



MINISTRY OF  
ENVIRONMENT  
ENERGY &  
CLIMATE  
CHANGE

**Special Secretariat for Water**

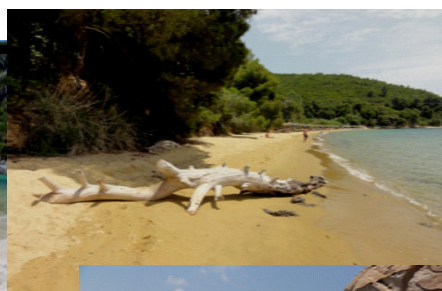
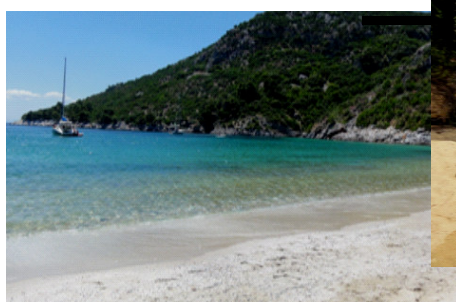
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# BATHING WATER QUALITY IN GREECE

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**Reference year 2011**

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**December 2011**

## INTRODUCTION

The bathing water quality for 2011 was monitored and assessed in the framework of the *Monitoring Programme of Bathing Water Quality* that was implemented under the supervision of the Special Secretariat for Water of the Ministry for the Environment, Energy and Climate Change.

The implementation of the 2011 monitoring programme was based on the provisions of the Directive 2006/7/EC concerning the management of bathing water quality and repealing Directive 76/160/EEC, which is incorporated to Greek legislation with the Ministerial Decree 8600/416/E103/2009 (Official Journal of the Greek Government 356B/2009).

The *length of the bathing season for 2011* was determined, with a ministerial decision, from June 1<sup>st</sup> to October 31<sup>st</sup>.

In total *2155 bathing water sites* were monitored, 6 corresponding to inland waters (lakes) and the rest 2149 to coastal waters.

The *quality parameters* monitored were selected in accordance to the obligations of the Directive 2006/7/EC and may be distinguished in two groups:

- ✓ **Microbiological:** “Escherichia coli” and “Intestinal enterococci”, determined in accordance to the reference methods of analysis of Annex I of the Directive 2006/7/EC and
- ✓ **Physicochemical:** tarry residues, glass, plastic, rubber or any other waste.

The programme was implemented normally during the bathing water season for 2011, without delays and with the frequency that is specified in Directive 2006/7/EC.

To each bathing water site **6 samples** were taken, one pre-seasonal and five samples distributed throughout the bathing season, with the interval between sampling dates never exceeding 31 days.

The coordinates and the description were redefined more accurately for all the monitoring points.

## ASSESSMENT FOR 2011

The *bathing water quality assessment* was performed according to the provisions of article 4 and Annex I of the Directive 2006/7/EC on the basis of the set of bathing water quality data compiled for 2011 in relation to that bathing season and the three preceding bathing seasons (i.e. 2008-2010) based upon percentile evaluation of the log<sub>10</sub> normal probability density function of microbiological data as prescribed in Annex II.

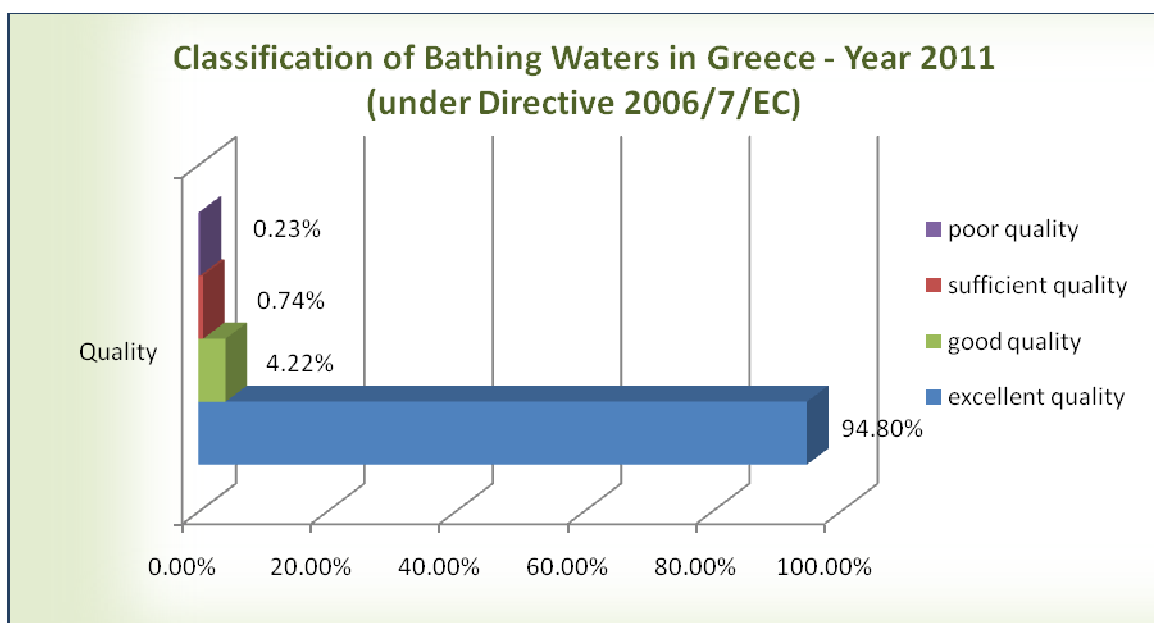
As a result of the aforementioned analysis bathing waters were classified in the following categories/classes:

Class	Definition
1	Excellent quality
2	Good quality
3	Sufficient quality
4	Poor quality

The evaluation of the results from the 2155 bathing sites gave the following results:

- **2043** bathing waters were classified as of “**excellent quality**”. Two of these are located in inland waters and 2041 in coastal waters.
- **91** bathing waters were classified as of “**good quality**”. Four of these are located in inland waters and 87 in coastal waters.
- **16** bathing waters were classified as of “**sufficient quality**”, all corresponding to coastal waters.
- **5** bathing waters were classified as of “**poor quality**” all corresponding to coastal waters.

The following figure and table show *the results of the assessment of 2011* on the basis of the set of bathing water quality data compiled in relation to the current bathing season and the three preceding bathing seasons.

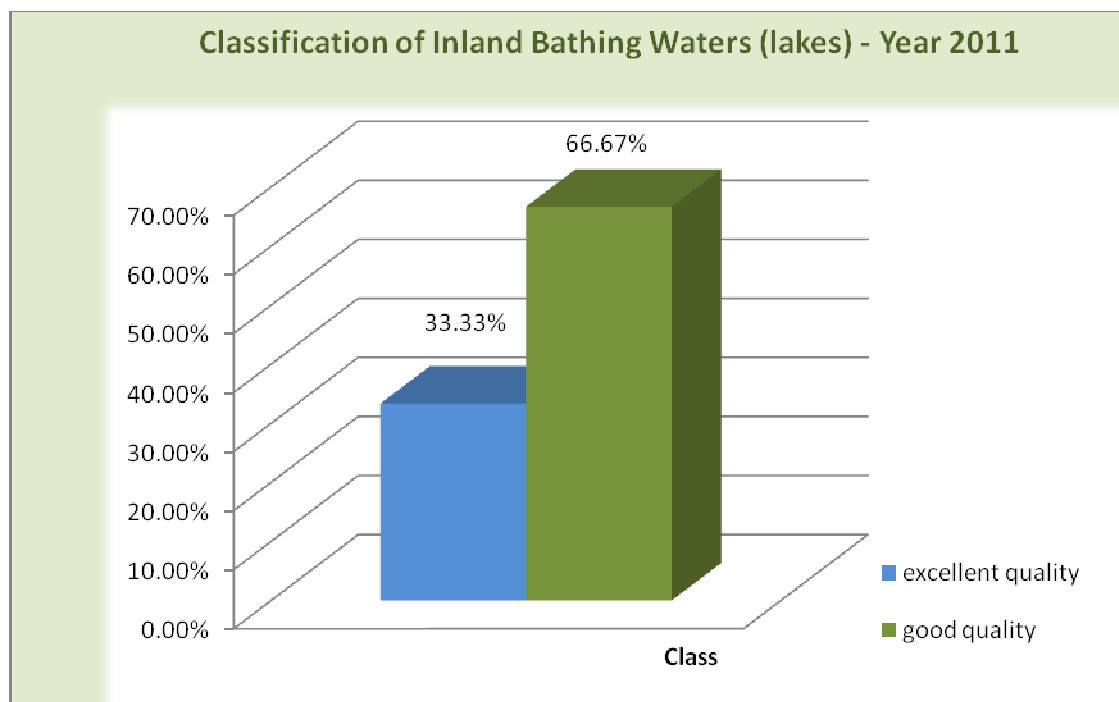


**Figure 1: Bathing waters classification according to Directive 2006/7/EC for year 2011**

No of points	Class	Definition	% Percentage
2043	Class 1	excellent quality	94.80
91	Class 2	good quality	4.22
16	Class 3	sufficient quality	0.74
5	Class 4	poor quality	0.23

**Table 1: Classification of bathing waters for year 2011 according to the requirements of the Directive 2006/7/EC**

Inland bathing waters in Greece are few when compared to the large number of coastal bathing waters. In the monitoring network of year 2011, only six bathing sites in inland waters were included (4 of them are in Lake Vouliagmeni and the remaining 2 in Vegoritida lake). The classification of inland bathing waters in the assessment year 2011 is described below.

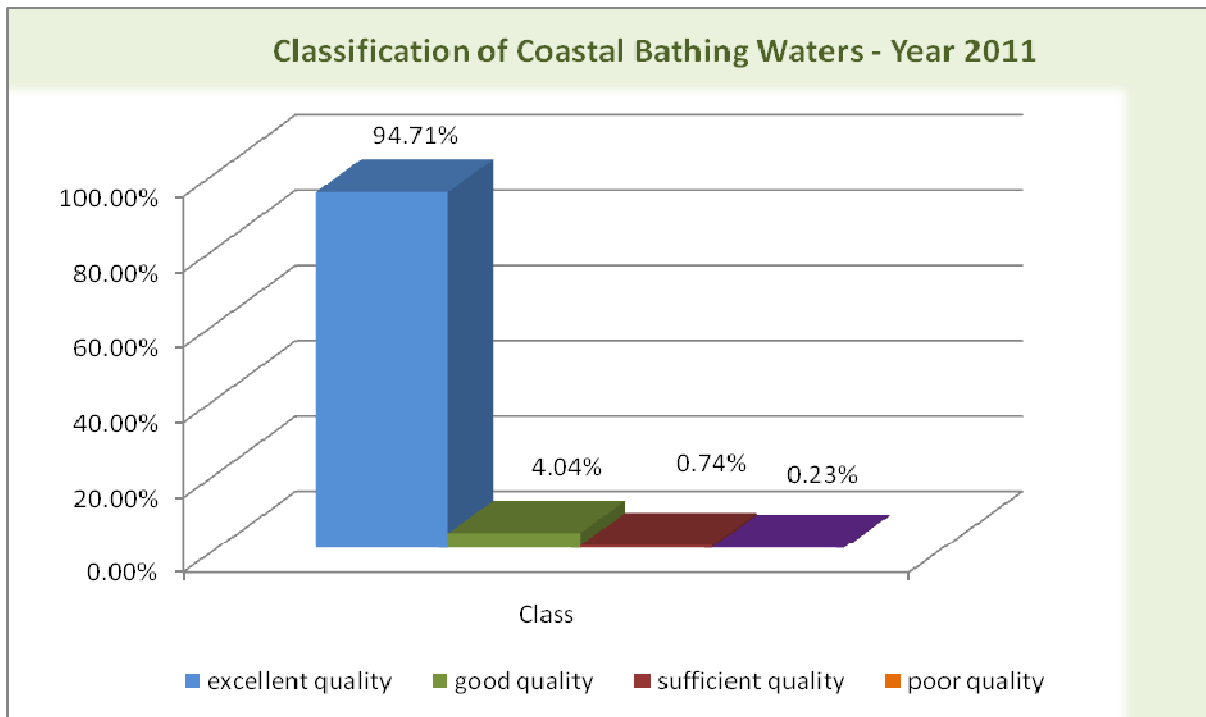


**Figure 2: Inland bathing waters classification (6 bathing waters) according to Directive 2006/7/EC for year 2011**

**Table 2: Classification of inland bathing waters for year 2011 according to the requirements of the Directive 2006/7/EC**

No of points	Class	Definition	% Percentage
2	Class 1	excellent quality	33,33
4	Class 2	good quality	66,67

From the 2155 bathing waters identified in Greece 2149 correspond to coastal bathing waters. As a result of the bathing water quality assessment the main conclusion is that 94,71% of the coastal bathing waters are of “excellent” quality, as shown in Figure 3.



**Figure 3 : Coastal bathing waters classification according to Directive 2006/7/EC for year 2011**

**Table 3: Classification of coastal bathing waters for year 2011 according to the requirements of the Directive 2006/7/EC**

No of points	Class	Definition	% Percentage
2041	Class 1	excellent quality	94,71
87	Class 2	good quality	4,04
16	Class 3	sufficient quality	0,74
5	Class 4	poor quality	0,23

### BATHING WATER PROFILES

*The Registry of Bathing Water Profiles* is completed and disseminated through an interactive website.

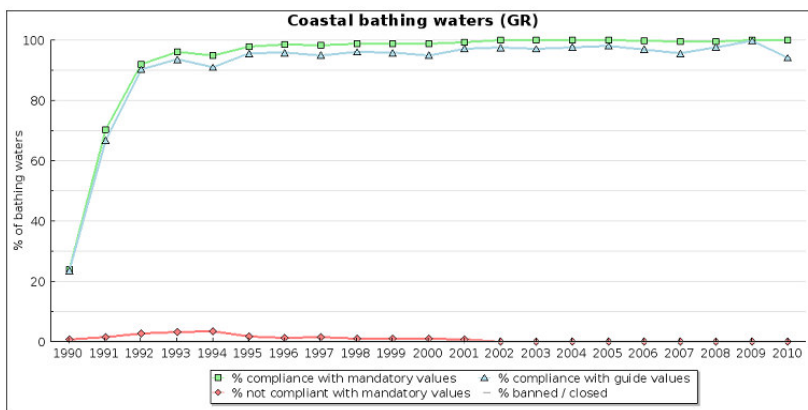
The aim of the *Registry of Bathing Water Profiles* is to describe and present the basic characteristics of the coasts, identify the pollution sources that may affect water quality and assess the magnitude of the effects. The Registry serves also as a guide for selecting appropriate measures in order to minimize the impact of pressures in bathing waters and allows for a more efficient management of resources.

## EVOLUTION OF BATHING WATER QUALITY IN GREECE

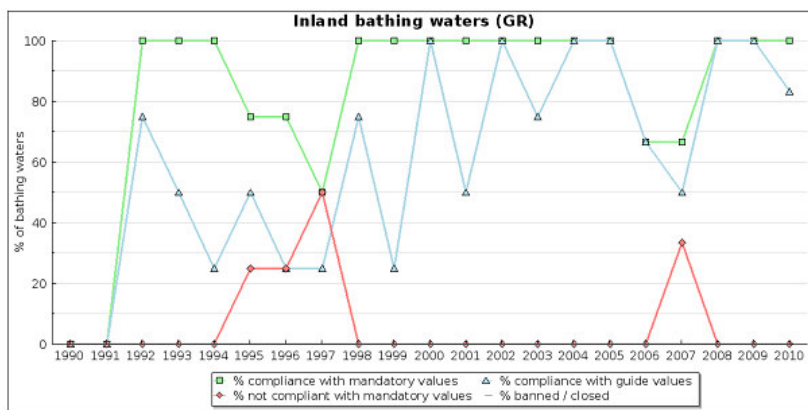
Greece since 1990 has systematically monitored the bathing water quality. The Directive applied until 2010 was the Directive 76/160/EEC. Since 2010, the Special Secretariat for Water began to assess bathing waters in accordance with the new Directive 2006/7/EC. However, for 2010 (July-October 2010) the European Commission followed its own assessment according to Directive 76/160/EEC.

The results of the bathing water quality in Greece for the period 1990-2010, according to the evaluation process described in the Directive 76/160/EEC, are presented in the Figures 4 and 5 with different colors:

- The percentage of bathing waters that comply with the guide values (blue line)
- The percentage of bathing waters that comply with the mandatory values (green line)
- The percentage of bathing waters that do not comply with the mandatory values (red line).



*Figure 4: Coastal bathing water quality according to Directive 76/160/EC, for the period 1990-2010*



*Figure 5: Inland bathing water quality according to Directive 76/160/EC, for the period 1990-2010*

The figures demonstrate that the Greek rate of compliance even with the stricter guide values of Directive 76/160/EEC (blue line) exceeds 94%. Inland water bodies show sharp quality fluctuations due to the small number of monitored points (only 6 points). However, Greece conforms since 1998 for inland water bodies as well with the mandatory values of Directive 76/160/EEC by 100% (green line) with the exception of years 2006 and 2007 when it complied by 66.7%.

## USEFUL LINKS

<i>Ministry of Environment, Energy and Climate Change (MEECC)- Aquatic Environment – Bathing coasts</i>	<a href="http://www.ypeka.gr/Default.aspx?tabid=253&amp;locale=el-GR&amp;language=en-US=el-GR">http://www.ypeka.gr/Default.aspx?tabid=253&amp;locale=el-GR&amp;language=en-US=el-GR</a>
<i>MEECC–Bathing Water quality in Greece- Reference year 2010</i>	<a href="http://www.ypeka.gr/LinkClick.aspx?fileticket=hyzfiYpedSw%3d&amp;tabid=253&amp;language=en-US">http://www.ypeka.gr/LinkClick.aspx?fileticket=hyzfiYpedSw%3d&amp;tabid=253&amp;language=en-US</a>
<i>MEECC- National Environment Information Network (NEIN)</i>	<a href="http://amappl1.e-per.gr/">amappl1.e-per.gr/</a>
<i>MEECC- Bathing Water Profiles</i>	<a href="http://www.bathingwaterprofiles.gr/">http://www.bathingwaterprofiles.gr/</a>
<i>European Commission – Bathing water quality</i>	<a href="http://ec.europa.eu/environment/water/water-bathing/index_en.html">http://ec.europa.eu/environment/water/water-bathing/index_en.html</a>
<i>European Environmental Agency- Country reports</i>	<a href="http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water-1/country-reports-2010-bathing-season">http://www.eea.europa.eu/themes/water/status-and-monitoring/state-of-bathing-water-1/country-reports-2010-bathing-season</a>
<i>European Environmental Agency – Guidelines on assessment under the New Bathing Water Directive and transition period</i>	<a href="http://glossary.en.eea.europa.eu/terminology/sitesearch?term=guidelines+on+assessment+under+the+Bathing+water+directive+and+transition+period">http://glossary.en.eea.europa.eu/terminology/sitesearch?term=guidelines+on+assessment+under+the+Bathing+water+directive+and+transition+period</a>
<i>European Environmental Agency - Central Data Repository</i>	<a href="http://cdr.eionet.europa.eu/gr/eu/nbwd">http://cdr.eionet.europa.eu/gr/eu/nbwd</a>
<i>European Environment Agency –Monitoring of air and bathing water quality (Eye on Earth)</i>	<a href="http://eyeonearth.eu/">http://eyeonearth.eu/</a>

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<http://www.bathingwaterprofiles.gr/>



