The GEF Drin Project

Water statistics

Key frameworks, concepts and definitions

WATER STATISTICS IN THE GLOBAL CONTEXT

- The United Nations World Water Development Report 2017 states that, water pollution is directly influencing the life in marine ecosystems where an estimate of 245,000Km2 of the ecosystem is affected.
- According to WaterAid and Globe Water, 315,000 children below the age of five years pass away owing to the intake of polluted water which causes diseases such as diarrhoea. That is around 900 child deaths daily – one child every 2 minutes!
- 18 percent of the world's population defecate in the open which compromises the quality of water bodies close and causes extreme human health risks
- In 2015, freshwater abstraction by public water supply ranged across the EU from a high of 159 m^3 of water per inhabitant in Italy down to a low of 31 m^3 per inhabitant in Malta.
  - **844 million people** in the world do not have clean water close to home. (WHO/UNICEF Joint Monitoring Programme (JMP) Report 2017)
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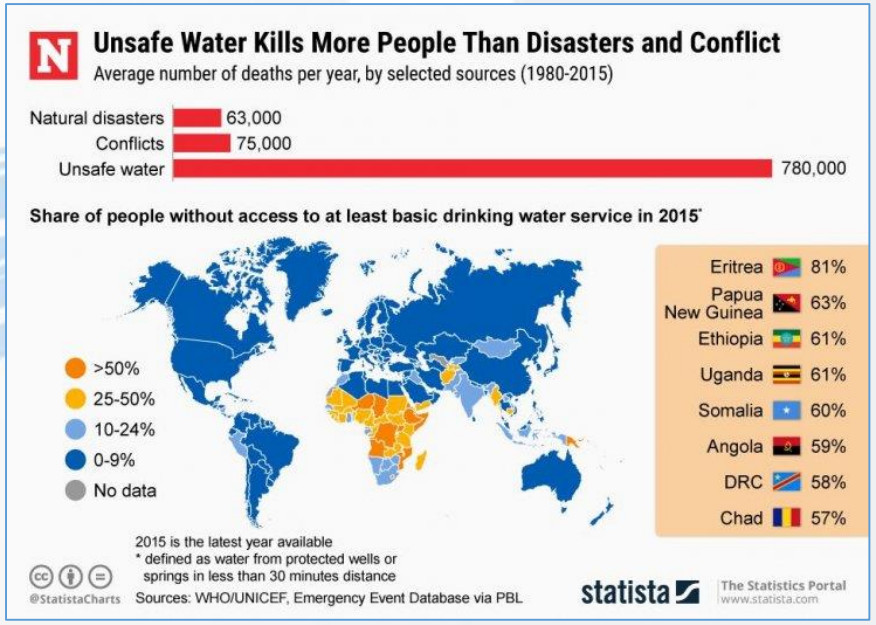
http://unesdoc.unesco.org/images/0024/002475/247553e.pdf

http://www.wateraid.org/what-we-do/the-crisis/statistics

http://pacinst.org/wp-content/uploads/2013/02/water_quality_facts_and_stats3.pdf

http://www.who.int/mediacentre/news/releases/2017/pollution-child-death/en/

https://ec.europa.eu/eurostat/statistics-explained/index.php/Water_statistics



WATER STATISTICS IN THE GLOBAL CONTEXT

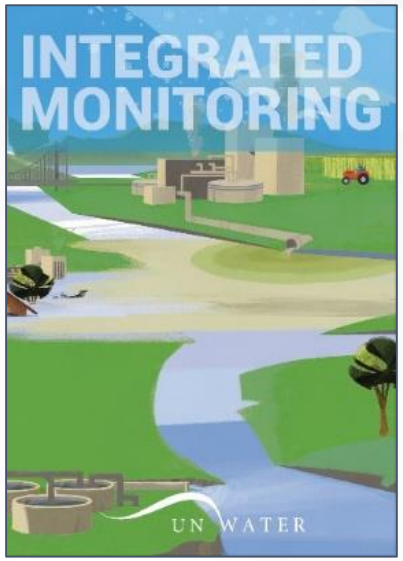


Table 2.1: Core monitoring parameters for each type of water body

Parameter group	Parameter	River	Lake	Groundwater
Oxygen	Dissolved oxygen	x	x	
	Biological oxygen demand, Chemical oxygen demand	x		
Salinity	Electrical conductivity	x	x	x
	Salinity, Total dissolved solids			
Nitrogen*	Total oxidised nitrogen	x	x	
	Total nitrogen, Nitrite, Ammoniacal nitrogen			
	Nitrate**			x
Phosphorous*	Orthophosphate	x	x	
	Total phosphorous			
Acidification	pH	x	x	x

* Countries should include the fractions of N and P which are most relevant in the national context

** Nitrate is suggested for groundwater due to associated human health risks

Indicator 6.3.2 “Proportion of bodies of water with good ambient water quality”

“Good” (in this context) indicates an ambient water quality that does not damage ecosystem function and human health according to core ambient water quality indicators. Country specific targets for parameters

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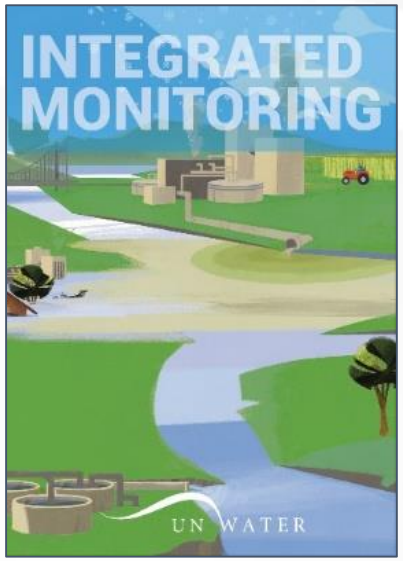
WATER STATISTICS IN THE GLOBAL CONTEXT - SDG



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Phosphorous*	Orthophosphate	x	x	
	Total phosphorous			
Acidification	pH	x	x	x

* Countries should include the fractions of N and P which are most relevant in the national context

** Nitrate is suggested for groundwater due to associated human health risks

UN-Water is later today launching seven reports that track progress towards the various targets set out in SDG 6 using the SDG global indicators:

[Safe Treatment and Use of Wastewater (SDG indicator 6.3.1, WHO and UN-Habitat)]
[Ambient Water Quality (SDG indicator 6.3.2, UN Environment)]
[Water-Use Efficiency (SDG indicator 6.4.1, FAO)]
[Level of Water Stress (SDG indicator 6.4.2, FAO)]
[Integrated Water Resources Management (SDG indicator 6.5.1, UN Environment)]
[Transboundary Water Cooperation (SDG indicator 6.5.2, UNECE and UNESCO)]
[Water-related Ecosystems (SDG indicator 6.6.1, UN Environment)]

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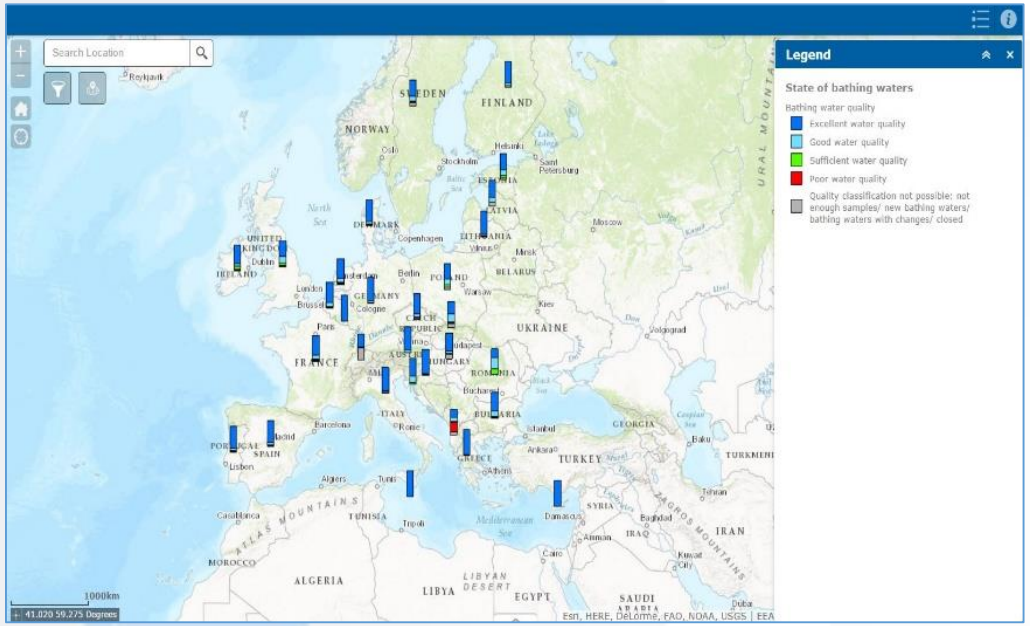
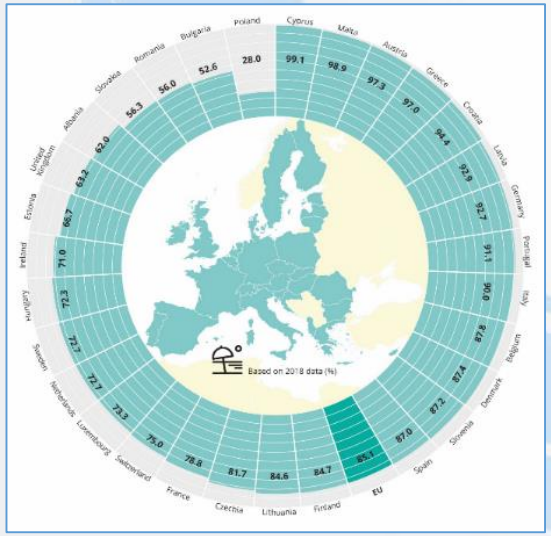
UN environment
United Nations Environment Programme

WATER STATISTICS IN THE EUROPEAN CONTEXT (BATHING WATER)





EEA Bathing water report 2018

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Country	Total number of bathing waters	Excellent quality		Good quality		Sufficient quality		Poor quality		Not classified (*)	
	2018 (2017)	Number	%	Number	%	Number	%	Number	%	Number	%
AT (Austria)	263 (263)	256	97.3	5	1.9	0	0.0	1	0.4	1	0.4
BE (Belgium)	115 (113)	101	87.8	10	8.7	2	1.7	1	0.9	1	0.9
BG (Bulgaria)	95 (95)	50	52.6	36	37.9	7	7.4	1	1.1	1	1.1
CY (Cyprus)	113 (113)	112	99.1	0	0.0	0	0.0	0	0.0	1	0.9
CZ (Czechia)	153 (154)	125	81.7	14	9.2	2	1.3	2	1.3	10	6.5
DE (Germany)	2 289 (2 287)	2 123	92.7	93	4.1	27	1.2	6	0.3	40	1.7
DK (Denmark)	1 026 (1 029)	897	87.4	87	8.5	20	1.9	14	1.4	8	0.8
EE (Estonia)	54 (54)	36	66.7	10	18.5	7	13.0	1	1.9	0	0.0
ES (Spain)	2 228 (2 219)	1 939	87.0	168	7.5	42	1.9	50	2.2	29	1.3
FI (Finland)	301 (299)	255	84.7	20	6.6	7	2.3	1	0.3	18	6.0
FR (France)	3 351 (3 379)	2 640	78.8	461	13.8	116	3.5	54	1.6	80	2.4
GR (Greece)	1 598 (1 598)	1 550	97.0	18	1.1	0	0.0	0	0.0	30	1.9
HR (Croatia)	1 008 (976)	952	94.4	20	2.0	2	0.2	1	0.1	33	3.3
HU (Hungary)	253 (257)	183	72.3	30	11.9	12	4.7	8	3.2	20	7.9
IE (Ireland)	145 (142)	103	71.0	22	15.2	12	8.3	5	3.4	3	2.1
IT (Italy)	5 539 (5 531)	4 987	90.0	279	5.0	116	2.1	89	1.6	68	1.2
LT (Lithuania)	117 (114)	99	84.6	11	9.4	2	1.7	1	0.9	4	3.4
LU (Luxembourg)	15 (12)	11	73.3	0	0	0	0.0	0	0.0	4	26.7
LV (Latvia)	56 (56)	52	92.9	2	3.6	1	1.8	0	0.0	1	1.8
MT (Malta)	87 (87)	86	98.9	1	1.1	0	0.0	0	0.0	0	0.0
NL (Netherlands)	725 (719)	527	72.7	126	17.4	36	5.0	25	3.4	11	1.5
PL (Poland)	483 (205)	135	28.0	26	5.4	18	3.7	3	0.6	301	62.3
PT (Portugal)	608 (603)	554	91.1	29	4.8	9	1.5	2	0.3	14	2.3
RO (Romania)	50 (50)	28	56.0	20	40.0	2	4.0	0	0.0	0	0.0
SE (Sweden)	436 (441)	317	72.7	78	17.9	13	3.0	2	0.5	26	6.0
SI (Slovenia)	47 (47)	41	87.2	5	10.6	1	2.1	0	0.0	0	0.0
SK (Slovakia)	32 (32)	18	56.3	9	28.1	1	3.1	1	3.1	3	9.4
UK (United Kingdom)	644 (634)	407	63.2	169	26.2	45	7.0	21	3.3	2	0.3
EU	**21 831 (21 509)**	**18 584**	**85.1**	**1 749**	**8.0**	**500**	**2.3**	**289**	**1.3**	**709**	**3.2**
AL (Albania)	108 (102)	67	62.0	20	18.5	5	4.6	10	9.3	6	5.6
CH (Switzerland)	192 (190)	144	75.0	10	5.2	2	1.0	2	1.0	34	17.7
Europe	**22 131 (21 801)**	**18 795**	**84.9**	**1 779**	**8.0**	**507**	**2.3**	**301**	**1.4**	**749**	**3.4**

Note: (*) See Annex 4 and Annex 5.

Source: EEA.

FUNDAMENTAL PRINCIPLES OF OFFICIAL STATISTICS

- The Conference of European Statisticians developed and adopted Ten Fundamental Principles of Official Statistics in 1991 (CES/702).
- The United Nations Statistical Commission at its Special Session of 11-15 April 1994 adopted the very same set of principles – with a revised preamble – as the United Nations Fundamental Principles of Official Statistics.
- At its forty-second session in 2011, the Statistical Commission discussed the Fundamental Principles of Official Statistics and acknowledged that the Principles were still as relevant today as they had been in the past and that no revision of the 10 Principles themselves was necessary and they were adpoted at its forty-fourth session in 2013.
- At the sixty-eighth session of the General Assembly in its resolution 68/261 of 29 January 2014, endorsed the Fundamental Principles of Official Statistics.

EUROPEAN STATISTICAL SYSTEM (ESS)

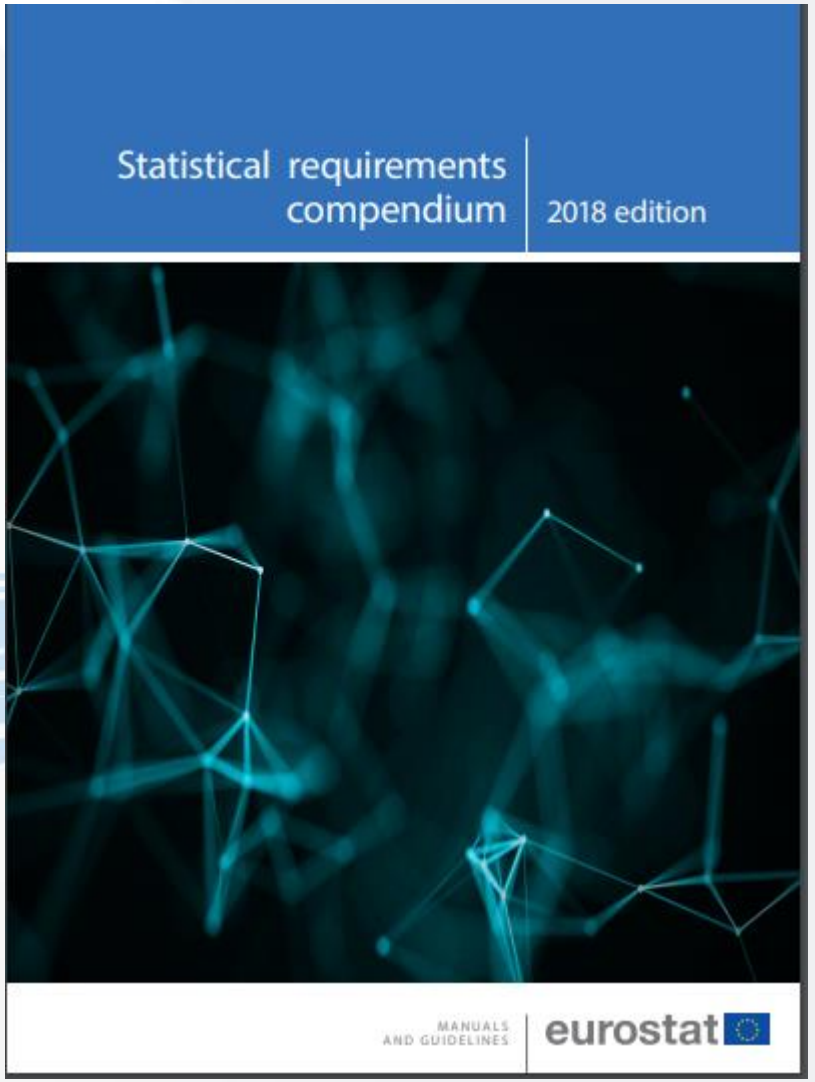
- The European Statistical System (ESS) is the partnership between the Community statistical authority, which is the Commission (Eurostat), national statistical institutes (NSIs) and other national authorities in each Member State in charge of the development, production and dissemination of the European statistics.
- The working methods are regulated by the Regulation (EC) No 223/2009 of the European Parliament and the Council. This partnership also includes the EEA and EFTA countries.
- The purpose of European statistical Cooperation is to produce high-quality statistics that will be a guarantee that the disseminated data are reliable and comparable and thus appropriate for the coordinated activities of institutions in the EU and at the national level, as well as for the implementation of their policies.

  EU statistics are produced within the framework of the five-year statistical program adopted by the European Parliament and the Council. To provide users with a more detailed insight into the ESS, an annual ESS report is published with more in-depth information on the latest initiatives and system developments.

  The European Statistical System provides the following information on its website pages, such as:
  - The latest news concerning all ESS partners, such as meetings, announcements of upcoming events and conferences, training opportunities, vacancies and publications
  - Corporate information about the ESS partners, such as their organisational structure, information related to the management and useful information.
- In the coming years, the European Statistical System will go through the reform arising from the ambitions for collaboration set out in the European Statistical System's Vision 2020. The reform process focuses on five areas: 1) user needs and cooperation with stakeholders, 2) quality, 3) new data sources, 4) effective quality assurance of statistical production processes, and 5) dissemination and communication.
  - https://ec.europa.eu/eurostat/web/european-statistical-system
  - https://ec.europa.eu/eurostat/web/ess/latest-news

- The Statistical requirements compendium, published by Eurostat, serves as a reference document for the EU acquis in statistics. It summarises the key reference information for European statistical production, taking into account new legislation and other developments relevant for European statistics.

  The Compendium also serves as the framework for conducting compliance monitoring of the enlargement countries in the area of statistics. The 2018 edition of the Compendium follows an adapted version of the Classification of Statistical Activities (CSA) Rev. 1 2009.



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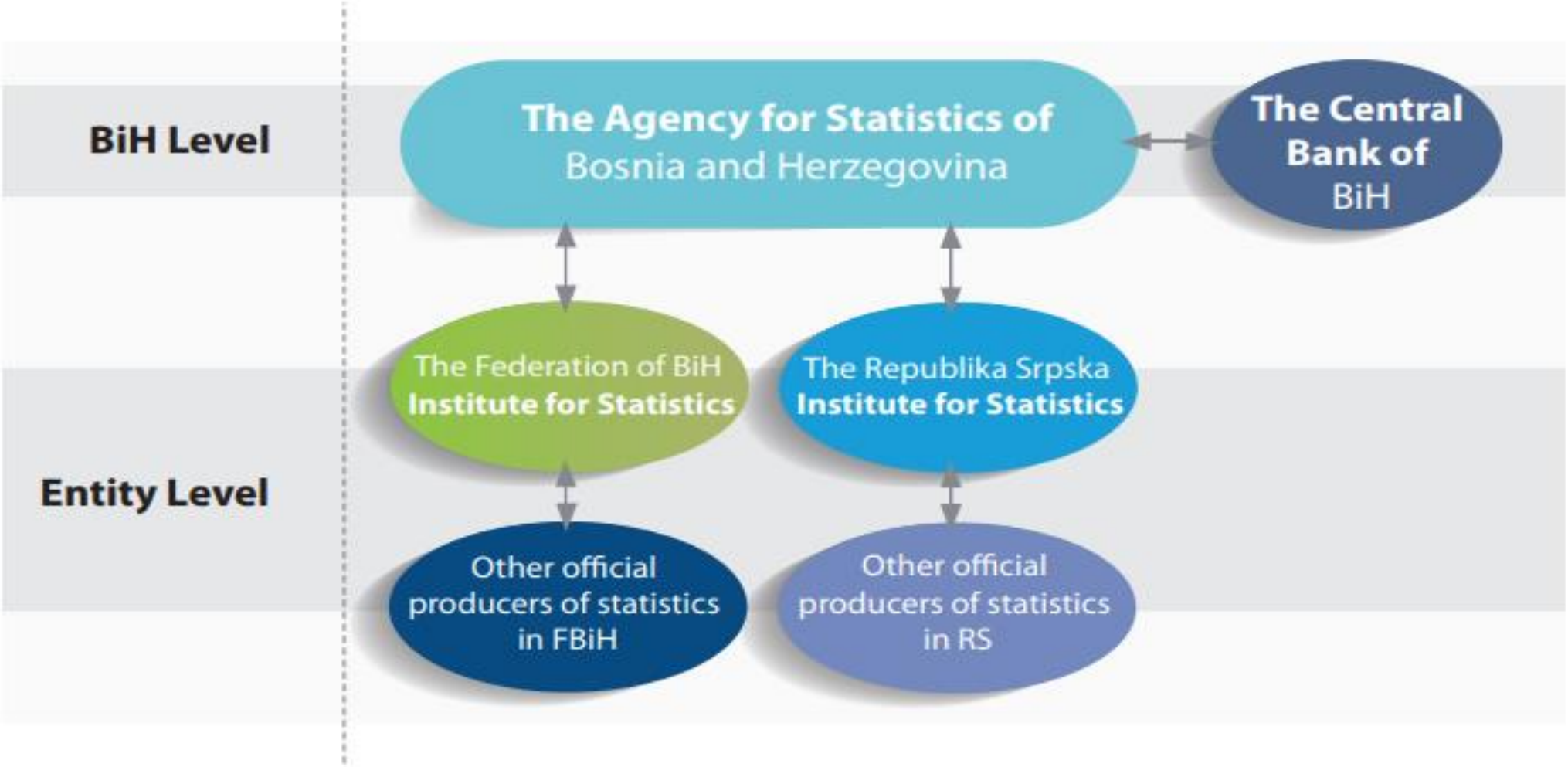
EUROPEAN STATISTICS CODE OF PRACTICE

- The European Statistics Code of Practice is the cornerstone of the common quality framework of the European Statistical System. It is a self-regulatory instrument and is based on 16 Principles covering the institutional environment, statistical processes and statistical outputs. A set of indicators of best practices and standards for each of the Principles provides guidance and reference for reviewing the implementation of the Code of Practice, increasing transparency within the European Statistical System.
- 16th November 2017

STRUCTURE OF STATISTICAL SYSTEM OF BOSNIA AND HERZEGOVINA



Agency for Statistics of Bosnia and Herzegovina

ENVIRONMENTAL STATISTICS IN BOSNIA AND HERZEGOVINA

Agency for Statistics of Bosnia and Herzegovina

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Statistical groups

- Economy statistics
- Demography and social statistics
- Business statistics
- Agriculture and forestry
- Transport
- Environment and energy
  - Energy
  - **Environment**
- Science, technology and digital society
- Special editions

331.550 mil. m³	116.916 mil. m³	914.232 mil. M³
Water supply	Wastewater	Amount of collected waste by municipal enterprises
2017	2017	2017

All | First release | Time series | Methodological documents | Data base

- Renewable freshwater resources, 2000 - 2018 5/31/2019
- Climate change, 2000 - 2018 5/10/2019
- Greenhouse gas emissions from waste, 2017 2/26/2019
- Waste recovery and disposal, 2017 2/22/2019
- Expenditures for environmental protection, 2017 1/21/2019
- Utilization and protection of water against pollution in industry, 2017 9/20/2018

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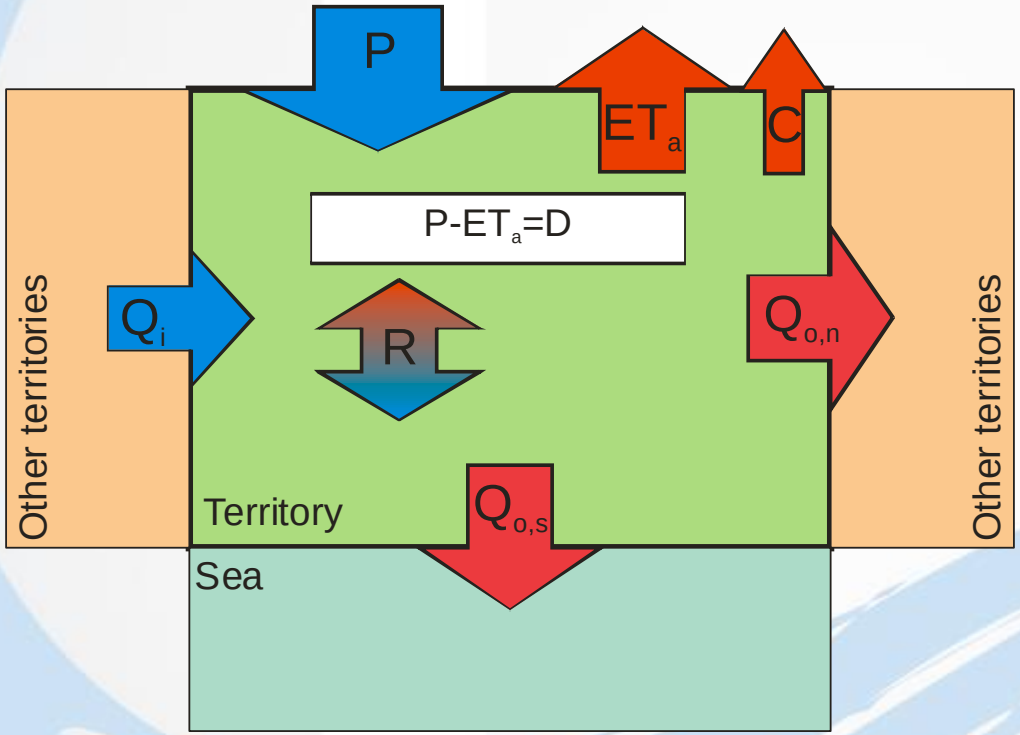
SCHEMATIC DIAGRAM OF NATIONAL WATER BALANCE FIGURES METHODLOGY

$$P + Q_i - ET_a - Q_o - R - C = 0$$



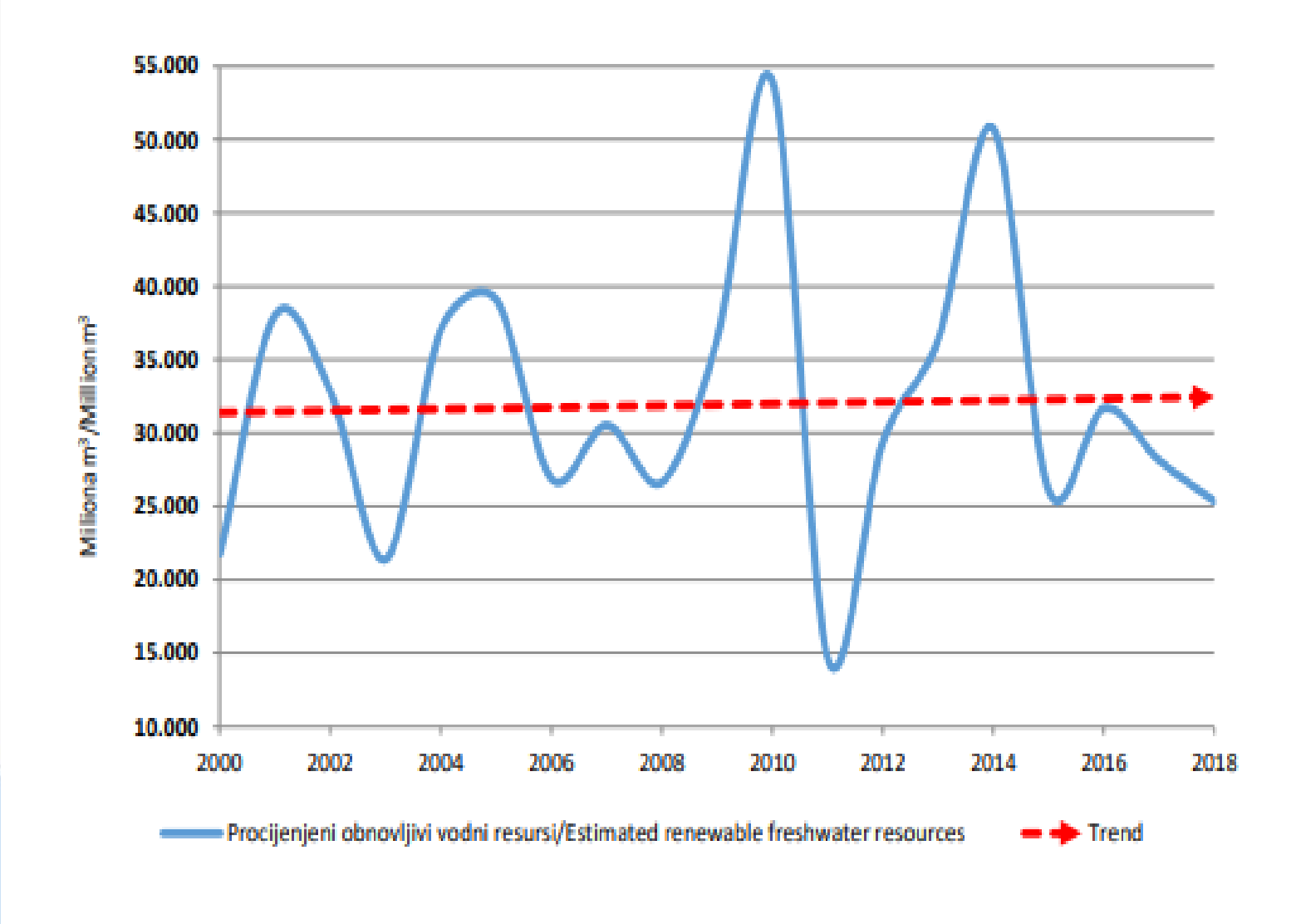
P	precipitation
Q_i	external inflow
Et_a	actual evapotranspiratoin
Q_o	total outflow from the territory
R	net recharge into aquifers
C	water consumption
$P\text{-}Et_a$ = D internal flow	

NATIONAL WATER BALANCE FIGURES METHODLOGY

- Integration of spatio-temporal processes from incomplete, discrete data → **non-trivial task which requires deep hydrological insight and expertise**
- Should be done by competent hydrologists, generally at the **national hydrological or meteorological service institution**
- Wide range of hydro-meteorological regimes → no single, generally applicable „best“ methods
- **Reference period:** generally the calendar year Jan-Dec, but where snow and soil water storage is significant → hydrological year! (e.g. Nov – Oct)
- **Long term annual averages (LTAA):** average of >= 30 consecutive years; recommended period: 1981-2010

RENEWABLE FRESHWATER RESOURCES

- The RFR release shows the assessment of the renewable freshwater resources of Bosnia and Herzegovina, as well as a range of related parameters, such as precipitation, evapotranspiration, inflow and outflow of water annually.
- This release is the result of the continuous activity of Agency for Statistics of Bosnia and Herzegovina, needs and obligations of Bosnia and Herzegovina for international reporting to the European Statistical Office (Eurostat), the United Nations and other international and domestic users of statistical data on water.

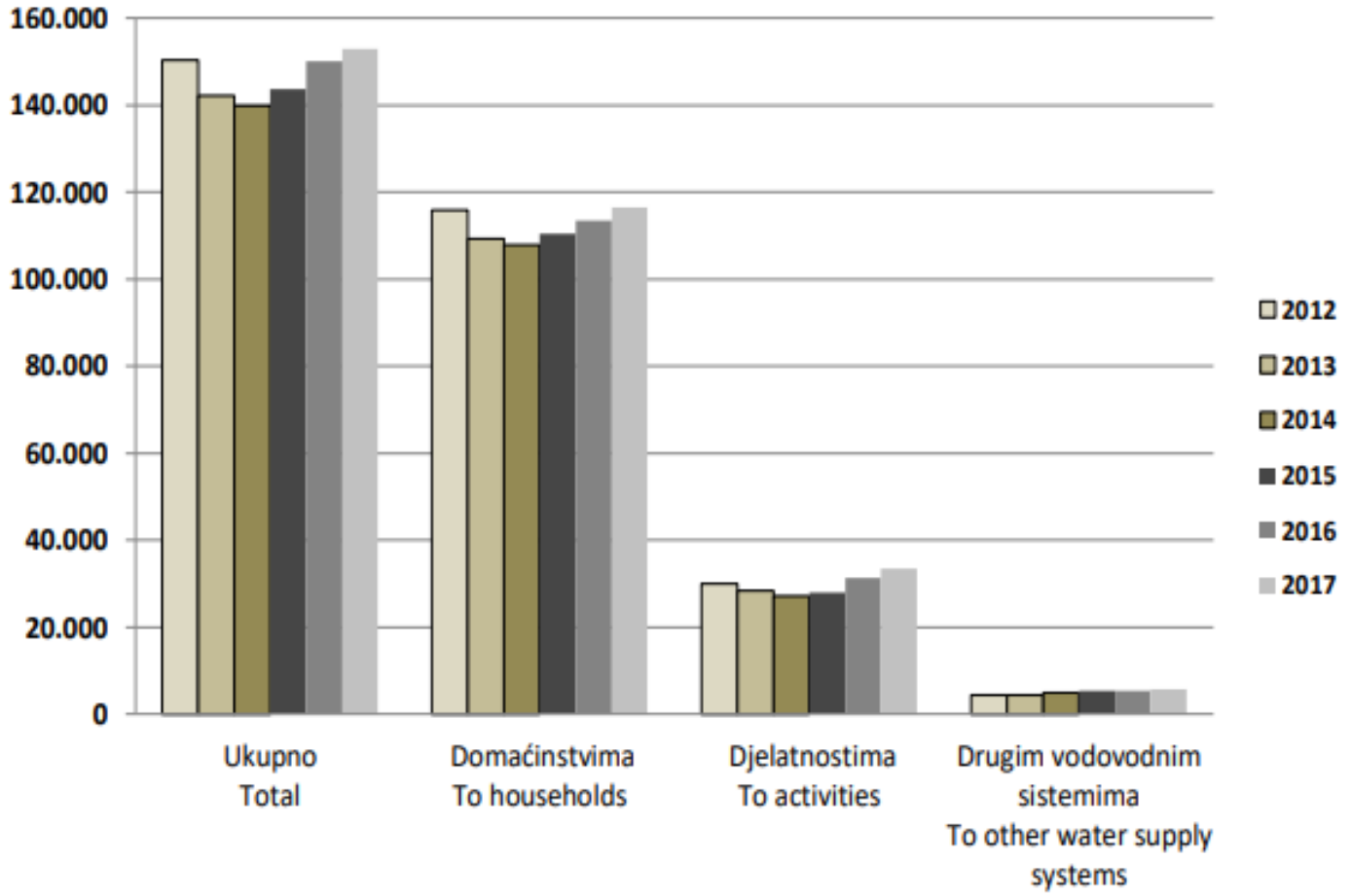


COLLECTION AND DISTRIBUTION OF WATER

- VOD 2V annual survey
- In 2017, there were 331.550.000 m³ of the total volume of abstracted water, which was 1,6% higher then year ago.
- From abstracted water quantity, 47,4% of water was abstracted from the ground sources, 35,0% from springs, 14,6% from the watercourses, 0,8% from reservoirs and 1,2% from lakes.

Grafikon 1. ISPORUČENE VODE IZ JAVNOG VODOVODA, `000 m³

Graph 1. Volume of water delivered to users, `000 m³



VOD 2V METHODOLOGY / DEFINITIONS

Data on public water supply are collected through regular annual reports (VOD-2V) from municipal business entities and municipal services which run the public water supply.

Water supply from public water mains is the total volume of water abstracted from ground waters, springs, watercourses, reservoirs and lakes as well as total volume of water abstracted from other water systems.

Abstracted volume of water is the total volume of water abstracted from water springs.

Public springs are all sources that are used in supplying of water mains, such as ground watercourses, springs, watercourses, reservoirs and lakes

Distributed volume of water is the volume of water sold to consumers.

Total water losses are actually losses in water mains caused by mechanical troubles or installation defects on water mains.

Water treatment plants are facilities used for purification (conditioning). Tanks are divided into underground and elevated (tower-shaped) ones, used for the accumulation of water and reaching the required pressure.

Lenght of water mains is the length of pipes used for the supply of water and reaching of the required pressure

The length of distribution network is the length of the water supply network from a tank to a consumer (excluded are the length of connections and network in a building).

PUBLIC SEWAGE SYSTEM

- In 2017, the total quantity of waste water decreased 5,7% than in the previous year.
- The total amount of treated wastewater in 2017 decreased by 13,1% compared to the previous year.
- The quantity of untreated water waste water is 0,4% higher than a previous year.
- Discharged waste waters were mostly into watercourses (58,5% of untreated and 40,6% of treated ones).
- In 2017 the sewage network was 4.604 km long, which was by 0,5% more than in the previous year.

Table 1. Sources of waste water, `000 m³

Year				in 000 m3
2014	2015	2016	2017	
91.962	92.894	124.002	116.916	Total waste waters
68.845	70.260	90.709	90.143	From households
23.117	22.634	33.293	26.773	From activities – of which:
263	230	215	217	Agriculture, forestry and fishing
8.693	8.629	9.900	10.750	Industrial and construction activities
14.161	13.775	23.178	15.806	Other activities

VOD 2K METHODOLOGY / DEFINITIONS

Data on public water supply and public sewage system are collected through regular annual reports (VOD-2K) from municipal business entities and municipal services which run the public water supply. .

Waste water is water drained to the treatment facility after use, or discharged into the environment (into ground or surface waters). It does not include atmospheric or transitional waters (i.e. waters that power hydro-electric plants).

Treated waste water comprises all amounts of waste water that was treated during the reporting year, either primary, secondary or tertiary treatment of waste waters.

Primary treatment includes the application of physical and/or chemical processes by which at least 50% of suspended solids are removed from the waste water, while the BOD5 value decreases by as much as 20%, as compared to its value in the influent waters.

Secondary treatment includes the application of biological and/or other treatment processes by which the concentration of suspended solids and BOD5 decreases by 70% to 90% and the concentration of COD by at least 75%.

Tertiary treatment includes the application of physical and chemical, biological and other treatment processes by which the concentration of nutrients in influent waste waters decreases by as much as 80%, which means that other pollutants, which could not be removed to that extent

Public sewage system is a network of enclosed public drains and sewers used for draining of either waste or atmospheric waters (general water sewage system), or solely waste water, and solely atmospheric waters (separation water sewage system).

UTILIZATION AND PROTECTION OF WATER AGAINST POLLUTION IN INDUSTRY

- In 2017 the water supply of industrial activities reached the total of 82.401.000 m³, in which the share of section B - Mining and quarrying was 12,9% and of section C - Manufacturing 87,1%.
- According to the origin of water supply, water from a watercourse represented with 34,1%, water reservoirs is represented with 29,6%, groundwater 15,8%, public water supply 6,5%, and the rest of 12,6% relates to water from sources and other systems
- The total amount of water used in 2017 decreased for 6,5% compared to year ago.
- Out of total discharged water 63,1% was purified, 16,6% was polluted and 20,3% was discharged as unpolluted waste water.
- For the first time, the different types of wastewater treatment are also represented. Primary treatment was used for 70.1%, secondary by 7.8% and tertiary by 22.2% of total treated water.

Table 1. Water supply, `000 m³

		Snabdjevene količine vode/Volume of water suplied								
		Ukupno *Total*	Iz javnog vodovoda *From public water supply system*	Iz drugih sistema *From other systems*	Iz vlastitog vodozahvata *From own water supplies*					
					Podzemne vode *Ground waters*	Izvori *Springs*	*Vodotoci Watercourses*	*Akumulacije Reservoires*		
	Ukupno	**82.401**	**5.347**	**10.409**	**13.046**	**1.151**	**28.089**	**24.359**		*Total*
B	**VAĐENJE RUDA I KAMENA**	**10.651**	**840**	**3.545**	**2.442**	**108**	**2.818**	**897**	***B***	***MINING AND QUARRYING***
05	Vađenje ugljena i lignita	3.001	685	0	1.778	1	511	26	*05*	*Mining of coal and lignite*
07	Vađenje metalnih ruda	2.337	76	0	36	23	2.202	0	*07*	*Mining of metal ores*
08	Vađenje ostalih ruda i kamena	5.313	80	3.545	628	83	105	871	*08*	*Other mining and quarrying*
C	**PRERAĐIVAČKA INDUSTRIJA**	71.750	4.506	6.864	10.603	1.043	25.271	23.462	***C***	***MANUFACTURING***
10	Proizvodnja prehrambenih proizvoda	3.122	1.281	14	1.699	127	0	1	*10*	*Manufacture of food products*
11	Proizvodnja pića	2.099	511	0	951	637	0	0	*11*	*Manufacture of beverages*
12	Proizvodnja duhanskih proizvoda	19	19	0	0	0	0	0	*12*	*Manufacture of tobacco products*
13	Proizvodnja tekstila	214	127	56	10	22	0	0	*13*	*Manufacture of textiles*
14	Proizvodnja odjeće	190	95	7	87	0	0	0	*14*	*Manufacture of wearing apparel*
15	Proizvodnja kože i srodnih proizvoda	566	164	0	402	0	0	0	*15*	*Manufacture of leather and related products*
16	Prerada drveta i proizvoda od drveta i pluta, osim namještaja; proizvodnja proizvoda od slame i pletarskih materijala	291	174	7	48	38	24	1	*16*	*Manufacture of wood and of products of wood and cork, except furniture, manufacture of articles of straw and plaiting materials*
17	Proizvodnja papira i proizvoda od papira	13.897	15	0	96	0	13.786	0	*17*	*Manufacture of paper and paper products*
18	Štampanje i umnožavanje snimljenih zapisa	32	30	2	0	0	0	0	*18*	*Printing and reproduction of recorded media*
19	Proizvodnja koksa i rafiniranih naftnih proizvoda	5.640	98	0	1.084	0	1.270	3.188	*19*	*Manufacture of coke and refined petroleum products*
20	Proizvodnja hemikalija i hemijskih proizvoda	6.751	100	6.493	10	26	122	0	*20*	*Manufacture of chemicals and chemical products*
21	Proizvodnja osnovnih farmaceutskih proizvoda i farmaceutskih preparata	69	62	0	7	0	0	0	*21*	*Manufacture of basic pharmaceutical products and pharmaceutical preparations*
22	Proizvodnja proizvoda od gume i plastičnih masa	106	85	6	13	1	1	0	*22*	*Manufacture of rubber and plastic products*
23	Proizvodnja ostalih proizvoda od nemetalnih minerala	881	246	221	147	29	180	59	*23*	*Manufacture of other non – metallic mineral products*
24	Proizvodnja baznih metala	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	*24*	*Manufacture of basic*

VOD 1 METHODOLOGY / DEFINITIONS

The report is presented by enterprises whose principal activity according to the Classification of activities is classified into the following sections: B - Mining and quarrying, C - Manufacturing, which use and discharge waters, irrespective of water capture and recipient of waste waters. Industrial units of non-industrial enterprises are also covered.

Water supply includes the total volume of water used in supplying enterprises/trade companies, irrespective of whether it was used for own purposes or sold to other users. The volume of water used is determined by using a water meter, or otherwise, the volume of abstracted water is estimated according either to standards or to the technological process for a particular activity. Data on water supply are given according to the water origin: from the public supply system, other systems or own water supplies, providing that own water supplies include abstractions from the ground, springs, watercourses, lakes, reservoirs or the sea.

Waste waters include all amounts of water treated as waste water after being used in the reporting year. Waste waters do not include water used for production of hydrolectric power.

Water utilisation includes the total volume of water used by a reporting unit for its own purposes in the period of one year. It comprises the volume of water used in technological process (production and cooling as well as water spent in the process of production or in the process of cooling), for sanitary purposes and other purposes

Treatment of wastewater in any non-public treatment plant, e.g. industrial wastewater treatment plants or treatment facilities of hotels, army camps etc., that do not fall under Independent Treatment. Excluded from "other wastewater treatment" is the treatment in septic tanks.

UNECE ENVIRONMENTAL INDICATORS

Indicator (updated October 2014)	Description	Production	Glossary of terms
B. Climate change			
B1. Air temperature	PDF	XLS	PDF
B2. Atmospheric precipitation	PDF	XLS	PDF
B3. Greenhouse gas emissions	PDF	XLS	PDF
C. Water			
C1. Renewable freshwater resources	PDF	XLS	PDF
C2. Freshwater abstraction	PDF	XLS	PDF
C3. Total water use	PDF	XLS	PDF
C4. Household water use per capita	PDF	XLS	PDF
C5. Water supply industry and population connected to water supply industry	PDF	XLS	PDF
C8. Reuse of freshwater	PDF	XLS	PDF
C9. Drinking water quality	PDF	XLS	PDF
C10. BOD and concentration of ammonium in rivers	PDF	XLS	PDF
C11. Nutrients in freshwater	PDF	XLS	PDF
C12. Nutrients in coastal seawaters	PDF	XLS	PDF
C13. Concentrations of pollutants in coastal seawater and sediments (except nutrients)	PDF	XLS	PDF
C14. Population connected to wastewater treatment	PDF	XLS	PDF
C15. Wastewater treatment facilities	PDF	XLS	PDF
C16. Polluted (non-treated) wastewaters	PDF	XLS	PDF

http://tiny.cc/yo958y

UNECE ENVIRONMENTAL INDICATORS

Time series data on the indicators for 2000-2018, Table C-1: Renewable freshwater resources: *Bosnia and Herzegovina*

	Unit	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2
Precipitation	million m^3	44,019	62,147	56,494	43,584	61,123	63,259	49,908	54,067	49,688	60,447	78,837	35,201	52,792	60,371	75,610	48,982	55,280	51,354	5
Actual evapotranspiration	million m^3	24,287	26,106	25,715	24,221	26,062	26,187	25,070	25,542	25,074	26,032	26,930	22,587	25,399	26,000	26,883	24,974	25,617	25,247	3
Internal flow (Row 1 - row 2)	million m^3	19,732	36,042	30,779	19,363	35,061	37,072	24,839	28,525	24,615	34,415	51,907	12,614	27,392	34,370	48,728	24,008	29,663	26,107	2
Inflow of surface and groundwaters from neighbouring countries	million m^3	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	
Renewable freshwater resources (Row 3 + Row 4)	million m^3	21,732	38,042	32,779	21,363	37,061	39,072	26,839	30,525	26,615	36,415	53,907	14,614	29,392	36,370	50,728	26,008	31,663	28,107	2
Outflow of surface and groundwaters to neighbouring countries	million m^3	28,332	23,798	25,212	28,441	23,539	25,561	26,362	27,734	25,954	24,788	17,724	28,851	28,291	23,128	20,431	27,091	25,516	26,498	2
Outflow of surface and groundwaters to the sea	million m^3	7,168	11,702	10,288	7,059	11,961	9,939	9,138	7,766	9,546	10,712	17,776	6,649	7,209	12,372	15,069	8,409	9,984	9,002	1

More information

Water related questionnaires as well as relevant definitions developed by UNSD can be found at http://unstats.un.org/unsd/environment/questionnaire2013.html

Data in Row 4: Aquastat, FAO. http://www.fao.org/nr/water/aquastat/data/query/results.html

Sources: Federal Hydrometeorological Institute of Bosnia and Herzegovina and Hydrometeorological Institute of Republika Srpska.

Estimated based on formula: ET = P / (√ (0,9 + (P2/ L2))), source: https://goo.gl/Gt1qKI

Data in Row 7: Estimations are based on Federal Hydrometeorological Institute of Bosnia and Herzegovina data for the surface outflow to Adriatic Sea (2004-2013), containing projections for the missing period, based on precipitation.

UNECE ENVIRONMENTAL INDICATORS

Time series data on the indicators for 2000-2017, Table C-2 Freshwater abstraction: *Bosnia and Herzegovina*

	Unit	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Surface and groundwater abstracted													
Fresh surface water abstracted	million m³	59.70	59.40	59.10	58.80	58.20	55.73	55.15	62.18	62.31	98.09	106.83	121.42
Fresh groundwater abstracted	million m³	312.05	314.25	316.44	318.63	320.82	323.01	325.20	327.40	329.59	331.78	328.56	302.18
Freshwater abstracted													
Freshwater abstracted (Row 1 + row 2)	million m³	371.75	373.64	375.53	377.43	379.02	378.74	380.35	389.58	391.90	429.87	435.39	423.59
of which abstracted by													
Water supply industry (ISIC 36)	million m³	333.3	331.9	325.5	324.4	338.1	334.1	344.4	323.5	335.6	339.3	340.3	330.0
Households	million m³	13.0	12.7	17.4	16.9	17.1	16.6	15.9	15.6	16.0	15.4	15.0	14.1
Agriculture, forestry and fishing (ISIC 01-03)	million m³	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Manufacturing (ISIC 10-33)	million m³	12.10	16.00	19.90	23.70	27.60	31.50	35.40	39.20	43.10	39.88	44.15	58.75
Electricity industry (ISIC 351)	million m³	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other economic activities	million m³	13.37	13.07	12.76	12.45	12.14	11.84	11.53	11.22	10.92	10.61	13.10	15.20
Water expolitation index (WEI)													
Renewable freshwater resources (=Table C-1, row 5)	million m³	21,731.81	38,041.56	32,779.42	21,363.47	37,061.06	39,071.63	26,838.87	30,525.12	26,614.67	36,414.85	53,906.57	14,614.24
Water exploitation index (Row 4 / row 13)	%	1.71	0.98	1.15	1.77	1.02	0.97	1.42	1.28	1.47	1.18	0.81	2.90

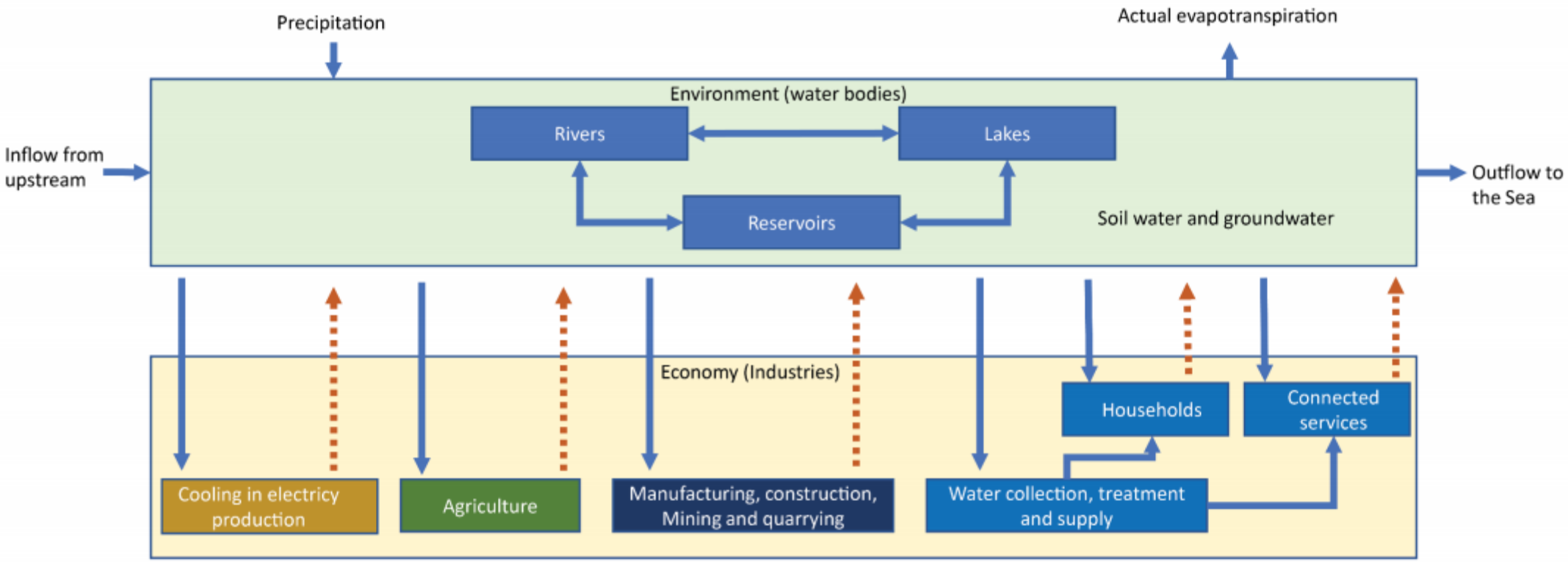
JQIW EUROSTAT / OECD

	A	B	C	D
3				
4	**TABLE OF CONTENTS**			
5	**INTRO**			Introduction: General and Specific Comments on the tables
6	**DEF**			List of Definitions
7	**NACE_ISIC**			Reference to the NACE/ISIC codes
8	**1**			Renewable freshwater resources
9	**1_notes**			Renewable freshwater resources - Explanatory notes
10	(inflow) **1_IF**			Actual external inflow from neighbouring territories
11	(outflow) **1_OF**			Actual outflow to neighbouring territories
12	**Scheme 1**			Simplified hydrological cycle
13	**2**			Annual freshwater abstraction by source and by sector
14	**3**			Water made available for use
15	**2+3_notes**			Explanatory notes for tables 2 and 3
16	**4a**			Water use by supply category and by sector
17	**4b**			Water use in the manufacturing industry by activity and supply category
18	**Scheme 2**			Freshwater flows
19	**Summary table**			Balance Table
20	**5**			National population connected to wastewater treatment plants
21	**5_notes**			National population connected to wastewater treatment plants - Explanatory notes
22	**6**			Treatment capacity of wastewater treatment plants in terms of BOD
23	**6_notes**			Treatment capacity of wastewater treatment plants in terms of BOD - Explanatory notes
24	**7**			Sewage sludge production and disposal
25	**7_notes**			Sewage sludge production and disposal - Explanatory notes
26	**8**			Generation and discharge of wastewater
27	**8_notes**			Generation and discharge of wastewater - Explanatory notes
28	**Scheme 3**			Wastewater flows
29				
30	**9**			Water quality of selected rivers , at mouth or downstream frontier
31	**10**			Water quality of selected lakes
32	**9&10-notes**			Water quality of selected rivers and lakes
33				***Yellow background = core tables***

http://tiny.cc/uoc68y

WATER EXPLOITATION INDEX (EEA)

Conceptual model of the WEI+ computation



Computation of the water exploitation index plus:

$$WEI+ = \frac{\text{Abstraction - Return}}{\text{Renewable water resources}}$$

RWR= Outflow + (Abstraction-Return) – Change in storage

Change in storage = Water in (Lakes+Reservoirs) – Water out (Lakes+Reservoirs)

Abstraction - Return = Water use

Legend

Abstraction

Return

Note:

- Desalinated water, inter-basin water transfers via conveyance infrastructure and net water loses are not included into the calculation because of insufficient data coverage.
- Similarly, change in the groundwater aquifers is not included into the computation of the change in storage because no data available at the European level

EXAMPLE WATER EXPLOITATION INDEX (EEA)

Despite an estimated decrease of total water abstraction by 19 % since 1990 in Europe, the milestone set in the EU resource efficiency roadmap — i.e. a water abstraction should stay below 20 % of available renewable water resources in Europe — has not been achieved in 36 river basins corresponding to 19 % of Europe's territory in summer 2015.
Around 30 % of the total European population was exposed to water scarcity conditions in summer 2015 compared to 20% in 2014, mainly living in densely populated European cities, agriculture-dominated areas of southern Europe and small Mediterranean islands.

Total gross abstraction (JQIW Table 1)
Total renewable freshwater resources (JQIW Table 1)

Definition:

The water exploitation index (WEI), or withdrawal ratio, in a country is defined as the annual total abstraction of fresh water divided by the long-term average freshwater resources.

http://tiny.cc/e9n68y

EUROPEAN STATISTICAL DATA SUPPORT (ESDS)

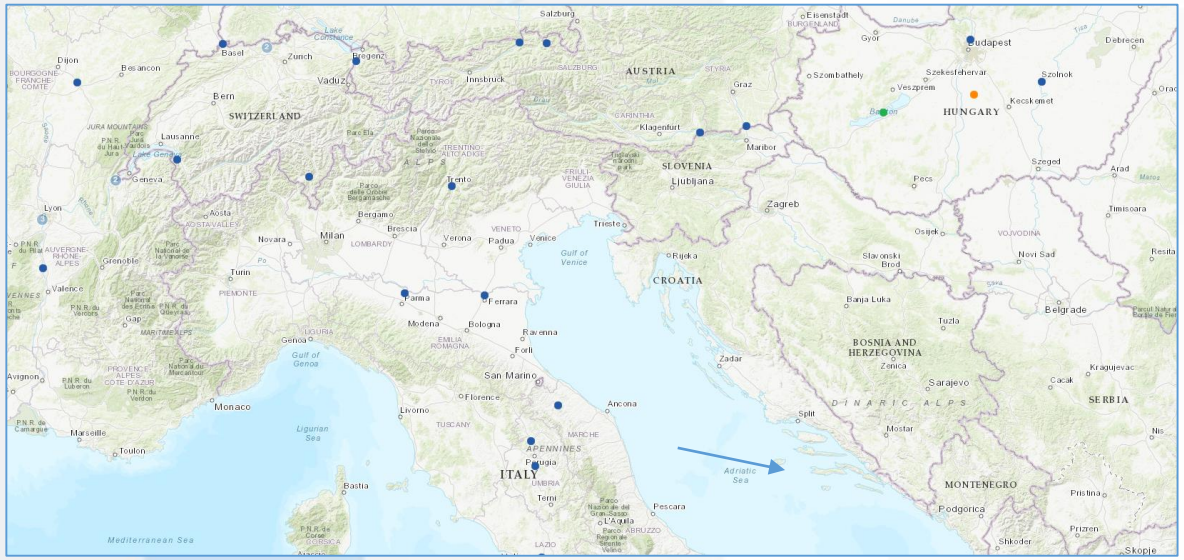
- In line with the basic principles of the European Statistical System, Eurostat has established in cooperation with national statistical institutions a network of national centres called European Statistical Data Support (ESDS). In this way, users are provided with free services allowing them easier access to statistical data on the Eurostat website pages. This service does not include a special data processing.
- The Agency for Statistics of Bosnia and Herzegovina cooperates with Eurostat closely. In addition to our national data delivered to Eurostat, we are also a part of ESDS network and we support our users to find data on European Statistics on the Eurostat's website. The replies to users' questions are provided in Bosnian, Croatian, and Serbian language.

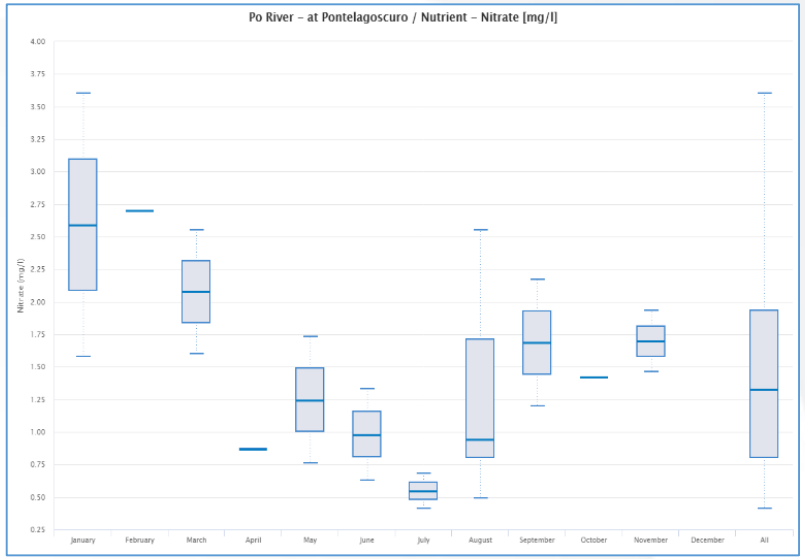
HOW TO ACCESS EUROPEAN STATISTICAL DATA?

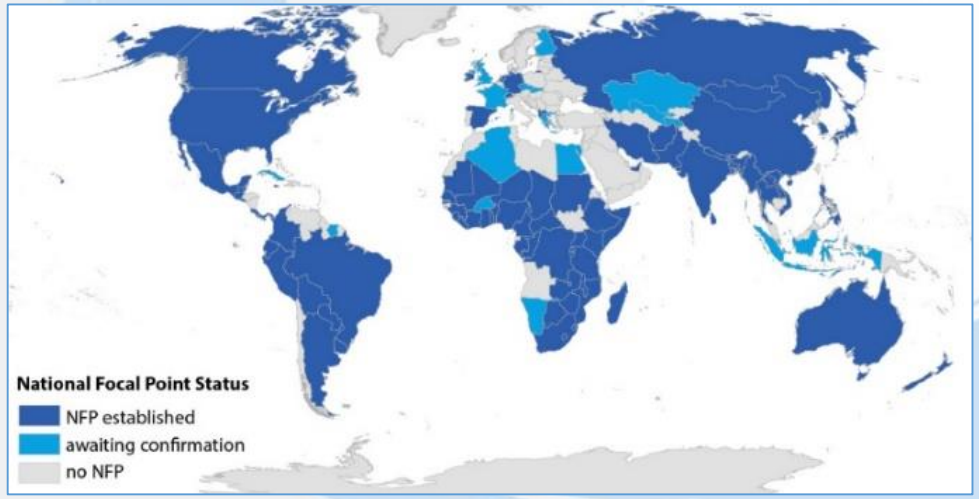
- If you cannot find the requested information on the Eurostat's website or if you need additional information, please visit the User Support page.
- User support provides information on whether the required statistical data and information are available and where they can be found on the Eurostat's website. It provides support in verifying data, giving additional information on methodology, and helps in solving technical issues.

UN GEMSTAT DATA VISUALIZATION PORTAL

UN GEMStat data visualization portal







The GEMSstat database holds a large amount of water quality information but is hampered by patchy coverage both spatially and temporally

https://gemstat.org/data/

ADDITIONAL RESOURCES - STATISTICAL DATA TOOLS

As with data storage there are a range of software tools to facilitate statistical assessment and visualisation of data including both commercial and licence-free options

SPSS (IBM) (**Statistical** Package for the Social Sciences) is perhaps the most widely used statistics software

human behaviour research.

SAS (Statistical Analysis Software) – a leading commercial system with excellent graphics

Stata is a general purpose stats software offered by StataCorp

Minitab is perhaps one of the most widely used commercial statistical packages with good technical support

(R Foundation for Statistical Computing) is a world wide 'free' software packages supported by many academic and professional packages. Relatively simple to learn it has very powerful graphing features.

Analyse-It and (XLStat) are both very powerful add-ins for MS Excel with 'free trials'

ADDITIONAL RESOURCES – FORUMS AND APPLICATIONS

Welcome to WEAP!

WEAP ("Water Evaluation And Planning" system) is a user-friendly software tool that takes an integrated approach to water resources planning.

Freshwater management challenges are increasingly common. Allocation of limited water resources between agricultural, municipal and environmental uses now requires the full integration of supply, demand, water quality and ecological considerations. The Water Evaluation and Planning system, or WEAP, aims to incorporate these issues into a practical yet robust tool for integrated water resources planning. WEAP is developed by the Stockholm Environment Institute's U.S. Center.

WEAP Highlights

Integrated Approach	Unique approach for conducting integrated water resources planning assessments
Stakeholder Process	Transparent structure facilitates engagement of diverse stakeholders in open process
Water Balance	A database maintains water demand and supply information to drive m balance model on a link-node architecture
Simulation Based	Calculates water demand, supply, runoff, infiltration, crop requirements flows, and storage, and pollution generation, treatment, discharge and instream water quality under varying hydrologic and policy scenarios
Policy Scenarios	Evaluates a full range of water development and management options, and takes account of multiple and competing uses of water systems
User-friendly Interface	Graphical drag-and-drop GIS-based interface with flexible model outpu maps, charts and tables
Model Integration	Dynamic links to other models and software, such as QUAL2K, MODFLO MODPATH, PEST, Excel and GAMS

http://www.weap21.org/

User Forum

Members List

Members and Download Statistics

Country: Bosnia and Herzegovina ▾ Search

	Name	Location	Organization	River Basins	Last Visit*	Visits	Postings
1	Mr. Mirza Agic	Sarajevo, Bosnia and Herzegovina	Agency for Statistics		7/2/2019	7	0
2	Mr. Ozren Djuric	Bijeljina, Bosnia and Herzegovina	Public institution "VODE SRPSKE"		5/21/2019	6	0
3	Mr. Emir Isaković	Sarajevo, Bosnia and Herzegovina	Sava river watershed agency Sarajevo		1/3/2019	8	0
4	Eng. Hydrology Centre	Banja Luka, Bosnia and Herzegovina	Hydrolog Centre		11/18/2018	2	0
5	Mr. Milan Blagojevic	Banja Luka, Bosnia and Herzegovina	Greenways - Zelene Staze	Drina, Vrbas, Bosna , Sava	2/12/2018	7	0
6	Prof. Budimirka Marinovic	Trebinje, Bosnia and Herzegovina	University of East Sarajevo		11/3/2017	6	0
7	Marko Krneta	Banja Luka, Bosnia and Herzegovina	Ministry of agriculture, forestry and water management		3/7/2017	7	0
8	Aleksandar	Bijeljina 76300, Bosnia	Javna ustanova Vode Srpske		1/27/2017	4	0

ADDITIONAL RESOURCES – FORUMS AND APPLICATIONS

Country: Albania

Search

	Name	Location	Organization	River Basins	Last Visit	Visits*
1	Eng. Dritan Gorica	Tirana, Albania	Urban Research Institute		5/10/2018	32
2	Prof. Eglantina Bruci	Tirana, Albania	Climate Change Pro			
3	Mrs. Liljana Lata	Tirana, Albania	Institute of Geoscier Environment			
4	Mr. Tauland Spahiu	Tirana, Albania	Polytechnic Universi			
5	Ms. Arbana Kola	Tirana, Albania	Water Supply ans S			
6	Mr. Klodian	Tirana	Institute of GeoScie			

Country: Macedonia

Search

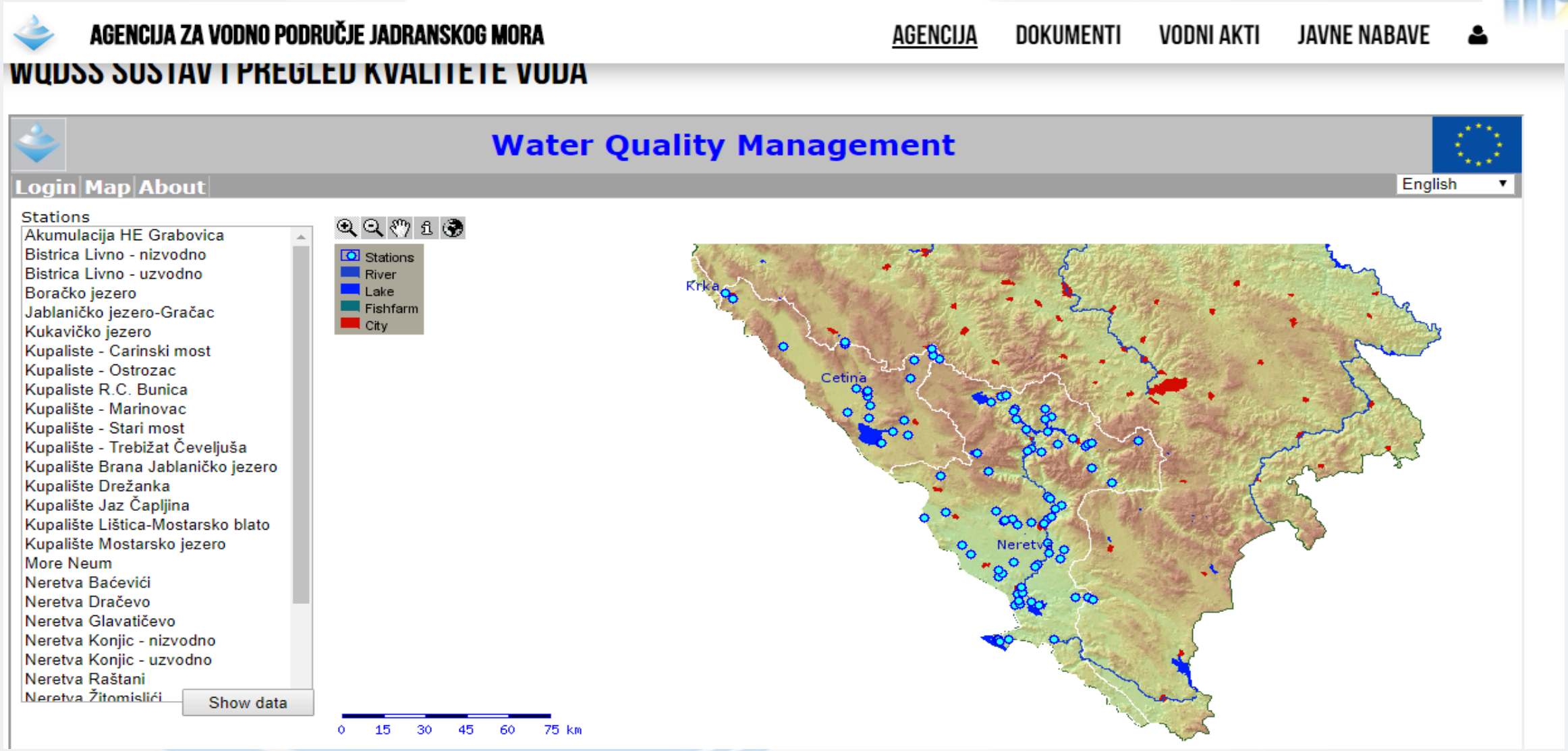
	Name	Location	Organization	River Basins	Last Visit	Visits*
1	Bogoja Popovski	Skopje, Macedonia	Education center for Energy efficiency and PPPs-EnEfect Macedonia	Vardar	10/14/2011	38
2	Miss Kalina Kulibanova	Skopje, Macedonia	St. Cyril and Methodius University	Strumica	12/9/2016	30
3	Dr. ivan kaev	Skopje, Macedonia	hidro energeo inze			
4	Ms. Tijana Sekuloska Simonovikj	Skopje, Macedonia	Institute of agricul			
5	Mrs. Sara Angel Panova	Skopje, Macedonia	St Ciril and Mathoc			
6	Mr. Igor Nikoloski	Skopje, Macedonia	http://igornikolosk			
7	Eng. Slaven	Skopje,	Ss Cyril and Metho			

Country: Kosovo

Search

	Name	Location	Organization	River Basins	Last Visit*	Visits
1	Eng. edon halili	prizren, Kosovo	university for business and technology		5/16/2019	2
2	Eng. agon mehmeti	prishtina, Kosovo	universiteti i prishtines		4/10/2019	2
3	Eng. FATON TURKAJ	Prishtinë, Kosovo	Universiteti i Prishtinës "Hasan Prishtina		3/27/2019	23
4	Eng. Behar Tërdevci	gllogoc, Kosovo	Ministry of environment and spatial planning	Drini i Bardhe	5/31/2018	25
5	Eng. Burim Dula	Prishtine, Kosovo	Louis Berger		3/13/2018	3
6	Ms. Elfete Krasniqi	Prishtine, Kosovo	Ministry of Environment and Spatial Planning Pristina Kosovo		1/29/2018	4
7	Dr. Mihaela Popovici	Pristina, Kosovo	Ministry of Environment and Spatial Planning Pristina Kosovo	Drini	1/19/2018	4
8	Dr. Avdullah Nishori	Prishtinë, Kosovo	Regional Environmental Center, field office in Kosovo	Iber River Basin	2/26/2016	5

ADDITIONAL RESOURCES – ADRIATIC SEA WATERSHED



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ADDITIONAL RESOURCES – ADRIATIC SEA WATERSHED

Water Quality Management

Login | Map | About

Station name: Jablaničko jezero-Gračac

Type of station:

River name:

From: 09-07-2015

To: 30-08-2018

Refresh

Analytical packages

- General chemical paramet
- Dissolved nutrients
- Metals
- Microbiology

Date	Temperatura vode	pH(BAS ISO 10523/2002)	Provodljivost / Conductivity(BAS ISO 27888/2002)	KMnO4 potrošnja / demand	Zasićenje kisikom/ Saturated oxigen
	oC		uS/cm	mg O2/l	%
09-07-2015	24,3	8	232	0,89	120,4
23-07-2015	28,8	8,3	234	0,64	132,5
04-08-2015	26,1	8,3	254	1,53	135,7
04-07-2016	23,9	8,2	269	1,28	129,8
20-07-2016	24	7	270	1,28	137,3
05-08-2016	25,4	8,3	253	1,28	115,1
13-07-2017	26,2	7,8	268	1,41	132,88
31-07-2017	28	8,3	268	3,2	118,63
08-08-2017	27	8,2	282	3,84	132,65
17-07-2018	24,5	7,9	259	2,05	126,7
31-07-2018	25,2	8,1	260	2,94	124,14
14-08-2018	27,9	8,1	273	2,17	135,2
30-08-2018	25,8	8,2	264	3,07	137042
No.	13	13	13	13	13
Average	25.93	8.05	260.46	1.97	10660.23
Minimum	23,9	7	232	0,64	115,1
Maximum	28,8	8,3	282	3,84	137042

ADDITIONAL RESOURCES – ADRIATIC SEA WATERSHED

Water Quality Management

Login | Map | About

Station name: Jablaničko jezero-Gračac

Type of station:

River name:

From: 09-07-2015

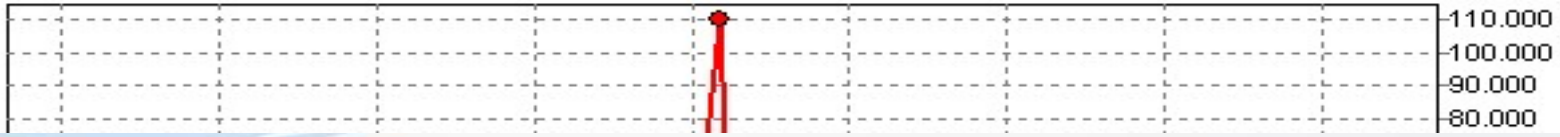
To: 30-08-2018

Refresh

Analytical packages

- General chemical paramet
- Dissolved nutrients
- Metals
- Microbiology

Date	NVB total coli	NVB E. coli(BAS ISO 9308-3)	Crijevni enterokoki(BAS ISO 7899)
	/100 ml	/100 ml	br/100
09-07-2015		100	60
23-07-2015		20	30
04-08-2015		40	20
04-07-2016	8000	170	50
20-07-2016	2000	60	70
05-08-2016	700	10	10
13-07-2017	20000		
31-07-2017	110000		
08-08-2017	14000		
17-07-2018	7700	10	30
31-07-2018	3900	210	14
14-08-2018	15000		
30-08-2018	600		
No.	10	8	8
Average	18190.00	77.50	35.50
Minimum	600	10	10
Maximum	110000	210	70



ADDITIONAL RESOURCES

WISE
WATER INFORMATION SYSTEM FOR EUROPE

WISE - Water Information System for Europe is the European information gateway to water issues

WISE FRESHWATER

WISE MARINE
MARINE INFORMATION SYSTEM FOR EUROPE

European Commission

EEA

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http://tiny.cc/njc68y

Thank you

Mirza Agić

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