WATER AND HEALTH IN HUNGARY

Report for the 2nd meeting of the Parties to the Protocol on Water and Health

1. Provide brief information on the process of target-setting in your country, e.g. which public authority(ies) took the leadership and coordinating role, which public authorities were involved, how coordination was ensured, which existing national and international strategies and legislations were taken into account, how cost-benefit analysis of target sets was performed.

On October 5, 2005, with its Government Decree 213/2005. (X. 5.), the Government of the Republic of Hungary promulgated the Protocol on Water and Health to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, signed in London on June 22, 1999.
The Minister of Health and the Minister of Environment and Water are jointly responsible for the implementation of the Protocol in Hungary.

The implementation of the Protocol, in addition to the implementation of obligations arising from other legal provisions contained therein, was launched following the meeting of the Parties to the Protocol on January 24, 2007. For the coordination of the implementation, a Water and Health Expert Committee (hereinafter referred to as Expert Committee) chaired by the director-general of the National Institute of Environmental Health of ÁNTSZ[1] was set up in the framework of the standing National Inter-ministerial Committee on Public Health. Members of the Expert Committee are representatives of the Ministry of Health, the ÁNTSZ, the National Institute of Environmental Health, the Ministry of Environment and Water, the Ministry of Agriculture and Rural Development, the Ministry of Local Government and several professional organisations, as well as individuals designated as Water and Health focal points of the Republic of Hungary, with the secretary of the Expert Committee among them.

The first activity undertaken by the Expert Committee was the elaboration of the targets related to the fields defined in Article 6 (2) of the Protocol which are due until the end of the second year following entering into force, and setting the target dates. On request of the secretariat of the Protocol on Water and Health in January 2009, these objectives and deadlines were submitted by the Expert Committee. Since then, the Expert Committee has held two additional meetings, and, in the course of these meetings, the targets and target dates have to a slight extent been amended through an increase in the number of involved experts and their endorsement. The majority of the Expert Committee members maintain frequent working relations in between the formal meetings, too, and there are numerous conciliations, meetings, electronic correspondence in issues related to the Protocol.

The Republic of Hungary became member of the European Union on May 1, 2004, hence, the implementation and realisation of the *acquis communautaire* is its obligation in a number of issues that are also regulated in the Protocol, which in a significant part of the cases affects the fulfilment of the obligations contained in the Protocol.

On the national level, the majority of the areas regulated by the Protocol fall within the scope of competence of the Minister of Health and partially of the Minister of Environment and

[1] Hungarian National Public Health and Medical Officer Service

Water. These ministers implement the obligations that fall within their scope of responsibility in the framework of the ministries (legislative), as well as the central and territorial institutional network (executive) they head. In the issues affected by the Protocol, the institutional network under the direction of the Minister of Health includes the ÁNTSZ and its central institutions (National Institute of Environmental Health, National Center of Epidemiology) and territorial institutions (7 institutes of regional, and 81 of micro-area level), while the Minister of Environment and Water coordinates the Central Directorate of Water and Environment and its territorial bodies, the Scientific Research Institute for Water Management, and the National Inspectorate of Environmental Protection, Nature Conservation and Water Management and its territorial bodies.

The specific regulatory, structural and administrative tools related to the individual areas will be presented in the relevant chapters.

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

With the promulgation of the Aarhus Convention and, as an EU Member State, through the relevant Community legal instruments, but also on the basis of its own legal and administrative system based on the autonomy of the local governments, the Republic of Hungary has an obligation to ensure public participation in environmental matters, and, in a broader interpretation, in the majority of the issues listed in the Protocol on Water and Health, including the target-setting related to these. The current situation in the area of public involvement significantly differs by target area, depending also on the extent to which substantial and comprehensive information has been made available on the relevant issues and problems.

For instance, the issue of the development of sanitation on the local level is clearly based on the involvement of the public, but the role of the local community in the issue of improving the quality of drinking water is at least of equal importance if it has relevant information on its importance (see later).

A significant amount of information that is partially related to the professional field of the Protocol on Water and Health is accessible through the web pages of the ministries and their bodies.

The data on the surface waters, ground waters and waste disposal, held in the information systems operated in the framework of the National Environmental Information System are partly accessible for the public and the professional circles, but making these public requires further development. In order for this to happen, there are currently several ongoing IT development programmes in Hungary with financial support from domestic and EU sources.

The emission data of the largest businesses with respect to the load on the environment are contained in the EPER and E-PRTR databases. These are accessible not only through the domestic expert systems, but also in the public databases of the European Union **(see e.g. http://eper.ec.europa.eu/eper/ http://eper-prtr.kvvm.hu/; http://prtr.ec.europa.eu/; http://okir.kvvm.hu/prtr/)**. Further development of these web pages is currently taking place.

Information on the condition of large lakes and bathing waters can be accessed at www.kvvm.hu/szakmai/balaton and http://www.antsz.hu/portal/portal/furdoviz1.html web pages in the bathing season. Online information on the measurements of the automatic monitoring stations operated in the Upper-Tisza area that is most critical from the quality of water point of view can be accessed at www.rivermonitoring.hu.

3. 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.

The drafting of this report was initiated by the leadership of the Expert Committee at its meeting by informing the Expert Committee on the obligations and deadlines that exist in this field. The coordination of the drafting of the Report and its shaping into a final version are the responsibility of the chairman of the Expert Committee and its secretary; the drafting of individual chapters is coordinated by the expert committee delegates of the institutional system of the Ministries of Health and of the Environment and Water through the involvement by subject of other members of the Expert Committee. The institutions and organisations that play role in the elaboration of individual parts of the report will be presented in the relevant chapters.

4. 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).

5. 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.

- As a typical downstream country, Hungary is exposed to climate-related problems (floods), and the large lowland territories of continental climate are also prone to droughts.
- Also, due to the downstream character of Hungary, there is a difficulty in complying with the water quality-related requirements for riverine bathing waters. Although these are often territories of considerable tourist attraction, and therefore the quality of the bathing water is an issue of primary importance from the health point of view, on the short run there seem to be not much chance for the resolution of the problems that originate in relation to water quality in the neighbouring upstream countries. In the framework of the International Convention on the Protection of the Danube River, the Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (EU Water Framework Directive, hereinafter: WFD) and the bilateral transboundary water cooperation, significant emphasis shall be put in the long run on these problems.
- A significant part of the world's third largest known geological arsenic deposition is found in Hungary. With regard to the outstanding significance of arsenic on the food related health including the Community legislation and WHO guidelines on the exposition by the drinking water, the Republic of Hungary faces particularly serious difficulties in ensuring proper water quality in this respect. More on this will be presented in the relevant chapter.

- The industrial and military (primarily related to the occupying Soviet Army) establishments of the previous regime in Hungary left behind a number of territories contaminated with dangerous waste, for the disposal of which there has been a national programme. A detailed presentation on this can be found in chapter XVIII.

PART TWO: COMMON INDICATORS

In order to present the common indicators, year 2005 was chosen for the baseline value and in most cases year 2008, as that of the most recent complete annual data set (Table 1 and Table 2).

Based on the data of the Hungarian Central Statistical Office, as of the year 2009, the population of Hungary comprises 10,030,975 people. The communal drinking water is supplied for 98 percent of the population, of this in 92 percent of the cases it is available in the homes.

The number of settlements (towns and villages) supplied with drinking water is 3,152. From among the Hungarian settlements, 6.86 million people (68.4% of the population) live in 306 towns (9.7%). According to reports prepared for the EU on the basis of data of the year 2007, the amount of drinking water supplied for the population of settlements over 5,000 people (app. 68.5%) is 78.0% of all supplied water. 8,9% of the population living in settlements with water consumption below 100 m^3/day (54.5% of total) uses 5.0% of the supplied water, 18.6% of the population living in settlements with water consumption between 100 and 400 m^3/day (32.0% of total) uses 13.1% of the supplied water, and 3.8% of the population living in settlements with water consumption between 400 and 1000 m^3/day (3.6% of total) uses 3.8% of the supplied water.

With regard to the requirements related to the quality of drinking water, Hungary has elaborated its internal norms based on the guidelines of the WHO. The regulation was amended in 2001 by the Government Decree 201/2001. (X. 25.) on the drinking water requirements and on the control procedure (hereinafter referred to as Government Decree 201/2001.) when the requirements of Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption (hereinafter referred to as Drinking Water Directive) were transposed, including the relevant regulations negotiated during the accession talks with regard to the transition period. The amendment set obligations on Hungary primarily with respect to arsenic, boron, fluoride and nitrite parameters (the limit value in case of the concentration of nitrite decreased to half, in case of ammonium to quarter, in case of boron and arsenic to one-fifth). In accordance with the Accession Treaty between the Republic of Hungary and the European Union (hereinafter referred to as Accession Treaty) in the period at issue there were transitional limit values in force for several parameters (see below). However, it is the Community limit values the current assessment is based on. If the assessment were based on the transitional limit values in force in these years, there would have been a nearly 100 percent compliance (with the exception of some settlements affected by arsenic value over 50 µg/l and occasional exceedance of the nitrite limit value).

Table 1

Indicators of the faecal contamination of the drinking water
(percent non-compliance)

WatSan_S2	**Baseline value (2005)**	**Current value (2008)**
E. coli	1.13	1.10
Enterococci	3.29	2.50

Table 2

Indicators of the chemical contamination of the drinking water
(percent non-compliance)

Substance	**Baseline value (2005)**	**Current value (2008)**
Fluoride	0.86	0.2
Nitrate and nitrite	1.48	3.72
Arsenic	41.0	44.4
Lead	0.9	0.2
Iron	10.9	9.2
Additional chemical parameter 1: Boron	6.90	5.20
Additional chemical parameter 2: Mn	17.1	15.4
Additional chemical parameter 3: THM	1.43	1.90
Additional chemical parameter 4: Hardness (low)	7.52	7.56
Additional chemical parameter 5: Permanganate value (oxygen demand)	0.92	1.20

II. REDUCTION OF THE SCALE OF OUTBREAKS AND INCIDENCE OF INFECTIOUS DISEASES POTENTIALLY RELATED TO WATER

Table 3

Indicators of the incidence of water related diseases
(incidence and number of outbreaks)

	Incidence		Number of outbreaks	
	Baseline (2005)	**Current value (2008)**	**Baseline (2005)**	**Current value (2008)**
Cholera	0	0	0	0
Bacillary dysentery (shigellosis)	85	78	11	1
EHEC	3	2	0	0
Viral hepatitis A	279	168	13	8
Typhoid fever	3*	1*	0	0

*Imported cases

III. ACCESS TO DRINKING WATER

Table 4

Access to central drinking water supply

Percentage of dwellings with access to drinking water	Baseline value (2005)	Current value (2008)
Total	93.98 %	94.91 %
Urban	95.92 %	96.62 %
Rural	89.82 %	90.97 %

IV. ACCESS TO SANITATION

Table 5

Access to sanitation

Percentage of dwellings with access to improved sanitation	Baseline value (2005)	Current value (2008)
Total	64.95 %	71.28 %
Urban	78.95 %	84.38 %
Rural	34.74 %	41.11 %

V. EFFECTIVENESS OF MANAGEMENT, PROTECTION AND USE OF FRESHWATER RESOURCES

Water quality

Table 6

Ecological status of surface water
(percentage of the water bodies)

Percentage of surface water classified as of	Baseline value (2000)**	Current value (2007)***
High status	1 %	1 % (6 %)
Good status	13 %	9 % (33 %)
Moderate status	40 %	30 % (30 %)
Poor status	33 %	18 % (5 %)
Bad status	13 %	4 % (0%)
Lack of data*		38 % (26%)

** Because of lacking monitoring data, 38% (26%) of the surface water bodies were not assessed during Water Framework Directive's river basin management process*
*** based on the Hungarian assessment method applied between 1994-2006 which took into consideration only physical-chemical parameters. The Water Framework Directive ecological assessment was introduced in 2007, thus the data from 2000 are only comparable with those in brackets for 2007!*
**** ecological status based on biological, hydromorphological and physical-chemical parameter; in brackets only by physical-chemical assessment*

Table 7

Chemical status of surface water
(percentage of the water bodies)

Percentage of surface water classified as of	Baseline value (2000)**	Current value (2007)
Good status	n.d.	2.8%
Poor status	n.d.	2.7%
Lack of data*		94.5%

* *Because of the lack of monitoring data 94,5 % of the surface water bodies were not assessed during Water Framework Directive's river basin management process.*
*** This type of monitoring was not performed before 2007*

Table 8

Status of groundwaters
(percentage of the groundwater bodies)

Percentage of ground-waters classified as of	Baseline value (before 2007)	Current value (2007)
Good status		85.4 % (quantity status) 79.5 % (chemical status)
Poor status		14.6 % (quantity status) 20.5 % (chemical status)

Water use

Water exploitation index at the national and river basin levels for each sector (agriculture, industry, domestic): 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 9a

Water exploitation index (surface water)

Water exploitation index (surface water)	Baseline value (2000)	Current value (2006)
Agriculture	2.2 %	0.9 %
Industry[1]	6.0 %	11.7 %
Domestic use[2]	1.2 %	1.0 %
Other uses*	1.0 %	1.0 %
Energy cooling **	55.6 %	55.1 %

General remarks: Hungary used the definition of OECD (EUROSTAT/OECD JOINT QUESTIONNAIRE ON INLAND WATERS) for the calculation of water exploitation index.
Accordingly, fresh surface water means:„Water which flows over, or rests on the surface of a land mass, natural watercourses such as rivers, streams, brooks, lakes, etc., as well as artificial watercourses such as irrigation, industrial and navigation canals, drainage systems and artificial reservoirs. For purposes of these tables bank filtration (induced infiltration of river water through bankside gravel strata (by pumping from wells sunk into the gravel strata to create a hydraulic gradient) with the intention of improving the water quality) is included in fresh surface water.
1 The figure includes abstractions for manufacturing industry and for production of electricity, but does not include cooling water
2 The figure refers only to public supply
** Figure refers to services, construction, etc. (the row added to the table by Hungary)*
*** Figure refers to abstraction for production of energy (only cooling waters) (the row was added to the table by Hungary)*

Table 9b

Water exploitation index (groundwater)

Water exploitation index (groundwater*)	Baseline value (2000)	Current value (2006)
Agriculture	2,8 %	1,7 %
Industry[1]	3,3 %	1,9 %
Domestic use[2]	18,9 %	14,9 %
Other uses**	0,3 %	1,6 %
Energy cooling ***	2,8 %	2,3 %

1. The figure includes abstractions for manufacturing industry
2. The figure refers only to public supply
** See above, in this case "groundwater" does not contain bank filtration waters*
*** Figure refers to services, construction, etc. (the row was added to the table by Hungary)*
**** Figure refers to abstraction for production of energy (only cooling waters) (the row was added to the table by Hungary)*

PART THREE: TARGETS AND TARGET DATES SET AND ASSESSMENT OF PROGRESS

I. QUALITY OF THE DRINKING WATER SUPPLIED, (ARTICLE 6, PARAGRAPH 2 (a))

In relation to the quality of water in the public supply system, in Hungary there are two kind of problems of different origin that need to be treated with an adequate toolkit. On the one hand, the unfavourable chemical composition related to the geological origin of the water constitutes serious problems for a significant part of the country, on the other hand, the influence by anthropogenetic contamination and that related to water treatment and distribution should be eliminated. The treatment of both areas requires different system of tools, and the targets also reveal different ambitions.

The quality of the drinking water sources in Hungary's differs by territory. The North-Lowlands and South-Lowlands are the most seriously affected regions from the quality of water point of view. The incidence of arsenic and, to a smaller extent, of boron and fluoride in the utilised aquifer results in concentrations that is above that of the Community limit values in the water of otherwise safe confined wells and in the communal networks supplied from them. Additional unfavourable parameters of geological origin that are though of less concern are iron, manganese, organic substances, sodium and, last but not least, ammonium which, sporadically and occasionally, due to incomplete nitrification, is transformed into toxic nitrite listed in Table B, Appendix 1 of the Drinking Water Directive.

The Government Decree regulating the quality of drinking water, availing of the exemption granted in the Accession Treaty, specified less strict limit values than those stipulated in the Directive, until the end of 2006 with respect to boron, fluoride and nitrite, and until the end of 2009 with respect to arsenic, and, with the latter deadline, put in force a temporary baseline value for ammonium as well. Before the expiration of the deadline of the year 2006, the Government indicated that, with respect to the limit values of boron, fluoride and nitrite, it intends to depart from the EU limit values, which was – with the exception of the request concerning the nitrite – approved by the Commission.

For the remediation of water quality problems with respect to the parameters which constitute the subject of the deviation (B, F, NO_2) and with respect to As and NH_4-ion, a "National drinking water improvement" programme based on the Drinking Water Directive with the temporary divergences specified in the Accession Treaty, was launched in 2001.

The setting of targets related to this scope of problems and the framework of the implementation are considerably determined by the obligations Hungary, as an EU Member State has, and also by the financial-administrative framework system of the Community catch-up funds. The target which was defined in 2008, then amended in 2009, was as follows: provision until the end of 2015 of 96 percent of the population supplied from the communal systems with drinking water that complies with the Community requirements with respect to chemical parameters that have direct health-related significance (with an intermediate goal of 80 percent until the end of 2010).

The financial and organisational conditions needed for the implementation have been available, hence meeting the target of implementation by the year 2015 seems feasible. However, the intermediate target will not be realised to the full extent. Due to the initial

organisational difficulties, the significant delay in the launch of the Programme, according to the forecasts, makes the realisation of the investment for the improvement of drinking water until the end of 2010 possible only for 10 percent of the affected population.

From this perspective, the chemical indicators presented in the first group of the common indicators (see table 2) provide certain information on the current situation. However, disclosure of some supplementary data for a more precise evaluation may be justified. Arsenic, boron, fluoride and nitrate that are viewed as having high health risks, as well as manganese, water hardness and chemical oxygen requirement (permanganate value) are components whose concentration remains largely unchanged without intervention for a long time. Therefore, what is more informative compared to the proportion of non-complying measurement results is the presentation of the proportion of the settlements and population affected by drinking water with concentration exceeding the limit value. The more it is true, as the distribution of the object results is distorted by the higher measuring frequency related to these, to which, in many cases, service operators are obliged by a legal provision.

From among the common indicators, the frequency of non-compliance calculated on the basis of "nitrate + nitrite formula" in the Hungarian circumstances practically equals with the total of frequency of non-compliance of both nitrate and nitrite calculated separately, since there is barely any coincidence of increased nitrite and nitrate concentration. The incidence of non-compliance due to nitrate is considerably low, thus the indicator practically reflects the incidence of the nitrite exceedances. (It is to be noted that in the applied formula the limit value of nitrite is 0,5 mg/L, in accordance with the Drinking Water Directive, instead of 3 mg/L according to the WHO Guidelines for Drinking Water Quality). The outstandingly high level of the frequency of non-compliance in 2008 was resulted by a significantly increased survey activity aimed at revealing more precisely the nitrite situation.

Table 10 contains the number of water supply zones and of the affected population as regards non-compliance of drinking water with respect to arsenic, boron, fluoride, nitrite or nitrate.

The exceedance of iron and manganese limit values is objected primarily because of the deterioration of the wholesomeness of water. Since both of these problems frequently appear together, a better indicator of the incidence of the produced water quality problem is a value obtained by the combined handling of both the limit value exceedances (that of iron and/or manganese). This is shown in table 11.

Another area of problems mentioned with regard the quality of drinking water –the treatment of arising from the anthropogenetic contamination and that originated from the water treatment and distribution system – requires a much more complicated, manifold development approach. The most important dimension of problems of such nature from the public health perspective is the microbiological quality of the supplied drinking water, which is also common indicator No. 1 in this report. In this respect, numeric targets should have been set in 2009. However, this has not happened yet due to the insufficient knowledge of the basic situation. One of the main reasons behind this is the lack of an information system that would enable the acquisition and comprehensive analysis of water quality related data. In connection with this report, significant efforts were made in order to create a relatively reliable description of the situation.

Collecting and processing data related to the quality of water currently happens in a settlement-sequential way. In this way, each settlement, and within it each part of the

settlement with an independent water supply, constitutes a water supply zone. In the current data structure so far there has been no possibility to discern within the settlements water supply zones of separate source and presumably different water quality, which are nevertheless interconnected. The total number of water supply zones ("settlements") referred to in the data, therefore, exceeds the number of settlements registered in Hungary.

Table 10

Number of water supply zones and the affected population with arsenic, boron, fluoride, nitrite or nitrate non-compliance in 2005 and 2008*

Parameter	2005		2008	
	No of supply zones affected	No. of population affected	No of supply zones affected	No. of population affected
Arsenic	490 (13,17%)	1.680.675 (16,4%)	411 (10,89%)	1.425.843 (13,88%)
Boron	58 (1,55%)	131.774 (1,29%)	49 (1,30%)	109.012 (1,06%)
Fluoride	5 (0,13%)	5373 (0,05%)	10 (0,26%)	9394 (0,09%)
Nitrite	137 (3,68%)	532 243 (5,20%)	203 (5,38%)	636 735 (6,20%)
Nitrate	0	-	3 (0,07%)	3915 (0,04%)

*Based on total numbers of 3,727 and 3,774 water supply zones and 10,243,472 and 10,270,937 total population in 2005 vs. 2008

Table 11

Number of water supply zones characterised with iron and/or manganese non-compliance in 2005 and 2008*

Parameter	2005		2008	
	No of supply zones	No. of population	No of supply zones	No. of population
Iron	332 (9.41%)	561,956 (5.53%)	376 (10.3%)	458,591 (4.49%)
Manganese	546 (16.2/%)	1,243,103 (12.4%)	555 (16.1%)	1,123,074 (11.2%)
Iron and/or manganese	765 (22.7%)	1,595,721 (15.9%)	743 (21.5%)	1,404,147 (14.0%)

**A water supply zone is characterised with iron and/or manganese non-compliance if more than a third of the measured values exceeds the limit value*

Beyond the value of the common indicators provided in table 1, in order to more precisely interpret the non-compliance of the indicated proportions, tables 12 and 13 provide some more detailed data for both of the studied years. Such are the data on the tests related separately to E. coli and Enterococcus, and non-compliances of them, the proportion of the affected settlements, the incidence of more severe cases of a minimum 10% non-compliance

(with minimum 2 cases of it), as well as the same but combined data in relation to the incidence of either of E. coli or Enterococcus.

The numbers demonstrate that the proportions of the affected settlements and population, as an important indicator of water safety, is inadmissibly high, and the situation did not improve significantly in the studied period. An important prerequisite of the improvement is the investigation of the causes and setting the proper targets in this respect. Both factors are in close connection with the examined factors in other areas, primarily with those discussed in Article 6 (2) (f), (j) and (m) of the Protocol on Water and Health.

Table 12

Faecal contamination of the drinking water in Hungary in the year 2005

Year 2005	E. coli	I Enterococcus	E. coli or ENT
total no. of settlements tested	3,660	2,770	3,686
total no. of tests	43,319	15,336	45,234
total no. of NC* tests	490 (1.13%)	504 (3.29%)	928 (2.05%)
NC settlements	338 (9.23%)	309 (11.15%)	554 (15.0%)
settlements with ≥10% (min 2) NC	61 (1.67%)	70 (2.53%)	118 (3.2%)
Population affected in ≥10% (min 2) NC (thousands)	73,4 (0.73%)	228,5 (2.5%)	164,8 (1.6%)

*NC: non-compliant/non-compliance

Table 13

Faecal contamination of the drinking water in Hungary in the year 2008

Year 2008	E. coli	I Enterococcus	E. coli or ENT
total no. of settlements tested	3,705	3,077	3,754
total no. of tests	52,005	16,984	53,611
total no. of NC* tests	573 (1.10%)	424 (2,50%)	932 (1.73%)
NC* settlements	309 (8.36%)	281 (9,14%)	499 (13.3%)
settlements with ≥10% (min 2) NC	79 (2.16%)	71 (2,31%)	150 (4.0%)
Population affected in ≥10% (min 2) NC (thousands)	98.2 (0.98%)	141.0 (1.45%)	226.7 (2.2%)

*NC: non-compliant/non-compliance

II. REDUCTION OF THE SCALE OF OUTBREAKS AND INCIDENTS OF WATER-RELATED DISEASE (ARTICLE 6, PARAGRAPH 2 (b))

Decreasing the number of outbreaks of waterborne communicable diseases is a national target. There are two types of surveillance that are existing in Hungary: the first one is the compulsory case-based reporting of communicable diseases, including those that could be spread by water (drinking and bathing water) [Appendix 1 of Act XLVII of 1997 on the protection of health related and connected personal data, as well as Appendix 1 of Decree 63/1997. (XII.21.) of the Ministry of Welfare on the procedure of reporting on communicable diseases (hereinafter: MoW Decree)]. The other surveillance is the high priority reporting of outbreaks of communicable diseases/syndromes (Art.7 of MoW Decree).

Both the physicians who diagnose diseases/deaths and microbiology laboratories that identify pathogens which cause diseases including those spread by water have to be reported (Appendices 5-6 of the MoW Decree). There is a reporting obligation of outbreaks for health care service providers, for the responsible officials of the affected institutions and for water suppliers in case they detect cluster of cases. Cases have to be reported to local institutes of National Public Health and Medical Officers' Service (NPHMOS) paper-based; and outbreak should be reported by phone. There is a national electronic database of the cases and outbreak. A statistical analysis could be made by this software. The investigation of outbreaks that are presumably spread by drinking water is the joint responsibility of National Public Health and Medical Officers' Service and, in relation to food production factories, of the Central Agricultural Office.

The surveillance of communicable diseases and outbreaks is efficient: in 2008, 828 outbreaks of gastroenteritis were registered in Hungary. Out of these, 398 were of institutional outbreaks, 26 community outbreaks and 404 household events. 10 percent of epidemics were of mass-scale (30 or more ill persons). It was confirmed in two-thirds of these 86 outbreaks and was suspected in five outbreaks spreading by contact route. The mode of transmission of 11 outbreaks was confirmed as food-borne, one outbreak (app. 1%) was waterborne involving 597 cases (calicivirus being the main pathogen at Nagymágocs). The mode of transmission in 9 outbreaks (10%) remained unknown.

In Hungary campylobacteriosis and legionellosis as emerging diseases have been notifiable since 1998 and cryptosporidiosis and the giardiasis since 2004. The laboratory diagnosis of campylobacteriosis and legionellosis are working well and accessable everywhere in the country, while that for cryptosporidiosis and giardiasis is not yet available in most laboratories, therefore, these two diseases are under-reported in Hungary.

An EU project improves the electronic collection of data. When ready, this creates the electronic contact between the health care service providers and NPHMOS, so the timeliness of surveillance improves. The development will establish electronic communication also with the Central Agricultural Office, thus enabling fast exchange of information about investigation of foodborne outbreaks (e.g. drinking water). Additionally, new surveillance programmes could be launched (e.g. surveillance of patient admissions in hospitals) which further improve the capacity to identify outbreaks.

Seven, one-week trainings were organised by the National Centre for Epidemiology in years 2008-2009, the courses consisted of both theoretical and practical lectures. The participants were epidemiological professionals from seven regions of Hungary (the staff of 81 local institutions of NPHMOS, app. 150 persons). The subject was the methodology of outbreak investigation of waterborne diseases.

Now the major challenge is the improvement of cooperation between the health care providers (clinicians, laboratories) and the two authorities (NPHMOS and the Central Agricultural Office) during the investigation of outbreaks.

In Hungary, the predominance of tap/piped drinking water supply fundamentally contributes to the epidemiological safety; however, based on the disclosed data in relation to faecal indicators, we cannot be satisfied with the situation. In connection with the incidence of waterborne outbreaks spread by piped drinking water, the target that shall be expected is, in fact, zero, and based on statistical data, by and large, drinking water outbreaks are registered at a value that is only slightly above this value. Along with the faecal contamination that is relatively frequently identified in the piped drinking water, at the same time, due to the relative small-scale circulation and isolated (geographically limited) spread of enteral bacteria, gastroenteric outbreaks rarely occur by drinking water.

As regards pool and spa establishments, the regulation shall ensure controlled technology, thus the expected number of outbreaks connected to them shall be close to zero.

III. ACCESS TO DRINKING WATER (ARTICLE 6, PARAGRAPH 2 (c))

Water supply in the field of public utilities in Hungary can be considered as solved from the quantity point of view. Each settlement in the country has public water supply network; the proportion of dwellings that have piped drinking water is presented in table 4. With respect to the supplied territory, among the characteristic features of the service could be mentioned the drinking water network of a total of nearly 90,000 km of length (with connecting pipes) which supplies 550 million m^3 of water, of which 400 million m^3 goes to households. The average water consumption of the population is around 100-110 l/person/day. This quantity is close to the European average, although it shows a decrease compared to earlier national consumption. Another important feature of the Hungarian public water supply sector is that the raw water originated almost exclusively from ground water sources.

For households (persons) have no access to public water supply, water meeting for drinking and sanitation requirements is ensured by means of public wells which, in the overwhelming majority of cases, is located within a 150 metres distance. Within the administrative area of some of the settlements, there is a small number of homesteads and farms with permanent population in which cases, based on assessments, realisation of public water supply is not implementable with realistic costs. Bottled drinking water is accessible also for citizens who are not provided with the water supply.

The proportion of households that are included in the public water supply network can be seen in the chapter on common indicators. The water supply of the population in the public water supply network, taking into consideration the possible extent of economical solutions, is nearly 100 percent.

Water charge subsidy in the field of drinking water and sewage

In Hungary, with respect to the public water supply and the sewage system, the needy can receive costs-based subsidies for charges. The allocation of available funds is determined in the annual ministerial decree. In 2009, the payable threshold value for costumers was maximised in the charges related subsidy at 435 HUF per m^3 for water charges and 870 HUF per m^3 for combined water and sewage charges. Settlements where the charges payable by the local population exceeded the threshold value were authorized to submit for compensation. The budget of the water charge subsidy for drinking water and sewage serves as cover for the difference between the threshold value and the real charge.

IV. ACCESS TO SANITATION (ARTICLE 6, PARAGRAPH 2 (d))

A safe communal waste water collection and –treatment is one of the environmental priorities. It is Hungary's obligation also as per the requirements of the Council Directive 91/271/EEC concerning urban waste-water treatment. The targets are as follows:

- Communal waste water collection and biological treatment with nitrogen and phosphorus removal.
    - Until 31st December 2008 the latest, for agglomerations above 10000 PE lying on sensitive areas, besides the implementation of waste water collection network and at least biological (secondary) waste water treatment, a tertiary treatment – nutrient (nitrogen and phosphorus) removal should be ensured.
      From among the agglomerations that belong to this category, by the set deadline all had waste water collecting system and treatment;
- Realisation of communal waste water collection and at least secondary biological waste water treatment in settlements:
    - Until 31st December 2010 the latest, all agglomerations above 15000 PE have to be supplied with waste water collecting network and at least biological (secondary) treatment plant. Investments which are intended to meet the obligations are under way;
    - Until 31st December 2015 the latest, in all agglomerations between 2000 and 15000 PE, the waste water collection and at least biological (secondary) treatment has to be available. For the solution of communal waste water collection and treatment of settlements below 2000 PE there is no Community obligation, but there is a possibility to apply for funds for this in the framework of the Regional Operational Programmes.

The achievement of the above targets can be examined by two aspects: waste water collection and waste water treatment.

As a result of realisation of the Hungarian National Implementation Program of Urban Waste Water Collection and Treatment (hereinafter: Waste Water Programme), collecting proportion significantly increased, and also the proportion of waste water treatment and its quality improved in Hungary.

In Hungary, the virtually exclusive form of waste water collection that is safe also from the environmental point of view is its drive through the public sewage system. The statistical data collection systems related to waste water collection and treatment contain the number of dwellings connected to the public sewage system. The records do not cover the distribution in terms of sensitivity and size of the settlements, hence the achievement of the targets cannot be

examined from this perspective. The only differentiation is that between towns and villages, which, to some extent, reflects the size-related differences.

The ratio of dwellings connected to the sewage system increased from 51.3% since 2000 by a yearly 2.5-3%, and in 2008 reached 71.3%. Within it, the proportion in terms of availability of a sewage system in villages is 41.11%, while in towns this value in 2008 was double: 84,38%. Compared to the previous years, the ratio of dwellings which, although located in an area with sewage system, are not included in it, has decreased. In 2004, the proportion of these was 9.5 percent, which by the end of 2008 decreased to 7.9 percent.

Following the EU accession, due to intensive developments that were launched, while in 2005 approximately 68.8 percent of the collected waste water, following a biological treatment, made its way to recipients, in 2008 this proportion increased to 70.7 percent. With the launch of the Budapest Central Waste Water Treatment Plant, this proportion is expected to reach nearly 100 percent. The proportion of the tertiary waste water treatment has also significantly increased (in 2000 it was 10.8%, in 2002 17.5%), which in 2008 reached 38.3 percent). While in 2000 the waste water of only approximately one third of dwellings received at least biological treatment, by the beginning of 2008 this proportion reached approximately 50 percent. As a result of this effect, the public utility “scissors” (the difference in the proportion of dwellings included in the piped drinking water system and those included in the public sewage system) closed on a national level from 41 percent to 23.8 percent, but is still behind the European average of 20 percent.

Between 2005 and 2008, the length of the combined sewer system (including also rainwater) and the separated sewer system increased by 5 kilometres. Now it is above 41,000 km of length, however, nationally there is only 642.7 m of waste water network per 1 km of drinking water network. In Hungary, current data collection does not cover separately the data on the rainwater systems, consequently, it is not possible to deal with issues related to this. There is a need for the development of the data collection.

The tasks affecting agglomerations of above 2,000 PE in the Waste Water Programme are implemented by means of EU funds, contribution made by local governments and state support. The financing of these investments is carried out in the form of a competition in the framework of the Environment and Energy Operational Programme (EEOP) which was launched in 2007. The amount of the available overall funds for the period 2007-2013 for the action plan of the Healthy, Clean Settlements priority axis is 380 billion HUF. The amounts contracted so far from the frame amount and the expected uses in the future are presented in the table below (table 14).

Table 14

Contracted amounts of the EEOP 1.2.0 scheme and expected use

Name of the EEOP scheme	Contracted amounts in 2007-2009 (Billion HUF)	planned for 2010 (Billion HUF)
1.2.0 waste water disposal and treatment	118,858	170

The size of the available amount for the period 2014-2020 will be determined on the basis of the results of examination of the currently running Waste Water Programme.

For the solution of waste water collection and treatment related problems in case of settlements below 2,000 PE, the available funding frame of the Regional Operational Program (ROP) and the timing of its use are shown in table 15.

The quantitative data of the waste water collection and –treatment in the period between 2005 and 2008 are summarized in table 16.

Table 15

ROP tenders, funds of priority projects
(Billion HUF)

2007-2008	2009-2010 total	2011-2013	2007-2013
12,673	18,440	4,096	35,209

Table 16

Amount of the collected and treated waste water, 2005–2008
(1000 m^3)

Year	Total of collected waste water	Amount of treated waste water	Total of all treated waste water		
			Only mechanically	Also biologically	Also with the 3rd treatment level
2005	588,064.00	560,377.90	174,815.20	188,778.90	196,783.80
2006	567,303.40	535,958.90	152,939.30	249,641.10	133,378.50
2007	533,951.40	510,818.30	128,143.30	197,955.40	184,719.60
2008	542,186.20	519,663.70	135,844.80	184,848.10	198,970.80

V. LEVELS OF PERFORMANCE OF COLLECTIVE SYSTEMS AND OTHER SYSTEMS FOR WATER SUPPLY (ARTICLE 6, PARAGRAPH 2 (e))

and

VI. LEVELS OF PERFORMANCE OF COLLECTIVE SYSTEMS AND OTHER SYSTEMS FOR SANITATION (ART. 6 (2) (e) continued)

The supply of drinking water and waste water collection are activities liable to official permits and are provided by companies of various business types. They are obliged to regularly provide statistical data in relation to the relevant data of the services they provide. These are primarily fact-figures that allow quantitative national assessments [e.g. the capacity of the water treatment plants, their treatment technology, the amount of water received and delivered for treatment, size related data of water transport works /length of pipeline network, number and capacity of water reservoirs, volume of the supplied water/ number of consumers supplied, the charge of the service, method of calculating the charge, etc. (table 17)]

Table 17

Some characteristic indicators regarding public water supply services in 1992 and 2008
(based on data provided by the Central Directorate for Water and Environment)

	1992	**2008**
Length of water supply network (without connecting pipes)	55,309 km	57,240 km
Number of dwellings connected to the system	3.45 million pieces	3.9 million pieces
Supplied drinking water	775 million m^3	564 million m^3
Strength of staff in the Drinking Water and Sanitation services sector	55,000 people	18,500 people

There is no reporting obligation as regards the data related to the quality and performance of the service provision. However, the Hungarian Water Utility Association, an organisation of voluntary membership comprising service providers under the guidance of its Benchmarking Club, has for several years been developing the system for data provision and data analysis which provides insight to such data. Although the Association represents only about a third of the service providers, they provide 95 percent of the supplied volume of water, hence their data can be viewed as representative also on the national level (table 18).
Based on the data of companies that supply about 60 percent of all drinking water and those involved in the treatment of about 30 percent of all waste water, the most recent data related to the most important characteristics defined in the Protocol were in 2008 as follows (see table 18).

Table 18

Selected operation-related data of
Member companies of the Benchmarking Club
(data of 2008)

Variable	Number of companies that provide data	Value	Unit of measurement
Extracted water	23	429,995,573	M^3
Water fed into the network	23	404,008,372	M^3
Accounted water	23	305,948,362	M^3
Unaccounted water*	23	98,060,010	M^3
Average age of the water supply network[1]	22	31.8	year
Average age of the sewerage mains network[1]	22	20.0	year
Amount of treated waste water:			
Only mechanical	21	0	M^3
Biological	21	46,565,502	M^3
nutrients removal	21	115,768,421	M^3
Total[2]	21	162,333,923	M^3

1. Average weighted by network
2. Shall not be compared to the amount of extracted water since the it contains the Budapest Water Works but not the Budapest Sewage Works.

*: Proportion of the loss from sales 23.4% (see Figure 1. (*Unaccounted water (%)*)attached to the report)

The Benchmarking Club together with the Expert Committee will in the near future review its activity and plans to elaborate new recommendations on the targets and target dates with regard to what follows:

– Elaboration of a recommendation for an extension of obligatory data provision on the area;
– Identifying the most important indicators in relation to water and health, and their recommendation to member organisations;
– Expansion of the list of the best applicable indicators for the assessment and presentation of the performance of service provision, and its recommendation to member organisations.

VII. APPLICATION OF RECOGNIZED GOOD PRACTICES TO THE MANAGEMENT OF WATER SUPPLY, (ARTICLE 6, PARAGRAPH 2 (f))

From the public health point of view, the systems that provide drinking water are outstandingly vulnerable supply structures whose protection from adverse external and internal impacts is a priority task. Supply of drinking water is an activity which requires extensive expertise on the field of environmental organisational and economical management and the essential aspects of which are summarised from the environmental and public health protection perspective in a general approach also called Water safety planning. Initiated and then reinforced with theoretical background and practical guidelines by the WHO, the water safety planning has by now also been included among the requirements by the amendment of the relevant Hungarian legislation (Government Decree 201/2001. (X.25)) which entered into force on March 31, 2009. The legal provision requires, with a progressivity which depends on the size of the water supply, systems of supply capacity larger than 1000 m^3/day or supplying for more than 5,000 people that their water safety management system has to be laid down in a drinking water safety plan. The drinking water safety plan in the case of water supplies for more than 100,000 people needs to be submitted for approval by the National Office of the Chief Medical Officer entrusted with first instance competence in drinking water quality issues by July 1 2012 in case of those for 50,000-100,000 people by 1 July 2013, in case of those for 5,000 to 50,000 people – by 1 July 2014.

The preparedness of the drinking water supplying systems and the efficiency of their water safety related professional activities to a large extent depend on the external and internal economic environment. They have no chance without long-term sustainable business management and financial means available for the necessary developments. In the near future it would be worth of considering to update laws that codify the quality management and economic requirements, first of all passing a so-called Water Public Utility Act (or the set of legal provisions which substitute it). A further challenge for the operators of public water utilities is to ensure expert consultation, with particular attention to the systems that ensure water supply for small communities, which are economically more vulnerable, whose staff have less opportunities for professional development and training than the human resources of the centralized service providers.

VIII. APPLICATION OF RECOGNIZED GOOD PRACTICE TO THE MANAGEMENT OF SANITATION (ART. 6, PARAGRAPH 2 (f))

The new waste water collection and treatment related investments are being implemented taking into consideration the principles of Best Available Technology. Nevertheless, there are no set targets and target dates; there is no relevant information on this field.

IX. OCCURRENCE OF DISCHARGES OF UNTREATED WASTEWATER (ART. 6, PARAGRAPH 2(g) (i))

With the pilot operation of the Central Waste Water Treatment Plant of Budapest which was launched on 4 August 2009, any disposal of untreated waste water was discontinued.

X. OCCURRENCE OF DISCHARGES OF UNTREATED STORM WATER OVERFLOWS FROM WASTEWATER COLLECTION SYSTEMS TO WATERS WITHIN THE SCOPE OF THE PROTOCOL (ART. 6, PARAGRAPH 2 (g) (ii))

see chapter IV

XI. QUALITY OF DISCHARGES OF WASTEWATER FROM WASTEWATER TREATMENT INSTALLATIONS TO WATERS WITHIN THE SCOPE OF THE PROTOCOL (ART. 6, PARAGRAPH 2 (h))

Government Decree 220/2004. (VII.21.) on the rules of protection of the quality of surface waters differentiates the direct and indirect discharges. The status of surface waters is affected primarily by the waste waters directly discharged into the recipient environment, however, the indirect waste water (containing communal and industrial waste water, used water or sniffed waste water, as well as rainwater) load discharged through public sewage canal system into the receptive water body also effects it. The Ministerial Decree 28/2004. (XII.25), 2004 on the emission limit values and certain rules for application of them defines different limit values depending on whether the recipient water body lies on a sensitive area (territorial limit value), and what kind of polluting substances are characteristic of the activity. There are separate threshold values determined for the indirect discharges, the goal of which is the technological protection of the communal waste water treatment plants and of the public sewage canals, as well as to minimise the load of the receptive environment.

With Hungary's EU accession, the earlier water protection regulation went through fundamental changes. The former territorial emission limit value system was replaced by a more modern multi-level system of emission limit values which defines the technological limit values specified for communal waste water treatment plants and certain industrial branches, and the individual baseline values as well. Its novelty is that the technological limit values are continuously becoming stricter as the level of the current technology get higher and higher. Another important tool of the water protection regulation is that, in the interest of the realisation of water quality related goals, it ensures the introduction of an individual territorial limit value defined by for the competent authority. This regulates the emissions from the perspective of the protection of the receptive environment, and, compared to the technological limit values, may involve further tightening.

The implemented changes in the legal provisions will result in significant pollution reduction in the future. In order to enforce the new limit value system, a new system of fines has been also introduced in which the rate of fines were significantly grow following the end of the grace period. The deadline for installations which are obliged to get integrated permits (IPPC permits) to comply with the limit values was 2007, while for the rest of installations it is 2010.

From among the waste water treatment plants, in 2004 26 percent were fined for exceeding the baseline value, while in 2007 it was only 18 percent.

In the interest of water protection, the measures related to the dangerous and other polluting substances are primarily of regulatory nature in Hungary. They target primarily the decrease and the prohibition of contamination, and promote the monitoring of the loads and their water quality related consequences.

In accordance with the regulation in force, it is prohibited to discharge into surface waters and their bed substances of any state which cause water pollution, with the exception of licensed water discharges with emission values below the limit values.
Environmental quality standards (EQS) were set on EU level (2008/105/EC Directive) for surface water bodies with regard to the so-called priority substances that are considered particularly dangerous to the water ecosystem and human health. Hungary also acknowledged these EQSs and used in the course of elaborating the first water-basin management plan when assessing the chemical status of the waters. Beyond that, in the framework of the Convention on Co-operation for the Protection and Sustainable Use of the Danube River, the Danube countries have agreed that in the Danube river basin beyond the WFD priority substances, the following metals shall be considered as relevant dangerous substances: chrome, zinc, arsenic and copper.

With regard to the status of surface waters, there are not yet enough sufficient survey data in Hungary either, therefore it is necessary that in the future the monitoring data collection has to be intensively continued. On the basis of the available data, it can be estimated that in particular the increased heavy-metal content (cadmium, zinc, copper) coming from up-stream water basins from abroad occur, mainly in havaria pollution cases in the river basin of Tisza. Occasionally there are also cases when the baseline values overstepping of the EQSs of certain organic substances (e.g. pesticides).

The so-called emission inventory for the above mentioned substances has to be elaborated by 2012, and the environmental authorities need to review and update the permits of the users of environment that potentially emit priority substances. The specific pollution-reduction plans have to be published in the 2nd river basin management plan which will be completed by 2015.

The national provisions which prohibit the injection of dangerous substances into ground waters either through direct or indirect injection, in the case of other (less dangerous) substances are in full compliance with the EU regulations. The domestic legal provisions contain the prohibition of the direct injection in the interest of prevention of the pollution of ground waters (except when it does not cause pollution, e.g. reversed extrusion or ground water enrichment that does not contain polluting substance of human origin), or the restriction of activities that are potentially polluting, depending on the dangerousness of the activity and the vulnerability of the ground water.

In the area of the use of agricultural chemicals, the regulation has been tightened during the last years, and in the future further significant changes and prohibition of the trade of certain substances shall be expected. The remains of the formerly used, but by now withdrawn pesticides (e.g. DDT, atrazine), however, are sporadically detectable. Pollution that exceeds the baseline value traced by monitoring is rare. In order to avoid sporadic (small concentrations that are rather related to settlements) pollution caused by plant protection chemicals which occurs primarily due to an irregular use or originate from the past,

intensification of authority control is needed in the future and a further development of monitoring.

The fact that from 2011 the use of plant protection chemicals will be controlled in Hungary as a condition for direct payments (EU Funds) also serves this purpose. Farmers, among others, have to keep diary on the use of plant protection chemicals, based on which records can be kept on the storage and use of plant protection chemicals in line with the permits.

The danger of injection of dangerous substances from industrial emitters into the environment is significantly reduced by the fact that in Hungary, similarly to other EU Member States, the potentially significant polluters need to receive an integrated environmental permit (so-called IPPC), in accordance with which the emissions have to be kept at the lowest level by use of the Best Available Technics (BATs). So far Hungary has issued more that 1,000 IPPC permits to various installations.

XII. DISPOSAL OR REUSE OF SEWAGE SLUDGE FROM COLLECTIVE SYSTEMS OF SANITATION OR OTHER SANITATION INSTALLATIONS

and

XIII. QUALITY OF WASTEWATER USED FOR IRRIGATION PURPOSES (ART. 6, PARAGRAPH 2 (i

A/ Basic situation and aims:

Due to the implementation of the Waste Water Programme the quantity of the sewage sludge rises, and this rise will be increasing in the future. There will be a need for wider utilisation of the treated sewage sludge produced by the sewage works, and also its harmless disposal. The agriculture may dispose only treated sewage sludge on the manner, measurement and locations defined by law. Adequate agricultural disposal and utilization of the untreated sewage sludge has not been resolved; due to the public health risks (realized by food chain) of it alternative methods of utilization have to be preferred. Objectives in this regard are defined in the national law by Government Decree 50/2001. (IV. 3.) (henceforth Government Decree 50/2001.) on the rules of the agricultural usage and treatment of the waste water and sewage sludge with reference to the Council Directive 86/278/EEC on the protection of the environment and especially the soil.

The aim of the legal regulation is to ensure avoidance of the harmful effects to the soil, surface waters, ground waters, human health, vegetation and animals by professional utilization of certain – first of all communal – waste waters and sewage sludge on agricultural territories possible. The Decree stipulates technical conditions of disposal of waste waters and sewage sludge from waste water treatment plants to agricultural areas, including conditions of the agricultural utilisation of the collected and treated urban liquid wastes. The Governmental says that only treated waste water and sewage sludge can be used, and it defines further conditions of utilisation as well (vegetal cultures, soil characteristics, limit values, etc.).

In order to utilise waste waters and sewage sludge one must have the permit of the authorities responsible for soil protection (the Plant and Soil Protection Directorate of the Central Agricultural Office has competence). The authorities will issue the permit based on soil protection plan and the stances by the competent authorities (environmental, water, public health).

Elements contained by the permit are regularly controlled by the authority. Based on the annually reported data there will be a country profile made concerning only the utilisation of the sewage sludge in every third year for the European Commission.

B/ Fulfilment of the aim: promotion of the agricultural utilisation of the sewage sludge through the regulation:

For the purpose of utilisation of the sewage sludge in a wider scale, Government Decree 50/2001. was modified in the year 2008. Previously, regulation based on food-safety considerations - in accordance with the EU Directive – defined, first of all, rules of utilisation in relation only to the soil used for nutriments and fodder growing. However, the increasing number of woody energetic plantations required extension of the regulation to afforested areas, as well, in order to ensure utilisation of sewage sludge and sewage sludge compost under control.

Modification of the Government Decree extended to the rules of utilisation of sewage sludge compost, as well. System of authorisation and criteria of utilisation became easier than that of sewage sludge compost, since regulated utilisation of compost does not endanger waters.

C/ Data based on evaluation of waste waters and sewage sludge utilisation

Due to the shortage of data, the effect of modification of the statute has not been assessed.

Source of data concerning the years 2004-2006 was the country profile report submitted to the European Commission; data concerning the years 2007-2008 were reported by Central Agricultural Office based on the summary of data submitted to the soil protection authority required by 17. §. of the Government Decree 50/2001.

Waste water utilisation:
At present, there are 1587 hectares that have permission by the authorities for the utilisation of waste water, of which they perform irrigation in 1200 hectares based on the data received in 2009 that refer to the activity in 2008. Primary aim of irrigation using clarified waste water is water supply, however, it contains nitrogen, phosphorus, and potassium nutrients. With the exception of a few cases, quantity of heavy metals and arsenic spread together with irrigated waste water remains deeply under the permitted level. Extension of the limit will result in measures by the authorities.

Utilisation of sewage sludge:
According to the Government Decree 50/2001. wastewater treatment plants are obliged to report the required date until 31st March every year, thus the latest data at our disposal refer to the year 2008. Data of the table indicated that toxic element concentration of the sewage sludge used for agricultural use is very low; it exceeds 10 % of the limits permitted by the Government Decree only in case of Cu (13,5 %), Ni (12,0 %) and Zn (24,3 %). (*Table 19*)

Table 19

Toxic element concentration of sewage sludge passed for agricultural use

	2005	**2006**	**2007**	**2008**
Sewage sludge passed for agricultural use *tons/year*	42.329	32.813	39.944	43.077
Agricultural area treated with sewage sludge *hectares/year*	7.069	6.406	7.865	8.006
Toxic element concentration of sewage sludge passed *mg/kg* dry substance:				
Cd	1,42	1,37	1,70	1,77
Cu	160,97	184,72	197,62	251,50
Ni	27,38	26,00	36,24	44,81
Pb	37,34	36,21	59,11	56,88
Zn	773,56	824,74	1092,92	1355,16
Hg	1,29	1,74	2,20	1,66
Cr	48,37	57,30	45,70	89,58
As	No data.	No data.	9,05	6,47
Nutrient concentration of sewage sludge passed *kg/tons* dry substance:				
Nitrogen (N)	30,43	30,41	26,23	28,00
Phosphor (P)	10,99	13,92	13,27	11,78

Proper dumping and utilisation of the sewage sludge gathered in waste water treatment plants (Table 20.) will be a task of key importance in the future, since possibility of dumping will be ceased according to the laws related to waste management. Since agricultural usage of sewage sludge is limited over a certain level of pollution, alternative methods of utilisation (energetic, re-cultivating, etc.) will be preferable. Due to the considerable quantity municipalities that run waste water treatment plants will have to elaborate action plans concerning the appropriate treatment and disposal of sewage sludge.

Table 20

Quantity of the sewage sludge generated at waste water treatment plants

Year	**Total quantity of generated sewage sludge (1000 tons dry substance /year)**
2006	216 428
2008	258 965
2010	359 606
2015	425 175

See Figure 2. attached to the report (Planned change of the rate of sewage sludge storage and utilisation generated from settlements' wastewater treatment during accomplishment of the Wastewater Program)

XIV. QUALITY OF WATERS USED AS SOURCES FOR DRINKING WATER (ART. 6, PARAGRAPH 2 (j), first part)

According to the WFD, the environment of any water abstraction (either active at present or delineated as perspective one) making for at least 10 m^3/d drinking water supply or that supplying at least 50 people, must be protected. Domestic practice complies with this in case of water-bases of public aims. According to registration, from the 1770 drinking water bases there are 16 surface, 92 bank-filtered water resources and 1662 groundwater bases. (Due to the character of their protective areas from this point of view are considered spring water plants as groundwater bases, and bank-filtered water resources generate a separate group due to the composition of their surface and groundwater impacts.

According to the WFD, water bodies that produce more than 100 m^3 drinking water in daily average will have to be monitored. Government Decree 201/2001. defined parameters and limits that are considerable from the point of view of human consumption. In the protective areas of drinking water the monitoring has to be extended to every element enlisted in the requirement of the Drinking Water Directive, but which does not occur in the list of general parameters and priority substances. Operators of this monitoring program are suppliers that produce water for human consumption that is waterworks and food industry plants. Frequency of sampling and field of parameters for analysis has been defined by Decree 21/2002. (IV. 25.) of the Ministry of Environment and Water. According to the above-mentioned, there must be a survey made for determining the reference status at each delineated points of water abstraction at least once in every six years. Depending on the vulnerability of the water base and capacity of the production there is more frequent survey required (e.g. daily or weekly sampling at surface waters).

Beyond measurements performed by operators, laboratories of the environment protection, nature conservation and water management inspectorate perform control measuring at sites of surface drinking water abstraction based on the requirements defined by Decree 6/2002. (XI. 5.) of the Ministry of Environment and Water, the pollution limits and their control at the surface waters assigned for drinking water and ensuring life conditions of fish. Environmental and water management authorities perform monitoring activity within the protected areas assigned for future drinking water source in order to check quality and quantity of these not yet utilised drinking water sources.

Protection of the surface waters assigned for water abstraction or drinking water source is contained by Decree 6/2002. (XI. 5.) of the Ministry of Environment and Water. Among the 16 water abstraction defined by the Decree 6/2002. of the Ministry of Environment and Water there are 3 abstraction direct from the stream, 6 from reservoirs, and 7 from lake Balaton. Designation of protection area of the surface drinking water source has been defined at six cases, so far. Evaluation of the surface drinking water source is taking place with the consideration of the requirements for water assessment according to the limits defined by the Decree. According to the data assessed in the evaluation that had been performed during recent years activities performed in the protected areas of the drinking water source at present do not cause damage that would endanger function of the water source.

Areas specified from the point of view of nutrient and nitrate sensitivity are defined by Government Decree 240/2000. (XII. 23.) and Government Decree 27/2006. (II. 7.).
Delineated nutrient-sensitive areas are catchment areas of lakes Balaton, Velencei and also Fertő. From the point of view of surface waters, catchment areas of surface drinking water

source are also considered nitrate sensitive areas. Although condition of the great lakes and drinking water source assigned as nutrient sensitive due to their endangered position to eutrophication is good, nutrient concentration exceeds limit defined for the type-specific good status at majority of their supply canals. Therefore, assignment and its consequence the prescription of good agricultural practice are justified within the full catchment areas assigned as sensitive (first of all, its effect on reducing phosphor loading). Nitrate concentration that exceeds 50 mg/l in annual average in other surface waters seldom occurs. According to Government Decree 27/2006. (II. 7.), the minister responsible for environmental protection shall take care of operation of monitoring of special aim at nitrate sensitive areas.

On qualitative and quantitative conditions of groundwater, and short or long-term changes of the status the following sources serve information:

- Monitoring systems that aim regular sampling, measuring and examination of the more or less permanent spots;
- Statistical services performed in connection with water abstraction (e.g. information by waterworks)
- Research programs, periodic surveys.

According to the Decree 30/2004. (XII. 30.) of the Ministry of Environment and Water on certain rules of testing ground waters, the monitoring system consists of territorial and environment usage subsystems. Besides the Water Framework Directive, the Nitrate Directive also requires monitoring the quality of ground waters for the sake of diminishing nitrate pollution of agricultural origin.

Ground waters in Hungary are abstracted in the greatest quantity for utilisation as drinking water (it is 79% of the total groundwater production, which ensures more than 94% of drinking water supply), while the remaining 21% is produced for industrial, mining, geothermal energy utilisation, and also for baths, irrigation and other aims. As a norm, they produce 2,7 million m^3 water daily from the ground water. Water consumption supplied by public utilities per capita and all types of water usage aiming production were reduced or stagnated during the last two decades. In spite of that, degree of intakes exceeds the quantity that can ensure refill in several parts of the country.

Water abstraction greatly effects on the status of ground waters. Water abstraction that lastingly exceeds the recharge may result sinking of groundwater table of shallow and deep ground water in porous and karstic waters, while at thermal waters it may result in decrease of pressure and temperature, or may cause the drying up of the springs. Based on the quantitative status analysis that had been performed in 2009, from the 185 ground water bodies 27 were of poor and 158 of good quality. However, in 35 cases from the latter, the water bodies required special attention in spite of the positive grading due to the instability of the status of ecosystems dependent from groundwater.

According to the register made for the river basin management plan, there are 1754 public ground drinking water sources in Hungary. Nearly 2/3 of waters produced by the public utilities come from vulnerable drinking water sources, where pollution of surface origin may reach the abstraction in less than 50 years.

Majority of our ground waters are good drinking water. However, especially at waters in confined porous aquifers, the use of suitable water treatment technologies (e.g. arsenic release, iron release and manganese release), while in other cases only disinfection will be

needed. In the pebbly and sandy aquifers of approx. 500 m thick upper zones of geological medium of the basin area, the water usually contains less than 1 g/l soluble agents.

Due to the dissolution of calcic and carbonate rocks karstic waters have basically of calcium-magnesium-hydrogene-carbonated character. Cold karstic waters contain small amount of soluble material, they are excellent for drinking water supply, however, can be more easily polluted from the surface. Due to their special chemical content, the salts and radioactive agents dissolved in them some ground waters can be also utilised as mineral water, medicinal water or refreshment – bottled or in the form of drinking the water or bath therapy. Ground waters can only be qualified as medicinal water after gaining results of medical examinations proving medical effects, so chemical composition in itself do not justify this qualification. It is an important rule that every water intake must be qualified separately. Water can be qualified as mineral water if it is ground water uncontaminated and protected by origin.

One of the most frequent contaminant is nitrate that originates first of all from manure or chemical fertilizer, and the infiltrated wastewater of households on the (rural) settlements. Amount of nitrogen of agricultural origin that reached the soil and ground waters in Hungary decreased by the 1990s due to the fall of the animal stock and fertilizer usage, and now it stagnates. Pesticide contamination can also take place due to agricultural activities. Extremely poisonous and hardly removable chlorinated hydrocarbon contaminations that endanger some drinking water sources can basically related to contaminated areas or industrial sources.

Based on the status evaluation of ground water bodies that had been performed in 2009 according to the requirements of the EU, 38 of the 185 ground water bodies were of poor status.

During the river basin management planning, a detailed assessment was carried out on the status and risks of water sources to define the necessary measures to improve the status of the not appropriate ones. The evaluation of the status of the 557 assessed ground water sources (total capacity 3,7 million m^3/day) resulted in the evaluation as follows:

1. water source of good condition: 46 water sources, 170 thousand m^3/day; the task: keeping them safe: monitoring, and also registry and control of activities of the land users,
2. moderately endangered water source: 381 water sources, capacity: 2,8 million m^3/day; the task: plan to make them safe
3. endangered water source: 150 water sources, capacity: 630 thousand m^3/day; the task: plan to make them safe, environmental supervision, possibly remediation
4. contaminated water source: 9 water sources, capacity: 50 thousand m^3/day; the task: remediation until 2015
5. contaminated productive wells: 7 water sources, capacity: 50 thousand m^3/day, the task: immediate clean-up

XV. QUALITY OF WATERS USED FOR BATHING (ART. 6, PARAGRAPH 2 (j), second part)

The quality requirements of bathing waters is regulated by Government Decree 78/2008. (IV. 3.) (henceforth Government Decree 78/2008.) implementing Directive 2006/7/EC of the European Parliament and Council on the quality of Bathing Water (henceforth Bathing Water Directive). It provides for the procedure of assignment and operation of bathing sites, the rules of control, the method of assessment and the delineation of the protective area. In the

process of assignment of a bathing site the minimum distance prescribed from a wastewater outfall has to be taken into consideration. In rivers the lowest recommended upstream distances from an outfall for a bathing site at the lowest flow rate in the bathing season are as follows:

in case of dilution over 500 times: at least 5 km upstream from a bathing site,

- in case of dilution between 200 - 500 times: at least 15 km upstream from a bathing site,
- in case of dilution of 200 times: at least 25 km upstream from a bathing site.

Protective areas have to be checked even in the case existing bathing waters, while these rules have to be observed when opening new bathing-sites and/or new wastewater discharges.

There are 266 potential bathing sites registered in Hungary at present, of which 234 are on standing water, while 32 of them are situated by riversides. Majority of the beaches are found on the shoreline of our greater lakes (154 by the lake Balaton, 9 by Lake Velencei, 4 by the Lake Tisza). The rest of the bathing-resorts were created in ox-bows and gravel-pit lakes.

Assignment of bathing-resorts – prior to the bathing season – can take place in case if attendance and public health requirements are fulfilled according to rule. Their number changes annually depending on the actual demands and fulfilment of conditions. In the year 2008, there were 253 assigned from the 266 natural bathing areas registered.

The Bathing Water Directive has stipulated sterner requirement than had the previous one concerning both the quality and monitoring, respectively. Quality assessment by the Directive will have to be performed for the first time by the end of the bathing season in 2011, at the latest by the end of the bathing season in 2015. Special monitoring system of the assigned bathing waters supplements the measuring applied on the surface waters in the system of the Water Framework Directive with a few additional elements. According to Government Decree 78/2008. (IV. 3.) check sample that aims quality control of the bathing water will be performed together with a field-survey of the beach, and it will have to involve assessment of the tar residues, occurrence of glass, plastic, rubber or other litter, and also assessment of proliferation of phytoplankton (among them blue-green algae) and macrophyta. Primary aim of the laboratory tests is the assessment of the number of faecal bacteria (intestinal Enterococcus, Escherichia coli), or in case of need measuring the toxin produced by blue algae. Monitoring of the bathing water is to be run by the operator or the owner, while the small regional institute of the public health authority will be responsible for its control. Further information on monitoring of the bathing waters are provided by the website of the Hungarian National Public Health and Medical Officer Service:
http://www.antsz.hu/portal/portal/furdoviz1.html.

In the year 2008, 92% of the assigned bathing waters complied with the mandatory limits. In 62% of them even stricter, i.e. recommended criteria were fulfilled as well. Quality of the larger lakes and important bathing waters is appropriate, while intermittent problems occur in connection with smaller stagnant waters and larger rivers.

In summary, the quality of the majority of the natural bathing waters has improved from the point of view of bacteriological contamination during recent years, however, the number of bathing areas in rivers unsuitable for bathing is still high. Majority of the non-complying bathing waters have communal or industrial wastewater discharges within the protective

areas. To safeguard the quality of bathing waters, their actual effects have to be investigated, the background contamination has to be explored by check monitoring and the necessary measures have to be met by 2015 according to the provisions of the Water Framework Directive.
Registration and reporting system of bathing waters have recently been created, monitoring methods have been updated and the IT background has been developed, as well. Based on the Bathing Water Directive, elaboration of bathing water profiles have been commenced with the target date of 2011.

Within the "Blue Wave" movement active in Hungary since 2004, beaches and marinas on larger lakes may gain the award if they comply with the diverse requirements (those concerning water quality, safety measures, accessibility, waste collection, information). While it was awarded to 19 beaches in 2004, in the year 2008 it was given to 34 beaches and 7 marinas.

Making provision for bathing water quality control, the chief medical officer is also supported by the Expert Committee.

Further tasks and arrangements to be realised:
Safeguarding quality of bathing waters, attaining and sustenance of the proper quality of waters assigned as bathing waters and also definition and execution of the measures of bathing water management have been permanent tasks. It includes regulation on discharge concerning wastewater discharges (first of all safety disinfection), sewerage of resort areas, assignment of protective areas according the present rules and regulations, and also scouring to slow down of siltation, elaboration of dry areas, and possibly construction of ancillary works in order to safeguard bathing water quality.

Partly connected to the status of bathing waters is the provision for the conditions of water tourism, including all water-connected recreational activities, e.g. fishing or thermal tourism. rivers and lakes of Hungary ensure ample opportunity for water tourism. Lakes Balaton, Velencei, Fertő and Tisza have approximately 400 sq. km of water surface. Development of sailing tourism can be a further possibility for Hungarian tourism.

XVI. QUALITY OF WATERS USED FOR AQUACULTURE OR FOR THE PRODUCTION OR HARVESTING SHELLFISH (ART. 6, PARAGRAPH 2 (j), third part)

According to Directive 2006/44/EC surface waters that require protection or improvement in order to support life conditions for fish (henceforth fish waters) are water courses and lakes defined in a separate legislation that may provide natural biological diversity of autochthonous fish species characteristic to the water in a sustainable manner, by decreasing or eliminating of water pollution. The protection of fish waters are provided by ministerial Decree 6/2002. (XI. 5.) of the Ministry of Environment and Water on the quality of fresh waters needing protection or improvement in order to support fish life. The scope of the Decree does not cover fish ponds and natural and artificial lakes with intensive fish-farming. Based on the Decree fish waters were assigned in Hungary, as well. Assignment is revised by the competent environmental authorities in every five years. At present, there are seven water course (or respectively their specified sections,) under the scope of the Decree; it is the water body in each case that thus became protected.

In the ministerial Decree water pollution limit values were established to maintain the appropriate quality of fish waters. In order to provide water quality requirements, authorities shall investigate the sources of pollutions and oblige the dischargers to elaborate a pollution prevention action program. Besides, environmental authorities shall regularly monitor the observation of the water pollution limit values, according to the provision of Directive 2006/44/EC. For the accomplishment of prevention measures EU resources may be available.

Freshwater fish farming in Hungary goes back to centuries now. Beside traditional lake fish farming, geographic, water and climatic facilities are suitable for natural water fishing and also intensive “industrial” fish farming. By the end of the 19th century, as a result of river regulation works on the Danube and Tisza rivers most of the extensive meadows, swamps wetlands are disappeared. Construction of large artificial fishponds are started. Largest fishpond systems were created on the Great Plain; connecting to the water systems of Tisza and the Körös Rivers, and also their irrigation channels, respectively, by the construction of cofferdams. In the Transdanubian region smaller fishponds were constructed in large number, mainly with dams. Today majority of the domestic fish production in Hungary is provided by fish pond farming. Pond management area in Hungary is increasing; it was 340,444 hectares in 2007, 7,5 % more than in year 2000.

Rules of fish farming and angling are also regulated by national act. Besides, national legislation control all activities connected to utilisation and usage of waters through permitting procedures. Improper fish farming or angling activity may result in quality problems in the water body; water discharge in improper quantity may risk the good status of the downstream water section, and also may cause disturbance on the bank region, therefore setting up rules and regulation concerning good practice in fishing and angling is indispensable.
It is aiming to harmonise the needs of fish farming, water quality protection and ecology, such as proper water discharge from side reservoirs, provision for ensuring quality of lakes, reservoirs used for fishing or angling and their accurate water discharge. As a consequence of the regulation, certain investment are necessary at some water users in the future (planting fish structure that improve water quality and creating technological conditions necessary to it), for which supporting resources will be needed.

Rivers and their oxbows, side streams, lakes, reservoirs, channels are all popular places of anglers; they represent 3,3% of the population, which is an average value in Europe. In 2008, there were nearly 350 thousand registered anglers and more than 1000 angler's club in Hungary, while number of the official anglers' waters was 1640.

There is no shellfish farming in Hungary, therefore, there is no special regulation existing.

XVII. APPLICATION OF RECOGNIZED GOOD PRACTICE IN THE MANAGEMENT OF ENCLOSED WATERS GENERALLY AVAILABLE FOR BATHING (ART. 6, PARAGRAPH 2 (k))

Hungary has plenty of resources of thermal water even in international comparison – there are thermal waters under approximately 80% of the country's territory – and also has favourable geothermic facilities. Based on their chemical composition, the majority of thermal waters are capable of being recognised as medicinal waters. Explored medicinal and thermal waters (and services based on them) have already been ensuring exceptional importance for health tourism.

There are several spas, thermal baths and lidos in the country, which play an important role in tourism. Due to developments in the first years of the new millennium their number has been increasing, and level of their service improving. There are 208 qualified medicinal waters, 71 spas, 13 health-resorts, 30 hydro-hotels, and approximately 40 wellness hotels, 5-5 medicinal caves and medicinal mud places, and one medicinal gas source in Hungary. Domestic medicinal fund is also used by the local population, as well, in preservation of - one of the greatest treasures – health and for improving life conditions.

Recreation based on the utilisation of thermal and other types of waters has a long tradition in Hungary. The number of pool-based water recreational establishments is about 500 – in which more than 2000 pools are operated.

Although recreation connected to thermal tourism and pool spas is an important area of improving life conditions, it represents several health risks, too. Pool and spa baths are also of risk sources both of accidents and of water-safety and environmental hygiene violations and their safe operation can only be guaranteed by proper quality management. It is especially the new adventure elements and also whirlpools operated with forced aeration that represent health risks lacking properly regulated procedures for supervision so far. The most important central aim is to base these procedures on contemporary statutes and technological standards. The Hungarian Standards Institution, the Hungarian Spa Association and the Hungarian Swimming Pool Association together with the National Institute of Environmental Health are elaborating the amendment of the Decree 37/1996 (X. 18.) of the Ministry of Welfare, the most important statute in the field, and their target is to implement it from the year 2011 the latest. The amended Decree on pool and spa or other statutes have to provide for better regulation on the control of safety and prevention of accidents, since there have been several tragic events that proved the inappropriate regulation of this field.

It would be important to reinforce the quality management of the baths by the system of independent third party certification.

XVIII. IDENTIFICATION AND REMEDIATION OF PARTICULARLY CONTAMINATED SITES (ART. 6, PARAGRAPH 2 (l))

Remediation

Protection of quantitative and qualitative resources of ground waters is a task of strategic importance, since drinking water supply of the population is mainly based on this source. In connection with this, it is the National Environmental Remediation Program (OKKP) as part of the National Environmental Program that coordinates tasks related to environmental remediation. It aims to survey contaminations, and also collects and publishes related information, and also eliminates or reduce harmful effects of the identified contaminated site under state liability. Based on survey of the previous activities the number of contaminated or potentially contaminated sites was predicted about 30-40 thousand at the start of OKKP in 1996.

On the basis of Government Decree 219/2004. (VII. 21.) on protection of ground waters (henceforth Government Decree 219/2004.), which regulates remediation tasks also, and the Decree 6/2009. (IV.14.) of the Ministry of Environment and Water, the Ministry of Health, the Ministry of Agriculture and Rural Development on limit values for protection geological medium and ground water against pollution and measures of contamination, and Decree 18/2007. (V. 10.) of the Ministry of Environment and Water on data supply on environmental registration system on ground waters and geological media (Database of Groundwater and Geological Media) ensure a long-term and suitable background in implementation tasks in connection with remediation.

To achieve remediation tasks belong to the state responsibility is the obligation of the different ministers by division of governmental work, which will be realised from the budget of the given ministry as OKKP sub-programs. Remediation tasks (site investigation, technical intervention, monitoring) are implementing in the framework of 15 subprograms. Implementation of the program can be considered successful with respect to the time-consuming and special character of the activity

Main results of the subprograms: within the framework of the MÁV (Hungarian State Railways) Subprogram full survey of the contaminated areas in the responsibility scope or administration of the state owned company, and remediation commenced, as well. Between the years 1994 and 2006 clean-up of soil and ground water contamination was performed in nearly 150 sites. Within the Solid Mineral Mining Subprogram remediation of the closed Mecsek Uranium Ore Mine has been nearly completed. Within the Remediation Subprogram of the Ex-Soviet Barracks remediation of the most contaminated areas was completed in 80% until the end of year 2006; within the Defence Subprogram remediation was executed on more than 50 sites until the end of year 2006. Within the framework of the program more than 500 site has been remediated since 1996, based on the priority list in the value of HUF 150 Billion.

Important individual projects: remediation of Metallochemia factory area and cave dwellings in Budafok-Budatétény region; EU Structural Founds financed- through the Environment and Infrastructure Operative Program – 5 remediation projects (Pétfürdő, Kazincbarcika, Debrecen, Dunaújváros, Budapest IX.); Üröm-Csókavár lime stone mine remediation project is co-financed by EU Cohesion Fund, term of completion is 30 June 2010.

In the period 2007-2013 financial support resource of the EU will ensure support to remediation projects belong to state and/or municipality responsibility or their property. Within the framework of construction 2.4.0 "Implementing Remediation Tasks of Contaminated sites" indicates full committed resources by 18 applications submitted and accepted at the first term, and also that of the total resource in the sum of nearly HUF 40 Billion.

Landfills

Remediation of communal solid landfills was prepared and accepted as a part of calling for tenders construction Environment and Energy Operative Program 2.4.0.B. elaborated in December 2009. Its aim was to reduce environmental risks caused by old, technologically inadequate, closed up or abandoned communal solid landfills that permanently endangered environmental elements and other receptors, and where the contamination of the groundwater or geological media exceeded limit values.

Concerning to the requirements of Council Directive 99/31/EC Hungary has to close all of the landfills without technological protection from 16th July 2009. Recultivation and – if needed – remediation of every closed landfills, takes a long-term task that requires high costs.

Domestic budget offers financial inspiration for the self-governments for accomplishment of the necessary investments (Environment and Energy Operative Program, Regional Operative Program) with EU contribution. The engineering protected landfills concerning the strict waste rules are not polluting any more. However the closed and less accurately built landfills and also the illegal landfills can be problematic. It promotes solving problems (especially prevent waters against the hazardous substances infiltration) originated from drifting waters into the surface waters or ground waters. Collecting abandoned waste and depositing it to landfills is also necessary, especially from wet areas.

Beside tasks that belong to the responsibility sphere of the state there are several types of contaminations that belong to the responsibility circle of private entities or companies in private property. Clean up of such contaminations, based on Government Decree 219/2004. (VII. 21.) will be performed either by voluntary action of the contaminator or coercive measures by the authorities.

Fulfilment of remediation tasks in case of contamination sources within state responsibility circle are greatly hardened by financing limits, while in the other cases the short of soundness.

As a result of the countrywide inventory data of contaminating sources and contaminated sites are registered in the Database of Groundwater and Geological Media – Remediation INFO. Among the more than 15,000 objects registered in 2008, nearly 1000 are serious, while approximately 4-5000 represent problems of lower categories. Preparatory works on e-KOP competition that aimed further development of database were continued in 2009. As a result of the development, the system – among others – will be suitable for fulfilment of information requirements, and also ensure publicising of public environmental data.
Results of OKKP, annual reports, guide books and more information are available on the OKKP website. (*http://www.kvvm.hu/szakmai/karmentes/*)

From the point of view of the fulfilment of the Water Framework Directive's aims it is of basic importance to eliminate contaminations within the protective areas of the drinking water bases until 2015, thus put a stop to endangered position of drinking water bases. Its

accomplishment, however, is questionable from several reasons, though it can be only attainment of the good condition in these areas without exception. One of the causes can be complexity of quality improvement of ground waters, in case of contamination sources within state responsibility circle are greatly hardened by financing limits, while in the other cases the short of soundness.

Risk reduction and remediation of intervented contaminations have been going on within the framework of OKKP. Beside, there are several dangerous contaminations that do not belong to the responsibility circle of the state. Their clean up will be performed either by voluntary action of the contaminator or enforced by the authorities.

The greatest progress in the period 2002-2008 was the preparation and accomplishment of complex area waste economy systems. Project 12 ISPA co-financed with EU ensures the supply of 3,8 million inhabitants. Beside investments connected to selective waste handling and utilisation, projects also contain building regional landfills and recultivation of old ones. Majority of the investments were completed by 2008.

Utilisation of communal solid waste increased concerning both its material and energetic utilisation, while depositing percentage fell. In spite of the results, however, aims of National Environmental Program II concerning waste utilisation was no attained. Rate of selective waste collection instead of the planned 35-40% in the ratio of the total collected waste was only 10,4% in 2006, while increase of the communal waste utilisation in the ratio of the mass of total collected waste instead of the planned 50% was only 18,7% in 2006.

There were 2667 closed up and abandoned, but not recultivated landfills in Hungary in 2003, while they were closed up, abandoned, but to be recultivated by 2009. In the year 2008 there were only 14 landfills working, of which 73 were modern, and 68 of them had to be closed up until 15th July 2009.

Elimination and recultivation of closed up landfills are costly and long term tasks. For this aim,the Ministry of Environment and Water offered support for 36 settlements so far, and there will be further 328 landfills recultivated within the ISPA projects, however, 2232 landfills are still waiting to be recultivated. Source of the work will be a competition for self-governments, in which applicants may attain 100% of the costs of necessary recultivation works in the form of non-refundable support.

Results of registrations and date assessments connected to wastes is contained by Waste Management Information System (HIR), while summarised data can be found at: http://okir.kvvm.hu/hir/

XIX. EFFECTIVENESS OF SYSTEMS FOR THE MANAGEMENT, DEVELOPMENT, PROTECTION AND USE OF WATER RESOURCES (ART. 6, PARAGRAPH 2 (m))

During former decades it was a tradition in Hungary that the territorial water management planning used the “river basin approach”. WFD represented a great step in the regulation of it. The Water Framework Directive envisaged the introduction of a comprehensive and coherent regulating system, elaboration of the sustainable water policy and requires the coordination of relevant activities and measures among the countries sharing common international river-

basins. The Directive handling the surface and ground waters, the quality and quantity of waters in complex way aimed to achieve the good ecological and chemical status of surface waters and the good qualitative and chemical status of ground waters by 2015. The Hungarian water protection legislation has been renewed recently, and at present it complies with the unified water policy concepts of the European Union.

22th December 2009 was an important date in fulfilment of the requirements, when every member state – including Hungary – had to prepare the first river basin management plan (RBMP) based on the requirements of the Water Framework Directive. The plan had to contain detailed analysis of the status of waters, the different pressures, environmental objectives had to be defined concerning the individual water bodies, their achievement dates, with considering cost recovery calculations and interests and involvement of public, too. Based upon the above, a detailed Programmes of Measures had to be set up; with special attention to all of the measures necessary by 2015 that may contribute to achieve good status even in water bodies that at present do not comply with the criteria above. The whole report of the RBMP and documents that contain background information are available through www.vizeink.hu web page.

The river basin planning and the related public participation process have been realised on different levels in Hungary:

- on the national level: one national river-basin management plan,
- on the level of regional sub-basin: Danube, Tisza, Dráva, Balaton level (4 regional sub-basin plans)
- on the level of planning sub-units (altogether 42 sub-unit plans) (*3.picture*)
- on the level of water bodies: (869 river section, 213 standing water bodies, 185 ground water bodies)

See Figure *3.attached to the report* (Planning units of river-basin management plan (*Source: RBMP2009*))

Hungary has to elaborate and execute internationally harmonised water policy within the frameworks of the Danube River Protection Convention (Sofia, 29th June 1994) in close cooperation with the countries of the Danube basin. The Convention came into force more than ten years ago, in order to protect the quality of the Danube River and Black Sea. This is the framework that ensures coordination of Water Framework Directive on international river basin district level. The Danube River Basin District is the second largest in Europe that is shared by 19 countries. Ten of them are member states of the European Union, one of them is candidate for membership, while eight are not members of the European Union. The whole territory of Hungary belongs to the international river-basin of the Danube.
Within the framework of the Convention the Danube River Basin Management Plan was created as well, it can be found at http://www.icpdr.org/. The plan was accepted by responsible ministers of the Danube countries in Vienna on 16th February 2010 by issuing a Common Statement.

The river basin management plan was prepared on the basis of description of Government Decree 221/2004. (VII. 21.) on certain rules of river-basin, and it deals with assignment, characterisation and status assessment of “protected areas” designated of special importance from various aspects (among others water bodies protected from the point of view of drinking water intake, nutrient and nitrate sensitive areas, bathing waters and water bodies designated in connection with protection of natural fish species living conditions). One of the most

important chapter of the river-basin management plan is the Program of Measures that contains all tasks and measures necessary for turning waters to good condition as the latest till 2027 – as timing of the plan says.

See Figure 4. attached to the report (Target dates of good water quality (rate of given water bodies in the function of the total water bodies %))
In connection with the protection of surface and ground waters the most important tasks of Hungary for the period 2010-2015 (and even for longer) will be substantiation of these measures, detailed planning and implementation, which relates to more branches of economy.

In Hungary, 95% of drinking water outlets originate from ground waters (rate of the bank-filtered water outlet is 38%). The aim of drinking water resources protection is the prevention/limitation of athropogenic contamination, conservation of natural (good) water quality in the environment of waterworks built for drinking water production and also in the area of drinking water resources designated for future use.

Protection of the drinking water resources is regulated by Government Decree 123/1997. (VII.18.) on the protection of water resources, perspective water resources and public utilities achieving drinking water supply, which refers to active, reserve and perspective water resources; and according to the present register there are 1754 public groundwater drinking water sources under its effect. This Decree gives provisions to define protection blocks and safeguard zones that safeguard the protection of the water sources, as well. In case of public surface water sources, internal, external (so called: sanitary protection zone) and hydrological protection zones. In the case of public and vulnerable groundwater sources both the internal, external, as well as the hydrological protection blocks and safeguard zones have to be assigned by authority decision, too.

In order to define protection blocks and protective areas according to Government Decree 123/1997. (VII. 18.), to assess their status and to arrange for the monitoring network, an investment program was commenced in 1997. In the framework of the Program on Safeguarding Vulnerable Drinking Water Resources there began the diagnostic investigation and preparation of plans for safeguarding their safety that are to serve as a basis of ensuring the safety of the water resources. As of the end of 2009, diagnostic investigations were accomplished in the framework of the program for 343 active and perspective water sources, and those for further 24 of them was in progress. At present, financial support from EU sources can be applied for delineation of the protection zones of vulnerable public water sources. Investigation of 36 water sources is in process within this framework. Protection blocks and zones of further 251 water sources have been delineated on voluntary base outside of the state-financed program, and another 64 are in progress.

In summary, protection blocks and zones, respectively, of 718 water sources have been delineated. It covers 40% of the water sources, however, in relation to the capacity, the accomplishment is close to 90%. In case of 391 public vulnerable water sources, delineation of protection blocks and zones represents further tasks until the end of 2013. In case of 267 water sources vulnerability is ambiguous, for this reason the first step is to clarify the vulnerability. For 394 water sources that are not vulnerable, it is only the protection blocks are to be delineated.

In the vicinity of the water intakes (protection blocks and zones) special protection measures are required. Aim of the internal protective area is direct protection of installations of the

water intake; The external protection zone is to safeguard the water against degrading and microbiological contaminations, while hydrological and hydrogeological protection zones present defence against non-degradable contamination and those ground water sources are vulnerable where the wells or intakes are liable to be reached by the contamination of surface origin within 50 years.
In order to identify contamination, remediation process has to be commenced or continued under Government Decree 219/2004. (VII. 21.) Polluting agents originating from point-source contamination often contain toxic substances which are not possible to be resolved by the conversion of drinking water treatment therefore it is the ingress of the contaminating agent to the wells that have to be prevented.

Among the explored actual pollution sources there are industrial plants and agricultural sites, landfills and in great amount also petrol stations and fuel stores. Most common contamination is of mineral oil origin (with the excess of the kerosene contamination of old military airports); however, occurrence of various organic hydrocarbons and metals is also high. The above-mentioned information ensures definition of priorities in assessment of the safeguarding program of water sources. This is the basis of the risk assessment and the only way to set up a plan for the protection.

Extremely sensitive areas all, and a significant part of the sensitive areas are nitrate sensitive areas, as well. According to Government Decree 27/2006. (II. 7.) implementing the Nitrate Directive of the EU, areas where nitrate content exceeds, or, as a consequence of agricultural activities, can exceed the value of 50 mg/l are delineated as nitrate sensitive. Such areas are open and surface-close karsts and porous aquifers, protection zones of drinking water sources, inner districts of settlements where animal husbandry is permitted or areas of great animal husbandry farms. Beyond ground waters, when assigning nitrate sensitive areas, surface waters – shallow, large lakes and drinking water reservoirs – their sensitivity to eutrophication – have also to be taken into consideration. In nitrate sensitive areas (covering about 46% of the territory of the country) agricultural activity can only be performed according to the good agricultural practice. Its rules and regulations are published in an action program by the minister responsible for the agriculture. Among others, it contains mandatory provisions on manuring (e.g. winter ban on manuring), on nutrients management and also on dung storage. Manure generated at animal husbandry sites should be stored in tanks covered with waterproof lining and capable of storing manure quantity of 6 months. Animal husbandry farms are obliged to have an ICCP permit to comply with manure storage requirements by 31st October 2010, while the rest of the animal farms until 31st December 2011. Adherence to the above rules is also the prerequisite for the payments of direct agricultural subventions. At present, Hungary is accomplishing Action Program II that was commenced in 2008. Assessment of the accomplishment and impacts of the Action Program is due every 4th year, and in case it is needed, provisions have to be adjusted in relation to the following four year term. This will next time be possible in 2011, as a preparatory act for the next Nitrate Action Program, with consideration to the results of assessment of the state of the surface and ground water bodies, and aspects of the Nitrate Directive.

Public participation process in the WFD River Basin Management Planning WFD states that the society has to be involved in the River Basin Management Planning, since protection of waters will be more efficient if citizens, society groups and NGOs will participate in the process of water resources management, in elaboration of plans and implementation. Common thinking, debates on problems, aims, possible measures and their costs, reconstructing plans, further developments, and their accomplishment will be the essence and

result of public participation. The aim of society involvement will be that knowledge and aspects of the participants should come to surface, decisions would rest upon common knowledge, and the plan should be created by real and commonly accepted measures. The Water Framework Directive prescribes passing information and consultation obligatory, while defines active involvement recommended.

Strategy and methodology of society involvement connected to the Water Framework Directive was elaborated in Hungary during the year 2006, and then based on the experience gained during the first consultation phase it was finalised in 2007.

- In the first half of 2007 there were several professional organisations and NGOs that participated in estimation of timing and work program of the riverbasin economy; and there were altogether 62 written remarks received from various organisations, committees, groups or individuals. With consideration of the membership of the groups, notes reflected the opinion of several thousand individuals, based on which Decree 5/2009. (IV.14.) of the Ministry of Environment and Water on advices concerning Water Management Councils was issued.
- In the first half of 2008 the document ”Working paper on important water management issues in Hungary” was debated. The material, having reviewed the local endowments and dominant procedures, summarised important water management issues of the country and the four domestic sub-basins with consideration of the position of Hungary in the Danube Basin. There were 59 notices received during written consultation. For submitters of written opinions, the Central Directorate of Water and Environment replied within a forum in the autumn of 2008; and final version of the document was completed as a result of the forum. Besides, Environmental and Water Directorates made further consulting material in connection with the 42 planning sub-units, which were also commented in written form.

Most important section of the consultation was the social debate on the Program of Measures in 2009 that went parallel with planning.

First level of public involvement, passing information and planning was the website accessible for everybody, as follows: www.vizeink.hu, and also continual information of the public through written and electronic media. There was a national and several regional press conferences organised in order to publicise the topic. This was later followed by publishing press material that always informed about the website and commenting possibility.

The second level, process of social consultation offered four ways to enter river basin management planning:

- Consultation in written form
- Regional (sub-unit) forums
- Thematic forums
- Active involvement (through participation in social organisational representation in regional, part catch-basin and national Water Management Councils).

The consultation concentrated, first of all, organisations, institutes, associations, NGOs interested in water-supply engineering or any kind of water or area, and then on citizens generally.

XX. ADDITIONAL NATIONAL OR LOCAL SPECIFIC TARGETS

Expectable impacts of climatic changes on the water management in Hungary

On the basis of European and Hungarian model investigations both qualitative and quantitative changes of waters at our disposal are assumed as a consequence of the climatic changes. According to the recent investigations, the climate of Hungary will most likely be shifted towards that of the Mediterranean, with higher average temperature, less summer precipitation, larger potential evaporation, and therefore, less surface water discharges and infiltration that would feed ground waters. Besides, increase in the frequency and intensity of extreme weather events is also expected.

Based on the climate forecasts it is easy to recognise that if precipitation will be less, run-off will be reduced, due to warming the evaporation will increase, and thus natural stock of water in lakes will fall, too. It means that water-level will often be lowered lastingly at lakes.

Due to the warming and change of precipitation beside smaller water flows, the water discharge of even the Danube will decline. Due to the decline of water resources, conditions of water utilisation (shipping, fishing) will probably decline, as well.

Changing climate will impact on the quality and quantity of ground waters, as well. Changes, however, are not that direct and large like in case of surface waters; only multi-annual effects can be indicated. These changes, however, will be manifested lastingly, and by the termination of the unfavourable effects the original condition can be restored by a very slow process. Condition of ground waters in Hungary is extremely important, since more than 90% of the drinking water supply comes from ground waters.

Increase of the temperature of waters, increase of evaporation, sudden and fast floods flushing contamination into the ground waters in larger amount from the drainage area and the unbalance of the nutrients may endanger the quality of the waters. Fall of the ecological situation in the area between the Danube and Tisza Rivers has already been experienced, and it will be augmented. There will be further wet habitats, saliferous lakes, ecosystems dependant from ground waters endangered as a consequence of climatic changes.

Fall of the water supply in smaller streams will make water flows more sensitive towards contaminant loads. Due to less water discharge, decomposition of certain contaminations will slow down that may effect on the quality of water. Sudden rains may represent danger, as well. Extreme precipitation increases loading of the sewerage systems that may result is overflows and in extreme cases to pollution havarias.

On the above basis, one must be prepared to more and more frequent shift in quantity of waters between abundance and shortage. Frequency, size and adverse consequences of the dry and humid years are dissimilar. Expectation of larger and dry areas is more likely than locally or small-scale-wise impacting floods or inland inundations. In spite of this, the more frequent and extreme weather conditions, huge rain storms may cause dangerous situations and serious damages.

National Strategy on Climatic Change (NÉS) also comprising important objectives for the water management was published in 2008. Beside cooperation with the Hungarian Academy

of Science, it was based on results of a so-called VAHAVA (Change-Effect-Response) Project, and also on the recent report of the Intergovernmetal Panel on Climate Change. It also defines measures concerning the protective areas in agriculture and forestry that may contribute to the preparations to hydrological changes (diminishing effects, acclimatization).

Largest risk in Hungary from the point of view of environmental safety is represented by floods, inland inundations and drought, respectively. Adverse effects may cause great damages at the affected areas. 55% of the population are exposed to dangers caused by floods or inland inundations.

One of the most import tasks of the period 2009-2014 remains the complex development of inland water systems, and simultaneously stopping or diminishing adverse effects caused by drought. One of the means for it can be active containment of water resources (storage or retention of water e.g. on the Great Plain between Rivers Danube and Tisza). The other possible method can be conduction of waters to regions lacking water serving several aims according to the contemporary expectations (water demands for ecological, irrigational, welfare, nature conservation objectives).

During the 2003-2008 period beside the appearance of flood, inland water, hail-storm there were many extreme weather conditions (wind storm, rain-shower, hail-storm, mud avalanche, fires). Increasing frequency of extreme weather conditions call for the attention on the importance of the further development of forecasting and preventive systems.

PART FOUR: OVERALL EVALUATION OF PROGRESS ACHIEVED IN IMPLEMENTING THE PROTOCOL

Implementing the Water and Health Minutes was accelerated in Hungary followed by the meeting of the Parties on 1st January 2007 by setting up the Expert Committee on Water and Health. Although setting of targets and target dates was followed by regular cooperation of the members of the Expert Committee, results attained have been far not been satisfactory.

We can report on considerable proceedings, first of all, on areas, where fulfilment of requirements based of our EU membership is on its way. E.g. sanitation-sewerage program and river basin management program. Because of financial reasons – and also due to the recent economical crisis - progress in drinking water improvement, setting water resources in safety and recultivation of contaminated areas are not satisfactory, although these are also related to EU programs.

These are the most important challenges of the near future, and in connection with them based on this review we are going to review our targets and the target dates. Legal proceedings are needed in important fields, such as updating the terms and conditions of drinking water supply systems, further regulation of the quality of bathing waters and those of pool and spa establishments. There is a need for progress and coordination on the field of the IT systems necessary for up-to date data management. It is the basic condition for the development on the field of public involvement and information, as well. Concerning the work of the Expert Committee, the most important target is to ensure more activity of experts from more ministries beyond those at the departments of health and the water and environment, as well as some NGOs.

International cooperation

Hungary will have to elaborate and implement water policy in close cooperation with the countries of the Danube basin within the framework of the International Convention of the Protection of Danube River (Sofia, 29th June 1994). The Convention came into effect more than ten years ago, in order to protect the quality of the Danube River and the Black Sea. This is the framework that ensures coordination in the implementation of the Water Framework Directive on the international river basin district level. The Danube River Basin District is the second largest in Europe that is shared by 19 countries. Ten of them are member states of the European Union; three of them are candidates for membership, while eight are not members of the Union. The whole territory of Hungary belongs to the international river basin of the Danube.

Hungary has bilateral transboundary water agreements with all neighbouring countries. We play an active role in the relevant conventions of the United Nations Economical Cooperation for Europe and other regional international cooperations that focus on the protection of the waters and the total environment.