

Bathing water results 2010 – Portugal

1. Reporting and assessment

This report gives a general overview of bathing water quality in Portugal during the 2010 bathing season. In 2010 Portugal reported under the Directive 2006/7/EC and has monitored under this Directive since 2007.

Portugal has 417 coastal and 75 inland bathing waters. Historical data with two parameters of the Directive 2006/7/EC was reported for 439 bathing waters in 2009, 259 bathing waters in 2008 and 51 bathing waters in 2007. Therefore, the assessment of bathing water quality according to assessment rules of the Directive 2006/7/EC is done for 51 (10.4 %) bathing waters. They are all coastal bathing waters. Since sets of samples to be used for the assessment under the Directive 2006/7/EC are available only for those bathing waters (12.2 % of coastal bathing waters and no inland bathing waters), the overall assessment for Portugal is done under transition period rules.

Assessment during the transition period

Before the necessary data set for assessment of bathing water quality under the Directive 2006/7/EC is compiled (data for three or four consecutive years) the rules for transition period assessment are applied. This means that the classification of bathing waters is defined on the basis of concentrations of intestinal enterococci and *Escherichia coli* that are reported under the Directive 2006/7/EC. The limit values for the classification are taken from the Directive 76/160/EEC. For the conversion of reported parameters under the Directive 2006/7/EC, Article 13.3 of the Directive 2006/7/EC foresees that the parameter *Escherichia coli*, reported under the Directive 2006/7/EC, is assumed to be equivalent to the parameter faecal coliforms of the Directive 76/160/EEC. The parameter intestinal enterococci reported under the Directive 2006/7/EC is assumed to be equivalent to the parameter faecal streptococci.

The results are classified in the following categories:

- **Class CI:** Compliant with the mandatory value of the Directive 76/160/EEC for *Escherichia coli* and not compliant with the guide values of the Directive 76/160/EEC for *Escherichia coli* or intestinal enterococci;
- **Class CG:** Compliant with the mandatory value of the Directive 76/160/EEC for *Escherichia coli* and the more stringent guide values for the *Escherichia coli* and intestinal enterococci;
- **Class NC:** Not compliant with the mandatory value of the Directive 76/160/EEC for *Escherichia coli*;
- **Class B:** Banned or closed (temporary or throughout the season);
- **Class NF:** Insufficiently sampled;
- **Class NS:** Not sampled.

The new bathing water directive (2006/7/EC) requires Member States to start sampling shortly before the start of the bathing season. It also requires that the interval between sampling should not exceed one month. In some cases these required changes in regard to the old bathing water directive (76/160/EEC) have not yet been implemented, resulting in a late start date of sampling at some sites and/or insufficiently frequent sampling. For that reason two rules in regard to sampling frequency are considered in the assessment of monitoring results in 2010. By the first rule, 41 days were taken as a maximum difference between two samples (less strict rule), whereas by the second rule the maximum days between two samples considered were 32 days (strict rule). The new directive also requires that the first sample must be taken shortly before the start of a bathing season. However, in the assessment of bathing water quality in 2010, the first sample could be taken not later than 10 days after the start of the bathing season. If this was a case, the second sample should have been taken no later than 41 days after the start of the bathing season when the less strict rules or 32 days when the strict rules are used in the assessment. The bathing water is classified as insufficiently sampled or not sampled when the pre-season sample is missing or when the difference between two consecutive

samples is larger than 41 days by the less strict rule or 32 days by the strict rule. In graphs results applying the less strict rules are presented.

Assessment under Directive 2006/7/EC

When samples of intestinal enterococci and *Escherichia coli* for bathing water are available for three or four consecutive years, the assessment is done according to assessment rules of Directive 2006/7/EC. The frequency of sampling is set out in Annex IV of the Directive. Including a sample to be taken shortly before the start of the bathing season, the minimum number of samples taken per bathing season is four. However, only three samples are sufficient when the bathing season does not exceed eight weeks or the region is subject to special geographical constraints. Sampling dates are to be distributed throughout the bathing season, with the interval between sampling dates never exceeding one month.

In the assessment of bathing water quality in 2010 the two rules in regard to sampling frequency are considered in the assessment of the monitoring results in the 2010 bathing season. By the first rule, 41 days were taken as a maximum difference between two samples (less strict rule), whereas by the second rule the maximum days between two samples considered were 32 days (strict rule). The new directive also requires that the first sample must be taken shortly before the start of a bathing season. However, in the assessment of bathing water quality in 2010, the first sample could be taken not later than 10 days after the start of the bathing season. If this was a case, the second sample should have been taken no later than 41 days after the start of the bathing season when the less strict rules or 32 days when the strict rules are used in the assessment. The bathing water is classified as insufficiently sampled or not sampled when the pre-season sample is missing or when the difference between two consecutive samples is larger than 41 days using by the less strict rule or 32 days by the strict rule. In graphs results applying the less strict rules are presented.

To assess bathing water under the Directive 2006/7/EC in 2010, four (or three if bathing season shorter than eight weeks) samples per season must be available for the 2007, 2008, 2009 and 2010 bathing seasons.

Bathing waters assessed according to the Directive 2006/7/EC are classified as 'excellent', 'good', 'sufficient' and 'poor' quality. Some bathing waters cannot be classified according to their quality but are instead classified as 'closed' (temporarily or throughout the bathing season), 'new' (classification not yet possible), 'insufficiently sampled' or 'changes' (bathing water is not new and classification not yet possible since a set of monitoring data is incomplete).

2. Length of bathing season and number of bathing waters

Coastal bathing waters opened from 15 May to 1 July 2010, except for three bathing waters opened in April, and closed from 31 August to 31 October 2010. This includes the Azores and Madeira. Inland bathing waters opened on 15 May to 1 July 2010 and closed from 31 August to 30 September 2010.

A total of 492 bathing waters were monitored in Portugal during the 2010 bathing season, of which 417 were coastal bathing waters (405) or transitional bathing waters (12) and 75 inland bathing waters (57 on rivers; 18 on lakes).

With 492 bathing waters Portugal accounts for about 2.3 % of the reported bathing waters of the European Union.

The evolution of the reported number of bathing waters since monitoring of the water quality began under the Directive 76/160/EEC and the Directive 2006/7/EC is presented in Table 1. Remarkably is the increase in number of coastal bathing waters since the start of the reporting from 160 in 1991 to 443 in 2009. It decreased afterwards to 417 in 2010. Similarly, the number of inland bathing waters also increased significantly from 23 in 1993 to 97 in 2008 and 2009, while it decreased to 75 in 2010. There were 48 less bathing waters in 2010 than in the previous year: five new bathing waters were added to the list, two coastal bathing waters were de-listed and 51 bathing waters were not identified on the list of bathing waters in 2010.

3. Bathing water quality

The results of the bathing water quality in Portugal for the period 1991-2009 as reported the past reporting years and for the bathing season of 2010 are presented in Figure 1. The previous reports are available on the European Commission's bathing water quality website (http://ec.europa.eu/environment/water/water-bathing/index_en.html; Water and Health/Bathing Water/2005-2010 reports) and the European Environment Agency's bathing water website (<http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water>; reports for the 2008 and 2009 bathing seasons).

The graphs show, for coastal and inland bathing waters separately:

- The percentage of bathing waters that comply with the guide values (class CG, blue line);
- The percentage of bathing waters that comply with the mandatory values (class CI, green line);
- The percentage of bathing waters that do not comply with the mandatory values (class NC, red line);
- The percentage of bathing waters that are banned or closed (temporarily or throughout the season) (class B, grey line).

Table 1 shows the same information in absolute numbers and in percentages separately for coastal and inland bathing waters. The numbers and percentages of insufficiently sampled or not sampled bathing waters are also presented. Table 2 shows the bathing water quality results for the 2009 and 2010 seasons in Portugal for all bathing waters. Table 3 shows the classification of bathing waters in absolute numbers and in percentages for assessed coastal bathing waters under Directive 2006/7/EC.

Map 1 and 2 show the location of the reported bathing waters in Portugal. Map 1 shows the bathing water quality results of overall assessment during transition period. Map 2 shows the bathing water quality results of assessment under Directive 2006/7/EC. The results applying the less strict rules are presented. In addition, insufficiently sampled bathing waters by the strict rules are presented as an orange outline. The location of the bathing waters is based on the geographic coordinates reported by the Portuguese authorities.

Coastal bathing waters

In Portugal, 99.3 % of the coastal bathing waters met the mandatory water quality in 2010. This is an increase of 0.7 % compared to the previous year. The rate of compliance with the more stringent guide values was 89.7 %, which is a decrease of 7.1 %. The number of non-compliant bathing waters with the mandatory values decreased from four (0.9 %) to three bathing waters (0.7 %). No coastal bathing water had to be closed (banned) during the season compared to two (0.5 %) in 2009.

The Portuguese authorities have taken measures to improve the overall water quality. These resulted in the gradual improvement of the water quality as can be seen in the decreasing percentage of non-compliant bathing waters and increasing compliance rate. The compliance rate with the mandatory values was met in more than 90 % of the bathing waters since 1999 and in more than 98 % since 2008. The compliance rate with the guide values was met in more than 80 % of the bathing waters since 1999 and in more than 85 % since 2002. One or more bathing waters were closed in 2001 (1.6 %) and from 2006 to 2009 (0.2-0.9 %).

All reported coastal bathing waters that had sufficient data to be assessed under the Directive 2006/7/EC (12.2 %) were of excellent quality.

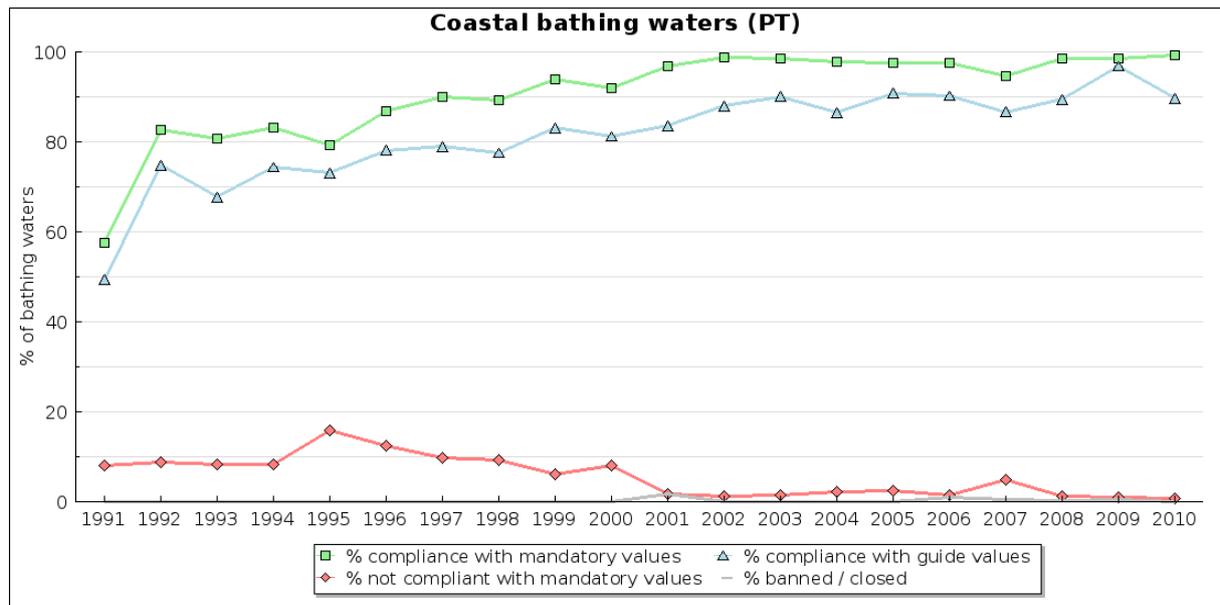
Inland bathing waters

Some 96 % of the inland bathing waters met the mandatory water quality in 2010. This is an increase of 6.3 % compared to the previous year. Some 52 % of the bathing waters met the more stringent guide values, which is a decrease of 6.8 %. Three bathing waters (4 %) were non-compliant with the mandatory value for *Escherichia coli*, the same as in 2009 (3.1 %). No bathing water was closed (banned) during the season compared to seven (7.2 %) in 2009.

Contrary to the coastal bathing waters, the compliance rate was low for the inland bathing waters at the start of reporting (26.1 % compliance with mandatory values). From 1998 onward we see a

gradual increase in the water quality, although it took Portugal till the 2002 bathing season to reach a low level of non-compliant inland bathing waters below 5 %, except for 2006 (9.3 %). The percentage of non-compliant bathing waters was the lowest in 2007 (1.1 %). The mandatory water quality was met in more than 90 % of the bathing waters since 2002 with a dip in 2006 (88.4 %) and 2009 (89.7 %). Since 2005, the bathing waters compliant with the more stringent guide values were fluctuating between 42.3 % in 2008 and 58.8 % in 2009. From 2006 to 2009, the number of bathing waters that were closed (banned) during the season increased from two (2.3 %) to seven (7.2 %), while no bathing water was closed in 2010.

Figure 1: Results of bathing water quality in Portugal from 1991 to 2010



Note: For the year 2010 results applying the less strict rules are presented.

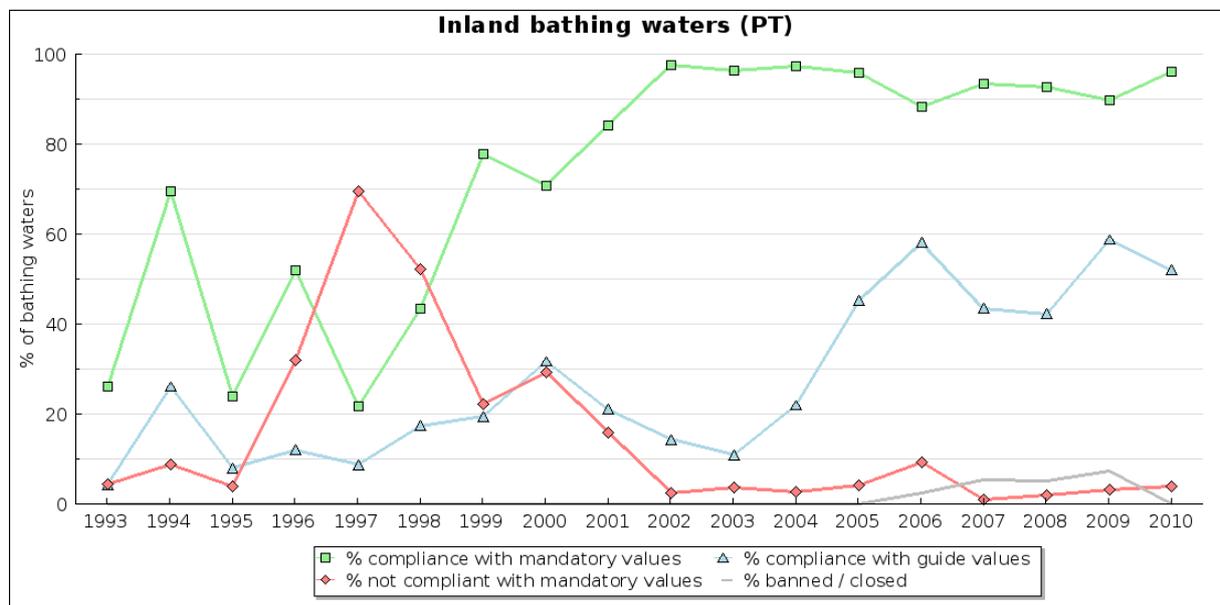


Table 1: Results of bathing water quality in Portugal from 1991 to 2010

PT												
		Total number of bathing waters	Compliance with guide and mandatory values**		Compliance with mandatory values		Not compliant		Banned/closed temporarily or throughout the season		Insufficiently sampled or not sampled	
			number	%	number	%	number	%	number	%	number	%
Coastal bathing waters	1991	160	79	49.4	92	57.5	13	8.1	0	0.0	55	34.4
	1992	226	169	74.8	187	82.7	20	8.8	0	0.0	19	8.4
	1993	313	212	67.7	253	80.8	26	8.3	0	0.0	34	10.9
	1994	316	235	74.4	263	83.2	26	8.2	0	0.0	27	8.5
	1995	334	244	73.1	265	79.3	53	15.9	0	0.0	16	4.8
	1996	339	265	78.2	294	86.7	42	12.4	0	0.0	3	0.9
	1997	337	266	78.9	303	89.9	33	9.8	0	0.0	1	0.3
	1998	343	266	77.6	306	89.2	32	9.3	0	0.0	5	1.5
	1999	343	285	83.1	322	93.9	21	6.1	0	0.0	0	0.0
	2000	346	281	81.2	318	91.9	28	8.1	0	0.0	0	0.0
	2001	366	306	83.6	354	96.7	6	1.6	6	1.6	0	0.0
	2002	373	328	87.9	368	98.7	5	1.3	0	0.0	0	0.0
	2003	384	346	90.1	378	98.4	6	1.6	0	0.0	0	0.0
	2004	400	346	86.5	391	97.8	9	2.3	0	0.0	0	0.0
	2005	414	376	90.8	404	97.6	10	2.4	0	0.0	0	0.0
	2006	422	381	90.3	412	97.6	6	1.4	4	0.9	0	0.0
	2007	427	370	86.7	404	94.6	21	4.9	2	0.5	0	0.0
	2008	436	390	89.4	430	98.6	5	1.1	1	0.2	0	0.0
	2009	443	429	96.8	437	98.6	4	0.9	2	0.5	0	0.0
	2010*	417	374	89.7	414	99.3	3	0.7	0	0.0	0	0.0
2010	417	348	83.5	386	92.6	3	0.7	0	0.0	28	6.7	
Inland bathing waters	1993	23	1	4.3	6	26.1	1	4.3	0	0.0	16	69.6
	1994	23	6	26.1	16	69.6	2	8.7	0	0.0	5	21.7
	1995	25	2	8.0	6	24.0	1	4.0	0	0.0	18	72.0
	1996	25	3	12.0	13	52.0	8	32.0	0	0.0	4	16.0
	1997	23	2	8.7	5	21.7	16	69.6	0	0.0	2	8.7
	1998	23	4	17.4	10	43.5	12	52.2	0	0.0	1	4.3
	1999	36	7	19.4	28	77.8	8	22.2	0	0.0	0	0.0
	2000	41	13	31.7	29	70.7	12	29.3	0	0.0	0	0.0
	2001	38	8	21.1	32	84.2	6	15.8	0	0.0	0	0.0
	2002	42	6	14.3	41	97.6	1	2.4	0	0.0	0	0.0
	2003	55	6	10.9	53	96.4	2	3.6	0	0.0	0	0.0
	2004	73	16	21.9	71	97.3	2	2.7	0	0.0	0	0.0
	2005	73	33	45.2	70	95.9	3	4.1	0	0.0	0	0.0
	2006	86	50	58.1	76	88.4	8	9.3	2	2.3	0	0.0
	2007	92	40	43.5	86	93.5	1	1.1	5	5.4	0	0.0
	2008	97	41	42.3	90	92.8	2	2.1	5	5.2	0	0.0
	2009	97	57	58.8	87	89.7	3	3.1	7	7.2	0	0.0
2010	75	39	52.0	72	96.0	3	4.0	0	0.0	0	0.0	

*Less strict rules applied (41 days taken as a maximum difference between two samples for reporting under Directive 2006/7/EC). **Bathing waters which were compliant with the guide values were also compliant with the mandatory values for five parameters under the Directive 76/160/EEC (1991-2009) or the mandatory value for *Escherichia coli* (2010).

Table 2: Results of bathing water quality for all bathing waters in Portugal in 2009 and 2010. Assessment during the transition period.

PT												
		Total number of bathing waters	Compliance with guide and mandatory values**		Compliance with mandatory values		Not compliant		Banned/closed temporarily or throughout the season		Insufficiently sampled or not sampled	
			number	%	number	%	number	%	number	%	number	%
All bathing waters	2009	540	486	90.0	524	97.0	7	1.3	9	1.7	0	0.0
	2010*	492	413	83.9	486	98.8	6	1.2	0	0.0	0	0.0
	2010	492	387	78.7	458	93.1	6	1.2	0	0.0	28	5.7

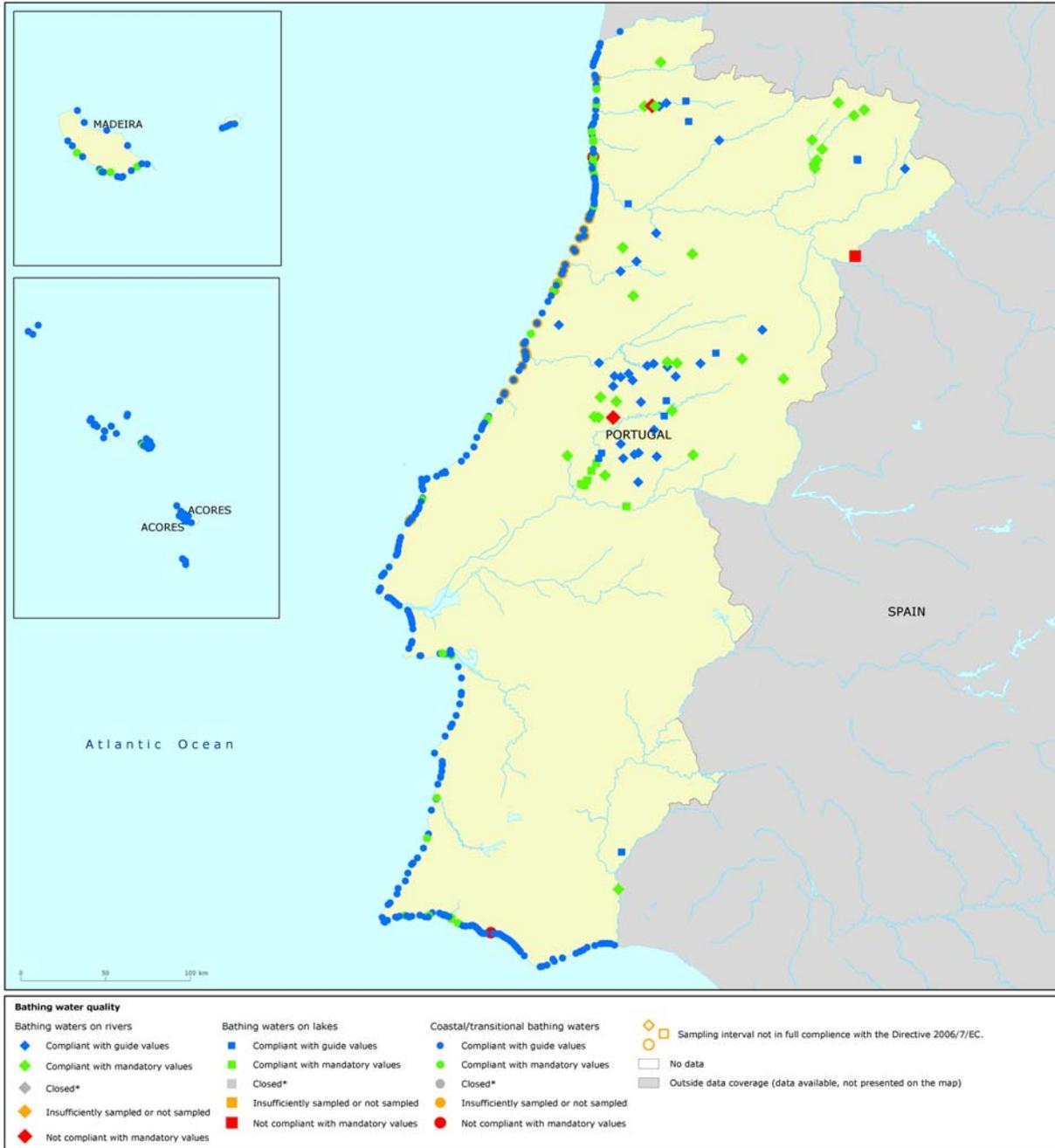
*Less strict rules applied (41 days taken as a maximum difference between two samples for reporting under Directive 2006/7/EC). **Bathing waters which were compliant with the guide values were also compliant with the mandatory values for five parameters under the Directive 76/160/EEC (2009) or the mandatory value for *Escherichia coli* (2010).

Table 3: Results of bathing water quality for coastal bathing waters assessed under Directive 2006/7/EC in Portugal in 2010 (including data from 2007, 2008 and 2009)

PT												
		Number of bathing waters assessed under 2006/7/EC	Excellent quality		Good quality		Sufficient quality		Poor quality		Closed temporarily or throughout the season	
			number	%	number	%	number	%	number	%	number	%
Coastal bathing waters	2010*	51 out of 417 (12.2 %)	51	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2010	45 out of 417 (10.8 %)	45	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

*Less strict rules applied (41 days taken as a maximum difference between two samples for reporting under Directive 2006/7/EC).

Map 1: Bathing waters reported during the 2010 bathing season in Portugal (transition period)



Map 2: Bathing waters reported during the 2010 bathing season in Portugal (Directive 2006/7/EC)



4. Important information as provided by Portuguese authorities

De-listing of bathing waters

The Portuguese authorities reported reasons for de-listing of two bathing waters as follows:

Bathing water identification code	Bathing water name	River Basin District	Reasons for change
C15100005 080507	FARO-RIA	Ribeiras do Algarve	Incompatibility of uses.
PTAQ8F	BARRA	Açores	Use conflict with harbour activities.

Information for the public

The results of the monitoring programme are available online, on the Instituto da Água website at <http://snirh.pt>. A sign indicating whether or not bathing is (temporarily or otherwise) safe or not are placed at the main entrances to bathing areas.

A national report is published every year and is available to the public on the Instituto da Água website, at <http://snirh.pt>.

Programmes to improve the quality of bathing waters

The Bathing Water Quality Improvement Programmes form part of the Strategic Water Supply and Waste Water Treatment Plan for 2007-13 (PEAASAR II).

The purpose of the Strategic Plan is to provide the public with guaranteed access to water supply and waste water treatment systems.

One of the objectives of PEAASAR II is to provide public urban waste water treatment systems for around 90 % of the country's total population, with each integrated waste water treatment system serving at least 70 % of the population concerned.

Under PEAASAR II, investments in supply systems are estimated at EUR 1 600 million. For distribution systems, priority investments for the period 2007-13 are estimated at EUR 2 200 million.

5. More information on bathing water quality in Europe

Of the more than 21 000 bathing areas monitored throughout the European Union in 2010, two-thirds were in coastal waters and the rest in rivers and lakes. The largest number of coastal bathing waters can be found in Italy, Greece, France, Spain and Denmark, while Germany and France have the highest number of inland bathing waters.

During recent years, including the 2010 bathing season, majority of Member States have adjusted their monitoring programmes to meet the requirements of the new bathing water directive (2006/7/EC). Luxembourg was the first country to report under this Directive in 2007. Cyprus, Denmark, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Slovakia, Spain and Sweden started to report under the new directive in 2008. Malta and the Netherlands started to report in 2009, while Austria, Belgium - Walloon Region, France, Greece, Italy, Portugal and Slovenia reported under this Directive for the first time in 2010. Historical data of two microbiological parameters, *Escherichia coli* and intestinal enterococci were sent by Sweden (since 2005), Luxembourg and Malta (since 2006), Belgium - Walloon Region, Greece, Hungary and Portugal (since 2007), and France (since 2009). To conclude, 20 Member States and the Walloon Region of Belgium monitored and reported under the new directive (Directive 2006/7/EC) in 2010.

Assessment of the status of all bathing waters in 2010 under the rules of the new directive (Directive 2006/7/EC) is made for Luxembourg, Malta and Hungary. Assessment of the bathing water quality on a country level for the other countries that reported under the new directive has been done using transition rules. Bathing water quality for individual bathing waters having four year set of data can be seen on the interactive maps and data viewer that are described below.

Three non-EU countries, Croatia, Montenegro and Switzerland have reported monitoring results under the new directive. Switzerland sent data on *Escherichia coli* for all bathing waters but only for some data on intestinal enterococci.

Overall in 2010, 92.1 % of Europe's coastal bathing waters and 90.2 % of inland bathing waters met the minimum water quality standards set by the bathing water directives. During recent years there has been deterioration in bathing water quality but still more than nine in ten bathing waters meet the minimum quality standards. The share of non compliant bathing waters was 1.2 % for coastal bathing waters and 2.8 % for inland bathing waters. The decrease reflects in part year to year variation but also indicates that further work is necessary to ensure that the quality of bathing waters is constantly improved and maintained.

More information on bathing water quality in the European Member States, including the EU summary report, the reports for 27 Member States, Croatia, Montenegro and Switzerland, can be found on the European Commission's bathing water quality website (http://ec.europa.eu/environment/water/water-bathing/index_en.html) and the European Environment Agency's bathing water website (<http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water>). The Institute for Water of the Republic of Slovenia (IWRS), a partner in the EEA European Topic Centre on Inland, Coastal and Marine Waters (ETC/ICM) has produced the reports for the bathing seasons from the 2008 bathing season on. Countries have collaborated in the assessment of bathing water quality and supplied additional information when needed.

Interactive information on bathing water quality

The bathing water section of the Water Information System for Europe (WISE), which is accessible at the EEA bathing water website, allows users to view the quality of the bathing water at more than 22 000 coastal beaches and inland bathing waters across Europe. Users can check bathing water quality on an interactive map or can download data for a selected country or region and make comparisons with previous years.

The WISE map viewer (<http://www.eea.europa.eu/themes/water/interactive//bathing>) is an online map viewer for visualisation of European spatial water data. It includes a lot of interactive layers, allowing water themes to be visualised at different scales. Broad resolutions display the aggregated data by Member State. At finer resolutions the locations of monitoring stations are displayed.

The WISE Bathing Water Quality data viewer (<http://www.eea.europa.eu/themes/water/status-and-monitoring/bathing-water-data-viewer>) combines text and graphical visualisation, providing a quick check on locations and statistics on the quality of coastal and freshwater bathing waters. It also documents how bathing waters have changed throughout Europe in recent years and provides a full summary of Europe's bathing water quality. Users can search information at three spatial levels - country, region and province - and observe specific bathing water locations on the Google Earth, Google maps or Bing maps.

The Eye On Earth - Water Watch application (<http://www.eea.europa.eu/data-and-maps/explore-interactive-maps/eye-on-earth>) allows users to zoom in on a given section of the coast, riverbank or lake, both in street map or, where available, bird's eye viewing formats. A 'traffic-light' indicator (red, amber, green) of bathing water quality, based on the official bathing water data, is put alongside the ratings of people who have visited the bathing site, including any comments users wish to make. For historical data Water Watch uses a simplified index of bathing water quality data. The Czech Republic, Estonia, Finland (one municipality), Hungary, Lithuania, Luxembourg, Malta, the Netherlands, Norway (one municipality), Slovenia, Slovakia and England and Wales were also sending near real time information on bathing water quality to the Eye On Earth application. The bathing water quality from Austria, Belgium, Bulgaria, Croatia, Denmark, France, Germany, Ireland, Italy, Poland, Portugal, Spain, Sweden and Scotland and Northern Ireland was also presented on Eye on Earth Water Watch.

National and local information on bathing water quality

In order to make information to the public more effective, all EU countries have national or local web portals with detailed information for each bathing water. Websites generally include a map search function and public access to the monitoring results both in real time and for previous seasons.

Information on EU bathing water legislation

EU Member States will have to comply with the stricter and more ambitious requirements laid out in Directive 2006/7/EC by 2015 at the latest. The new legislation requires more effective monitoring and management of bathing waters, greater public participation and improved information dissemination. By March 2011 Member States have to have established bathing water profiles. More on the new legislation can be found on the European Commission's websites and on <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0037:0051:EN:PDF>.