BWD Report For the Bathing Season 2014
Croatia

The report gives a general overview of information acquired from the reported data, based on provisions of the Bathing Water Directive[1]. The reporting process is described below, as well as state and trends of bathing water quality in Croatia.

1. BWD reporting in the season 2014

In 2014 bathing season, 945 bathing waters have been reported in Croatia. For each bathing water, five groups of parameters have been delivered[2]:

- *identification data* – including name, location, geographic type of bathing water and availability to bathers;
- *seasonal data* – including season start and end, national quality classification in present season, potential management measures and changes in quality;
- *monitoring results* – disaggregated numerical values of two microbiological parameters – intestinal enterococci and Escherichia coli (also known as E. coli), recorded at each water sample taken;
- *abnormal situation periods* – periods of unexpected situations that have, or could reasonably be expected to have, an adverse impact on bathing water quality and on bathers' health; reporting is optional;
- *short-term pollution periods* – identifiable events that adversely affect water quality by faecal contamination; reporting is optional.

Bathing waters of Croatia in 2014	
Total reported	**945**
Coastal	918
Inland	27
Max season period	**107 days**
	1 Jun to 15 Sep
Samples taken	**9366**
Share of bathing waters with good or excellent water quality	**96 %**
New BWD implemented in	**2009**

The authorities of Croatia report data according to the new BWD (2006/7/EC) since the season 2009. The data for the season 2014 were delivered to the European Commission by **30 December 2014**.

Altogether, **945 bathing waters** have been reported – 4.4% of all bathing waters in Europe. Out of all bathing waters in Croatia, 2.96% have been newly identified in 2014 season. 97% of bathing waters in Croatia are of coastal type; the other 3% are inland. **9366 samples** were taken at bathing waters throughout the season – 10 per bathing water on average.

[1] Directive BWD 2006/7/EC, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0037:0051:EN:PDF

[2] See the BWD Data Dictionary for detailed explanations: http://dd.eionet.europa.eu/datasets/3151#tables

The maximum bathing season period was from 1 June to 15 September, i.e. 107 days altogether.

Detailed information on bathing waters is available from national portal at http://baltazar.izor.hr/plazepub/kakvoca?p_jezik=eng.

2. Assessment methodology[3]

During the bathing season, water samples are taken and analysed for two bacteria, *Escherichia coli* and intestinal enterococci which may indicate the presence of pollution, usually originating in sewage or livestock waste. The results of the analysis are used to assess the quality of the bathing waters concerned and to provide information to the public on the quality of the water in the bathing sites concerned.

The monitoring requirements under the New Bathing Water Directive are:

- taking of a pre-season sample (taken shortly before the start of the bathing season) [4];
- a minimum of four samples per season[5];
- a minimum of one sample per month[6].

The conditions described above must be met for all bathing waters. If these rules are satisfied, the bathing water is categorised as 'sampling frequency satisfied'. If not all monitoring requirements are fulfilled the bathing water is categorised as 'sampling frequency not satisfied'. 96.8% of bathing waters met the described monitoring requirements set by the Directive, while the rest did not satisfy monitoring requirements or was either new, changed or closed. Table 1 shows the statistics of bathing waters according to satisfied BWD monitoring requirements.

[3] The methodology used by the EC and the EEA is described here, while results of assessment by national authorities may somewhat differ. However, the provisions of the Directive should be followed in any case.
[4] A pre-season sample is taken into account at total number of samples per season.
[5] Three samples are sufficient if the season does not exceed eight weeks or the region is subject to special geographical constraints.
[6] If, for any reason, it is not possible to take the sample at the scheduled date, a delay of four extra days is allowed. Thus, the interval between two samples should not exceed 31 + 4 days.

Table 1: Bathing waters in 2014 according to compliance with BWD monitoring provisions

	Count	Share of total [%]
BWs with sampling frequency satisfied and are not new, have no changes or were not closed in 2014 These bathing waters have been monitored according to BWD provisions (monitoring frequency satisfied and have pre-season sample. They have been quality-classified (excellent, good, sufficient, poor).	915	96.8%
BWs with sampling frequency not satisfied and that are not new, have no changes or were not closed in 2014. These bathing waters have not been monitored according to BWD provisions (monitoring frequency not satisfied). They may be quality-classified if there is a reasonable volume of samples available.	2	0.2%
BWs that are new, changed or closed in 2014 These bathing waters are new or have been subject to changes that could affect bathing water quality.	28	3.0%
Total number of bathing waters in 2014	**945**	**100%**

Bathing waters where sampling frequency was not satisfied can still be quality assessed if at least four samples per season (three samples if the season does not exceed eight weeks or the region is subject to special geographical constraints) are available and are more or less equally distributed throughout the season. Assessment of bathing water quality is possible when the bathing water sample dataset is available for four consecutive seasons. Bathing waters are accordingly classified to one of the bathing water quality classes (excellent, good, sufficient, or poor).

The classification is based on pre-defined percentile values for microbiological enumerations, falling in the certain class given in Annex I of the Directive. This defines different limit values for coastal and inland waters.

Quality assessment is not possible for all bathing waters. In these cases, they are instead classified as either:

- not enough samples[7];
- new[8];
- changes[9];
- closed[10].

[7] Not enough samples have been provided for the 2014 season or throughout the whole assessment period.
[8] Classification not yet possible because bathing water is newly identified and a complete set of samples is not yet available.
[9] Classification is not yet possible after changes affecting bathing water quality have been implemented.
[10] Bathing water is closed temporarily or throughout the bathing season.

3. Bathing water quality

The results of the bathing water quality in Croatia throughout the past period are presented in Figure 1 (for coastal bathing waters) and Figure 2 (for inland bathing waters). The previous reports are available on the European Commission's bathing water quality website[11] and the European Environment Agency's bathing water website[12].

3.1 Coastal bathing waters

In Croatia, 98.6% of all existing coastal bathing waters met at least sufficient water quality standards in 2014. See Appendix 1 for numeric data.

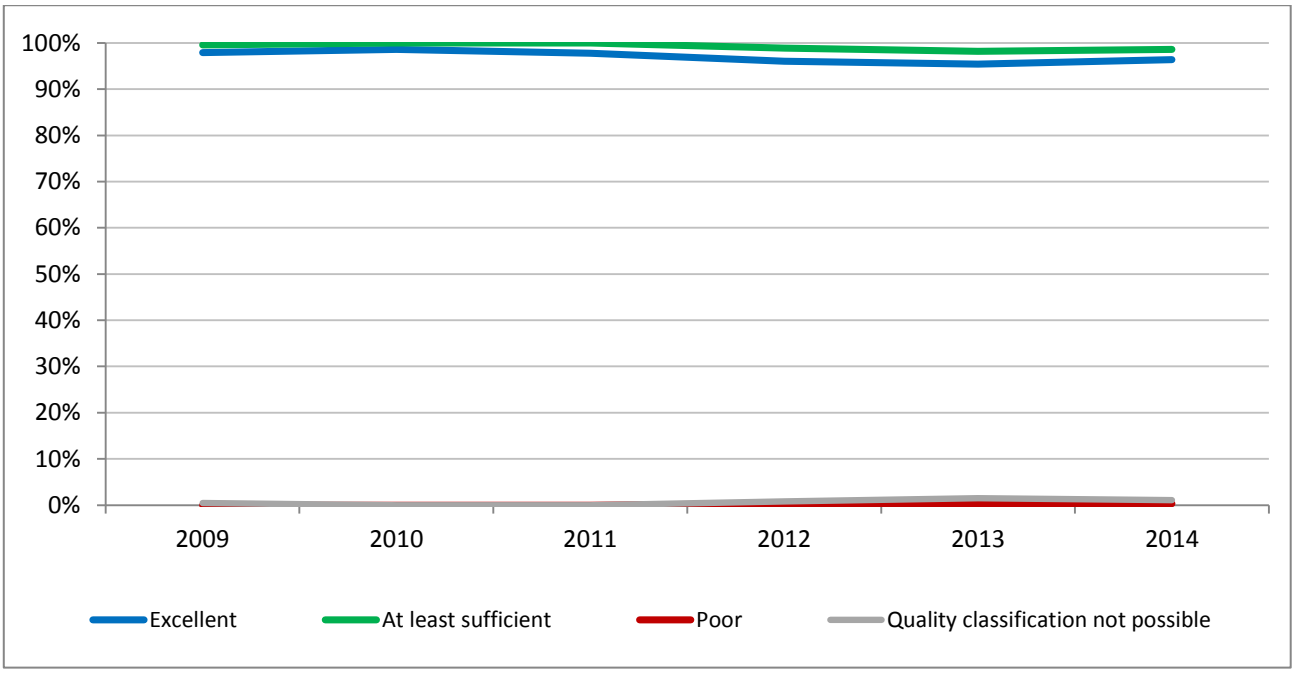

Figure 1: Coastal bathing water quality trend in Croatia. Note: the "At least sufficient" class also includes bathing waters of "Excellent" quality class, the sum of shares is therefore not 100%.

[11] http://ec.europa.eu/environment/water/water-bathing/index_en.html
[12] http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water

3.2 Inland bathing waters

25.9% of all existing inland bathing waters met at least sufficient water quality in 2014. See Appendix 1 for numeric data.

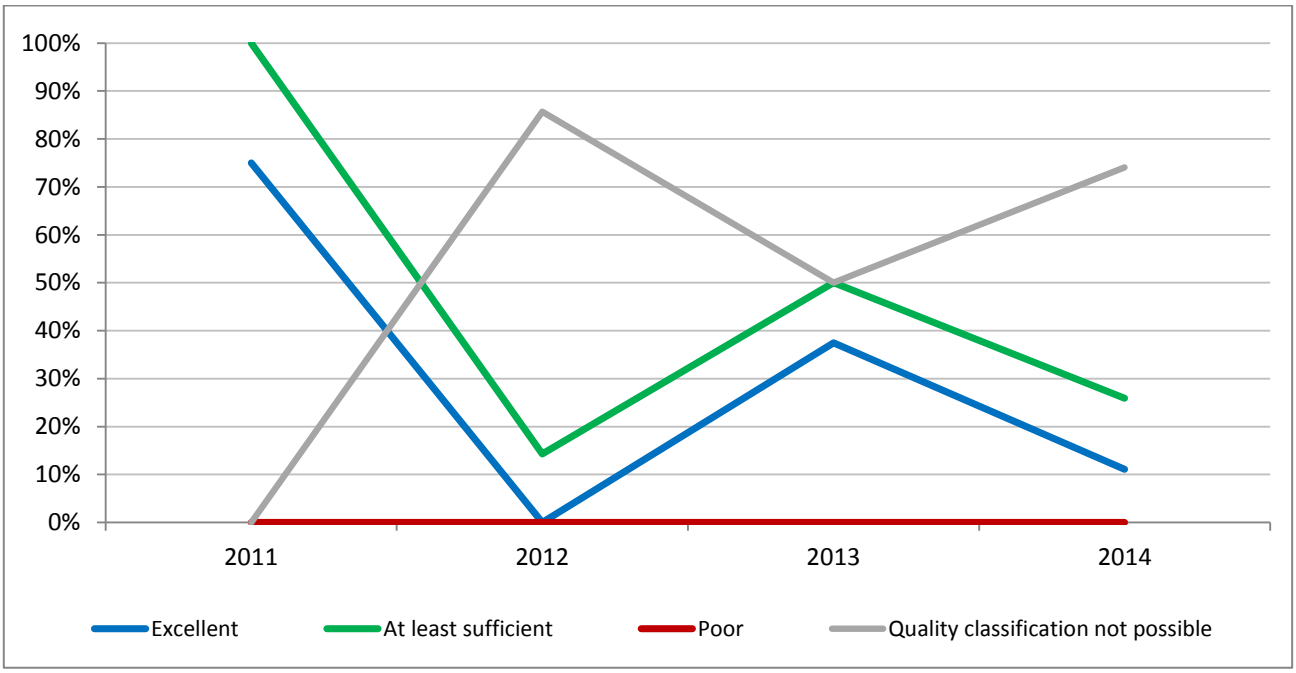

Figure 2: Inland bathing water quality trend in Croatia. Note: the "At least sufficient" class also includes bathing waters of "Excellent" quality class, the sum of shares is therefore not 100%.

4. Information regarding management and other issues

Bathing water quality monitoring is carried out under Regulation on sea bathing water quality (OG 73/08) and Regulation on bathing water quality (OG 51/14). Regulations set out standards for bathing water quality at the coastal, transitional and inland beaches, establish the limit values for microbiological parameters and other characteristics of the coastal, transitional and inland waters. In order to achieve the require standards, management measures for the bathing waters were established.

The bathing season in Croatia is the period from 1 June until 15 September, unless due to weather conditions and local customs, the representative body of the county issues a decision on the bathing season lasting for a longer period of time. Monitoring of bathing water quality at sea beaches lasts from 15 May until 30 September. Before each bathing season the county is obliged to determine sampling points. Before the start of each bathing season the authorised person is obliged to determine monitoring calendar consistent with the relevant administrative body in the county. Bathing water monitoring has to start no later than four days from the date specified in the calendar.

Based on bathing water quality monitoring results individual, annual and final assessments are made. The individual assessment is determined after each analysis carried out during the bathing season, according to the limit values for the microbiological parameters referred by the Regulation. The annual assessment is determined after the end of the bathing season, based on a set of data on bathing water

quality for that particular bathing season, according to the limit values for the microbiological parameters referred by the Regulation.

The final assessment is determined after the end of the last bathing season and the three preceding bathing seasons, according to the limit values for the microbiological parameters referred by the Regulation, based on a data set of at least 28 samples for each sampling point.

Monitoring data are available for public on http://www.izor.hr/bathing/ and http://www.azo.hr/KakvocaMoraZa. Moreover, users are allowed to make comments and suggestion considering each bathing water, to propose new sampling points, to get additional information of the beaches and even to report on possible sudden and short term pollutions,. The application for mobile phones which makes uses of modern technologies, such as GPS was produced in 2012. Bathing water profiles are available for majority of bathing waters as well and the major parts of profiles are publicly available from 2014.

In 2003 the project "Coastal Cities Water Pollution Control Project" has started and is still on-going. It includes 47 subprojects for construction and modernization of sewage systems and waste water treatment along the coast of the mainland and islands. The project has a long-term character and itâ□□s second phase will be finished by the end of 2015. By the end of the third phase it is envisaged that all Croatian coast and islands will be adequately covered with sewage systems and waste water treatment plants. The situation has been already improved in the area around the cities of Rijeka, Opatija, Zadar and Šibenik which is evident from the bathing water quality trends.

Implementation of Marine strategy framework directive MSFD is also on-going and it is expected that by the 2018 Monitoring program for ongoing assessment regarding all eleven MSFD descriptors will be fully implemented.

Additional details on bathing water monitoring, management measures, short-term pollutions and general implementation of the BWD are included in an extensive report produced by the national authorities (in Croatian; http://www.mzoip.hr/doc/izvjesce_o_kakvoci_mora_za_kupanje_u_rh_2014.pdf).

5. Bathing water quality assessment presentation in online viewers

The new legislation requires more effective monitoring and management of bathing waters, greater public participation and improved information dissemination. More on the bathing and other water legislation can be found on the European Commission's website: http://ec.europa.eu/environment/water/index_en.htm.

The bathing water section of the Water Information System for Europe (WISE), which is accessible at the EEA bathing water website (http://www.eea.europa.eu/themes/water/interactive/bathing/state-of-bathing-waters), allows users to view the bathing water quality at more than 21 000 coastal beaches and inland sites across Europe. The data on bathing water quality in 2014 and previous years can also be viewed in WISE bathing water data viewer, an application prepared by TC Vode (http://bwd.eea.europa.eu/). The WISE bathing water quality data viewer combines text and graphical visualisation, providing a quick overview of the bathing water's locations and achieved quality.

Citizens have now access to more bathing water information than ever and are encouraged to make full use of disseminated information.

Appendix 1: Results of bathing water quality in Croatia from 2011 to 2014

Table 2: Bathing waters in the season 2014 according to quality

		Total number of bathing waters	Excellent quality or compliant with guide values		At least sufficient quality or compliant with mandatory values		Poor quality or non-compliant		Quality classification not possible: not enough samples /new bathing waters/bathing waters with changes/closed	
			No	%	No	%	No	%	No	%
Coastal	2011	906	886	97.8	906	100.0	0	0.0	0	0.0
	2012	912	876	96.1	902	98.9	3	0.3	7	0.8
	2013	919	877	95.4	902	98.2	3	0.3	14	1.5
	2014	918	885	96.4	905	98.6	3	0.3	10	1.1
Inland	2011	4	3	75.0	4	100.0	0	0.0	0	0.0
	2012	7	0	0.0	1	14.3	0	0.0	6	85.7
	2013	8	3	37.5	4	50.0	0	0.0	4	50.0
	2014	27	3	11.1	7	25.9	0	0.0	20	74.1
Total	**2011**	**910**	**889**	**97.7**	**910**	**100.0**	**0**	**0.0**	**0**	**0.0**
	2012	**919**	**876**	**95.3**	**903**	**98.3**	**3**	**0.3**	**13**	**1.4**
	2013	**927**	**880**	**94.9**	**906**	**97.7**	**3**	**0.3**	**18**	**1.9**
	2014	**945**	**888**	**94.0**	**912**	**96.5**	**3**	**0.3**	**30**	**3.2**

Note: the class “At least sufficient” also includes bathing waters which are of excellent quality, the sum of shares is therefore not 100%.

Appendix 2: Bathing water quality map

Map 1: Bathing waters reported during the 2014 bathing season in Croatia

Bathing water quality

- Excellent water quality
- Good water quality
- Sufficient water quality
- Poor water quality
- Quality classification not possible: not enough samples / new bathing waters / bathing waters with changes / closed
- No data
- Outside data coverage (data available, not presented on the map)

Source: National boundaries: EEA; Large rivers and lakes: EEA, WFD Article 3; Rivers in Western Balkan: TC Vode; Bathing waters data and coordinates: Croatian authorities