработка карьеров (МСОК 05-09)	млн. м³/год										
9	обрабатывающая промышленность (МСОК 10-33)	млн. м³/год	518.7	39.3	46.1	64.4	51.2	61.1	59.2	47.7	46.2	43.8
Снабжение электроэнергией, газом,												

The volume of water directly taken from surface water sources (rivers, lakes, reservoirs, etc., including the amount of collected rainfall) and from underground sources by economic entities belonging to subsections of ISIC 01-03 for their own needs This category includes water abstraction by water supply enterprises (ISIC 36) for the operation of irrigation canals.

AQUASTAT Questionnaire

I	Water withdrawals
I.1.	Water withdrawals by sector
111	Total water withdrawal (1111 + 1112 + 1113)
1111	Agricultural water withdrawal: total (11111 + 11112 + 11113)
11111	Water withdrawal for irrigation
11112	Water withdrawal for livestock (watering and cleaning)
11113	Water withdrawal for aquaculture
1112	Municipal water withdrawal
1113	Industrial water withdrawal (incl. water for cooling of thermoelectric plants)
11131	Water withdrawal for cooling of thermoelectric plants
112	Environmental flow requirements

1111 Agricultural water withdrawal (km³/year)

Annual quantity of **self-supplied** (own use and not for distribution, as opposed to supplied to other economic units) water withdrawn for irrigation, livestock and aquaculture purposes. It includes water from primary renewable freshwater resources and secondary sources of water, as well as water from over-abstraction of renewable groundwater or withdrawal of fossil groundwater, direct use of agricultural drainage water and (treated) wastewater, and desalinated water.

1112 Municipal water withdrawal (km³/year)

Annual quantity of water withdrawn primarily for the **direct use by the population**. It includes water from primary renewable freshwater resources and secondary sources of water, as well as potential over-abstraction of renewable groundwater or withdrawal of fossil groundwater and the potential use of **desalinated water or direct use of treated wastewater**. It is usually computed as the total water withdrawn by the public distribution network. It can include that part of the industries, which is connected to the municipal network. The ratio between the net consumption and the water withdrawn can vary from 5 to 15 percent in urban areas and from 10 to 50 percent in rural areas.

UNSD/United Nations Environment Programme Questionnaire on Environmental Statistics

Water Accounts Statistics

А. Physical use table (millions of cubic metres), 2017

Таблица W2: Забор и использование пресной воды

№ строки	Категория	Industries (by ISIC category)										Households	Supply of water to other economic units (row 4 of table III.3)			
		1-3	1	3	5-33, 41-43	10-33	35	35-11-2	36	37	38, 39, 45-99			Total		
1	Забор пресных поверхностных вод	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Забор пресных подземных вод	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Забор пресной воды (= 1+2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	из которого забор (0-33) осуществлён:															
	Индустрии (by ISIC 36)															
5	домашние хозяйства	881.6	881.6	0	0	0	0	0	0	0	0	0	0	0	0	0
6	сельское хозяйство, лесоводство и рыболовство (МСОК 01-03)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	из которого использовано в целях сельскохозяйственной ирригации	881.7	881.7	0	0	0	0	0	0	0	0	0	0	0	0	0
Households	Горнодобывающая и обрабатывающая промышленность (МСОК 10-33)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rest of the world	Use of water received from other economic units (row 2 of table III.1)	881.9	881.7	0	0	0	0	0	0	0	0	0	0	0	0	0
9	обрабатывающая промышленность (МСОК 10-33)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Снабжение электроэнергией, газом, паром и кондиционированным воздухом (МСОК 35)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Memorandum items for water abstraction															
12	Abstraction from artificial reservoirs															
13	Water abstraction for purposes of hydroelectricity generation															

The volume of water directly taken from surface water sources (rivers, lakes, reservoirs, etc., including the amount of collected rainfall) and from underground sources by economic entities belonging to ISIC division 35 for own needs. This category does not include water for hydropower generation (for example, water behind dams in reservoirs).

Name	Gross water abstraction (= water withdrawal)
Number	15
Definition	Water removed from any source, either permanently or temporarily. Mine water and drainage water are included. Water abstractions from groundwater resources in any given time period are defined as the difference between the total amount of water withdrawn from aquifers and the total amount charged artificially or injected into aquifers. Water abstractions from precipitation (e.g. rain water collected for use) should be included under abstractions from surface water. The amounts of water artificially charged or injected are attributed to abstractions from that water resource from which they were originally withdrawn. Water used for hydroelectricity generation is an in-situ use and should be excluded.

Hybrid supply table 4

1. Total output and supply
(billion of drams)
of which:

1.a. Natural water (CPC 1800)

1.b. Sewerage services (CPC 941)

2. Total supply of water (millions of
cubic meters)

2.a. Supply of water to other
economic units
of which:

2.a.1. Wastewater to sewerage

2.b. Total returns

Hybrid use table 5

1. Total intermediate consumption and
use (billion of drams)
of which:

1.a. Natural water (CPC 1800)

1.b. Sewerage services (CPC 941)

2. Total use of water (millions of cubic
meters)

2.a. Total abstraction
of which:

2.a.1. Abstraction for own use

2.b. Use of water received from other
economic units

Key indicators

Water consumption [million m³]

Water consumption per GVA (gross value added)
[m³ per 1000 drams]

Water consumption per Production Output
[m³ per 1000 drams]

Water use [million m³]

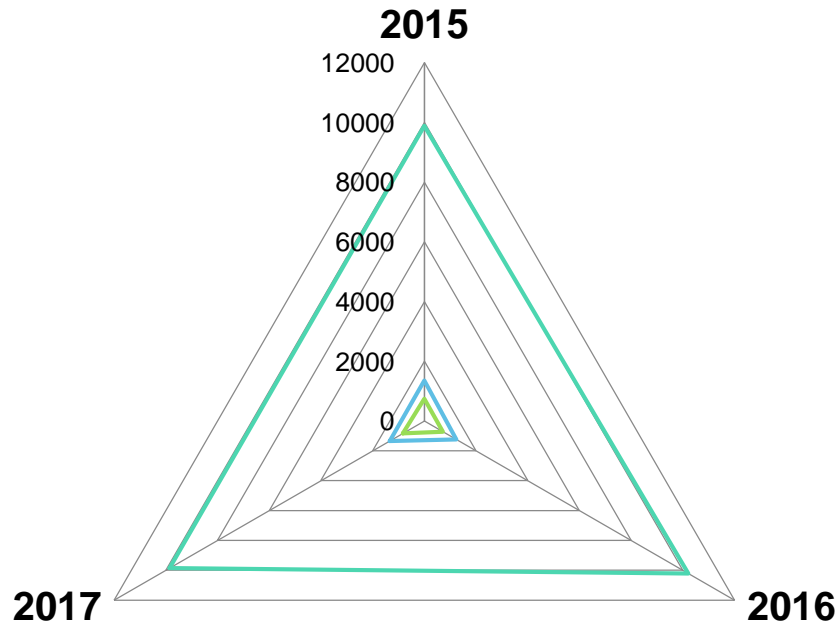
Water use per GVA (gross value added)
[m³ per 1000 drams]

Water use per Production Output
[m³ per 1000 drams]

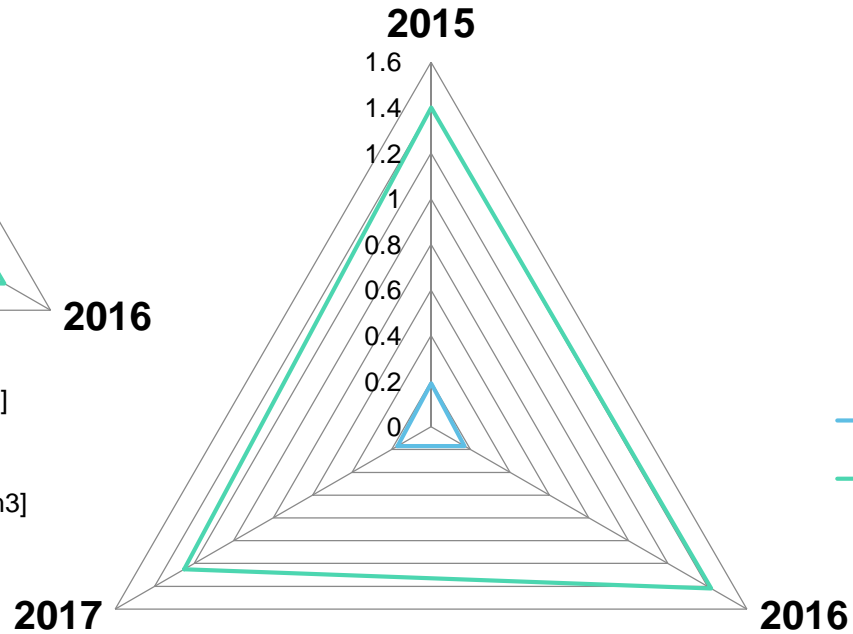
Water consumption/ water use

Losses in distribution / total water use

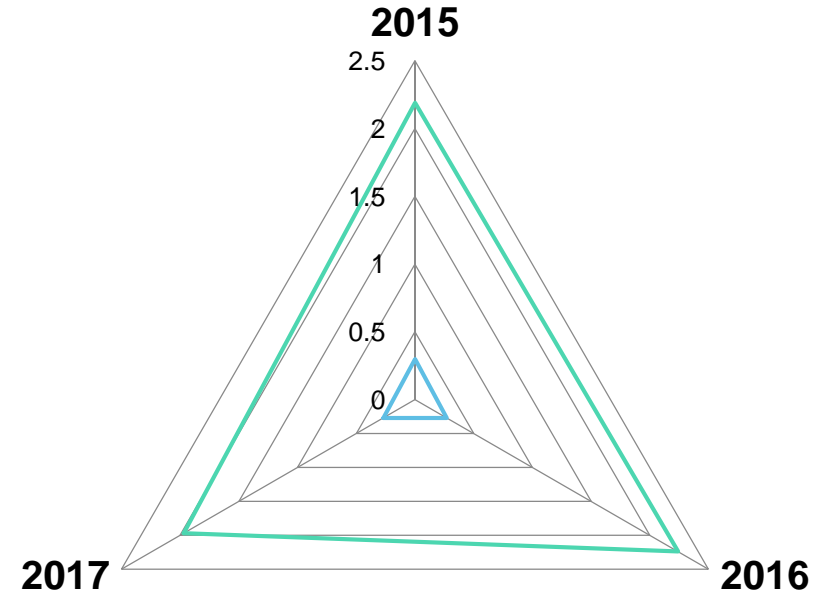
Key indicators



- K1 Water consumption [mln m3]
- K4 Water use [mln m3]
- K9 Losses in distribution [mln m3]



- K3 Water consumption per Production Output [m3 per 1000 drams]
- K6 Water use per Production Output [m3 per 1000 drams]



- K2 Water consumption per GVA (gross value added) [m3 per 1000 drams]
- K5 Water use per GVA (gross value added) [m3 per 1000 drams]

Setting priorities

Initiatives

Water Code legislative framework

Effective Management of Ararat Valley Groundwater Resources

Prohibition of the construction of small hydropower plants in the Arpa River basin

- 2017-2020 ENI SEIS II East project:
- Biodiversity - Protected areas
 - Air Quality
 - Water
 - Pilot on extending CORINE Land Cover (CLC) methodology
 - Eco-portal

Regular reporting system of environmental-economic accounts (until 2025)

Air accounts (in 2020)

Water accounts





THANK YOU