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European bathing water quality in 2016

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European Environment Agency

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Foreword

This year, the European Union celebrates the 60th anniversary of the Treaties of Rome and Europeans can be proud of what we have accomplished by working together to improve our quality of life.

This includes the environment. The EU has built up some of the world's highest environmental standards including those on water quality. For over 40 years the EU's Bathing Water Directive, which sets water quality standards and monitoring guidelines, has ensured vast improvements in providing clean bathing water across Europe.

So as we start to plan and look forward to our summer holidays with family and friends it's reassuring to know that thanks to EU policies on green jobs, thousands of dedicated professionals in EU Member States have been working hard to tackle water pollution. Every day their job is focussed on making sure the bathing water at our favourite beaches and other bathing sites are the cleanest and safest they can be.

Water Technicians, Flood Protectors, Environmental Chemists, WasteWater Managers and Sampling Inspectors, all play a vital role in ensuring millions can enjoy the European Union's wealth of bathing sites. We are working hard to ensure that the high value of these green jobs is recognised and celebrated.

This year's bathing water assessment shows once again the continued improvements in the quality of Europe's more than 21 000 coastal and inland swimming areas across the EU's 28 Member States. The report also covers bathing waters in Albania and Switzerland. This report assesses bathing water quality for 2016, which will give a good indication where the quality of bathing water is expected to be good for the 2017 bathing season.

In 2016, 96.3 % of sites met the minimum quality requirements and just over 85 % of bathing water sites met the Bathing Water Directive's most stringent 'excellent' quality standards. While this is fantastic news, we know there remains room for improvement.

We hope that this report and the handy interactive online maps and detailed data on bathing sites, will serve as a good guide for you as you plan your summer ahead. And we encourage you to continue to do your part to help keep our beaches and inland bathing areas clean.

Happy bathing!

Karmenu Vella,
European Commissioner for the Environment, Maritime Affairs and Fisheries

Hans Bruyninckx,
Executive Director, European Environment Agency

Photo: Amalfi Coast © Peter Kristensen

Executive summary

For many Europeans, holidays revolve around bathing water — whether it is snorkelling in the turquoise waters of the Aegean Sea or swimming in a Scandinavian lake or on the rugged Atlantic coast. Therefore, it is natural that people have a keen interest in the quality of the bathing waters at this time of year.

The European Environment Agency (EEA) and the European Commission are therefore pleased to present this year's bathing water report, which will help Europeans make informed choices about the bathing sites they plan to visit. The report assesses bathing water quality in 2016, thereby also indicating where the best quality bathing sites are likely to be found this year.

The European Union and its Member States have been working for years to improve water quality. Today Europe's bathing waters are much cleaner than forty years ago when large quantities of untreated or partially treated municipal and industrial wastewater were discharged into water.

More than 21 000 European coastal and inland bathing water sites reported on their water quality in 2016. As in recent years, the vast majority can boast good quality bathing water. In 2016, 96.3 % of sites met the minimum quality requirements set out in the EU's Bathing Water Directive.

Moreover, more than 85 % of bathing water sites satisfied the directive's most stringent 'excellent' bathing water quality standards. Water quality classified as 'excellent' increased from 78.1 % in 2011 to 85.5 % in 2016.

Swimming at bathing sites of poor water quality can result in illness. In 2016, 1.4 % of bathing water sites were rated as having 'poor' water quality. Between the 2015 and 2016 bathing seasons, the absolute number of bathing waters in Europe classified as 'poor' dropped markedly from 383 to 316. 93 bathing water sites changed status from poor to sufficient quality or better, whilst 72 bathing water sites were downgraded to poor quality. Bathing water sites classified, as 'poor' have to be closed in the following bathing season and must have measures in place to reduce pollution and eliminate hazards to bathers' health.

All reported bathing water sites in Austria, Croatia, Cyprus, Estonia, Greece, Lithuania, Luxembourg, Latvia, Malta, Romania and Slovenia for which classification was possible achieved at least sufficient quality in 2016 (according to minimum quality standards set in the Bathing Water Directive). In five countries, 95 % or more bathing waters were assessed as being of excellent quality: Luxembourg (all 11 reported bathing waters), Cyprus (99 % of all sites), Malta (99 % of all sites), Greece (97 % of all sites), and Austria (95 % of all sites).

The highest rates of bathing waters with poor quality have been found in Ireland (6 bathing waters or 4 %), the United Kingdom (20 bathing waters or 3 %), and Slovakia (one bathing water or 3 %). In comparison with the 2015 season, the absolute number of poor bathing waters has decreased by 19 bathing waters in Spain (from 58 in 2015 to 39 in 2016) and 13 bathing waters in France (from 95 in 2015 to 82 in 2016). The deterioration of the quality of individual bathing water sites was most significant in Italy, where the quality at 22 bathing water sites changed from at least sufficient to poor. In Spain, France, the Netherlands and Denmark, the quality of more than five bathing water sites was downgraded from at least sufficient to poor.

Overall bathing water quality has been improving over time. It is encouraging to observe that more and more bathing water sites are not only reaching minimum quality standards set by the Bathing Water Directive, but are improving their quality to the highest ('excellent') quality standards.

Looking forward, it is important to continue understanding the effectiveness and efficiency of the policy. European legislation and national water policies as well as many years of investment in the better wastewater treatment, sewerage system, and the reduction of pollution from farms have led to Europe's bathing water being much cleaner today than it was decades ago. Citizens are encouraged to get more actively involved in protecting the environment and helping to improve Europe's bathing areas.

1 Introduction

Europe has a wide diversity of beautiful beaches and bathing areas, and every year millions of Europeans spend their weekends at local beaches. The coasts of Mediterranean Sea and other popular European bathing destinations attract also large numbers of foreign tourists. As this year's bathing season approaches, many people have a keen interest in the quality of water in which they will bathe. To help them make informed choices, the European Commission and the European Environment Agency (EEA) ([1]) are therefore pleased to present this year's bathing water report.

Europe is the world's no. 1 tourist destination, and the tourism industry has become a key sector of the European economy, generating over 10 % of EU GDP (directly or indirectly) and employing around 12 million citizens. The competitiveness of the European tourism industry is dependent on the quality of tourist destinations, including the quality of bathing water at those destinations.

Forty years ago, large quantities of uncontrolled, untreated or partially treated wastewater were discharged into many of Europe's bathing waters. An increasing number of beach visitors, combined with dirty beaches, concerns over the health of swimmers and growing environmental awareness, paved the way for the first Bathing Water Directive (76/160/EEC) adopted in 1976. The overall quality of bathing water has steadily improved since then. A revised version of the directive followed in 2006 ([2]), updating the measures of the 1976 legislation and simplifying its management and surveillance methods. This revised directive also provides for better and timelier public information about bathing water quality.

The assessment of the bathing water quality under the Bathing Water Directive makes use of the values of two microbiological parameters: intestinal enterococci and Escherichia coli. All bathing waters have to be sampled in accordance with monitoring requirements ([3]) set out in the Bathing Water Directive. These include compilation of a four-year dataset for the assessment of bathing water quality ([4]). If the sampling frequency of bathing water has not been satisfied, it can still be quality assessed if at least four samples per season ([5]) are available, and if the bathing-water sample dataset contains an adequate amount of samples ([6]). Bathing water sites are accordingly classified in one of the bathing-water quality classes (excellent, good, sufficient or poor). More information regarding the bathing water legislation, monitoring and management provisions can be found in the 2016 EEA report European bathing water quality in 2015 (Chapters 1 and 2) ([7]) and on the European Commission website ([8]) dedicated to bathing water.

([1]) Since 2009, the EEA and its European Topic Centre on Inland, Coastal and Marine Waters have prepared the annual European bathing water quality report.
([2]) Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC, OJ L 64, 4.3.2006, pp. 37-51.
([3]) These monitoring requirements are: taking of a pre-season sample shortly before the start of the bathing season, a minimum of four samples per season (three samples are sufficient if the season does not exceed eight weeks or if the region is subject to special geographical constraints) and sampling dates are to be distributed throughout the bathing season, with the interval between sampling dates never exceeding one month. If these rules are satisfied, the bathing water is categorised as sampling frequency satisfied. If at least one monitoring requirement is not fulfilled the bathing water is categorised as sampling frequency not satisfied.
([4]) A dataset compiled in relation to fewer than four bathing seasons may be used provided the conditions laid out in Artticle 4 of Directive 2006/7/EC are fulfilled.
([5]) Three samples if the season does not exceed eight weeks or the region is subject to special geographical constraints.
([6]) In accordance with Article 4 of Directive 2006/7/EC.
([7]) http://www.eea.europa.eu/publications/european-bathing-water-quality-2015.
([8]) http://ec.europa.eu/environment/water/water-bathing/index_en.html.

2 Integrated management of bathing water quality in Europe

Pollution gets into the water from many sources and takes many forms. One of the most prevalent is faecal contamination from sewage and animals. Faecal contamination is a cause of concern for public health and can lead to poor quality bathing water. Pollution from sewage is often the result of storm water overflows of sewage or water draining from farms and farmland or from poorly maintained cesspits and septic tanks. Misconnected plumbing — where foul water, such as from toilets, enters directly into surface waters constitutes another potential source of pollution. Such pollution usually increases during heavy rains and floods, when pollution is washed into rivers and seas, and by overflowing sewerage networks. Swimming in contaminated water can result in illness. The most frequent adverse health outcome associated with exposure to faecally contaminated recreational water is intestinal illness. *Escherichia coli*, when transmitted to the human body through contaminated water, can cause diarrhoea and other illnesses of the intestinal tract. Febrile respiratory illness (AFRI), which is a more severe health outcome than gastroenteritis can also occur in some cases ([9]).

Many years of investment in the sewerage system and better wastewater treatment have led to Europe's bathing water being much cleaner today than it was decades ago, but as the results show, there are still bathing water sites with poor quality. The Bathing Water Directive specifies measures to be taken in respect to 'poor' bathing waters ([10]): Where bathing water quality is poor, it is imperative to assess the sources of pollution. Bathing water profiles required by Article 6 of the Directive should provide an up-to-date indication of pollution sources in the bathing catchment area and, together with historical data on rainfall, stream flow and sea currents, should also include information on the sources to be targeted with management measures. At the bathing sites where the causes of poor quality are not known in detail, special studies to explore the sources might be needed.

Management measures are primarily implemented at those bathing water sites that have only sufficient or poor water quality.

- Implementation of the Urban Waste Water Treatment Directive (UWWTD) and a focus on reducing sewer overflow have successfully led to reduced pollution and improved quality at several low quality bathing water sites. However, for some bathing water sites, upgrading of wastewater treatment, for example with ultraviolet light disinfection, may still be needed to ensure good bathing water quality.

- Bathing water affected by water draining from farms and farmland, and from scattered houses with misconnected drains may need detailed inventories to find and stop the sources.

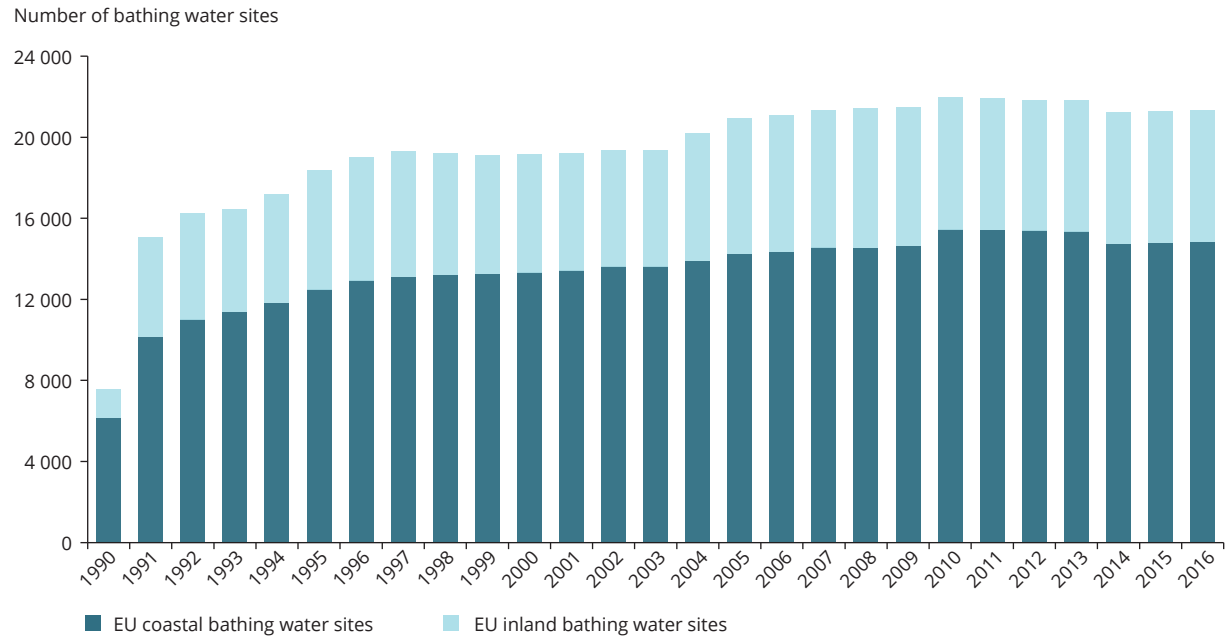
- Bathing water affected by large numbers of dogs or resting birds may need to consider restricting the number of animals, or changing the location of the bathing water site.

- In addition to measures to reduce pollution at source and rainwater storage basins, bathing water affected by heavy rains and storm water overflows may also need an effective modelling and warning system to advise bathers against entering the water after these short-term pollution events.

There were 21 667 bathing water sites monitored in Europe in 2016, of which 21 344 were in the 28 EU Member States. Switzerland and Albania also monitored and reported on the quality of their 323 bathing water sites. In 2016, 69 % of all sites were coastal bathing waters (including transitional waters), while 31 % were situated on rivers and lakes.

([9]) WHO, 2003, Guidelines for safe recreational water environments, Volume 1: Coastal and fresh waters.
([10]) Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC, OJ L 64, 4.3.2006, pp. 37-51.

Figure 2.1 Total number of bathing waters reported in the European Union since 1990



Source: WISE bathing water quality database (data from annual reports by EU Member States).

Photo: Madeira © Peter Kristensen

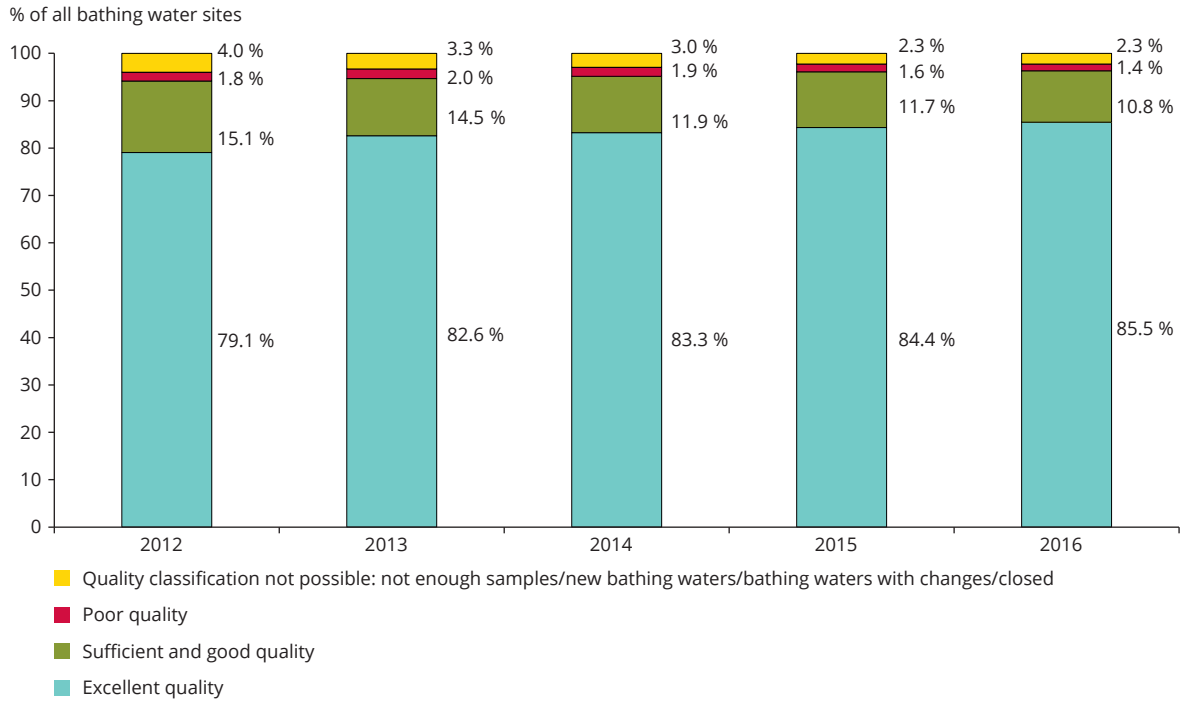
3 Bathing water quality and trends in 2016

During 2016 bathing season, all EU Member States managed their bathing waters according to the provisions set out in the Bathing Water Directive (2006/7/EC). Before the beginning of the bathing season, countries identified national bathing water sites, established respective monitoring calendars and defined the length of the bathing season. They ensured that the sampling and analysis of bathing water quality during the season took place in accordance with the reference methods specified in the directive.

The EEA checked all reported bathing water sites for the monitoring requirements set in the Bathing Water Directive. Bathing water sites that had not met the criteria were categorised as 'sampling frequency not satisfied'. The sampling frequency was not sufficient at 506 sites in the EU Member States (see Annex 1). In comparison with the 2015 season, when 324 bathing water sites did not meet at least one of the sampling frequency conditions, this shows deterioration in monitoring of the bathing water according to the provisions of the directive. The most common reasons for not meeting these criteria are insufficient intervals between samples (longer than one month) and missing samples that should be taken shortly before the season. The highest number of such bathing waters are in Italy (263 bathing waters (5 %)), Croatia (67 bathing waters (7 %)) and Sweden (47 bathing waters (11 %)). Nevertheless, there has been a marked drop in the proportion of EU bathing water sites with 'sampling frequency not satisfied', from 5.8 % in 2011 to 2.4 % in 2016.

Minimum water quality standards (meaning at least 'sufficient' bathing water quality) have been met by 96.3 % of all EU bathing water sites reported for the 2016 bathing season. The share of poor quality bathing water sites dropped to 1.4 % in 2016 from 1.6 % in 2015. The share of bathing water sites in the EU with excellent water quality has steadily increased from 79.1 % in 2012 to 85.5 % in 2016. Figure 3.1 shows

Figure 3.1 Overall bathing water quality in the European Union between 2012 and 2016



overall bathing water quality for the period of the last four bathing seasons which is the last assessment period according to the Directive.

Overall bathing water quality has thus been improving over time. It is encouraging to observe not only that more and more bathing water sites have not only reached minimum quality standards set by the Bathing Water Directive, but also that more and more bathing water sites have improved their quality to the highest (excellent) quality standards.

3.1 Coastal and inland bathing water quality

In 2016, monitoring was established on 14 821 coastal and 6 523 inland bathing waters (situated on rivers and lakes). All 23 EU Member States with access to the sea had coastal bathing water sites whereas inland bathing site where monitored in 26 EU Member States. No inland bathing waters were identified in Cyprus and Malta.

Quality of coastal bathing waters is in general better than that of inland bathing waters. This is mainly because the capacity for self-purification of coastal areas is higher than that of inland bathing waters.

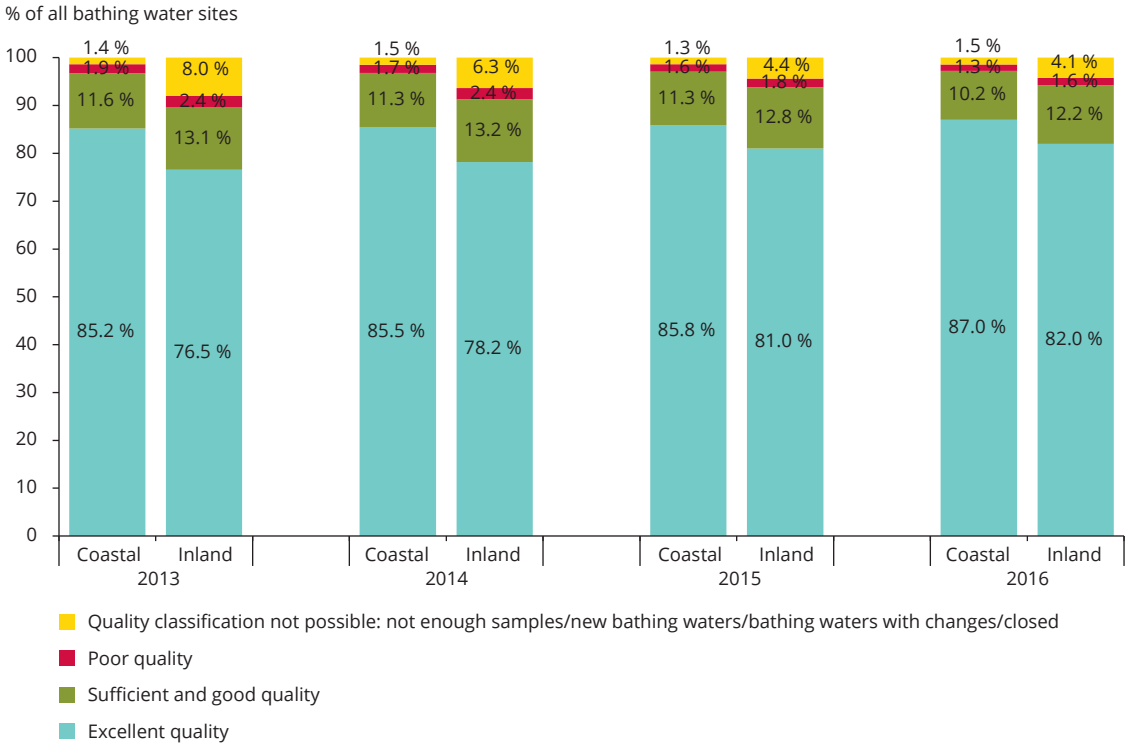
Moreover, many central European inland bathing waters are situated on relatively small lakes and ponds as well as low flow rivers, which, especially in the summer, are more susceptible to short-term pollutions caused by summer heavy rains than coastal areas.

In 2016, 97.2 % of all coastal bathing waters and 94.3 % of all inland bathing waters in the EU achieved at least 'sufficient' quality — a minimum quality standard established by the Bathing Water Directive. In comparison with the 2015 season, the overall bathing water quality has slightly improved.

Nevertheless, the share of coastal bathing waters of excellent quality (the highest quality standard) has increased by 1.2 percentage points whereas the share of inland bathing waters of excellent quality has increased by 1.0 percentage points. In the three year period 2013-2016, the share of inland bathing waters of excellent quality increased markedly from 76.5 % to 82.0 %. The share of excellent quality bathing water sites is increasing due to water quality improvement at sites that were formerly of poor or sufficient quality.

The share of coastal bathing waters of poor quality decreased from 1.9 % in 2013 to 1.3 % in 2016 and for inland bathing waters from 2.4 % in 2013 to 1.6 % in

Figure 3.2 Coastal and inland bathing quality in the European Union between 2013 and 2016



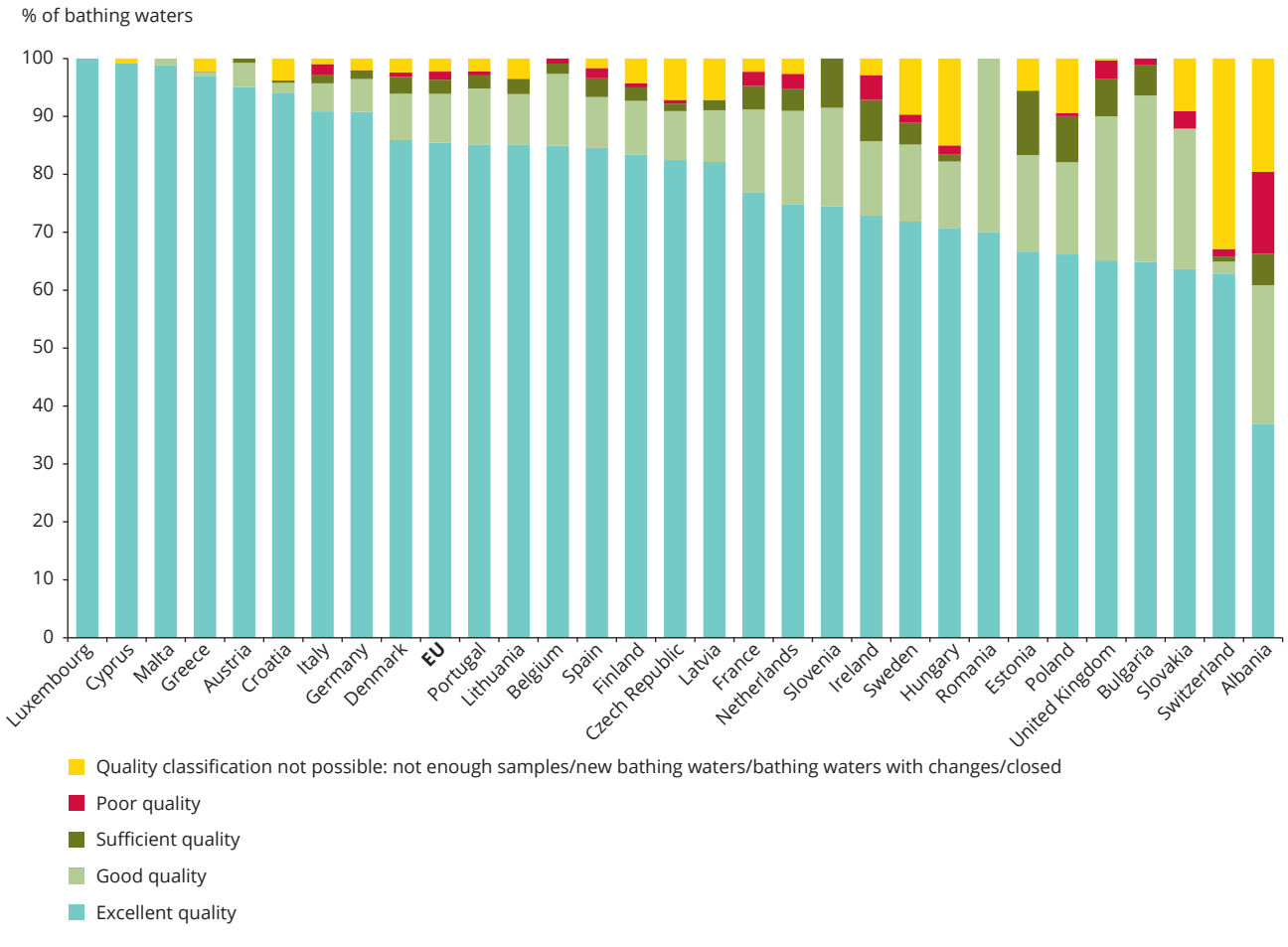
2016. The share of bathing waters with poor quality is decreasing due to two reasons. Either water quality has improved at some sites or bathing sites with poor quality have been excluded from the monitoring programme because permanent bathing prohibition was introduced. Bathing waters of poor quality might be excluded from the monitoring programme if the management measures for quality improvement are disproportionately expensive or too difficult to perform.

3.2 Bathing water quality by country in 2016

European bathing water quality results for each country in the 2016 bathing season are shown in Figure 3.3 below. Tabular information regarding 2016 bathing water quality in Europe by country is available in Annexes 2-4. All reported bathing water sites in Austria, Croatia, Cyprus, Estonia, Greece, Lithuania, Luxembourg, Latvia, Malta, Romania and Slovenia achieved at least sufficient quality in 2016 (according to minimum quality standards set by the Bathing Water Directive). In five countries, 95 % or more of bathing waters were assessed as being of excellent quality: Luxembourg (all 11 reported bathing waters), Cyprus (99.1 % of all sites), Malta (98.9 % of all sites), Greece (97 % of all sites) and Austria (95.1 % of all sites).

Between the 2015 and 2016 bathing seasons, the number of poor bathing waters in Europe dropped markedly from 383 to 316. The three countries with the highest numbers of such sites are Italy (100 bathing water sites or 1.8 %), France (82 sites or 2.4 %) and Spain (39 sites or 1.8 %). Nevertheless, in comparison with the 2015 season, the number of poor bathing waters decreased by 19 bathing waters in Spain (from 58 in 2015 to 39 in 2016) and 13 bathing waters in France (from 95 in 2015 to 82 in 2016). The highest rates of bathing waters with poor quality were found in Ireland (6 bathing waters or 4.3 %), the United Kingdom (20 bathing waters or 3.2 %), and Slovakia (one bathing water or 3 %).

Figure 3.3 Bathing water quality in 2016 for the 28 EU Member States, Albania and Switzerland



In Albania, assessed under provisions of the revised Bathing Water Directive for the second time, 13 bathing water sites (or 14.1 %) were classified as poor. This is a major improvement in comparison with 2015 season when 31 bathing water sites (or 39.1 %) were quality assessed as 'poor'. This improvement can be associated with the five wastewater treatment plants constructed in recent years, which provide wastewater treatment for almost half a million residents and contribute to better bathing water quality.

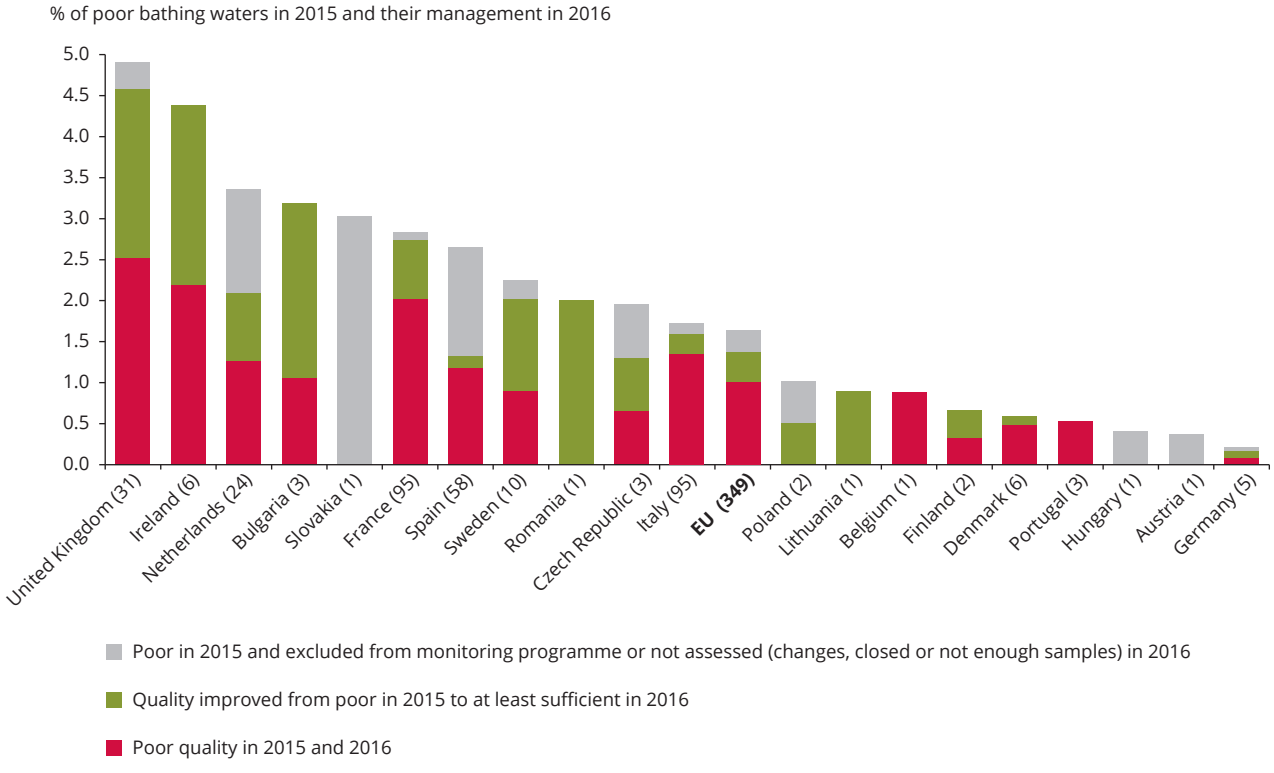
Some countries had a large share of bathing waters where quality classification was not possible because the waters were either newly opened; closed; not yet assessed due to changes; or because the required amount of samples for assessment had not been provided. More than 10 % of bathing waters could not be quality assessed in Switzerland (32.9 %), Albania (19.6 %) and Hungary (15.0 %).

3.3 Improvements and deterioration of bathing water quality

Between 2015 and 2016, 94 bathing water sites in Europe changed status from poor quality to sufficient quality or better. The countries with the highest number of bathing water sites where the water quality improved from poor to at least sufficient were France (24 sites), Albania (16 sites) and the United Kingdom (13 sites).

However, in the same period, 72 bathing water sites changed their status from at least sufficient quality to poor quality. This deterioration of the quality of individual bathing water sites was most significant in Italy, where the quality at 22 bathing water sites changed from at least sufficient to poor. Deterioration in quality is also significant for Spain (12), France (12), the Netherlands (8) and Denmark (5), where the

Figure 3.4 Status of bathing waters assessed in 2015 as poor

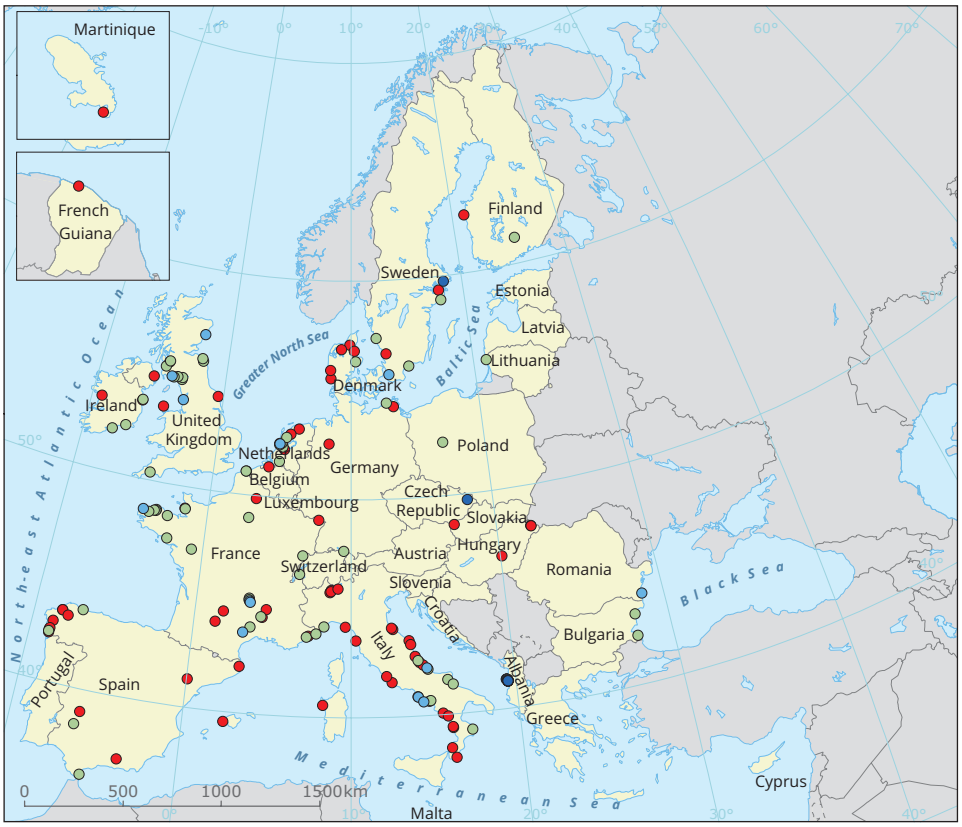


quality of five or more bathing water sites was downgraded from at least sufficient to poor.

For the 2017 bathing season, all bathing sites with poor water quality in the 2016 season should be subject to prohibition of bathing or at least advise against it. In addition, appropriate measures to prevent, reduce or eliminate the causes of pollution should be implemented before the bathing water can be reopened.

Despite efforts made at some bathing sites to reduce and eliminate pollution, problems causing poor water quality persist. Affected bathing water sites must then be closed to eliminate hazards to bathers' health. A permanent bathing prohibition or permanent advice against bathing must be put in place at bathing water sites that have been classified as poor for five consecutive years. In 2016, this was the case for 43 bathing water sites: 25 in Italy, eight in France, seven in Spain, two in Denmark and one in the Netherlands.

Map 3.1 Improvements and deteriorations in bathing water quality



Improvements and deteriorations in bathing water quality

Bathing water quality improved from poor in 2015 to sufficient, good or excellent in 2016

- Excellent
- Good
- Sufficient

Bathing water quality deteriorated from sufficient, good or excellent in 2015 to poor in 2016

- Poor
- EU Member States and other countries with results
- Outside coverage

3.4 Informing the public about bathing water quality

Besides calling for more effective monitoring and management of bathing water, the revised Bathing Water Directive also requires greater public participation and improved information dissemination. The directive obliges Member States to inform citizens about bathing water management, bathing water quality, potential threats to bathing water quality, and bathing. Today, countries have national or local websites with detailed information on each bathing water site ([11]). These websites generally include a map search function and allow public access to monitoring results, both in real time and for previous seasons.

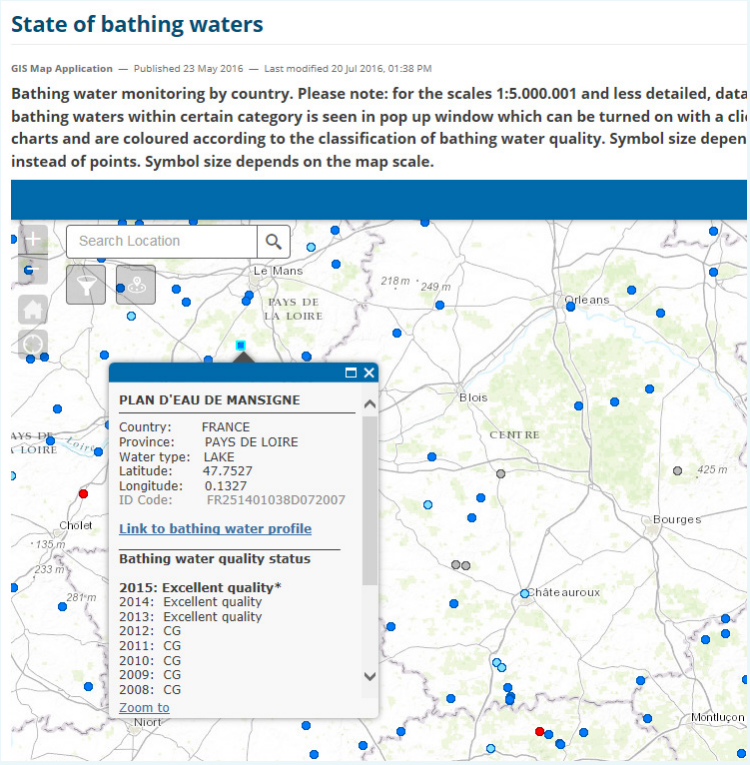
At the European level, bathing water information is made available to the public through the EEA's bathing water website ([12]), which allows users to view bathing water quality at more than 21 000 coastal beaches and inland sites across Europe. Users can check bathing water quality on an interactive map, download data and a report for a country and make comparisons with previous years.

Today, the public has access to high-quality information on bathing water quality, and can thus become more actively involved in protecting the environment and helping to improve Europe's bathing areas.

Bathing water quality near you

Why not take a few minutes to find out how clean the bathing water is near you or your summer location?

Visit the interactive map viewer on bathing water quality and simply enter the geographical area of your interest at: http://www.eea.europa.eu/themes/water/interactive/bathing/state-of-bathing-waters or use one of the national or regional websites for bathing water quality.



([11]) National or regional websites for bathing water quality available at http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water/state/national-or-regional-pages.

([12]) EEA bathing water website, available at http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water/state.

This year, the Blue Flag programme is celebrating its 30 year anniversary. Blue Flag is an eco-label that is awarded to beaches, marinas and sustainable boating tourism operators. Although the Blue Flag is not awarded by the EU, the EU Bathing Water Directive criteria on excellent bathing water quality are used as the basis for its water quality criteria. In addition, the Blue Flag programme uses other criteria beyond water quality, including on environmental education, safety and accessibility when awarding the label to specific beaches.

Since its creation the Blue Flag programme has enjoyed steady growth in both the number of sites and the participating countries. 452 Blue Flag sites were selected in Europe in its debut year of 1987. This number currently stands at more than 4 300 in sites across the world.Over the years, the Blue Flag programme has expanded from focusing only on beaches to marinas and sustainable boating operators.

More information about the Blue Flag programme can be found here: www.blueflag.global.

Photo: Gilleleje, Denmark © Peter Kristensen

Annex 1 Number of bathing waters in the 2016 season with requirement on sampling frequency satisfied and not satisfied

Country	Total number of bathing water sites in 2016	Bathing waters with sampling frequency satisfied *	Bathing waters with sampling frequency not satisfied **	Bathing waters that are new, changed or closed ***		
				Closed	New	Changes
AT (Austria)	264	264	0	0	0	0
BE (Belgium)	113	113	0	0	0	0
BG (Bulgaria)	94	94	0	0	0	0
CY (Cyprus)	113	112	1	0	0	0
CZ (The Czech Republic)	154	131	15	4	4	0
DE (Germany)	2 292	2 214	37	7	26	8
DK (Denmark)	1 036	1 005	7	19	5	0
EE (Estonia)	54	51	2	0	1	0
ES (Spain)	2 191	2 135	21	4	29	0
FI (Finland)	301	288	8	0	4	1
FR (France)	3 359	3 275	15	24	43	2
GR (Greece)	1 542	1 506	1	1	34	0
HR (Croatia)	949	846	67	0	36	0
HU (Hungary)	253	215	17	0	21	0
IE (Ireland)	140	136	0	0	3	1
IT (Italy)	5 518	5 230	263	0	21	2
LT (Lithuania)	114	110	0	0	3	1
LU (Luxembourg)	11	11	0	0	0	0
LV (Latvia)	56	52	0	0	4	0
MT (Malta)	87	87	0	0	0	0
NL (The Netherlands)	718	699	0	2	11	6
PL (Poland)	201	182	1	0	18	0
PT (Portugal)	579	565	0	0	13	1
RO (Romania)	50	50	0	0	0	0
SE (Sweden)	444	391	47	0	6	0
SI (Slovenia)	47	47	0	0	0	0
SK (Slovakia)	33	30	0	3	0	0
UK (The United Kingdom)	631	629	0	2	0	0
EU	**21 344**	**20 468**	**502**	**66**	**282**	**22**
AL (Albania)	92	56	18	0	0	18
CH (Switzerland)	231	149	8	4	70	0
Europe	**21 667**	**20 673**	**528**	**70**	**352**	**40**

Note: * These bathing waters have been monitored according to Bathing Water Directive provisions (monitoring frequency satisfied and have pre-season sample) are not new, have no changes, and were not closed in 2016. Such bathing waters have been quality-classified (excellent, good, sufficient, poor).

** These bathing waters have either not been monitored according to Bathing Water Directive provisions (monitoring frequency not satisfied) are not new, have no changes, or were closed in 2016. They may be quality-classified if there is a reasonable volume of samples available.

*** These bathing waters are closed, new, or have been subject to changes that could affect bathing water quality.

Annex 2 Bathing water quality results in 2016

Country	Total number of bathing water sites	Excellent quality		Good quality		Sufficient quality		Poor quality		Quality classification not possible *	
	2016 (2015)	Number	%	Number	%	Number	%	Number	%	Number	%
AT (Austria)	264 (265)	251	95.1	11	4.2	2	0.8	0	0.0	0	0.0
BE (Belgium)	113 (113)	96	85.0	14	12.4	2	1.8	1	0.9	0	0.0
BG (Bulgaria)	94 (94)	61	64.9	27	28.7	5	5.3	1	1.1	0	0.0
CY (Cyprus)	113 (113)	112	99.1	0	0.0	0	0.0	0	0.0	1	0.9
CZ (The Czech Republic)	154 (153)	127	82.5	13	8.4	2	1.3	1	0.6	11	7.1
DE (Germany)	2 292 (2 292)	2 081	90.8	130	5.7	30	1.3	5	0.2	46	2.0
DK (Denmark)	1 036 (1 028)	890	85.9	83	8.0	30	2.9	8	0.8	25	2.4
EE (Estonia)	54 (54)	36	66.7	9	16.7	6	11.1	0	0.0	3	5.6
ES (Spain)	2 191 (2 189)	1 853	84.6	192	8.8	71	3.2	39	1.8	36	1.6
FI (Finland)	301 (301)	251	83.4	28	9.3	7	2.3	2	0.7	13	4.3
FR (France)	3 359 (3 355)	2 581	76.8	482	14.3	137	4.1	82	2.4	77	2.3
GR (Greece)	1 542 (1 542)	1 496	97.0	10	0.6	1	0.1	0	0.0	35	2.3
HR (Croatia)	949 (935)	893	94.1	16	1.7	4	0.4	0	0.0	36	3.8
HU (Hungary)	253 (246)	179	70.8	29	11.5	3	1.2	4	1.6	38	15.0
IE (Ireland)	140 (137)	102	72.9	18	12.9	10	7.1	6	4.3	4	2.9
IT (Italy)	5 518 (5 518)	5 013	90.8	268	4.9	84	1.5	100	1.8	53	1.0
LT (Lithuania)	114 (112)	97	85.1	10	8.8	3	2.6	0	0.0	4	3.5
LU (Luxembourg)	11 (11)	11	100.0	0	0.0	0	0.0	0	0.0	0	0.0
LV (Latvia)	56 (55)	46	82.1	5	8.9	1	1.8	0	0.0	4	7.1
MT (Malta)	87 (87)	86	98.9	1	1.1	0	0.0	0	0.0	0	0.0
NL (The Netherlands)	718 (714)	537	74.8	116	16.2	27	3.8	19	2.6	19	2.6
PL (Poland)	201 (197)	133	66.2	32	15.9	16	8.0	1	0.5	19	9.5
PT (Portugal)	579 (569)	493	85.1	56	9.7	13	2.2	4	0.7	13	2.2
RO (Romania)	50 (50)	35	70.0	15	30.0	0	0.0	0	0.0	0	0.0
SE (Sweden)	444 (445)	319	71.8	59	13.3	17	3.8	6	1.4	43	9.7
SI (Slovenia)	47 (47)	35	74.5	8	17.0	4	8.5	0	0.0	0	0.0
SK (Slovakia)	33 (33)	21	63.6	8	24.2	0	0.0	1	3.0	3	9.1
UK (The United Kingdom)	631 (633)	411	65.1	157	24.9	41	6.5	20	3.2	2	0.3
EU	**21 344 (21 288)**	**18 246**	**85.5**	**1 797**	**8.4**	**516**	**2.4**	**300**	**1.4**	**485**	**2.3**
AL (Albania)	92 (78)	34	37.0	22	23.9	5	5.4	13	14.1	18	19.6
CH (Switzerland)	231 (216)	145	62.8	5	2.2	2	0.9	3	1.3	76	32.9
Europe	**21 575 (21 582)**	**18 425**	**85.0**	**1 824**	**8.4**	**523**	**2.4**	**316**	**1.5**	**579**	**2.7**

Note: * Not enough samples/new bathing waters/bathing waters with changes/closed.

Source: EEA.

Annex 3 Coastal bathing water quality results in 2016

Country	Total number of bathing water sites	Excellent quality		Good quality		Sufficient quality		Poor quality		Quality classification not possible *	
	2016 (2015)	Number	%	Number	%	Number	%	Number	%	Number	%
BE (Belgium)	42 (42)	38	90.5	4	9.5	0	0.0	0	0.0	0	0.0
BG (Bulgaria)	90 (90)	57	63.3	27	30.0	5	5.6	1	1.1	0	0.0
CY (Cyprus)	113 (113)	112	99.1	0	0.0	0	0.0	0	0.0	1	0.9
DE (Germany)	367 (367)	295	80.4	51	13.9	11	3.0	1	0.3	9	2.5
DK (Denmark)	921 (918)	785	85.2	81	8.8	29	3.1	8	0.9	20	2.2
EE (Estonia)	27 (27)	14	51.9	6	22.2	5	18.5	0	0.0	2	7.4
ES (Spain)	1 949 (1 948)	1 732	88.9	135	6.9	45	2.3	19	1.0	18	0.9
FI (Finland)	77 (77)	45	58.4	17	22.1	6	7.8	2	2.6	7	9.1
FR (France)	2 066 (2 063)	1 634	79.1	308	14.9	78	3.8	36	1.7	10	0.5
GR (Greece)	1 540 (1 540)	1 495	97.1	9	0.6	1	0.1	0	0.0	35	2.3
HR (Croatia)	922 (908)	889	96.4	13	1.4	3	0.3	0	0.0	17	1.8
IE (Ireland)	131 (128)	94	71.8	17	13.0	10	7.6	6	4.6	4	3.1
IT (Italy)	4 864 (4 866)	4 414	90.7	237	4.9	75	1.5	95	2.0	43	0.9
LT (Lithuania)	16 (16)	14	87.5	0	0.0	2	12.5	0	0.0	0	0.0
LV (Latvia)	33 (33)	28	84.8	4	12.1	0	0.0	0	0.0	1	3.0
MT (Malta)	87 (87)	86	98.9	1	1.1	0	0.0	0	0.0	0	0.0
NL (The Netherlands)	93 (92)	75	80.6	14	15.1	1	1.1	0	0.0	3	3.2
PL (Poland)	89 (83)	50	56.2	22	24.7	5	5.6	1	1.1	11	12.4
PT (Portugal)	464 (460)	413	89.0	35	7.5	6	1.3	4	0.9	6	1.3
RO (Romania)	49 (49)	34	69.4	15	30.6	0	0.0	0	0.0	0	0.0
SE (Sweden)	245 (246)	169	69.0	32	13.1	14	5.7	4	1.6	26	10.6
SI (Slovenia)	21 (21)	21	100.0	0	0.0	0	0.0	0	0.0	0	0.0
UK (The United Kingdom)	615 (617)	400	65.0	153	24.9	40	6.5	20	3.3	2	0.3
EU	**14 821 (14 791)**	**12 894**	**87.0**	**1 179**	**8.0**	**336**	**2.3**	**197**	**1.3**	**215**	**1.5**
AL (Albania)	92 (78)	34	37.0	22	23.9	5	5.4	13	14.1	18	19.6
Europe	**14 913 (14 869)**	**12 928**	**86.7**	**1 201**	**8.1**	**341**	**2.3**	**210**	**1.4**	**233**	**1.6**

Note: * Not enough samples/new bathing waters/bathing waters with changes/closed.

Source: EEA.

Annex 4 Inland bathing water quality results in 2016

Country	Total number of bathing water sites	Excellent quality		Good quality		Sufficient quality		Poor quality		Quality classification not possible *	
	2016 (2015)	Number	%	Number	%	Number	%	Number	%	Number	%
AT (Austria)	264 (265)	251	95.1	11	4.2	2	0.8	0	0.0	0	0.0
BE (Belgium)	71 (71)	58	81.7	10	14.1	2	2.8	1	1.4	0	0.0
BG (Bulgaria)	4 (4)	4	100.0	0	0.0	0	0.0	0	0.0	0	0.0
CZ (The Czech Republic)	154 (153)	127	82.5	13	8.4	2	1.3	1	0.6	11	7.1
DE (Germany)	1 925 (1 925)	1 786	92.8	79	4.1	19	1.0	4	0.2	37	1.9
DK (Denmark)	115 (110)	105	91.3	4	3.5	1	0.9	0	0.0	5	4.3
EE (Estonia)	27 (27)	22	81.5	3	11.1	1	3.7	0	0.0	1	3.7
ES (Spain)	242 (241)	121	50.0	57	23.6	26	10.7	20	8.3	18	7.4
FI (Finland)	224 (224)	206	92.0	11	4.9	1	0.4	0	0.0	6	2.7
FR (France)	1 293 (1 292)	947	73.2	175	13.5	59	4.6	46	3.6	67	5.2
GR (Greece)	2 (2)	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0
HR (Croatia)	27 (27)	4	14.8	3	11.1	1	3.7	0	0.0	19	70.4
HU (Hungary)	253 (246)	179	70.8	29	11.5	3	1.2	4	1.6	38	15.0
IE (Ireland)	9 (9)	8	88.9	1	11.1	0	0.0	0	0.0	0	0.0
IT (Italy)	654 (652)	599	91.6	31	4.7	9	1.4	5	0.8	10	1.5
LT (Lithuania)	98 (96)	83	84.7	10	10.2	1	1.0	0	0.0	4	4.1
LU (Luxembourg)	11 (11)	11	100.0	0	0.0	0	0.0	0	0.0	0	0.0
LV (Latvia)	23 (22)	18	78.3	1	4.3	1	4.3	0	0.0	3	13.0
NL (The Netherlands)	625 (622)	462	73.9	102	16.3	26	4.2	19	3.0	16	2.6
PL (Poland)	112 (114)	83	74.1	10	8.9	11	9.8	0	0.0	8	7.1
PT (Portugal)	115 (109)	80	69.6	21	18.3	7	6.1	0	0.0	7	6.1
RO (Romania)	1 (1)	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
SE (Sweden)	199 (199)	150	75.4	27	13.6	3	1.5	2	1.0	17	8.5
SI (Slovenia)	26 (26)	14	53.8	8	30.8	4	15.4	0	0.0	0	0.0
SK (Slovakia)	33 (33)	21	63.6	8	24.2	0	0.0	1	3.0	3	9.1
UK (The United Kingdom)	16 (16)	11	68.8	4	25.0	1	6.3	0	0.0	0	0.0
EU	**6 523 (6 497)**	**5 352**	**82.0**	**618**	**9.5**	**180**	**2.8**	**103**	**1.6**	**270**	**4.1**
CH (Switzerland)	231 (216)	145	62.8	5	2.2	2	0.9	3	1.3	76	32.9
Europe	**6 754 (6 713)**	**5 497**	**81.4**	**623**	**9.2**	**182**	**2.7**	**106**	**1.6**	**346**	**5.1**

Note: * Not enough samples/new bathing waters/bathing waters with changes/closed.

Source: EEA.

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