Country fiche: Portugal

Content

1. Introduction

The European Environment Agency (EEA) manages water data and information reported either voluntarily by EEA member countries (water quality in groundwater, rivers, lakes; emissions of pollutants and water quantity); and data reported via REPORTNET under EU water directives: Water Framework Directive (WFD); Bathing Water Directives (BWD) and Urban Waste Water Treatment Directive (UWWTD), Nitrate Directive (NiD) and Drinking water Directive (DWD). Reported data are processed at EEA and stored in water data center. They can be also accessible on EEA home page. Data reported under Nitrate Directive (NiD) and Drinking water Directive (DWD) are not yet available at EEA water data center home page.

The aim of the country fiches is both to clean-up and correcting errors in the data member countries now have reported for 15-20 years. Some errors have been introduced by the EEA and its Topic Centres handling of the reported data; others is due to errors introduced in member countries reporting.

Another aspect is to improve the spatial and temporal coverage and to ensure that the relevant determinands are reported.

- In some cases member countries will be asked for more stations to increase the spatial coverage or density of stations; or questions on why data have not been reported from some of the RBDs.

- EEA water quality indicators are for trend assessments based on consistent time series with some gap filling. For a single country consistent time series are established for the defined period (e.g. 1992-2012; or 2000-2012) with some gap filling(e.g. up to 3 years) and only stations with values for all years in the defined period are used. This ensure that any trend is because of change in the observations and not in the stations included.

- In the current data set the reporting of some high priority determinands has stopped or there has been change in the determinands in the database e.g. cadmium changed to dissolved cadmium. EEA wants to clarify if these changes are real changes or it has been errors/misinterpretations introduced in compiling the databases. In addition, the aim is to ensure that the high priority determinands (e.g. nitrate or orthophosphate) have as complete coverage as possible.

The last part is on ensuring linkage between the different Waterbases by having a common coding system (Water Body ID) and linked to different reference layers such as the RBDcodes.

2. Reporting obligations from European Water Directives

Portugal reporting of data in relation to EU water directives have in the last years been uploaded to the Reportnet Central Data Repository (CDR Portugal) and below is listed an overview of Portugal's reporting in relation to water directives (Remark this is an overview of what is available in CDR and Portugal may have reported by other format directly to the European Commission).

- Bathing Water Directive (2006/7/EC) Link – Portugals reporting under the Bathing Water Directive is further described in the annual national report published by EEA available at Link and the data is available here Link
- Drinking Water Directive Report (98/83/EC) - Link. Data related to two "3 yearly report on quality of water for human consumption" are available for the period 2005-2007 and 2008-2010.
- Floods Directive Preliminary flood risk assessment

    - Floods Directive Unit of Management and Competent Authorities. Link, Portuguese Competent Authority and Units of Management,
    - Preliminary flood risk assessment Link. *No data in CDR yet*.
- Nitrates Directive (91/676/EEC) - Link. Report/data related to the Nitrate Directive reporting period 2004-2007 and 2008-2011.
- Urban Waste Water Treatment Directive
    - Monitoring (91/271/EEC) [Art 15] - Link. 2011 UWWT data plus archive over previous reporting.
    - Article 16 - Situation report – Link. *No data in CDR yet*.
    - Article 17 - National Implementation Programme – Link. *No data in CDR yet*.
- Water Framework Directive
    - Art. 3 reporting (River Basin Districts and Competent Authorities) – Link.
    - Art. 5 reporting – Link.
    - Art. 8 (Monitoring programmes) – Link.
    - Art. 13 (River Basin Management Plans) – Link.
    - Art. 15.3 Progress on implementation of programmes of measures – Link.

3. Overview on WFD reporting in Portugal

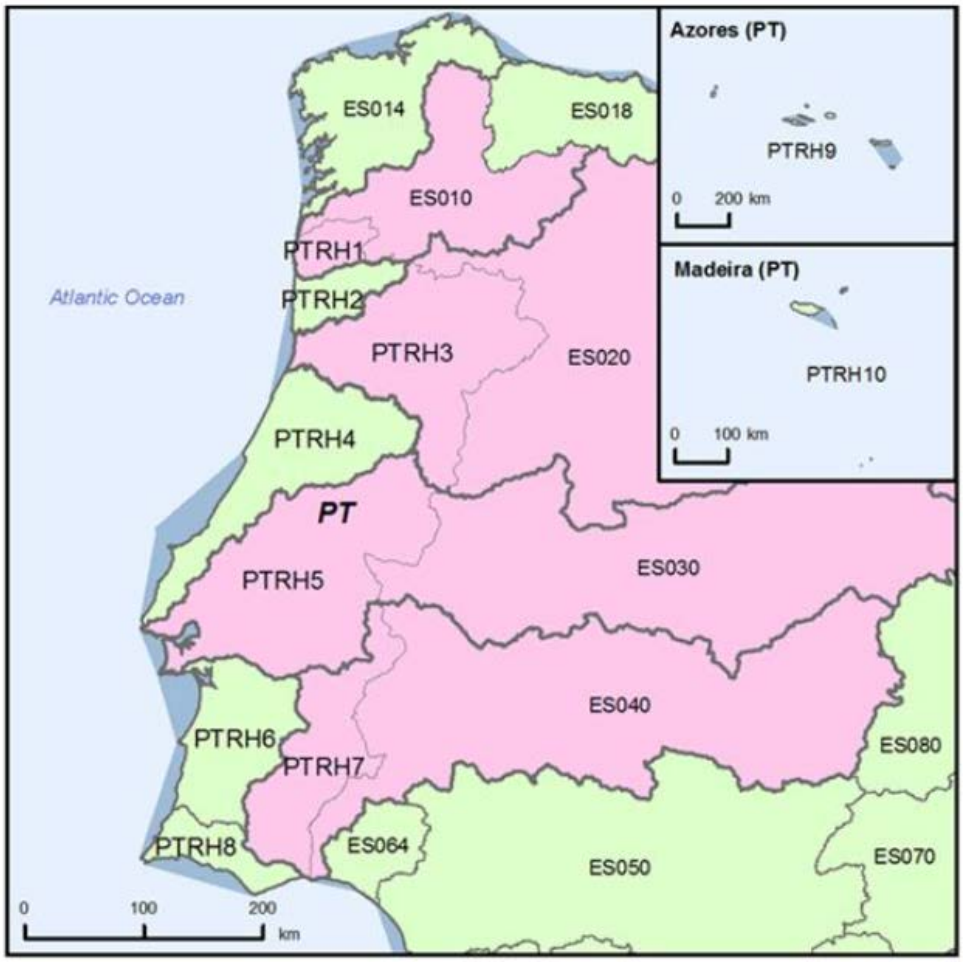

Figure 1.1: *Map of River Basin District*

International River Basin Districts (within EU)
International River Basin Districts (outside EU)
National River Basin Districts (within EU)
Countries (outside EU)
Coastal Waters

Source: *WISE, Eurostat (country borders)*

Source: Portugal`s WFD implementation report
http://ec.europa.eu/environment/water/water-framework/pdf/CWD-2012-379_EN-Vol3_DK.pdf

RBD	Name	Size (km^2)	Countries sharing RBD
PTRH1	Minho and Lima	2442*	ES
PTRH2	Cavado, Ave and Leca	3615	-
PTRH3	Douro	19213*	ES
PTRH4	Vouga, Mondego, Lis and West Rivers	12633	-
PTRH5	Tagus	30014*	ES
PTRH6	Sado and Mira	12147	-
PTRH7	Guadiana	11613*	ES
PTRH8	Algarve Rivers	5509	-
PTRH9	Azores	10045	-
PTRH10	Madeira		-

Table 1.1: *Overview of Portugal's River Basin Districts*
*Note: *Area in Portuguese territory*
Source: *This information may be found in the general fiches for countries in http://europa.eu/about-eu/countries/index_en.htm.*

The WISE-WFD database contains data from River Basin Management Plans reported by EU Members States according to article 13 of the Water Framework Directive. A number of aggregation queries provide an overview on number and statistics of water bodies, on status assessments and pressures and impacts for both surface water bodies and groundwater bodies.

The following queries are available:

- Numbers and statistics of surface water bodies
- Ecological and chemical status of surface water bodies
- Significant pressures affecting surface water bodies
- Impacts on surface water bodies
- Numbers and statistics of groundwater bodies
- Chemical and quantitative status of groundwater bodies

The information is aggregated at country, river basin district (RBD) or in some cases even RBD-subunit level and can be downloaded here.

4. Eionet priority data flows – SoE data (Waterbase)

The EEA Eionet priority data flows identify a set of agreed, stable, well-defined objectives to provide a focus for countries, when they are putting procedures in place for regular reporting. Portugal has in the period 2000-2014 reported river, lake (reservoir) and groundwater water quality data, while there have been no reporting of data on emissions (data have been inserted from E-PRTR) and limited reporting on water quantity.

Portugal – performance of EEA priority inland data flows

Data flow name	Progress 2000	Progress 2001	Progress 2002	Progress 2003	Progress 2004	Progress 2005	Progress 2006	Progress 2007	Progress 2008	Progress 2009	Progress 2010	Progress 2011	Progress 2012
EWN1: River quality													
EWN2: Lake quality													
EWN3: Groundwater quality													
EWN4: Water quantity	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A		
WISE1: Water emission quality	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	

Data flow name	Status	Progress 2012-2013	Progress 2013-2014	Remark
EWN1: River quality	2014-02-25			Data delivered with a delay (water quality 19 Nov 2013, biology 14 Jan 2014) and in the requested format. Feedback to reported issues provided. Monitoring stations with coordinates provided. Data on 3 preferred SoE nutrient delivered. Hazardous substances data delivered. Proxy pressures data provided. Short time series on preferred SoE available. Biology data delivered.
EWN2: Lake quality	2014-02-27			Data delivered with a small delay (19 Nov 2013) and in the requested format. Monitoring stations with coordinates provided. Data on 4 preferred SoE nutrient delivered. Hazardous substances data delivered. Proxy pressures data provided. Some long time series on preferred SoE nutrients available. Biology data delivered.
EWN3: Groundwater quality	2014-02-04			Data delivered on time and in the requested format. 3 of 5 requested chemical substances data provided, all in disaggregated form. Monitoring sites with coordinates and links to GW bodies provided. GIS data of GW bodies and list of GW bodies with most important attributes and pressure data provided.
EWN4: Water quantity (1)	2014-02-07			Reported data relevant to Water Quantity in EUROSTAT/OECD JQ 2012.
WISE1: Emissions to water (1)	2014-02-03			No data delivery under WISE-SoE data collection 2013, data from E-PRTR inserted.

Note: Further information and scoring criteria is available here:
http://www.eionet.europa.eu/dataflows/pdf2013/country_summary?country=PT

http://www.eionet.europa.eu/dataflows/pdf2013/history?country=PT

4.1 Rivers and Lakes

Note: all queries (which are still under development) and outcomes on rivers and lakes can be found here: http://www.tcvode.si/wise_soe_country_fiche/#

In Chapters 2.1.1 and 2.1.4 reporting on nutrients, organic matter and general physico-chemical determindands is illustrated. For simplification only the term nutrients is used in the descriptions.

Rivers – Nutrients, Organic Matter and General Physico-Chemical Determinands

Issues to be clarified:

- Have data for all SoE nutrients of highest priority[1] been reported consistent over the years?
- Are stations with monitoring of highest priority nutrients covering all RBDs?
- Are longer time series (since 1992) for preferred nutrients available?
- Are stations codes consistent and is it possible to link the stations with WFD water bodies?
- Member State specific issues, if such occur

Portugal has been reporting data on nutrients in rivers since 2006. Table 1 below provides an overview by determinands (highest priority nutrients) of the number of river stations per year for the period 2006 to 2012. Portugal`s reporting on total ammonium stopped in 2010, on CODCr in 2011.

Table 1: Number of river stations per determinand/year (nutrients of highest EEA priority)

Determinand_Nutrients	2006	2007	2008	2009	2010	2011	2012
Nitrate	48	51	41	39	27	37	60
Total nitrogen	0	0	0	6	18	7	16
Orthophosphates	48	43	28	38	26	30	58
Total phosphorus	39	44	22	34	38	13	43
BOD5	52	33	55	49	28	37	68
CODCr	41	46	28	37	15	0	0
Total ammonium	52	46	35	49	0	0	0

Note: In the current data set the reporting of some high priority determinands has stopped or there has been a change in the determinands in the database. EEA wants to clarify if these changes are real changes or it has been errors/misinterpretations introduced in compiling the databases. In addition, the aim is to ensure that the high priority determinands (e.g. nitrate or orthophosphate) have as complete coverage as possible.

Table 2 shows the number of river stations by River Basin Districts which reported on nutrients for the period from 2006 – 2012. Portugal reported data from 85 river stations for nutrients for all RBDs except PTRH9 and 10, but there are only few water bodies (mostly coastal waters). There was less reporting in PTRH4 in 2011 and 2012.

Table 2: Number of river stations for nutrients by River Basin Districts for the period 2006 - 2012

[1] Determinands of highest priority in terms of EEA`s needs are determinands which are or will be used in EEA assessments (e.g. CSI).

RBDcode	2006	2007	2008	2009	2010	2011	2012
PTRH1	5	5	5	5	1	5	6
PTRH2	5	7	7	5	5	7	7
PTRH3	6	6	6	9	1	8	13
PTRH4	12	14	14	14	14	3	12
PTRH5	15	15	15	9	10	10	10
PTRH6	1	1	1	1	1	1	5
PTRH7	3	3	3	3	5	5	12
PTRH8	5	5	5	5	5	4	5
Total	52	56	56	51	42	43	70

Note: One aspect of the country fiches is to improve the spatial coverage and ensure that stations are reported for all RBDs.

The figure below illustrates the river stations with nutrient reporting in 2013 (covering the year 2012) in Portugal. From this it can be seen that the main RBDs in Portugal are covered with reporting in 2012, but that the density of stations is low.

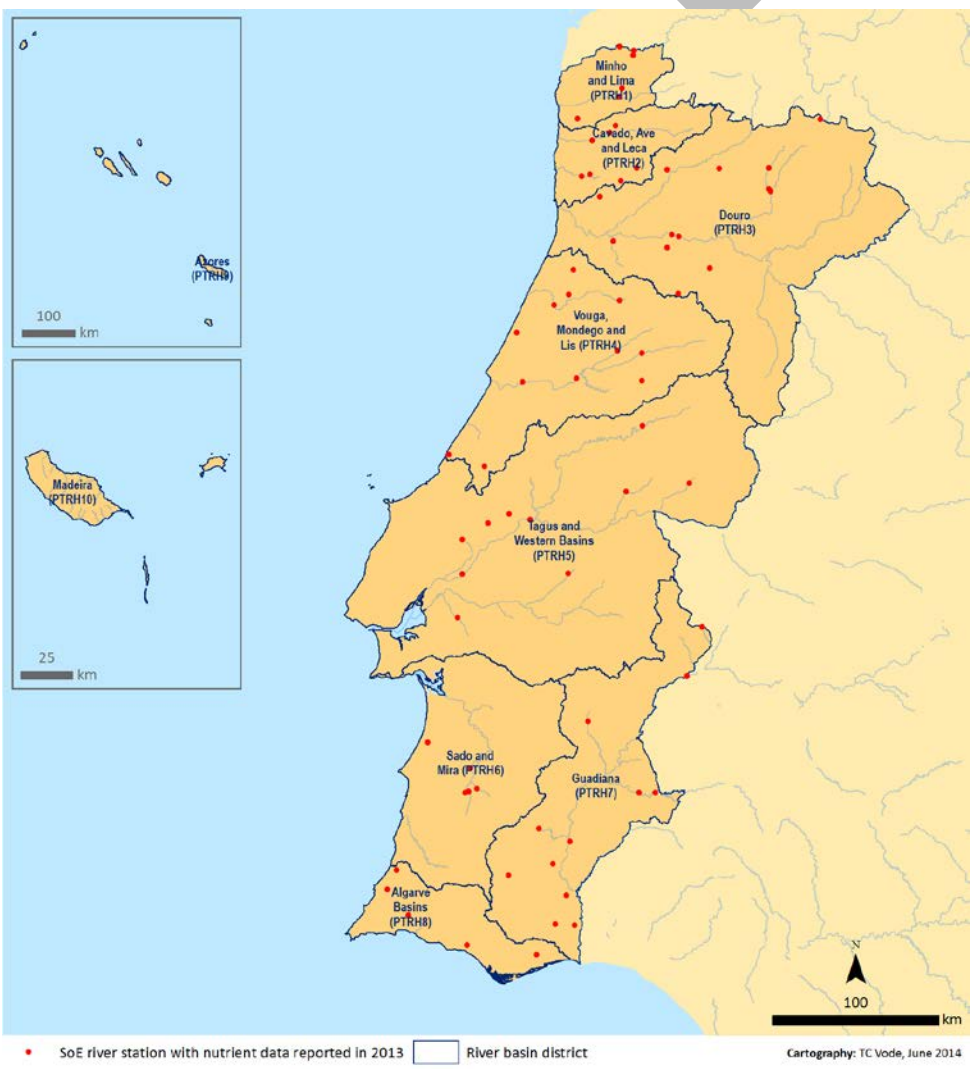

Figure 1: SoE river stations with nutrient data reported in 2013 in Portugal`s RBDs

For the period 2006 to 2012 Portugal has reported around 82 river stations with monitoring of nitrate, but only 7 stations have 7 years of observations (Table 3).

Table 3: Length of nitrate time series in Portugal for period 2006 – 2012 (value in the table fields is number of stations with x years' time series)

RBDcode	1 yr	2 yr	3 yr	4 yr	5 yr	6 yr	7 yr
Total	23	16	11	14	10	1	7

Note: EEA water quality indicators are used for trend assessments based on consistent time series with some gap filling. For a single country consistent time series are established for the defined period (e.g. 1992-2012; or 2000-2012) with some gap filling (e.g. up to 3 years) and only stations with values for all years in the defined period are used. This ensures that any trend is because of change in the observations and not in the stations included.

Questions to Portugal regarding the reporting on nutrients in rivers:

- Does data exist for determinands to fill the gaps in reporting? Esp. total ammonium from 2010 to 2012 and CODCr in 2011 and 2012?
- Can the data be resubmitted for stations / years / which have not been reported so far?
- Are there more stations with time series for the listed determinands (in particular the priority ones) available that have so far not been reported?
- Can more stations be reported to increase spatial coverage?

Rivers – hazardous substances

Issues to be clarified:

- Have data for all SoE preferred[2] hazardous substances which are monitored in the Member State been reported and consistent for the years in which data are available?
- Are stations with monitoring of SoE preferred hazardous substances covering all RBDs?

Portugal has been reporting data on hazardous substances in rivers since 2006. In table 3 there is an overview on the reporting of preferred hazardous substances (heavy metals, pesticides and PAH as example). For many substances data in some years have not been reported or reporting stopped for some substances. Another issue is that until 2009 there was no distinction between total and dissolved forms of metals in the data dictionary code list for rivers and lakes. After 2009 it could be distinguished between the forms of metals. So copper has been reported as copper and as copper dissolved. In general most information is on metals, only less information has been reported on pesticides or other substances.

[2] The lists of preferred substances are based on legislation, spatial and temporal availability. Preferred substances are also covered by Hazardous substances report regularly.

Table 4: Hazardous substances (examples for preferred substances) in rivers by number of stations and year

Determinand_HazSubs	2006	2007	2008	2009	2010	2011	2012
Cadmium	47	1	30	17	0	3	19
Lead	48	0	29	16	0	3	20
Mercury	25	6	7	3	0	3	19
Nickel	1	0	0	0	0	0	0
Copper	31	0	39	19	0	6	21
Copper dissolved	0	0	0	0	25	11	22
Arsenic	22	0	19	27	0	6	31
Chromium	45	0	41	29	0	8	32
Iron and its compounds	16	0	14	0	0	0	0
Manganese and its compounds	30	11	0	0	0	0	0
Selenium and its compounds	13	0	0	0	0	0	0
Zinc	46	0	46	37	0	13	44
Atrazine	0	0	0	16	4	0	0
Gamma-HCH (Lindane)	22	0	3	0	0	0	0
Chlorfenvinphos	0	0	0	2	0	0	0
Endrin	13	0	0	0	0	0	0
Aldrin	13	0	0	0	0	0	0
Diuron	0	0	0	16	3	0	0
Linuron	0	0	0	17	0	0	0
Alachlor	0	0	0	15	3	0	0
Dieldrin	13	0	0	0	0	0	0
Isodrin	13	0	0	0	0	0	0
Naphthalene	0	0	0	15	4	0	0
Fluoranthene	0	0	0	15	1	0	0
Anthracene	0	0	0	14	3	0	0

Note: In the current data set the reporting of some high priority determinands has stopped or there has been change in the determinands in the database e.g. copper changed to dissolved copper. EEA wants to clarify if these changes are real changes or it has been errors/misinterpretations introduced in compiling the databases. In addition, the aim is to ensure that the high priority determinands (e.g. priority substances) have as complete coverage as possible.

- An overview of reporting on supportive determinands will be added in final versions of country fiches -

Table 5 shows the number of river stations by River Basin Districts which reported on preferred hazardous substances for the period from 2006 – 2012. In this period Portugal reported data from around 81 river stations for all 8 RBDs. In 2007 and 2011 there was less reporting in some RBDs

Table 5: Number of stations by River Basin Districts for preferred hazardous substances

RBDcode	2006	2007	2008	2009	2010	2011	2012
PTRH1	5	3	5	5	1	0	4

PTRH2	5	0	6	7	4	0	6
PTRH3	2	1	6	8	1	0	11
PTRH4	12	1	14	13	10	2	1
PTRH5	15	2	15	5	8	8	8
PTRH6	1	0	1	1	1	1	5
PTRH7	3	0	1	2	3	3	10
PTRH8	5	0	0	1	1	0	0
Total	48	7	48	42	29	14	45

Questions to Portugal regarding the reporting on hazardous substances in rivers:

- Does data exist for determinands to fill the gaps in reporting?
- Can reporting for metals be clarified?
- Are data from 1992 to 2006 available?
- Are there more stations for the preferred determinands available that have so far not been reported?
- Can the data be resubmitted for stations / years which have not been reported so far?

Rivers – Biology

No data on biology in rivers have been reported.

Questions regarding the reporting on biology in rivers:

- Why has no information on biology in rivers been reported and can data be delivered to SoE in the future?

Lakes – Nutrients, Organic Matter and General Physico-Chemical Determinands

Issues to be clarified:

- Have data for all SoE nutrients of highest priority[3] been reported consistent over the years?
- Are stations with monitoring of highest priority nutrients covering all RBDs of the Member States?
- Are longer time series (since 1992) for preferred nutrients available?
- Are stations codes consistent and is it possible to link the stations with WFD water bodies?
- Member State specific issues, if such occur

Portugal has been reporting data from nutrients in lakes from 2006 on. The table below provides an overview by determinands of the number of lake stations per year for the period 2006 to 2012. Reporting on total ammonium and TOC stopped in 2010, dissolved organic carbon and CODCr has been less reported.

[3] Determinands of highest priority in terms of EEA`s needs are determinands which are or will be used in EEA assessments (e.g. CSI).

Table 6: Number of lake stations per determinand/year (nutrients of highest priority)

Determinand_Nutrients	2006	2007	2008	2009	2010	2011	2012
Nitrate	26	29	25	27	20	24	24
Total nitrogen	0	2	2	1	20	14	13
Orthophosphates	26	29	20	26	21	26	22
Total phosphorus	23	30	24	23	25	20	19
BOD5	25	18	27	24	25	23	26
Total organic carbon (TOC)	0	11	10	4	0	0	0
Dissolved organic carbon	0	0	0	0	0	2	0
CODCr	0	0	0	0	19	0	0
Total ammonium	26	30	27	29	0	0	0

Note: In the current data set the reporting of some high priority determinands has stopped or there has been a change in the determinands in the database. EEA wants to clarify if these changes are real changes or it has been errors/misinterpretations introduced in compiling the databases. In addition, the aim is to ensure that the high priority determinands (e.g. nitrate or orthophosphate) have as complete coverage as possible.

Table 7 shows the number of lake stations by River Basin Districts which reported on nutrients for the period from 2006 – 2012. Data are reported from 35 stations from PRTH2- to PRTH8, no data were delivered from PTRH1, where only heavily modified lakes occur.

Table 7: Number of lake stations for nutrients by River Basin Districts

RBDcode	2006	2007	2008	2009	2010	2011	2012	Total
PTRH2	3	3	3	3	3	3	3	3
PTRH3	3	5	5	6	3	5	5	9
PTRH4	1	1	1	1	1	1	1	1
PTRH5	7	9	7	9	7	7	7	9
PTRH6	4	4	4	4	4	4	4	4
PTRH7	5	5	5	5	6	5	5	6
PTRH8	3	3	3	3	3	3	2	3
Total	26	30	28	31	27	28	27	35

Note: One aspect of the country fiches is to improve the spatial coverage and ensure that stations are reported for all RBDs.

Questions to Portugal regarding the reporting on nutrients in lakes:

- Does data exist for determinands to fill the gaps in reporting? Esp. total ammonium, TOC, DOC and CODCr.
- Can the data be resubmitted for stations / years / which have not been reported so far?
- Are there more stations with time series for the listed determinands (in particular the priority ones) available that have so far not been reported?
- Can more stations be reported to increase spatial coverage?

Lakes – Hazardous Substances

Issues to be clarified:

- Have data for all SoE preferred[4] hazardous substances which are monitored in the Member State been reported and consistent for the years in which data are available?
- Are stations with monitoring of SoE preferred hazardous substances covering all RBDs?

Portugal has been reporting data on hazardous substances in lakes since 2006. In Table 8 there is an overview on the reporting of some preferred hazardous substances to illustrate (only metals). Other data have been submitted for pesticides, PAH and some other, but most information on metals. In some years no information has been reported.

Another issue is that until 2009 there was no distinction between total and dissolved forms of metals in the data dictionary code list for rivers and lakes. After 2009 it could be distinguished between the forms of metals. So since 2010 metals are reported sometimes as dissolved.

Table 8: SoE preferred hazardous substances (only metals as example) in lakes by number of stations and year

Determinand_HazSubs	2006	2007	2008	2009	2010	2011	2012
Cadmium	28	15	0	4	0	4	0
Cadmium dissolved	0	0	0	0	0	2	2
Lead	29	14	1	8	0	4	5
Lead dissolved	0	0	0	0	0	2	0
Mercury	26	9	7	3	0	0	7
Mercury dissolved	0	0	0	0	0	2	0
Nickel dissolved	0	0	0	0	0	2	2
Arsenic	24	10	7	0	8	10	5
Arsenic dissolved	0	0	0	0	0	2	0
Copper	29	16	10	1	13	10	0
Copper dissolved	0	0	0	0	13	8	1
Chromium	28	22	3	10	13	10	6
Chromium dissolved	0	0	0	0	0	2	0

Note: In the current data set the reporting of some high priority determinands has stopped or there has been change in the determinands in the database. EEA wants to clarify if these changes are real changes or it has been errors/misinterpretations introduced in compiling the databases. In addition, the aim is to ensure that the high priority determinands (e.g. priority substances) have as complete coverage as possible.

Table 9 shows the number of river stations by River Basin Districts which reported on preferred hazardous substances for the period from 2006 – 2012. In this period Portugal reported data from 35 lake stations in 7 RBDs. Again no data were delivered from PTRH1. In some years no data have been

[4] The lists of preferred substances are based on legislation, spatial and temporal availability. Preferred susbstances are also covered by Hazardous substances report regularly.

submitted for some RBD`s, as can be seen from the table.

Table 9: Number of lake stations by River Basin Districts for preferred hazardous substances

RBDcode	2006	2007	2008	2009	2010	2011	2012
PTRH2	3	1	1	0	1	0	1
PTRH3	5	5	4	1	5	0	4
PTRH4	1	1	1	1	1	0	0
PTRH5	9	8	5	4	5	4	3
PTRH6	4	4	3	3	3	3	4
PTRH7	6	5	4	4	4	3	4
PTRH8	3	2	0	3	3	0	2
Total	31	26	18	16	22	10	18

Note: One aspect of the country fiches is to improve the spatial coverage and ensure that stations are reported for all RBDs.

Questions to Portugal regarding the reporting on hazardous substances in lakes:

- Does data exist for determinands to fill the gaps in reporting?
- Can it be clarified why sometimes metals are reported in their dissolved form?
- Are older data than what has been reported available (from 1992 – 2005)?
- Are there more stations for the determinands available that have so far not been reported?
- Can the data be resubmitted for stations / years which have not been reported so far?

Lakes – Biology

No data on biology in lakes have been reported.

Questions to Portugal regarding the reporting on biology in lakes:

- Why has no information on biology in lakes been reported and can data be delivered in the future?

4.2 Groundwater quality

Issues to be clarified:

- Have data for all SoE nutrients of highest priority (in terms of EEA`s needs) in groundwater been reported consistent over the years?
- Have disaggregated data for all highest priority SoE nutrients in groundwater been reported consistent over the years?

- Are all RBDs in the MS covered with reporting on highest priority SoE nutrients in groundwater?
- Have data on preferred hazardous substances, if monitored by Member State, in groundwater been reported for all years in which they are available?
- Are all RBDs in the MS covered with reporting on preferred SoE hazardous substances in groundwater?

Groundwater - Nutrients, Organic Matter and General Physico-Chemical Determinands

In 2006 only aggregated data for nutrients in groundwater have been reported from Portugal, in 2004 and 2005 no data at all. In the other years disaggregated[5] data on groundwater nutrients have been reported. In 2010 and 2011 reporting on ammonium stopped, in 2012 reporting on dissolved oxygen Table 10).

Table 10: Highest priority) nutrients in groundwater disaggregated (value = number of stations per country in which given determinand was reported) (disaggregated data: in red colour: data aggregated included)

DeterminandName	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Nitrate	156	166	249	184	0	0	326	320	267	224	256	232	212
Ammonium	126	147	248	96	0	0	211	311	237	125	0	0	195
Nitrite	126	148	216	108	0	0	215	145	84	107	110	102	87
Dissolved Oxygen	98	116	157	71	0	0	198	217	176	234	73	100	0

Note: In the current data set the reporting of high priority determinands has stopped or nutrients have been reported as aggregated data only. The aim is to ensure that the high priority determinands (preferably disaggregated data) have as complete coverage as possible.

No data for the RBDs on islands (PRTH9 Azores and PTRH10 Madeira) were reported (Table 11). Before 2006 (reporting of aggregated data) and 2007 (reporting of disaggregated data) there was only less reporting in most RBDs. In 2006 the number of stations reported was around 330, in 2012 214, so it is decreasing.

Table 11: Number of groundwater stations for highest priority nutrients (disaggregated) by River Basin Districts (disaggregated data: in red colour: data aggregated included)

RBDcode	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
PTRH1	0	0	0	0	0	0	6	5	6	6	6	6	4
PTRH2	0	0	0	0	0	0	7	6	6	6	7	6	6
PTRH3	0	0	0	0	0	0	6	5	4	4	4	4	4
PTRH4	2	2	7	7	0	0	90	89	89	83	69	68	45
PTRH5	45	52	60	31	0	0	124	120	116	49	95	68	72
PTRH6	0	0	0	0	0	0	10	17	18	20	20	19	16
PTRH7	5	5	6	6	0	0	30	28	24	27	1	28	25

5 For Eionet-Water data are reported at different levels of aggregation:

- Disaggregated: concentrations in each sample and date of sample taken at each monitoring site in the groundwater body;
- Aggregated: annual average concentrations for the groundwater body.

PTRH8	5	7	9	7	0	0	58	53	5	55	55	34	42

Note: One aspect of the country fiches is to improve the spatial coverage and ensure that stations are reported for all RBDs.

Groundwater - Hazardous substances

Table 12 provides an overview on reporting of preferred hazardous substances in groundwater in Portugal. Portugal reports information on only a part of the preferred hazardous substances. Most data have been delivered since 2010 (only metals). For the years 2003 to 2009 no data were delivered at all.

Until 2009 there was no distinction between total and dissolved forms of metals in the data dictionary code list. After 2009 it could be distinguished between the forms of metals, so there was some change in reporting This can be seen for lead, nickel, copper, zinc, which have been reported as dissolved in 2010 as well (only two stations).

Table 12: Number of groundwater stations per determinand (preferred hazardous substances)/year

DeterminandName	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Cadmium	0	0	0	0	0	0	0	0	0	0	63	39	63
Lead	0	0	0	0	0	0	0	0	0	0	75	39	63
Lead dissolved	0	0	0	0	0	0	0	0	0	0	2	0	0
Mercury	0	0	0	0	0	0	0	0	0	0	0	39	51
Nickel	0	0	0	0	0	0	0	0	0	0	165	58	61
Nickel dissolved	0	0	0	0	0	0	0	0	0	0	2	0	0
Arsenic	0	0	0	0	0	0	0	0	0	0	63	53	63
Chromium	0	0	0	0	0	0	0	0	0	0	22	0	0
Copper	0	0	0	0	0	0	0	0	0	0	99	73	92
Copper dissolved	0	0	0	0	0	0	0	0	0	0	2	0	0
Zinc	0	0	0	0	0	0	0	0	0	0	73	82	101
Zinc dissolved	0	0	0	0	0	0	0	0	0	0	2	0	0
Alachlor	0	3	0	0	0	0	0	0	0	0	0	0	0
Atrazine	0	3	0	0	0	0	0	0	0	0	0	0	0
Chlorfenvinphos	0	3	0	0	0	0	0	0	0	0	0	0	0
Gamma-HCH (Lindane)	6	9	8	0	0	0	0	0	0	0	0	0	0
Hexachlorobenzene (HCB)	6	9	8	0	0	0	0	0	0	0	0	0	0
Simazine	0	3	0	0	0	0	0	0	0	0	0	0	0
Alpha-Endosulfan	6	9	8	0	0	0	0	0	0	0	0	0	0

Note: In the current data set the reporting of preferred substances has stopped or data have not been reported. The aim is to ensure that the high priority determinands (e.g. priority substances) have as complete coverage as possible.

In Table 13 an overview on the number of groundwater stations for preferred hazardous substances by RBD is provided. Only in RBDs RTRH 4, 5, 6 and 7 the reporting was relatively stable from 2010 to 2012. For 2001 and for the period 2000 – 2002 some substances have been reported, but for EIONET groundwater body only PT010. These data cannot be represented in the table below, because no RBD code was provided for this groundwater body. ,.

Table 13: Number of groundwater stations for preferred hazardous substances by River Basin Districts

RBDcode	2010	2011	2012
PTRH1	0	0	3
PTRH2	0	0	3
PTRH3	0	0	2
PTRH4	58	7	4
PTRH5	95	56	55
PTRH6	20	19	16
PTRH7	26	24	22

Note: One aspect of the country fiches is to improve the spatial coverage and ensure that stations are reported for all RBDs.

Questions to Portugal regarding the reporting on groundwater

- Can data for ammonium and dissolved oxygen in missing years be resubmitted?
- Can data for missing RBDs / missing years be redelivered, for both nutrients (esp. 2004 and 2005) and hazardous substances (2000 – 2009)?
- Can data in 2006 be redelivered as disaggregated data?

4.3 Emissions

Issues to be clarified:

- Does Member State report data on emissions or are the tables prefilled from E-PRTR reporting?
- What type of source apportionment has been reported?
- Which determinands have been reported for the different emissions categories (nutrients from point and diffuse sources, hazardous substances from point and diffuse sources)
- Have data been reported from all RBDs (if relevant)?

For Portugal records only records from E-PRTR are present. Portugal has never reported emissions under SoE. In the following tables there is an overview on reporting nutrients and hazardous substances from point sources and the groups of emission sources which have been used. The value in the table fields is the number of RBDs in which the determinands were reported.

The E-PRTR is limited to point sources of pollution and to specific types of facilities. Although to each facility the main activity is assigned, which allows to distinguish between industrial and urban waste water emissions, this apportionment is very rough (there could be more than one activity assigned to each facility). The table shows also that there might be some gaps in the spatial coverage of the country. From E-PRTR those pollutants were selected which were available and could be unambiguously linked to the determinands in SoE data dictionary.

Table 14: Nutrients emissions from point sources (value means the number of spatial units in which the determinand was reported for that year)

Determinand_Nutrients	2006	2007	2008	2009	2010	2011	2012
Total Nitrogen					6	6	
Total Organic Carbon (TOC)					7	6	
Total Phosphorus					6	6	

Sources of emissions reported:

I Industrial Waste Water Discharges total

U2 Urban Waste Water Treated Discharges total

Table 15: Hazardous substances emissions from point sources (value means the number of spatial units in which the determinand was reported for that year)

Determinand_HazSubs	CASNumber	2007	2008	2009	2010	2011	2012
Arsenic	7440-38-2				5	5	
Cadmium	7440-43-9				5	5	
Copper	7440-50-8				7	7	
Chromium	7440-47-3				5	5	
Lead	7439-92-1				5	5	
Mercury	7439-97-6				6	6	
Nickel	7440-02-0				6	5	
Zinc	7440-66-6				5	6	

Sources of emissions reported:

I	Industrial Waste Water Discharges total
U2	Urban Waste Water Treated Discharges total

Questions to Portugal regarding the reporting on emissions:

- Are other data than E-PRTR available for point sources?
- Are any data available for diffuse sources?

4.4 Waterbase WaterQuantity

Portugal only participated in the testing phase of the water quantity dataflow in 2008 submitting areal data for the reference year 2006. From this submission useful data were extracted and are published in Waterbase (see Table 16). The preferred time scale of the reported time series was annual (55 TS).

Table 16: Number of reported time series (of any time scale) per parameter (see http://etcdd.eionet.europa.eu/dataelements/7433 for the description of parameters)

Parameter	Number of time series
wa_total_abstraction	**10**
wa_total_abstraction_sw	**10**
wa_total_abstraction_gw	**10**
wa_for_public_wss	**10**
wb_areal_precipitation	**16**
wb_internal_flow	**1**
wb_total_act_ext_inflow	**3**
wb_total_actual_outflow	**3**

By comparing identical parameters reported through the WISE SoE dataflow and through the OECD/EUROSTAT Joint Questionnaire 2012 inconsistencies have been detected, as shown in Table 17 (the country value for WISE-SoE has been aggregated from the reported RBD values).

Table 17: Comparison of annual values at country level of parameters reported through the OECD/EUROSTAT Joint Questionnaire 2012 and the WISE SoE water quantity dataflow

Ref. year	Parameter	Value (JQ)	Value (SoE)
2006	Total surface and groundwater abstracted for public water supply	912.908	499.772

As water quantity data are very important for the estimation of water scarcity and drought on European level and especially for South European countries, Portugal is encouraged to resume submitting data through the WISE-SoE dataflow.

5. Matching of stations/water bodies – all Water Directives

For the integrated assessment with the Water Framework Directive as well as other Water Directives it is a prerequisite that SoE stations can be linked to stations or water bodies from the other reporting streams. That was often not possible in former assessments and should be improved in the future, especially with regards to the next assessment of WFD reporting.

All the datasets reported to WISE have different fields to identify the stations or water bodies. The WISE-WFD database with data reported for the first RBMPs has the **water body code** (Surface or Groundwater) as one of the main codes. The WISE-SoE Groundwater, Rivers and Lake databases have a field with the **water body codes** (WaterBodyID/ GWBcode_WFD).

Database	Water Body Code
WISE-WFD database	*Surface water bodies* EUSurfaceWaterBodyCode SWB_MS_Code SWB_NAME
WISE_SoE rivers	WaterBodyID WaterBodyName
WISE_SoE lakes	WaterBodyID WaterBodyName
WISE-WFD database	*Groundwater bodies* EUGroundWaterBodyCode SWB_MS_Code SWB_NAME
WISE_SoE groundwater bodies Groundwater stations	GWBcode_WFD GWBcode_WFD

The following overview shows some statistics of the availability of WaterBodyID for SoE surface water stations or WaterBodyCode for SoE groundwater stations and groundwaterbodies and their matching with WFD EUSurfaceWaterBodyCode and WFD SWB_MS_CD.

WISE-SoE rivers

Portugal has reported WaterBodyID for most of its WISE-SOE river stations (67 of 67); there is a match between 63 river stations and WFD water bodies, if EUSurfaceWaterBodyCode is used, and no match if SWB_MS_CD is used (see Table 18).

Table 18 WISE SoE rivers water quality dataset - statistics of the availability of rivers monitoring stations and their attributes (waterbody ID) and the results of the matching of the SoE rivers waterbody ID with WFD EUSURFACEWATERBODYCODE and SWB_MS_CD

SOE_STATIONS_TOTAL	SOE_WATERBODYID_EXISTS	MATCH_EUSURFACEWATERBODYCODE	MATCH_SWB_MS_CD
67	67	63	0

WISE-SoE lakes

Portugal has reported WaterBodyID for all of its lakes (34 of 34); there is a 100% match between lake stations and WFD water bodies (Table 19) if EUSurfaceWaterBodyCode is used, and no match if SWB_MS_CD is used.

Table 19: WISE SoE lakes water quality dataset - statistics of the availability of lakes monitoring stations and their attributes (water body ID) and the results of the matching of the SoE lakes waterbodyID with WFD EUSURFACEWATERBODYCODE and SWB_MS_CD

SOE_STATIONS_TOTAL	SOE_WATERBODYID_EXISTS	MATCH_EUSURFACEWATERBODYCODE	MATCH_SWB_MS_CD
34	34	34	0

WISE-SoE groundwater

The majority of Portugal`s WISE-SoE groundwater bodies (83 of 93), but only part of WISE-SoE groundwater stations (349 of 532) have GWB codes. However there are match of 79 groundwater bodies with WFD water bodies (Table 20) and of 75 of 532 groundwater stations with WFD water bodies only (Table 21).

Table 20: WISE SoE groundwater quality dataset - statistics of the availability of groundwater bodies and their SOE_GWBCODE_WFD and the results of the matching of the SoE groundwater SOE_GWBCODE_WFD with WFD EUGROUNDWATERBODYCODE and GWB_MS_CD

SOE_GWB_TOTAL	SOE_GWBCODE_WFD_EXISTS	MATCH_EUGROUNDWATERBODYCODE	MATCH_GWB_MS_CD
93	83	79	0

Table 21: WISE SoE groundwater quality dataset - statistics of the availability of groundwater monitoring stations and their attributes (SOE_GWBCODE_WFD) and the results of the matching of the SoE groundwater SOE_GWBCODE_WFD with WFD EUGROUNDWATERBODYCODE and GWB_MS_CD

SOE_GW_STATIONS_TOTAL	SOE_GWBCODE_WFD_EXISTS	MATCH_EUGROUNDWATERBODYCODE	MATCH_GWB_MS_CD
532	349	75	0

Questions to Portugal:

- Can the waterbody code as defined in the WFD guidance (EUSurfaceWaterBodyCode) be reported for all stations and water bodies, especially groundwater?
- Could stations that are not active and where the station information is from before 2007 (if this is the case) be updated with WBCode?

- Other statistics on matching (see example Spain) will be included in the country fiche in a next version -