

SLOVAK REPUBLIC

Summary report under the Protocol on Water and Health

April 2016

Part One

General aspects

1. Were targets and target dates established in your country in accordance with article 6 of the Protocol?

Please provide detailed information on the target areas in Part Three.

YES NO IN PROGRESS

If targets have been revised, please provide details here.

In the first half of 2014 the Slovak Republic has set up own 3rd national targets. Some of the previous national targets from 2007 were already fulfilled and some of them have been still processed, but during the last period new problems have arisen. The first step in process of a new and revised national target preparation intersectoral national meeting focused on information about the Protocol on Water and Health activities has been organized. Participants have been informed about objectives of the Protocol, its key activities and activities which have been done in Slovakia, the Program of work of WHO and UNECE, current priorities, water problem and gaps.

Participants from 19 institutions have been invited (Water Research Institute; Slovak Environmental Agency; Slovak Hydrometeorological Institute; Slovak Environmental Inspectorate; State Geology Institute of Dionyz Stur; Slovak Water Management Enterprise; Inspectorate of Spa and Springs of the Ministry of Health of the Slovak Republic; WHO Office in Slovakia; Regional Public Health Authorities; National Reference Centre for Drinking Water; Ministry of Agriculture and Rural Development of the Slovak Republic; Ministry of Labor, Social Affairs and Family of the Slovak Republic; Office of the Governmental Plenipotentiary for Romany Communities; Association of the Waterwork Companies; Waterwork Company Bratislava; West Slovak Waterwork Company; Association of the towns and municipalities).

At the end of the meeting working group has been set up. Its task was elaborated new national targets. Experts, members of the working group met few times during spring 2014. Moreover, a lot of individual consultations have been performed. Some of the national targets are related to the implementation of EU directives, international conventions and bilateral agreements and some of the targets deal with particular areas, e.g. safety and quality of drinking water (with regard to pesticides, disinfection by-products ...), determination of cyanobacteria and cyanotoxins, elimination of environmental loads, diagnostic of enteroviruses in bathing water, spreading of information about mineral water etc. All targets reflect topical needs of our country in water related sphere.

The proposal of updated national targets went through national legislative process including comments from the public. Slovak Government approved proposal of the new national targets in July 2014, it is available on the web page: <http://www.rokovania.sk/Rokovanie.aspx/BodRokovaniaDetail?idMaterial=23673>.

2. Were they published and, if so, how?

Please explain whether the targets and target dates were published, made available to the public (e.g. online, official publication, media) and communicated to the secretariat.

New revised national targets were presented at specialist and expert forums, conferences, and they were also published in magazines and on websites (http://www.uvzsr.sk/docs/info/zp/Protokol_o_vode_a_zdravi_narodne_ciele_2014.pdf).

The Slovak Republic formally informed WHO and UNECE Secretariat about revision of the targets.

3. Has your country established national or local arrangements for coordination between competent authorities for setting targets? If so please describe, including information on which public authority(ies) took the leadership and coordinating role, which public authorities were involved and how coordination was ensured.

Yes. Ministry of Health of the Slovak Republic and the Ministry of Environment of the Slovak Republic are institutions responsible for implementation and fulfilment of the Protocol on Water and Health in the Slovak Republic. Both institutions have nominated national focal point who communicate with the WHO and UNECE Secretariats.

The Public Health Authority of the Slovak Republic is institution which took the leadership and coordinating role in all areas (setting targets, reporting national reports, organization of workshops and meetings if it needs and etc.).

In process of targets setting and fulfilment are involved these institutions:

- health sector: Ministry of Health of the Slovak Republic, Public Health Authority of the Slovak Republic and 36 Regional Public Health Authorities, Inspectorate of Spa and Springs and National Reference Centre for Drinking Water;
- environmental sector: Ministry of Environment of the Slovak Republic (Water Section, Section of Geology and Natural resources), State Nature Protection of the Slovak Republic, Water Research Institute; Slovak Environmental Agency;
- interior sector: Office of the Governmental Plenipotentiary for Romany Communities;
- municipalities.

4. Which existing national and international strategies and legislation were taken into account?

Please briefly mention the most relevant national and international strategies and instruments that were taken into account when setting targets (only a limited number of references are required under this question; indicatively, five references are considered appropriate, but the number will depend on your national situation).

Key strategy in water sector of the Slovak Republic is in harmony with European Union water strategy - implementation of the Water Framework Directive and all relevant water directives under the umbrella of the Common implementation Strategy (CIS) -at present Working programme for years 2016-2018.

Slovakia is a signatory to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) and the Convention on Cooperation for the Protection and Sustainable Use of the River Danube. An International Commission for the Protection of the Danube River was established on the basis of the Convention on Cooperation for the Protection and Sustainable Use of the River Danube that plays a role of coordinator of Water Framework Directive implementation in this international river basin.

Commissions for transboundary waters serve as a platforms for the Water Framework Directive implementation at the international level, that were established on the basis of bilateral agreements between the Slovak Republic and the neighbouring countries.

Further, Slovakia adopted and fulfills the National Environmental Health Action Plans, the Children's Environment and Health Action Plan and Parma Declaration on Environment and Health.

5. Was cost-benefit analysis of targets set performed, and if so how?

Alternatively, please explain to what extent financial implications were taken into account when setting targets.

When targets of the Protocol on Water and Health were setting/ reviding in 2014, they were prepared analysis of financial, economic, environmental impacts, impacts on employment and business environment.

All expenses are covered within the limit of budget of the health and environmental sectors for individual years. In case that the national targets are part of EU directives implementation, EU funds represent significant source of financial support.

6. What has been done in your country to ensure public participation in the process of target setting in accordance with article 6, paragraph 2, and how was the outcome of public participation taken into account in the final targets set?

The proposal of updated national targets went through national legislative process including comments from the public via internet portal where exists opportunities to put comments of proposals like individual person, NGO, state institutions etc. But the public has no revevant comments.

7. Provide information on the process by which this report has been prepared, including information on which public authorities had the main responsibilities, which other stakeholders were involved, etc.

This report was prepared in cooperation of Public Health Authority of the Slovak Republic with Ministry of Environment of the Slovak Republic. Individual data about set targets was provided by institution responsible for targets fullfilment. Involved institutions:

- health sector: Ministry of Health of the Slovak Republic, Public Health Authority of the Slovak Republic and 36 Regional Public Health Authorities, Inspectorate of Spa and Springs and National Reference Centre for Drinking Water;
- environmental sector: Ministry of Environment of the Slovak Republic (Water section, section of Geology and Natural resources), State Nature Protection of the Slovak Republic, Water Research Institute; Slovak Environmental Agency;
- interior sector: Office of the Governmental Plenipotentiary for Romany Communities;
- municipalities.

Coordinator of preparing of national report was Public Health Authority of the Slovak Republic. The draft of national summary has undergone the process of review and was approved by the council of Minister of Health. The basis for the preparation of this report was the report, which was prepared in slovak language and approved by the Government of Slovak Republic in December 2015.

8. Report any particular circumstances that are relevant for understanding the report, e.g., whether there is a federal and/or decentralized decision-making structure, or whether financial constraints are a significant obstacle to implementation (if applicable).

Significant/serious obstacles do not exist for implementation of Protocol (all inhabitants have access to drinking water in harmony with definition of WHO/UNICEF; process of waste water treatment continues to fulfil requirement of 91/271/EEC directive).

But for better implementation of Protocol on Water and Health in the Slovak Republic constrains are:

- *finance* (most of tasks of Protocol are performed by state budget- health and environment sector funds)
- *personal capacity* (in competent sectors are still missing experts who would deal with topics of Protocol)

9. Please describe whether and, if so, how emerging issues relevant to water and health (e.g., climate change) were taken into account in the process of target setting.

In the Slovak Republic is long period valid regulation, that in case of drought period, priority for water use is given to supply of inhabitants.

Important role plays Flood Directive (and its connection to the Water Framework Directive) which requires elaboration of the map of flood risk and plans of management of flood risks. These are important tools for protection of inhabitants and their health and safety of water sources.

Emerging and relatively new issues related to water and health (e.g. climate change, water scarcity and drought, new chemical substances etc.) are taken into consideration on national level in harmony with agenda on EU level—in the frame of the CIS structures.

Part Two

Common indicators¹

I. Quality of the drinking water supplied

A. Context of the data

1. What is the population coverage (in millions or per cent of total national population) of the water supplies reported under this indicator?

The rationale of this question is to understand the population coverage of the water quality data reported under sections B and C below. Please describe the type of water supplies for which data is included in the following tables, and the population share covered by these supplies. Please also clarify the source of the water quality data provided (e.g., data from regulatory authorities).

In 2014, Slovak Republic had 5.4213 mil. habitants. Public water supply systems supply 87.67% (4.753 mil. inhabitants). In 2014, the number of municipalities with public water supply system was 2 369, which represents 82% of municipalities. Provided data are officially data from Statistical Authority and Water Research Institute.

2. Do the water supply systems reported here supply the urban population only or both the urban and rural populations?

Reported data about water supply systems content urban and rural populations together. Areas of drinking water supply are divided into:

- a) big areas : 5000-50 000 inhabitants and more than 50 000 inhabitants
- b) small areas: population: 50-500; 500–2 000; 2 000–5 000.

Data reported to European Commission (EC) concerning individual water directives are available at Central Data Repository (Eionet network): <http://cdr.eionet.europa.eu/sk/eu>.

3. Specify where the samples/measurements are taken (e.g., treatment plant outlet, distribution system or point of consumption).

In sections B and C are provided data about samples that were primarily taken from water tap (point of consumption) by Regional Public Health Authorities.

The owners of public water systems or their operators ensure raw water quality control at source and water quality control in the distribution network. Water companies, municipalities or other legal bodies and persons can operate public water systems if they have license for public water system of appropriate category. In case of identification of exceeded limit values of parameters that are defined by limit or highest acceptable limit value the operator is obliged to inform immediately the corresponding Regional Public Health Authority. The extent number and frequency of water quality control depends on the volume of supplied water and number of supplied inhabitants. Drinking water quality in Slovak Republic is monitored by Public Health Authority of the Slovak Republic and 36 Regional Public Health Authorities in their competency in the framework of performance of state health surveillance. Drinking water quality is monitored in the spot of end user, as a part of specialised roles of public health bodies.

¹ In order to allow an analysis of trends for all Parties under the Protocol, please use wherever possible 2005— the year of entry into force of the Protocol — as the baseline year.

4. In the reports, the standards for compliance assessment signify the national standards. If national standards for reported parameters deviate from the WHO guideline values, provide information on the values (standards) used for calculation.

The Slovak Republic transposed and implemented all relevant European Directives on water. Requirements for drinking water quality, applicable to all European Union member states, are given by Drinking Water Directive (2015/1787 amending DWD 98/83/EC), which is implemented by the Slovak Government Order No. 354/2006 Coll., laying down the requirements for water intended for human consumption and quality control of water intended for human consumption, as amended by the Slovak Government Order No. 8/2016 Coll. Standards for drinking water quality in the directive are based on WHO recommendations. When compared to the European Union regulation, Slovak Government Regulation No. 354/2006 Coll. contains additional 30 drinking water quality parameters, as follows: Colony Count 37°C, colorless flagellates, living organisms (excluding flagellata colorless), filamentous bacteria (excluding iron and manganese bacteria), micromycetes determinable microscopy, dead organisms, iron and manganese bacteria, abioseston, silver, dichlorobenzene, monochlorobenzene, styrene, tetrachloromethane, toluene, xylenes, bromodichloromethane, 2,4-dichlorophenol, chlordioxide, chlorites, chloroform, ozone, 2,4,6-trichlorophenol, absorbance, total dissolved solids, temperature, zinc, magnesium, calcium, pooled concentration of calcium and magnesium, microcystins).

In each table, there are provided both guideline value (WHO guideline value and the European Union guideline value).

B. Bacteriological quality

Indicator to be used: WatSan_S2: The percentage of samples that fail to meet the national standard for E. coli and the percentage of samples that fail to meet the national standard for Enterococci.

In the table there are provided the latest data about non-complying samples that were primarily taken from water tap (point of consumption) by Regional Public Health Authorities. General data for the whole Slovakia (Regional Public Health Authorities + water operators data) are not available actually for year 2014 or 2015. In a national report about drinking water quality in 2011-2013 which was prepared for the European Commission evaluation there was provide both type of data individual for large and small water supply zones. In this report it was following data:

- large water supply zones (supplying > 5 000 habitants)

E. coli - non-complying samples with EU requirements 0.3% (2013)

Enterococci – non-complying samples with EU requirements 99. % (2013)

- small water supply zones (supplying < 5 000 habitants)

E. coli - non-complying samples with EU requirements 1.75 % (2012)

Enterococci – non-complying samples with EU requirements 2.45 % (2012)

These data are available on European Environmental Agency website - http://cdr.eionet.europa.eu/sk/eu/dwd/envvosoeg/WISE_DWD_SK_2011-2013.xls/manage_document.

Table 1: Decreasing tendency in non- complying samples (bacteriological quality)

<i>WatSan_S2</i>	<i>WHO guideline value</i>	<i>DWD parametric value</i>	<i>Baseline value (2005)</i>	<i>Value reported in the previous reporting cycle (2012)</i>	<i>Current value (2015)</i>

E. coli	0 number/100 ml	0 number/100 ml	2.62 %	1.83 %	1.78 %
Enterococci	0 number/100 ml	0 number/100 ml	3.52 %	2.77 %	1.46 %

C. Chemical quality

Indicator to be used: WatSan_S3. All countries shall monitor and report on the percentage of samples that fail to meet the national standard for chemical water quality with regard to the following:

- (a) Fluoride;
- (b) Nitrate and nitrite;²
- (c) Arsenic;
- (d) Lead;
- (e) Iron;
- (f) additional physico-chemical parameters.

In the table there are provided the latest data about non-complying samples that were primarily taken from water tap (point of consumption) by Regional Public Health Authorities. In data are incorporated results from rural and urban monitoring and large and small water supply zones too. General data for the whole Slovakia (Regional Public Health Authorities + water operators data) are not available actually for year 2014 or 2015. In a national report about drinking water quality in 2011-2013 which was prepared for the European Commission evaluation there was provide both type of data individual for large and small water supply zones. These data are available on European Environmental Agency website

http://cdr.eionet.europa.eu/sk/eu/dwd/envvosoeg/WISE_DWD_SK_2011-2013.xls/manage_document.

In this report it was following data:

- large water supply zones (supplying > 5 000 habitants)

Nitrate - non-complying samples with EU requirements 0 % (2013)

Nitrite - non-complying samples with EU requirements 0% (2013)

Arsenic - non-complying samples with EU requirements 0,1% (2013)

Lead - non-complying samples with EU requirements 0,1 % (2013)

Iron - non-complying samples with EU requirements 2,5 % (2013)

- small water supply zones (supplying < 5 000 habitants)

Nitrate - non-complying samples with EU requirements 0.2 % (2012)

Nitrite - non-complying samples with EU requirements 0.2 % (2012)

Arsenic - non-complying samples with EU requirements 0.3 % (2012)

Lead - non-complying samples with EU requirements 0 % (2012)

Iron - non-complying samples with EU requirements 2.1 % (2012)

Other parameter were complying with EU requirements.

² As defined in the WHO Guidelines for drinking-water quality.

Table 2: Decreasing tendency in non-complying samples (chemical quality)

<i>Substance</i>	<i>WHO guideline value</i>	<i>DWD parametric value</i>	<i>Baseline value (2005)</i>	<i>Value reported in the previous reporting cycle (2012)</i>	<i>Current value (2015)</i>
Fluoride	1,5 mg/l	1,5 mg/l	0,14 %	0,1 %	0 %
Nitrate	50 mg/l	50 mg/l	1.2 %	0,33 %	0,19 %
Nitrite	3 mg/l	0,5 mg/l	0,02 %	0,3 %	0,1 %
Arsenic	0,01 mg/l	0,01 mg/l	3,2 %	0,68 %	0,66 %
Lead	0,01 mg/l	0,01 mg/l	0,35 %	0,1 %	0,54 %
Iron	-	0,2 mg/l	8,24 %	4,52 %	4,26 %
Pesticides – Total	-	0,0005 mg/l	0 %	0 %	0 %
Benzo(a)pyrene	0,0007 mg/l	0,00001 mg/l	-	0 %	0 %
Benzene	0,01 mg/l	0,001 mg/l	0 %	0 %	0 %
Cadmium	0,003 mg/l	0,005 mg/l	0 %	0 %	0 %
Mercury	0,006 mg/l	0,001 mg/l	0,91 %	0 %	0 %
Nickel	0,07 mg/l	0,02 mg/l	0,25 %	0 %	0 %
Cyanide	-	0,05 mg/l	0,14 %	0 %	0 %
Copper	2 mg/l	2 mg/l	0 %	0 %	0 %
Chloride	-	250 mg/l	0 %	0 %	0 %
THM - Total	-	0,1 mg/l	0,88 %	0 %	0 %

II. Reduction of the scale of outbreaks and incidence of infectious diseases potentially related to water

Table 3: numbers reported only in relation to drinking water

	<i>Incidence</i>			<i>Number of outbreaks</i>		
	<i>Baseline (2005)</i>	<i>Value reported in the previous reporting cycle (2012)</i>	<i>Current value (2014)</i>	<i>Baseline (2005)</i>	<i>Value reported in the previous reporting cycle (2012)</i>	<i>Current value (2014)</i>
Cholera	0	0	0	0	0	0
Bacillary dysentery (shigellosis)	0	0	0	0	0	0
Enterohaemorrhha	0	0	0	0	0	0

gic E. coli.						
Viral hepatitis A	0	0	0	0	0	0
Typhoid fever	0	0	0	0	0	0

III. Access to drinking water

Please comment on the trends or any other important information supporting interpretation of the data.

Table 4: Percentage of population with access to drinking water

<i>Percentage of population with access to drinking water</i>	<i>Baseline value (2005)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (2014)</i>
Total	85,3% (4,5941 mil. inhabitants)	86,9% (4,7238 mil. inhabitants)	87,7% (4,753 mil. inhabitants)
Urban	Evidence doesn't select urban and rural population extra.	Evidence doesn't select urban and rural population extra.	Evidence doesn't select urban and rural population extra.
Rural			

Please specify if the above data is based on national estimates or estimates provided by the WHO/United Nations Children's Fund (UNICEF) Joint Monitoring Programme (JMP) for Water Supply and Sanitation.

If national estimates are provided, please specify how access is defined and estimated in your country.

JMP definitions and categories are available at <http://www.wssinfo.org/definitions-methods/watsan-categories>.

National data are long period collected in database and published in annual report „Water Management in the Slovak Republic“.

Definition of drinking water public supply in the Slovak Republic: minimum 50 inhabitants or 10 m³ water/day.

In the sense of WHO/UNICEF definition all inhabitants of the Slovak Republic have access to safe drinking water resources.

IV. Access to sanitation

Please comment on the trends or any other important information supporting interpretation of the data.

Table 5: Percentage of population with access to sanitation

<i>Percentage of population with access to sanitation</i>	<i>Baseline value (2005)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (2014)</i>
Total	55,16% (3,0755 mil. inhabitants)	61,58% (3,26004 mil. inhabitants)	64,67% (3,5061 mil. inhabitants)
Urban	Evidence doesn't select urban and rural population extra.	Evidence doesn't select urban and rural population extra.	Evidence doesn't select urban and rural population extra.
Rural			

Please specify if the above data is based on national estimates or estimates provided by JMP for Water Supply and Sanitation.

If national estimates are provided, please specify how access is defined and estimated in your country.

JMP definitions are available at <http://www.wssinfo.org/definitions-methods/watsan-categories>.

National data are long period collected in database and published in annual report „Water Management in the Slovak Republic“.

Sanitation is performed in harmony with EU legislative – the Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment (Directive 91/271/EEC).

V. Effectiveness of management, protection and use of freshwater resources

For European Union countries

Water quality

On the basis of national systems of water classification, the percentage of the number of water bodies or the percentage of the volume (preferably) of water³ falling under each defined class (e.g., in classes I, II, III, etc. for non-EU countries; for EU countries, the percentage of surface waters of high, good, moderate, poor and bad ecological status, and the percentage of groundwaters/surface waters of good or poor chemical status).

³ Please specify.

Table 6: Assessment of water bodies in harmony with Water Framework Directive

Ecological status of surface water bodies

<i>Percentage of surface water classified as:</i>	<i>Baseline value (2007/2008)</i>	<i>Value reported in the previous reporting cycle (2010[*])</i>	<i>Current value (2009- 2012)</i>
High status	27.7	0.30	3.64
Good status	36.0	70.21	52.65
Moderate status	32.9	25.31	34.77
Poor status	3.0	3.71	8.28
Bad status	0.4	0.43	0.66
Total number/volume of water bodies classified	1510		

Total number/volume of water bodies in the country 1510

** Preliminary assessment 2nd RBMPs*

NOTE: Changes in assessment of water bodies (1st and 2nd RBMPs):

- updated number of water bodies
- higher reliability of evaluation

Chemical status of surface water bodies

<i>Percentage of surface water bodies classified as</i>	<i>Baseline value (2007/2008)</i>	<i>Value reported in the previous reporting cycle (2010[*])</i>	<i>Current value (2009- 2012)</i>
Good status	95.0	90.0	97.55
Poor status	5.0	10.0	2.45

Total number/volume of water bodies classified 1510

Total number/volume of water bodies in the country 1510

** Preliminary assessment 2nd RBMPs*

NOTE: Changes in assessment of water bodies (1st and 2nd RBMPs):

- updated number of water bodies
- higher reliability of evaluation

Status of groundwaters

<i>Percentage of groundwaters classified as</i>	<i>Baseline value (2007/2008)</i>	<i>Value reported in the previous reporting cycle (2010[*])</i>	<i>Current value (2009-2012)</i>
Good quantitative status	93.3	-	94.7
Good chemical status	82.7	-	85.33

<i>Percentage of groundwaters classified as</i>	<i>Baseline value (2007/2008)</i>	<i>Value reported in the previous reporting cycle (2010[*])</i>	<i>Current value (2009-2012)</i>
Poor chemical status	17.3	-	14.67
Total number/volume of groundwater bodies classified	75		

Please provide any needed information that will help put into context and aid understanding of the information provided above (e.g., coverage of information provided if not related to all water resources, how the quality of waters affects human health).

Information in detail available in 1st Slovak Water Management Plan and 2nd Slovak Water Management Plan

Water use

Please provide information on the water exploitation index at the national and river basin levels for each sector (agriculture, industry, domestic), i.e., the mean annual abstraction of freshwater by sector divided by the mean annual total renewable freshwater resource at the country level, expressed in percentage terms.

Table 7: Water exploitation

<i>Water exploitation index</i>	<i>Baseline value (2005)</i>	<i>Value reported in the previous reporting cycle (2011)</i>	<i>Current value (2014)</i>
Agriculture	2,1%	4,3 %	0,4%
Industry ^a	87,8%	77%	80,5%
Domestic use ^b	10,1%	18,8%	19,1%

^a Please specify whether the figure includes both water abstraction for manufacturing industry and for energy cooling.

^b Please specify whether the figure only refers to public water supply systems or also individual supply systems (e.g., wells).

Note :

1/ data in table above are related to surface water

2/ figures relevant to „Domestic use“ refer to public water system

3/ figures relevant to „Industry“ refer to total number, including cooling water

Part Three

Targets and target dates set and assessment of progress

For countries that have set targets and target dates, please provide information specifically related to the progress towards achieving them. If you have not set targets in a certain area, please explain why.

For countries in the process of setting targets, please provide information on the relevant target areas (e.g., baseline conditions, provisional targets, etc.)

Suggested length: one page (330 words) per target area.

I. Quality of the drinking water supplied (art. 6, para. 2 (a))

Slovakia has set two national targets in this area.

National target No. 3 - Improvement of quality and safety of drinking water

Target is set at the local level. Deadline is year 2020. For target fulfillment is responsible the Public Health Authority of the Slovak Republic + competent Regional Public Health Authority, Water companies and municipalities.

The reason for target setting was to improve the health safety of drinking water, by limiting or complete absence of chlorine-based disinfection for the selected water source of public water supply. During the distribution of drinking water from the public water supply to the consumer in Slovakia, it often uses a combination of multiple chlorine disinfectants (usually sodium hypochlorite and chlorine). In specific cases, it can lead to formation of disinfection by-products (further „DBP“). Toxicological studies have confirmed that some of these compounds are carcinogenic and have negative effect on reproduction and development of foetus. Moreover in practice, it is not possible testing over the range of chemicals that could be formed during the disinfection.

Since 2012, the public health sector has been cooperating with water operators in specific projects. It was chosen five public water supply systems in good technical status and with good-class of water sources. The first step was verified presence of the DBP. In case of positive discovery of DBP it was designed pilot run without continual disinfection (in minimum lasting 1 year). During the pilot run was quality of drinking water monitoring frequently. For the first time, it was applied ecotoxicological test in practice. Basin condition was distribution of health safety drinking water and complying with legislative requirements.

Accompanying activity of pilot project was organizing of the meeting with people living in these local areas where were informed about projects.

Results from projects verify that DPB do not form in the course of drinking water chlorination. Ecotoxicological tests for the majority of selected water supply systems confirmed that after addition of chlorine were formed specific chemical substances exhibiting positive ecotoxicological effects on selected living organisms. The presence of the mandatory monitoring of the DPB was not detected in any case, but the presence of substances generated during disinfection and their health effects can be classified as harmful.

National target No. 4 - Monitoring of pesticides in drinking water

Target is set at the national and local level. Deadline is year 2020. For target fulfillment is responsible National reference Center for drinking water, Public Health Authority of the Slovak Republic + competent Regional Public Health Authority.

The reason for target setting was need to review actual monitoring of pesticides in water sources which are situated near by agricultural soil. In generally, some kinds of pesticides are high toxic and their adverse effects on human health are essential. Slovakia has about 85% drinking water from underground waters which are less exposed to negative impacts of pollutions. Nowadays in Slovakia we determine mainly chlorinated pesticides such as lindane, methoxychlor, pentachlorophenol, heptachlor, aldrin, dieldrine, hexachlorobenzene, heptachlorepoxyde and so on, which are in the environment highly persistent. These pesticides are a remnant of the agricultural activities from 80th to 90th years of the last century in the form of environmental loads. In recent years, the measured value of these pest control agents on the level of 0.01 mg / l.

In the past 10 years, the agricultural activities in Slovakia significantly decreased. The new generation of pesticides are already quite easily degradable, but even though these substances can endanger the quality of water in water sources. The public health authorities do not register.

Pesticides issue was consulted by 36 Regional Public Health Authorities, Public Health Authority of the Slovak Republic, National Reference Center for drinking water, Water Research Institute, University of Veterinary Medicine, Association of Water companies and last but not least with Central Control and Testing Institute for Agriculture which have evidence of pesticides consumption in Slovakia. In context of monitoring drinking water, for Slovakia's territory are relevant these pesticides: acetochlor, glyphosate, propisochlor, S-metolachlor, MCPA, terbuthylazine, metazachlor.

Currently, we reviewed available data on the ecotoxicity or toxicity of these substances on underground water resources and the possibilities for their laboratory determination.

II. Reduction of the scale of outbreaks and incidents of water-related disease (art. 6, para. 2 (b))

Slovakia has set one national targets in this area.

National target No. 6 - Reduction of health risks related to bathing water quality

Target is set at the national level. Deadline is year 2020. For target fulfillment is responsible the Public Health Authority of the Slovak Republic + competent Regional Public Health Authority.

The reason for target setting was primarily the lack of statistical data at the national level about diseases and the medical problems related to non-complying quality of bathing water at natural waters as well as an artificial swimming pool. Public health authorities annually monitor the quality of bathing water and the diseases associated with bathing water in 80 natural waters, 165 summer artificial swimming pool and 280 year-round artificial swimming pools.

According our experiences, we have greater problem with a death by drowning like than the disease of non-complying bathing water. This is confirmed by the fact that for the last six years, it has been reported only one outbreak in thermal spa *Polny Kesov* (23 case of disease „acute gastroenteritis”). Another problematic case is a thermal spa *Podhajska* where was found pathogenic bacteria *Vibrio cholerae* non O1 and non-O139 *Vibrio vulnificus* illnesses, unfortunately with 1 death (year 2014). The main problem of thermal spa *Podhajska* is visiting vacationers with health problems (for example skin disease) because this thermal spa is wrong propaged such as health resort and also capacity of spa is often gotten over. For this reason, since 2014, it has begun regular and strickter monitoring of bathing water in connection of *Vibrio*.

As mentioned above, the drowning in Slovakia constitutes 1/5 fatalities of children each year and is the second most frequent cause of fatal injuries children and adolescents. Although the majority of drowning occurs in places not intended for swimming (flowing and standing water, dams), we have also many cases cases of drowning in the swimming pool.

Public Health Authority of the Slovak Republic prepared and published for public education materials (15 000 leaflets and 50 posters) under "Safety swimming via summer". The materials are designed for parents with children and were distributed before the start of the bathing season 2015 (May, June) to the most visited seasonal pools in Slovakia through Regional Public Health Authorities. Leaflets (see Picture) were subsequently provided by the operators of swimming pools to visitors as part of the ticket. Leaflets (see. Figure) were subsequently provided by the operators of swimming pools to visitors as a part of the ticket. Leaflet contains selected data on injuries (and the heating), and in particular advice and tips how to safely spend time with the kids in the water. Further, there is information about what to do when someone is drowning, warning that swimming toys are only toys. Leaflets is calls for obtaining of swim literacy. The material also contains instructions for first aid.



Picture: Leaflet - Safety swimming via summer

III. Access to drinking water (art. 6, para. 2 (c))

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National target:

-increase of number of inhabitants which are supplied by public water supply network

-implementation of Water Framework Directive

Concrete number of inhabitants supplied by public water supply is not designated. Basic document for development of public water system is the Proposal of the orientation, principles and priorities of water management policy of the Slovak Republic until year 2027. 1st Water Management Plan of Slovakia approved by the Slovak Government by the decision No. 109 of February 10, 2010 sets up policy for implementation of the Water Framework Directive, including the Programme of Measures, which is its part. 2nd Water Management Plan of Slovakia approved by the Slovak Government by the decision No.6 of January 13, 2016. The Programme of Measures is its part as well.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

In the frame of the Operational Programme Environment sum of 198.9 mil Euros has been allocated for drinking water supply area from Cohesive Fund 2007-2013. National source of money Environmental Fund of the Slovak Republic contributes to development of public water supply system as well. Plan for Public Waterworks Development is regularly updated in 6 year period.

3. Assess the progress achieved towards the target.

In year 2005 85,3 % (4,5941 mil. inhabitants) were supplied with drinking water from public water supply network. This number increased in 2008 up to 86,3 % (4,6704 mil. inhabitants), in 2011 up to 86.9 % (4,7238 mil. inhabitants) and in 2014 up to 87.67% (4,753 mil. inhabitants).

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Targets and target dates did not have to be revised.

5. If you have not set a target in this area, please explain why

IV. Access to sanitation (art. 6, para. 2 (d))

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National targets:

- improved situation in the sector of waste water treatment and release
- implementation of Water Framework Directive
- implementation of the Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment

Main milestones:

- treatment of urban waste water in agglomerations with more than 10,000 population equivalent (PE) until end of 2010 and more than 2,000 PE until end of year 2015. Others targets are described in the Operational Programme Quality of Environment (www.op-kzp.sk)
- implementation of the Water Framework Directive and all others EU relevant directives focused on pollution reduction.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

Legislation:

- Water Law No. 384/2009 Coll. and its amendments
- National Programme of the Slovak Republic for Performance of Council Directive 91/271/EEC concerning urban waste water treatment is basic document for implementation of the Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment (up dated in 2 years period)
- Plan for Development of Public Sewerage
- 1st Water Management Plan of Slovakia approved by the Slovak Government, the decision No. 109 of February 10, 2010 sets up policy for implementation of the Water Framework Directive, including the Programme of Measures, which is its part
- 2nd Water Management Plan of Slovakia approved by the Slovak Government by the decision No. 6 of January 13, 2016. The Programme of Measures is its part as well.

Financial sources: Cohesive Fund, Structural Funds, state budget

3. Assess the progress achieved towards the target

Table 8 : Progress achieved in sanitation (years 2005 - 2014)

Percentage of population with access to improved sanitation	Baseline value year 2005	year 2011	Current value year 2014
Total	Number of inhabitants connected to public sewerage system : 3,0755 mil. (57.09 %) of that in houses connected to sewerage system with WWTP: 2,9714 mil. (55.16 %)	Number of inhabitants connected to public sewerage system : 3,347 307 mil. (61.58%) of that in houses connected to sewerage system with WWTP: 3,260 041 mil. (59.98%)	Number of inhabitants connected to public sewerage system : 3,5061 mil. (64.67 %) of that in houses connected to sewerage system with WWTP: 3,4531 mil. (63.69%)
number of waste water treatment plants	468	616	692

5. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Targets and target dates did not have to be revised.

5. If you have not set a target in this area, please explain why.

V.Levels of performance of collective systems and other systems for water supply (art. 6, para. 2 (e))

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National targets: Increased proportion of public high quality water supply user, implementation of Water Framework Directive.

- ensurance of quality and quantity of water for water supply
- monitoring of water sources

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

Legislation:

- Water Law No. 384/2009 Coll. and its amendments
- Governmental Order No. 354/2006 Coll.,
- 1st Water Management Plan of Slovakia and 2nd Water Management Plan of Slovakia, which include Programme of Measures focused on water quality and quantity protection
- Standards for Water Quality in Public Waterworks and Public Sewerage
- Requirements for drinking water quality, applicable to all European Union member states are given by Drinking Water Directive (98/83/EC), which is implemented in the Slovak Republic by Governmental Order No. 354/2006 Coll., laying down the requirements for water intended for human consumption and quality control of water intended for human consumption. Standards for drinking water quality in the directive are based on WHO recommendations. Slovakia has 6 indicators which are more stringent than the limits laid down in directive compared with the Drinking Water Directive (98/83/EC); namely boron, cadmium, copper, cyanide, chloride and pH

Difficulties: lack of financial sources.

3. Assess the progress achieved towards the target.

Table 9: Progress achieved in drinking water supply (years 2005 - 2014)

	Baseline value		Current value year 2014
	year 2005	year 2011	
amount of samples meeting requirements for drinking water quality in all parameters (%)	89.59	92.05	99.6
capacity of water resources (l/s)	33 848	33 527	34 057
length of water supply network (km)	25 719	28 777	29 438.3

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Targets and target dates did not have to be revised.

5. If you have not set a target in this area, please explain why.

VI. Levels of performance of collective systems and other systems for sanitation (art. 6, para. 2 (e) continued)

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National target:

- improved situation in the sector of waste water treatment and release
- implementation of Water Framework Directive
- implementation of the Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment

Main milestones:

-treatment of urban waste water in agglomerations with more than 10,000 population equivalent (PE) until end of 2010 and more than 2,000 PE until end of year 2015. Others targets are described in the Operational Programme Quality of Environment (www.op-kzp.sk).

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

Legislation:

-Water Law No. 384/2009 Coll. and its amendments

-National Programme of the Slovak Republic for Performance of Council Directive 91/271/EEC concerning urban waste water treatment is basic document for implementation of the Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment (up dated in 2 years period)

- Plan for Development of Public Sewerage (updated in 6 years period)

- Standards for Water Quality in Public Waterworks and Public Sewerage

- 1 st Water Management Plan of Slovakia approved the Slovak Government by the decision No. 109 of February 10, 2010 sets up policy for implementation of the Water Framework Directive, including the Programme of Measures, which is its part- 2nd Water Management Plan of Slovakia approved by the Slovak Government by the decision

No. 6 of January 13, 2016. The Programme of Measures is its part as well.

Financial sources: Cohesive Fund, Structural Funds, state budget, Environmental Fund

3. Assess the progress achieved towards the target.

Table 10: Progress achieved in systems of sanitation (years 2005 – 2014)

	Baseline value year 2005	year 2011	Current value year 2014
total percentage of population with access to improved sanitation	Number of inhabitants connected to public sewerage system : 3,0755 mil. (57.09 %) of that in houses connected to sewerage system with WWTPs: 2,9714 mil. (55.16 %)	Number of inhabitants connected to public sewerage system: 3, 347 307 mil. (61.58%) of that in houses connected to sewerage system with WWTPs: 3,260 041 mil. (59.98 %)	Number of inhabitants connected to public sewerage system : 3,5061 mil. (64.67 %) of that in houses connected to sewerage system with WWTP: 3,4531 mil. (63.69%)
number of waste water treatment plants	468	616	692
length of sewerage networks (km)	7690	11 210,5	12 565

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Revision of target is managed in 2 years interval in harmony with the National Programme of the Slovak Republic for Performance of Council Directive 91/271/EEC concerning urban waste watertreatment. Data reported to the European Commission (EC) concerning individual water directives, including Directive 91/271/EEC, are available at Central Data Depository(Eionet network): <http://cdr.eionet.europa.eu/sk/eu>.

5. If you have not set a target in this area, please explain why.

VII. Application of recognized good practices to the management of water supply, (art. 6, para. 2 (f))

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National targets:

- increased proportion of public high quality water supply users, implementation of Water Framework Directive
- ensurance of quality and quantity of water for water supply
- monitoring of water sources

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

Legislation:

- Water Law No. 384/2009 Coll. and its amendments
- Governmental Order No. 354/2006 Coll.,
- 1 st Water Management Plan of Slovakia and 2 nd Water Management Plan of Slovakia include own Programme of Measures, in which are presented measures focused on protection of water quality and quantity
- Standards for Water Quality in Public Waterworks and Public Sewerage,
- Requirements for drinking water quality, applicable to all European Union member states are given by Drinking Water Directive (98/83/EC), which is implemented in the Slovak Republic by Governmental Order No. 354/2006 Coll., laying down the requirements for water intended for human consumption an quality control of water intended for human consumption. Standards for drinking water quality in the directive are based on WHO recommendations. Slovakia has 6 indicators which are more stringent than the limits laid down in directive compared with the Drinking Water Directive (98/83/EC); namely boron, cadmium, copper, cyanide, chloride and pH.

Difficulties: lack of financial sources.

2. Assess the progress achieved towards the target.

Table 11: Progress achieved in drinking water supply (years 2005 - 2014)

	Baseline value year 2005	year 2011	Current value year 2014
amount of samples meeting requirements for drinking water quality in all parameters (%)	89,59	92,05	99.60
capacity of water resources (l/s)	33 848	33 527	34 057
length of water supply network (km)	25 719	28 777	29 438.3

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Targets and target dates did not have to be revised.

5. If you have not set a target in this area, please explain why.

VIII. Application of recognized good practice to the management of sanitation (art. 6, para. 2 (f) continued)

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National targets:

- improved situation in the sector of waste water treatment and release
- implementation of Water Framework Directive
- National Programme of the Slovak Republic for Performance of Council Directive 91/271/EEC concerning urban waste water treatment
- nutrient reduction in harmony with requirements of Council Directive 91/271/EEC concerning urban waste water treatment

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

- application of the Standards for Water Quality in Public Waterworks and Public Sewerage,
- using of techniques which lead to achievement of targets set up in Council Directive 91/271/EEC concerning urban waste water treatment

3. Assess the progress achieved towards the target.

Table 12 : Progress achieved in the sector of waste water treatment (years 2005 - 2014)

Percentage of population with access to improved sanitation	Baseline value year 2005	year 2011	Current value year 2014
Total	Number of inhabitants connected to public sewerage system : 3,0755 mil. (57.09 %) of that in houses connected to sewerage system with WWTP: 2,9714 mil. (55.16 %)	Number of inhabitants connected to public sewerage system : 3, 347 307mil. (61.58%) of that in houses connected to sewerage system with WWTP: 3, 260 041 mil. (59.98%)	Number of inhabitants connected to public sewerage system : 3,5061 mil. (64.67 %) of that in houses connected to sewerage system with WWTP: 3,4531 mil. (63.69%)
number of waste water treatment plants	468	616	692

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

National Programme of the Slovak Republic for Performance of Council Directive 91/271/EEC concerning urban waste water treatment is updated each 2 years.

5. If you have not set a target in this area, please explain why.

IX. Occurrence of discharges of untreated wastewater (art. 6, para. 2 (g) (i))

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National target:

- improved situation in the sector of waste water treatment and release
- implementation of Water Framework Directive
- implementation of the National Programme of the Slovak Republic for Performance of Council Directive 91/271/EEC concerning urban waste water treatment. There is stated, that waste water treatment plants have to be built with appropriate treatment.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

The Plan of Development of Public Sewerage allows/ensures treatment of waste water in agglomerations below 2000 PE. In certain conditions - support from EU funds. This one is used seldom, because main national target is waste water treatment in agglomerations above 2000 PE (obligation from European Union: Accession Treaty). 1st Water Management Plan of Slovakia and 2nd Water Management Plan of

Slovakia include own Programme of Measures, which are split on basic measures and additional measures. Treatment of untreated waste water from agglomerations below 2000 PE belongs to additional measures.

3. Assess the progress achieved towards the target.

Table 13: Progress achieved in the sector of waste water treatment (years 2005 - 2014)

	Baseline value year 2005	year 2011	Current value year 2014
water discharged to watercourses altogether (m ³)	443 mil.	414,6 mil.	436,6 mil.
of that treated wastewater (m ³)	428,2 mil	406,5 mil.	430,1 mil.
untreated water (m ³)	15,1 mil.	8,1 mil.	6,5 mil.
untreated water (%)	3.41	1.95	1.49

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

National Programme of the Slovak Republic for Performance of Council Directive 91/271/EEC concerning urban waste water treatment is updated each 2 years.

5. If you have not set a target in this area, please explain why.

X. Occurrence of discharges of untreated storm water overflows from wastewater collection systems to waters within the scope of the Protocol (art. 6, para. 2 (g) (ii))

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National targets are described in §6 of the Governmental Order No. 269/2010 which sets up requirements form good water status. Before th Governmental Order No. 269/2016 came into force sewerage system was mostly uniform. In new constructed sewerage systems areas built dividied sewerages. Rainfall tanks with satisfactory capacity are built in the process of waste water treatment plans reconstructions.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

Implementation the §6 of the Governmental Order No. 269/2010 which sets up requirements form good water status into practice.

3. Assess the progress achieved towards the target.

Evidence is not available yet.

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Targets did not have to be revised.

5. If you have not set a target in this area, please explain why.

XI. Quality of discharges of wastewater from wastewater treatment installations to waters within the scope of the Protocol (art. 6, para. 2 (h))

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National targets:

- improved situation in the sector of waste water treatment and release
- implementation of Directive 91/271/EEC.
- implementation of the Water Framework Directive 2000/60 EC with objective to reach good status of water
- implementation of others European Union relevant directives focused on pollution reduction (mainly directive 2013/39/EU on priority substances in the field of water policy).

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

Legislation:

- Water Law No. 364/2004 Coll. in wording of its later amendments
- Governmental Order No. 269/2010 Coll. which sets up requirements on good water status in the wording of Governmental Order No. 398/2012

All relevant European Union directives have been transposed into Water Law No. 364/2004 Coll. in wording of its later amendments and into Governmental Order No. 269/2010 Coll. which sets up requirements on good water status in the wording of Governmental Order No. 398/2012.

3. Assess the progress achieved towards the target.

Improvement of discharged waste water quality and following improvement of surface water quality and relevant ecosystems.

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Targets and target dates did not have to be revised.

5. If you have not set a target in this area, please explain why.

XII. Disposal or reuse of sewage sludge from collective systems of sanitation or other sanitation installations (art. 6, para. 2 (i), first part)

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National targets:

- improved situation in the sector of waste water treatment and release
- implementation of Water Framework Directive

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

Legislation:

- Water Law No. 364/2004 Coll. in wording of its later amendments
- 1st Water Management Plan of Slovakia and its Programme of Measures
- 2nd Water Management Plan of Slovakia and its Programme of Measures
- Governmental Order No. 279/2011 Coll. (which contains Programme of Measures, purpose of its achievement of environmental objectives)
- Waste Law No. 223/2001 Coll. in wording of its later amendments
- Law on application of sewage sludge into soil No. 188/2003 Coll. in wording of its later amendments
- Programme of Waste Management of the Slovak Republic

Education:

Education of state administration, education programmes, implementation of good agriculture practice, Rural Development Programme

3. Assess the progress achieved towards the target.

Assessment of progress published in table 14.

Table 14: Disposal/resuse of sewage sludge (years 2007 – 2014)

year	Sludge production - dry mass - (t)							
	total	recovery				disposal		temporarily stored in WWTPs
		aplication into agricultural soil	aplication into forest soil	compost and other recovery	energy recovery (after biological handling)	burn	landfills	
2007	55 305	0	0	42 315	0	0	3 590	9 400
2008	57 810	0	0	38 368	0	0	8 676	10 766
2009	58 582	0	0	47 056	0	0	2 696	8 830
2010	54 760	923	0	47 140	0	0	16	6 681
2011	58 718	358	0	50 111	0	0	2 306	5 943
2012	58 706	1 254	0	46 446	3196	0	1 615	6 195
2013	57 433	518	0	45 261	5 008	0	1 666	4 980
2014	56 875	0	0	36 524	16 038	0	1 073	3 240

5. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Present legislation is satisfactory. Conception of sludge production is under preparation. It should sets up main principles of sludge management.

5. If you have not set a target in this area, please explain why.

XIII. Quality of wastewater used for irrigation purposes (art. 6, para. 2 (i), second part)

This point is not relevant for the Slovak Republic (no use of waste water for irrigation).

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.
2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.
3. Assess the progress achieved towards the target.
4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If

so, and if the revised target and target date have already been adopted, please describe them.

5. If you have not set a target in this area, please explain why.

XIV. Quality of waters which are used as sources for drinking water (art. 6, para. 2 (j), first part)

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National targets:

- increased of proportion of public high quality water supply users
- implementation of Water Framework Directive and all relevant water directives

- ensurance quality and quantity of water for water supply,
- monitoring of water sources.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

Legislation:

All relevant European Union directives have been transposed into:

- Water Law No. 364 /2004 Coll., in wording of its later amendments
- Governmental Order No. 269/2010 Coll. which sets up requirements on achievement of good water status, in the wording of Governmental Order No. 398/2012
- Requirements for drinking water quality, applicable to all European Union member states are given by Drinking Water Directive (98/83/EC), which is implemented in the Slovak Republic by Governmental Order No. 354/2006 Coll., laying down the requirements for water intended for human consumption and quality control of water intended for human consumption. Standards for drinking water quality in the directive are based on WHO recommendations. Slovakia has 6 indicators which are more stringent than the limits laid down in directive compared with the Drinking Water Directive (98/83/EC); namely boron, cadmium, copper, cyanide, chloride and pH.

3. Assess the progress achieved towards the target.

Table 15: Progress achieved in drinking water quality (years 2005 - 2014)

	Baseline value year 2005	year 2011	Current value year 2014
amount of samples meeting requirements for drinking water quality in all parameters (%)	89.59	92.05	99.60

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Slovakia has set two national targets in this area. National target No.8 is partially focused on cyanobacterial proliferation and occurrence cyanotoxins in water reservoir for drinking water resources and bathing water (see in part XV).

National target No. 8: Surveillance of cyanobacteria expansion in water reservoirs

Target is set at the national level. Deadline is year 2020. For target fulfillment is responsible the Public Health Authority of the Slovak Republic + competent Regional Public Health Authorities. Legislative requirements for cyanobacteria monitoring are set but only on national level. European requirements on cyanobacteria are set only in Bathing water Directive 2006/7/EC. Requirements cover cyanobacterial proliferation and adoption of measures but without concretely monitoring parameters and limit values.

The reason for target setting was to obtain an overview of the actual occurrence of cyanobacteria and cyanotoxins in surface water (water reservoir) which are used as source of drinking water or bathing water and determined the species composition of cyanobacteria flowers with an emphasis on the presence of invasive species.

Cyanobacteria are a natural part of the aquatic environment, but as a result of eutrophication may reach the overgrowth. Some species of cyanobacteria produce toxins accumulated in water and it can be risk for human health.

Over the past years it was highlighted problems with increasing growth of cyanobacteria in three water reservoirs in central Slovakia (Klenovec, Málinec, Hriňová). The most common and dominant representatives of cyanobacterial blooms are *Microcystis aeruginosa*, *Woronichinia naegeliana*, *Aphanizomenon flos-aquae* and *Dolichospermum flos-aqua* producing toxins microcystin (LR, YR RR) and toxin cylindrospermopsin.

In context of monitoring of the cyanobacteria presence in water reservoirs, water intended for human consumption is not yet threatened by cyanotoxins. According to the requirements of Government Regulation No. 354/2006 Coll., the limit of parameter „microcystin LR” in drinking water is set 1 mg/L. This parameter is set over the framework of European requirements of Drinking-water Directive 98/83/EC amending Commission Directive No. 1787/2015.

5. If you have not set a target in this area, please explain why.

XV. Quality of waters used for bathing (art. 6, para. 2 (j)),

Slovakia has set two national targets in this area. National target No.8 is mainly focused on bathing water quality and partially focused on cyanobacterial proliferation in water reservoir for drinking water (see in part XIV).

National target No. 7: Mapping of enteroviruses occurrence in bathing water

Target is set at the national level. Deadline is year 2020. For target fulfillment is responsible the Public Health Authority of the Slovak Republic. Legislative requirements for enteroviruses monitoring are not being on national and European level.

The reason for target setting was the fact that enteroviruses cause significant acute or chronic diseases of eyes, oral tissue, skin, skeletal muscles, heart muscle, liver and pancreas diseases.

In the context of microbiological and biological activation of monitored bathing waters and due to the circulation of enteroviruses in the external environment, the Public Health Authority identified 26 natural bathing waters and five artificial pools. Determination of the samples was carried out according to standard methodology recommended by the WHO. Enteroviral RNA detection was carried out by the means reverse PCR (RT-PCR) method and nested PCR method. The enteroviruses detection was accomplished in National Reference Centre for enteroviruses in the Slovak Health University in Bratislava.

During the two-year pilot testing of selected bathing waters were taken 140 samples, of which 24 were positive for the detection of enteroviruses. The partial results show that in the natural bathing waters „Ivanka pri Dunaji on the Danube, Zlaté Piesky and Ružiná – Ružiná” were repeatedly determined the presence of enteroviral RNA. In samples of artificial pool waters it was confirmed in 2 cases the presence of enteroviruses. The test results for bathing season 2015 are not yet available. Partial results were presented on expert conferences at the national level and published in the collections.

The proposed PCR method is still in the process of standardization, but in the future it can be applied in practice for the detection of enteroviruses in water samples. The sample preparations do not interfere with the PCR method. The results of enteroviruses monitoring may be crucial in the future process of preparation of new legislation for quality monitoring.

National target No. 8: Surveillance of cyanobacteria expansion in water reservoirs

Target is set at the national level. Deadline is year 2020. For target fulfillment is responsible the Public Health Authority of the Slovak Republic + competent Regional Public Health Authorities. Legislative requirements for monitoring cyanobacteria are set but only on national level. European requirements on cyanobacteria are set in Bathing water Directive 2006/7/EC but not sufficiently. Requirements cover cyanobacterial proliferation and adoption of measures without concretely monitoring parameters and limit values.

The reason for target setting was to obtain an overview of the actual occurrence of cyanobacteria and cyanotoxins in surface bathing water and determined the species composition of cyanobacteria flowers with an emphasis on the presence of invasive species.

The Public Health Authority prepared a water quality assessment scheme for natural water bodies used for bathing. In this scheme are specific steps that must be taken place by Regional Public Health Authorities in the course of visual inspection and sampling. Furthermore, the scheme referred to the subsequent process of continuing laboratory testing of biological indicators and assessment of the situation on site. The Public Health Authority realized training for staff of Regional Public Health Authorities. It consisted of theoretical part (legislative requirements, ISO norms, how to do visual inspection, sampling etc.) and practical part in situ. In 2014, the Public Health Authority determined 31 samples and 23 samples in 2015.

Over the past years it was highlighted problems with increasing growth of cyanobacteria in six bathing water (Šaštín-Stráže, Zemplínska šírava, Vinné, Bátorovce-Lipovina, Košice - jazero, Kuchajda). The most common and dominant representatives of cyanobacterial blooms are *Microcystis aeruginosa*, *Woronichinia naegeliana*, *Aphanizomenon flos-aquae* and *Dolichospermum flos-aqua* producing toxins microcystin (LR, YR RR) and toxin cylindrospermopsin. During the last bathing season it was also recorded unusual water flower consisting of *Microcystis ichthyoblabe* with high toxicity and high measured value of microcystins. We observed also the occurrence and overgrowth of new invasive species of cyanobacteria - *Cylindrospermopsis raciborskii*. It comes from the tropics, is the producer of the toxin cylindrospermopsin and its occurrence in our country may be related to changes in climatic conditions.

XVI. Quality of waters used for aquaculture or for the production or harvesting of shellfish (art. 6, para. 2 (j), third part)

This part of report is not relevant for the Slovak Republic. Slovakia is landlocked country and we do not have information about the production or harvesting of shellfish.

XVII. Application of recognized good practice in the management of enclosed waters generally available for bathing (art. 6, para. 2 (k))

Slovak Republic has not set individual target in this area. Partially, National target No. 8: *Surveillance of cyanobacteria expansion in water reservoirs* is focused on the management of bathing water in relation to management of cyanobacteria proliferation. On the other side, Slovakia implemented European Bathing water Directive 2006/7/ES where are defined management measures (establishing bathing water profile, establishing monitoring calendar, monitoring bathing water, assessing bathing water quality, classifying bathing water, identifying and assessing cause of pollution, giving information to the public, taking action to prevent bathers' exposure to pollution, taking action to reduce the risk of pollution). It was not needed to set individual national target in this area.

XVIII. Identification and remediation of particularly contaminated sites (art. 6, para. 2 (l))

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

National targets is set up in harmony with State Programme of Environmental Burdens Remediations for years 2016-2021 (elaborated in 2015, to be updated in 6 years) which represents basic conceptual document for solution of environmental burdens.

Objective: to eliminate negative impact of environmental burdens – to protect human health ecosystems and waters.

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

Legislation:

-Law No. 569/2007 Coll. on geological works (Law on Geology)

-Law No. 409/2011 Coll. on some measures concerning environmental burden and its amendments

-Order Ministry of Environment of the Slovak Republic No.1/2015-7 from 28 January 2015 on elaboration of risk analysis of contaminated area set up general principle of this analysis Strategy:

State Programme of Environmental Burdens Remediations for years 2016-2021.

Financial support: Operational Programme Environment for years 2007-2013 and Operational Programme Quality of Environment for years 2014-2020; state budget and privat sector.

3. Assess the progress achieved towards the target.

Progress achieved is published in Information System of Environmental Burden on webpage of the Ministry of Environment of the Slovak Republic :<http://www.minzp.sk/sekcie/temy-oblasti/geologia/environmentalne-zataze.html>

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Target is revised in 6 years period in the frame of the State Programme of Environmental Burdens Remediations

5. If you have not set a target in this area, please explain why.

XIX. Effectiveness of systems for the management, development, protection and use of water resources (art. 6, para. 2 (m)) ciel' 12

For each target set in this area:

1. Describe the target, target date and baseline conditions. Please include information on whether the target is national or local, and intermediate targets as relevant. Also include information on the background and justification for the adoption of the target.

Implementation of the Water Framework Directive, Flood Directive and all relevant water directives in the frame of the Common Implementation Strategy, Work Programme 2016-2018 (CIS 2016-2018).

2. Describe the actions taken (e.g., legal/regulatory, financial/economic and informational/educational, including management measures) to reach the target, having regard to article 6, paragraph 5, and, if applicable, the difficulties and challenges encountered.

1st Slovak Water Management Plan and 2nd Slovak Water Management Plan and their Programme of Measures contain all relevant data and information, measures etc. which are needed for fulfilment of Water Framework Directive implementation. Process of implementation of Water Framework Directive and also other water directives will ensure improvement and effectiveness of water management system, flood protection, development, protection and use of water and nature resources.

3. Assess the progress achieved towards the target.

Described in previous chapters and published in tables above.

4. In the review of progress achieved towards the target, has it appeared that the target and target date need to be revised, e.g., in the light of scientific and technical knowledge? If so, and if the revised target and target date have already been adopted, please describe them.

Response depends on topic and is described in individual chapters.

5. If you have not set a target in this area, please explain why.

XX. Additional national or local specific targets

Slovak Republic has set two national targets focus on information of public and raising public awareness. European legislations require public information but on the other side people have huge interest about water quality (drinking water, bathing water and mineral water too).

National target No. 10: Raising of public awareness in relation to natural healing waters and natural mineral waters

Target is set at the national level. Deadline is year 2019. For target fulfillment is responsible the Inspectorate of Spa and Springs.

Inspectorate focused on the spread of information about mineral water. On the Ministry of Health website, in the section Healthcare/Inspectorate of Spas and Springs has been established new sub-titled in slovak language: *the competency* where are published basic information about completencies of the Ministry of Health (general body), State Spa Commission (administrative authority) and Inspectorate of Spas and Springs (supervisory authority) and legislative overview (<http://www.health.gov.sk/?ikz-kompetencie>). Second new sub-title is *the terminology* such as definitions of minaral water, natural mineral water, natural healing waters, natural medicinal resources, natural mineral resources, natural healing and natural mineral resources, climatic conditions suitable for treatment. There are also explains concepts such as spa resorts, spa area, natural spas, spa hospital, spa treatment, peloids, natural healing salts, protection of natural healing resources, the monitoring system of natural healing and mineral resources etc (<http://www.health.gov.sk/?ikz-terminologia>).

Furthermore, Inspectorate contributes to the raising experts awareness about natural healing waters and natural mineral waters, through the lectures and presentations at expert seminars and conferences in the field of water and environment, which itself organizes and is the co-organizer.

National target No. 11: Raising of public awareness concerning protection of water and aquatic ecosystems and further educational activities

Target is set at the national level. Deadline is year 2020. For target fulfillment are responsible following institutions: Slovak Environmental Agency, Public Health Authority of the Slovak Republic, Ministry of Environment of the Slovak Republic, Water Research Institute, Office of the Governmental Plenipotentiary for Romany Communities, Inspectorate of Spas and Springs, National Reference Centre for Drinking water.

The reason for setting target was to increase public awareness and educational activities in the area related with water protection and water ecosystems.

Overview of some activies which are carried out by mentioned institutions:

- **Slovak Environmental Agency:** publication all national reports on website which are required by European Commission, preparation 5 key indicators for water issue (Water using, Waste water, Bathing water quality, Drinking water quality, Surface water quality, Ground water quality – available on <http://www.enviroportal.sk/indicator/103?langversion=sk>), organization interactive exhibition Water is Life (2014), World Water Day – film screenings, lecture (annually), organization one-day programme for children from infant and primary school, organizing environmental living programmes and programmes for students of secondary school and university, organizing of international film festival Envirofilm (more information is available <http://www.ekotopfilm.sk/sk/aktuality/mff-ekotopfilm-envirofilm-2015.html>) and publication of Enviromagazin (<http://www.enviromagazin.sk/>) etc.

- **Water Research Institute:** conferences, seminars and workshops organizing, training course for water managers, hydrobiologists and microbiologists, sampling courses for drinking water, groundwater, surfacewater, waste water etc.

- **Public Health Authorities:** World Water Day activities (determination of nitrates and nitrites in samples from own individual wells, public consultations about protection and taking care about own wells, using filtration equipments, advisory services, preparation leaflets and education materials), activities during the bathing season (preparation weekly fresh information about bathing water quality in natural bathing water and artificial pools, public consultations, preparation leaflets and education materials etc.

Part Four

Overall evaluation of progress achieved in implementing the Protocol

The Slovak Republic is a country in the centre of Europe, with the area of 49,035 km² and a population of approximately 5, 424 millions (2015) habitants. Slovakia adopted and ratified the Protocol on Water and Health in 2001. Intention was to point out the importance and seriousness of water quality on the human health and safety environment for living. The first national targets in harmony with Protocol on Water and Health were set in 2001. National targets was updated two-times in year 2007 and 2014.

In this part of the summary report, Parties shall provide an analysis and synthesis of the status of implementation of the Protocol. Such an overall evaluation should not only be based on the issues touched upon in the previous parts, but should also include, as far as possible, a succinct overview of implementation of activities related to, for example:

- (a) Response systems (article 8);

One of the priority tasks of public health in Slovakia is regular monitoring of drinking water quality. Results of monitoring in consumer can point to the possibility of emergence and spread of infectious diseases associated with water. Health care providers, medical and clinical laboratories are required to notify the occurrence of infectious diseases and suspected infection to Regional Public Health Authorities. Reports are sent to central register of infectious diseases, which is part of Slovak epidemiological information system (EPIS). The basic legal document dealing with target 5 is the Act No. 355/2007 Coll. on protection, promotion and development of public health, amending certain acts, as amended. The system also corresponds with the European Centre for Diseases Prevention and Control criteria on quality classification of communicable diseases and the quality of reporting of data on portable diseases. The system besides collection, processing and presentation of data on communicable diseases includes a Rapid Alert System, which enables rapid information to professional public about outbreaks of serious communicable diseases in Slovakia and European Union countries, thereby enabling to take appropriate action.

- (b) Public awareness, education, training, research and development and information (article 9);

Slovak Republic has set two national targets focus on information of public and raising public awareness – National target No. 10: *Raising of public awareness in relation to natural healing waters and natural mineral waters* and National target No. 11: *Raising of public awareness concerning protection of water and aquatic ecosystems and further educational activities*. Just article 9 of the Protocol on Water and Health is significant from Slovak view. Over the last 10 years, the enquiry of for information (general public, experts from state institutions and of course private sector) increased in 300 %. That is the reason why were set individual national targets for this area.

- (c) Public information (article 10);

Slovakia is a democratic state and Slovak government is aware of the fact that opened attitude of public institutions towards citizens is an important part of creating of space for trust of citizens towards the state and its institutions. In the sense of this and also in accordance with the Slovak Constitution and Freedom of information act No. 211/2000 Coll. of Laws and also the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) citizens have a chance to express themselves and get involved in the process. However, experience shows that this is a demanding process. To arouse a public interest is a topic of limited potential.

In addition, Slovakia as a European Union member state implemented all relevant European Union Directive. Publishing and sharing information is significant requirement of these Directives. State institutions make public summary national reports about quality/quantity of drinking water, bathing water, sewerage water, ground water, surface water, further information about epidemiological situation in context of water quality, etc.

(d) International cooperation (article 11);

International co-operation of the Slovak Republic on management and protection of water in sense of art. 11 is performed mainly through : implementation of EU water directives, bilateral cooeration on transboundary waters and EU Strategy for Danube region.

(e) Joint and coordinated international action (article 12);

Application of this requirement is fulfilled through implementation of relevant EU directives for sector water.

(f) Cooperation in relation to transboundary waters (article 13);

The Slovak Republic has been signed bilateral agreement on co-operation on transboundary waters with all neighbouring countries. Articles of these treaties include requerements specified in article 11 of the protocol on Water and Health.

(g) International support for national action (article 14).

This analysis or synthesis should provide a succinct overview of the status of and the trends and threats with regard to waters within the scope of the Protocol sufficient to inform decision makers, rather than an exhaustive assessment of these issues. It should provide an important basis for planning and decision-making as well as for the revision of the targets set, as needed.

Improvement in area of drinking water supply and sanitation in harmony with requirements of relevant EU directives.

Trends and treaths:

1/increasing number of chemicals in water where is a need their of specification, prioritisation (based on negative impact on human health and environment), monitoring, laboratory analysis, assessment of risk and management of measures.

2/ climate change impact (drought, floods) on quality and quantity of water

Part Five

Information on the person submitting the report

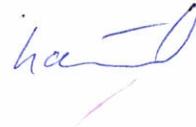
The following report is submitted on behalf of the Slovak Republic in accordance with article 7 of the Protocol on Water and Health.

Health sector

Name of officer responsible for submitting the national report: Eva Kaňková
E-mail: eva.kankova@uvzsr.sk
Telephone number: +421 2 49 284 383
Name and address of national authority: Public Health Authority of the Slovak Republic
Trnavská cesta 52
826 45 Bratislava
Slovak Republic

Signature:

Date: 4.4.2016



Environmental sector

Name of officer responsible for submitting the national report: Zdenka Kelnarová
E-mail: zdenka.kelnarova@enviro.gov.sk
Telephone number: +421 2 59 343 375
Name and address of national authority: Ministry of Environment of the Slovak Republic,
Nám. L. Štúra 1
812 35 Bratislava
Slovak Republic

Signature:

Date: 27.4.2016



Submission

Parties are required to submit their summary reports to the joint secretariat, using the present template and in accordance with the adopted guidelines on reporting, by **18 April 2016**. Submission of the reports ahead of this deadline is encouraged, as this will facilitate the preparation of analyses and syntheses to be made available to the third session of the Meeting of the Parties.

Parties are requested to submit, to the two addresses below, an original signed copy by post and an electronic copy either on a CD-ROM or by e-mail. Electronic copies should be available in word-processing software, and any graphic elements should be provided in separate files.

Joint Secretariat to the Protocol on Water and Health

United Nations Economic Commission for Europe

Palais des Nations

1211 Geneva 10

Switzerland

E-mail: protocol.water_health@unece.org

and

World Health Organization Regional Office for Europe

WHO European Centre for Environment and Health

Water and Sanitation Programme (WSN)

Platz der Vereinten Nationen 1

53113 Bonn

Germany

E-mail: watsan@ecehbonn.euro.who.int