



EUROPEAN
COMMISSION

Brussels, 2.10.2026
SWD(2026) 703 final

COMMISSION STAFF WORKING DOCUMENT

**Third River Basin Management Plans Second Flood Hazard and Risk Maps and
Second Flood Risk Management Plans
Member State: Portugal**

Accompanying the document

**REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN
PARLIAMENT**

**on the implementation of the Water Framework Directive (2000/60/EC) and the Floods
Directive (2007/60/EC)
Third River Basin Management Plans
Second Flood Risk Management Plans**

{COM(2025) 2 final}



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Country-specific staff working document

Portugal



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SECTION A:

WATER FRAMEWORK DIRECTIVE

1. General info, Member State characterisation

Portugal (Map A) has a total population of 10.64 million (2024)¹ and a total surface area of 92 226 km². Beyond the mainland, Portugal's territory also comprises the Atlantic archipelagos of the Azores and Madeira. The country as a whole manages one of the largest marine areas in the EU. This broader maritime dimension is reflected in the water body accounting: as shown in Tables A and B, all 10 RBDs, including their coastal waters, cover a total surface area of 109 464.61 km², which is more than the land area itself. Portugal's natural fluvial regime is strongly dependent on the pattern of precipitation, which is markedly asymmetric across the territory: the north and north-west, more directly exposed to Atlantic weather systems, are relatively water-rich, while the south (Alentejo, Algarve and generally south of the Tagus) is more semi-arid and structurally water-scarce. This regional asymmetry is corroborated by Portugal's Water Exploitation Index Plus (WEI+), which already exceeds 50% of available resources in some regions.

Four of Portugal's 10 RBDs are international, shared with Spain: Minho and Lima (PTRH1), Douro (PTRH3), Tagus and West Rivers (PTRH5A), and Guadiana (PTRH7) (Table B). For the country's three largest rivers (Douro, Tagus and Guadiana), Portugal is the downstream riparian state: these rivers originate largely in Spain before crossing into Portugal and reaching the Atlantic. This downstream position makes a significant share of Portugal's water availability dependent on upstream flow regimes, abstraction and climate conditions in Spain, underscoring the importance of the transboundary cooperation mechanisms summarised in Table B.

Agriculture is by far the largest water user in the country: based on 2018 data reported under the 3rd RBMPs, agriculture accounted for 86.0% of consumptive water abstraction, followed by public water supply (10.4%) and industry (3.6%).

¹ <https://ec.europa.eu/eurostat/databrowser/view/tps00001/default/table?lang=en>.

² https://european-union.europa.eu/principles-countries-history/key-facts-and-figures/life-eu_en.

Map A. Map of river basin districts (RBDs)

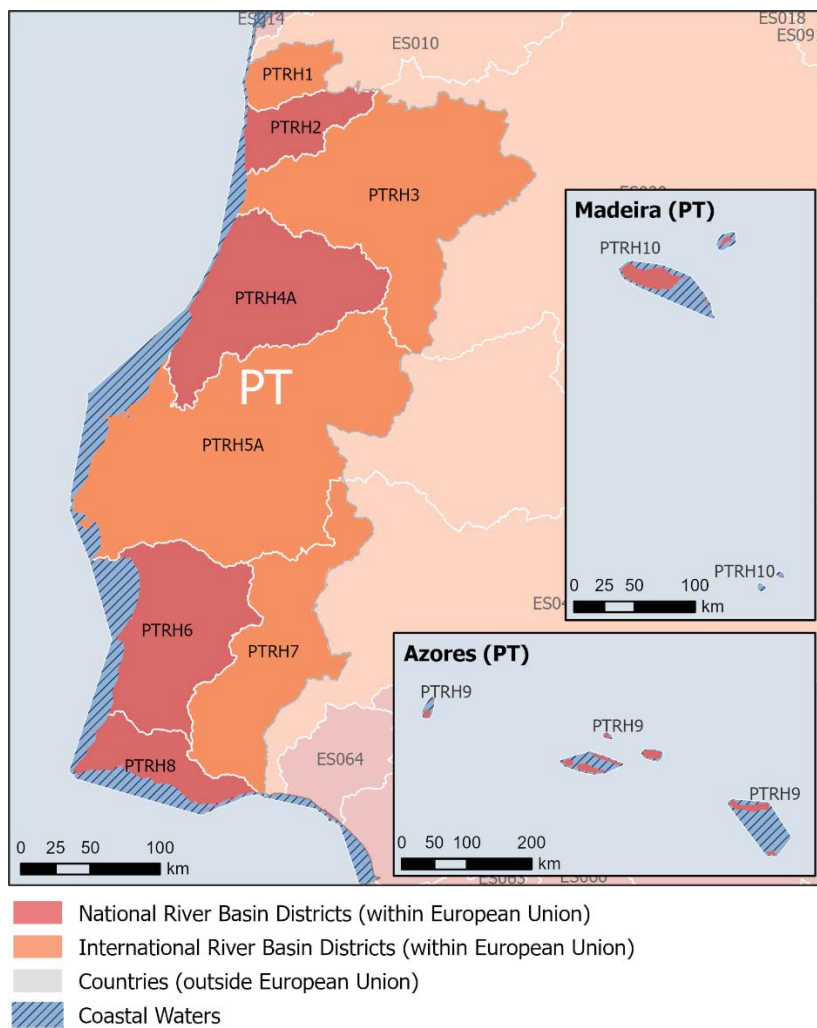


Table A. Overview of Portugal's RBDs and sub-units

RBD	RBD name	Size (km ²)	Countries sharing RBD
PTRH1	Minho and Lima	2 464.341	ES
PTRH2	Cávado, Ave and Leca	3 584.854	
PTRH3	Douro	19 215.46	ES
PTRH4A	Vouga Mondego and Lis	12 143.04	
PTRH5A	Tagus and West Rivers	30 498.75	ES
PTRH6	Sado and Mira	12 147.19	
PTRH7	Guadiana	11 610.39	ES
PTRH8	Algarve rivers	5 510.023	
PTRH9	Azores	10 043.89	
PTRH10	Madeira	2 246.669	

Table B. Transboundary river basins by category and percentage share in Portugal

Name of international river basin	National RBD	Countries sharing RBD	Coordination category					
			1		2		3	
			km ²	%	km ²	%	km ²	%
Minho and Lima	PTRH1	ES			2 464.341	12		
Douro	PTRH3	ES			19 215.46	20		
Tagus and West Rivers	PTRH5A	ES			30 498.75	35		
Guadiana	PTRH7	ES			11 610.39	17		

Source 3rd RBMP electronic reporting

Category 1: International agreement, permanent cooperation body and international RBMP in place.

Category 2: International agreement and permanent cooperation body in place.

Category 3: International agreement in place.

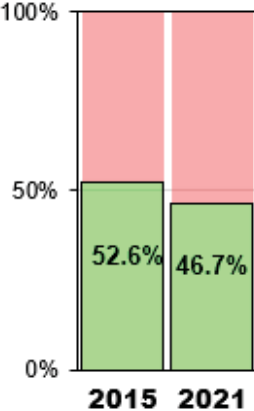
Category 4: No cooperation formalised.

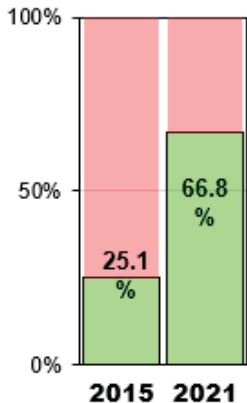
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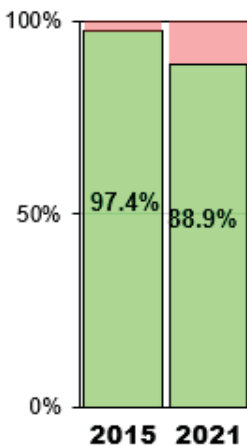
Portugal has designated 2 056 surface water bodies and 126 groundwater bodies. The assessment is based on electronic reporting data (all RBDs) and an in-depth review of 3rd RBMPs PDF documents for the RBDs Douro, Guadiana, Azores and Madeira. The deadline for reporting the 3rd RBMPs was March 2022. The Commission and the European Environment Agency (EEA), together with Member States, developed an electronic reporting system in WISE (Water Information System for Europe). Its use was voluntary. Some Member States used it to fulfil their obligations; others reported the plans in PDF format. The cut-off date for the WISE electronic reporting was September 2023, and the Member States were assessed based on the datasets available by that date.

The 3rd RBMPs were published on 3 April 2024. Portugal did not consult, adopt or report its 3rd RBMPs in accordance with the WFD timetable. The issue is one of timeliness rather than consultation quality: public participation was broad across all 10 RBDs, but the third consultation phase (on the draft RBMPs) started too late to meet the Article 14.1(c) requirement of publishing drafts at least one year before the plan period began – a delay that carried through to late adoption (3 April 2024) and late reporting.

Changes in status, pressures, exemptions and measures

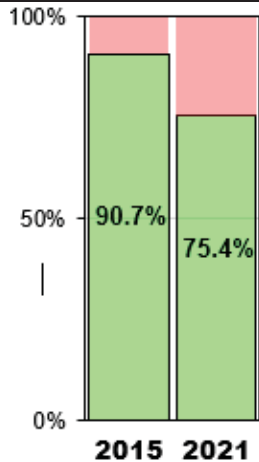
Surface water bodies (2 048)	Trend (% good status/potential)	Main pressures, changes and exemptions						
ECOLOGICAL STATUS	 <table><thead><tr><th>Year</th><th>% good status/potential</th></tr></thead><tbody><tr><td>2015</td><td>52.6%</td></tr><tr><td>2021</td><td>46.7%</td></tr></tbody></table>	Year	% good status/potential	2015	52.6%	2021	46.7%	The number of water bodies in Portugal classified as having ‘high’ or ‘good’ ecological status has seen a slight decline, attributed to episodes of severe drought and a widespread reduction in precipitation. These conditions have placed ecosystems under significant water stress, reducing the natural dilution and recovery capacities of aquatic systems. Overall monitoring has improved compared with the previous cycle. Some quality elements across biological, hydromorphological and physico-chemical quality elements are not monitored in all surface water body (SWB) categories. The most significant pressure affecting 61% of surface water bodies is diffuse pollution, of which 36% can be attributed to agriculture, 9% to urban runoff, 9% to discharges from dwellings unconnected to the sewer system and 30% to other sources. Hydromorphological pressures are reported for 39% of all water bodies, while point sources, mostly related to urban wastewater treatment plants, affected 27% of all water bodies. In particular, 40% of surface water bodies report unknown anthropogenic pressures. The biggest reported impacts affecting ecological status are nutrient (38% of water bodies) and organic pollution (17%), as well as altered habitats due to changes in the morphology (14%) and hydrology (14%) of water bodies. Despite these pressures, it is expected that by 2027 74.4% of surface water bodies will be in good or better status. Ecological flows (E-flows) have been partially defined and implemented in nine RBDs. While no specific data on the nutrient load reductions required to reach ‘good’ status is currently available, the levels of nitrogen (N) and phosphorus (P) produced by various activities have been mapped and there are planned targeted mitigation measures. Portugal has applied the following exemptions: • Article 4(4) (extended deadlines): Applied to 953 surface water bodies (46.4%) due to natural conditions, 248 (12.1%) for technical feasibility and 8 (0.4%) due to disproportionate costs. • Article 4(5) (lower objectives): Applied to 7 surface water bodies (0.3%) where achieving standard goals is unfeasible. • Article 4(6) (temporary deterioration): Applied to 121 surface water bodies (5.9%) due to natural causes and 56 (2.7%) due to <i>force majeure</i>.
Year	% good status/potential							
2015	52.6%							
2021	46.7%							

		• Article 4(7) (new modifications): Applied to 3 surface water bodies (0.1%) resulting from new physical modifications.									
CHEMICAL STATUS	 <table border="1"> <thead> <tr> <th>Year</th> <th>Good Status (%)</th> <th>Unknown Status (%)</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>25.1</td> <td>74.9</td> </tr> <tr> <td>2021</td> <td>66.8</td> <td>33.2</td> </tr> </tbody> </table>	Year	Good Status (%)	Unknown Status (%)	2015	25.1	74.9	2021	66.8	33.2	Knowledge of the chemical status of Portugal's water bodies has improved significantly over time. While 73.6% of water bodies were in unknown status in 2015, this share fell to 25.6% in 2021. The number of surface water bodies in good chemical status has increased, primarily due to several water bodies being reclassified from unknown to good status. At the same time, the share of water bodies in known bad chemical status has also increased, from 1.3% to 7.6%. The fact that over a quarter of all surface water bodies are still in unknown chemical status shows that there is still a significant knowledge gap. Since the 2nd RBMP, the proportion of 'unknown confidence' scores has decreased significantly in the 3rd RBMP, from 74% to 26%. The vast majority of water bodies have been reclassified from unknown status with unknown confidence to high degree of confidence. However, due to the lower frequency of monitoring and a limited number of monitored substances, it is unclear if the high confidence is justified. In the 3rd RBMP 55% of all surface water bodies in Portugal were classified with a high degree of confidence. The number of substances included in the monitoring programme has varied by RBD, with a maximum of 33 priority substances out of 45 for Guadiana, and a minimum of 12 for Minho and Lima, with 4 substances not monitored at all. All monitoring has been conducted in water, with some carried out in sediment or biota. Among priority substances causing failure, cadmium, mercury, nickel and lead, and chemicals linked to industrial sources, including fossil fuel combustion (fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, and perfluorooctane sulfonic acid PFOS) are in the top 10. The top 10 also includes the pesticide chlorpyrifos. Of the 7.6% of surface water bodies failing chemical status, cadmium is responsible for approximately half. It is expected that 69.1% of all surface water bodies will be in good status by 2027. Article 4(4) exemptions: Exemptions under Article 4(4) have been applied to 113 surface water bodies (5.5%) due to natural conditions and to 43 surface water bodies (2.1%) for technical feasibility reasons.
Year	Good Status (%)	Unknown Status (%)									
2015	25.1	74.9									
2021	66.8	33.2									

Ground water bodies (126)	Trend (% good status/potential)	Main pressures, changes and exemptions						
QUANTITATIVE STATUS	 <table><tr><th>Year</th><th>% good status/potential</th></tr><tr><td>2015</td><td>97.4%</td></tr><tr><td>2021</td><td>88.9%</td></tr></table>	Year	% good status/potential	2015	97.4%	2021	88.9%	The number of groundwater bodies in good quantitative status has decreased in this round of reporting mainly due to over-abstraction, primarily for agriculture, exceeding the available groundwater resource or causing human-induced declines in groundwater levels (accounting for 12 of the 14 failing groundwater bodies), with the remaining 2 linked to abstraction-driven saline intrusion. Between the 2nd and 3rd RBMPs, the reliability of groundwater body classifications has improved significantly, most likely reflecting a strengthened monitoring network and wider assessment coverage rather than a change in the underlying state of groundwater bodies. Groundwater-associated aquatic ecosystems (GWAAEs) have been reported in 6 out of 10 RBDs, although they have been factored into the quantitative status assessments of 7 RBDs³. Groundwater-dependent terrestrial ecosystems (GWDTEs) have been reported in 7 out of 10 RBDs, although they have been factored into the quantitative status assessments for 9 RBDs⁴. The number of groundwater bodies identified as drinking water protected areas has decreased from 112 in the 2nd RBMPs to 97 in the 3rd RBMPs. Fourteen groundwater bodies (11%) have failed to achieve good quantitative status. For 12 groundwater bodies the available groundwater resource has been exceeded by the long-term annual average rate of abstraction or there has been a human-induced decline in groundwater levels. For the other 2 groundwater bodies, the reason for failing to achieve good quantitative status was regional, saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction. Water abstraction has significantly impacted groundwater bodies in 9 out of 10 RBDs and 72% of groundwater bodies in Portugal, mainly due to agriculture (69%) and, to a lesser extent, public water supply (7%) and industry (4%). By 2021, 14 of 126 groundwater bodies were in poor quantitative status, primarily owing to these pressures.
Year	% good status/potential							
2015	97.4%							
2021	88.9%							

³ According to 3rd RBMPs e-reporting (GWB_GroundWaterBody), 6 out of 10 RBDs report GWAAEs. Furthermore, GWAAEs are reported (GWMET_gwm methodologies) to be considered in the groundwater quantitative status assessment in all 6 of them, and in the Madeira RBD (PTRH10), where they have not been reported to exist.

⁴ According to 3rd RBMPs e-reporting (GWB_GroundWaterBody), 7 out of 10 RBDs report GWDTEs. Furthermore, GWDTEs are reported (GWMET_gwm methodologies) to be considered in the groundwater quantitative status assessment in all 7 of them, and in the Minho and Lima RBD (PTRH1) and Azores RBD (PTRH9), where they have not been reported to exist.

		By 2027, 97.6% of groundwater bodies are expected to achieve good status. Article 4(4) exemptions: Exemptions under Article 4(4) are applied to 14 groundwater bodies (11.1%) due to natural conditions. Article 4(6) exemptions: Exemptions under Article 4(6) are applied to 8 groundwater bodies (6.3%) due to natural causes.						
CHEMICAL STATUS	 <table><thead><tr><th>Year</th><th>Good Chemical Status (%)</th></tr></thead><tbody><tr><td>2015</td><td>90.7%</td></tr><tr><td>2021</td><td>75.4%</td></tr></tbody></table>	Year	Good Chemical Status (%)	2015	90.7%	2021	75.4%	The number of groundwater bodies in good chemical status has decreased in this round of reporting. Between the 2nd and 3rd RBMPs, Portugal has significantly expanded surveillance monitoring of groundwater bodies, while operational monitoring coverage has declined slightly, suggesting that monitoring may not be sufficiently targeted towards groundwater bodies at risk of failing their objectives. The establishment of threshold values does not consider the assessment of impacts on GWAAEs and GWDTEs in 1 out of 10 RBDs. GWAAEs are reported in 6 out of 10 RBDs, but they are not considered in the groundwater chemical status assessment in 5 of those RBDs⁵. GWDTEs are reported in 7 out of 10 RBDs, but they are not considered in the groundwater chemical status assessment in any of those 7 RBDs⁶. The biggest pressure on the chemical status of groundwater is diffuse pollution from agriculture (60%), other diffuse sources (40%) and urban runoff (18%). Twenty-five groundwater bodies (19.8% of total groundwater bodies) have failed to achieve good chemical status. A further, separate 6 groundwater bodies (4.8% of total groundwater bodies) have failed to achieve good chemical status due to regional saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction. Among the 25 groundwater bodies failing due to pollutants, the specific substances most frequently causing failures include total phosphorus (10.3% of groundwater bodies), nitrate (7.9%), ammonium (4.0%), chloride (4.0%) and dimethoate (3.2%). 92.1% of groundwater bodies are expected to be in good status by 2027.
Year	Good Chemical Status (%)							
2015	90.7%							
2021	75.4%							

⁵ According to 3rd RBMPs e-reporting (GWB_GroundWaterBody), 6 out of 10 RBDs report GWAAEs. GWAAEs are reported (GWMET_gwm methodologies) to be considered in the groundwater chemical status assessment in all 6 of them, and in the Madeira RBD (PTRH10), where they have not been reported to exist. There are 5 RBDs that report GWAAEs but do not consider them in the groundwater chemical status assessment. There are also 4 RBDs that consider GWAAEs in the groundwater chemical status assessment, but no GWAAEs are reported in them. The only RBD that reports GWAAEs and considers them in the groundwater chemical status assessment is the Azores RBD (PTRH9).

⁶ According to 3rd RBMPs e-reporting (GWMET_gwm methodologies) there are 7 RBDs that report GWDTEs but do not consider them in the groundwater chemical status assessment. There are also 2 RBDs that consider GWDTEs in the groundwater chemical status assessment, according to 3rd RBMPs e-reporting, but no GWDTEs are reported in them: Minho and Lima RBD (PTRH1), and Cávado, Ave and Leca RBD (PTRH2).

		Article 4(4) exemptions: Exemptions under Article 4(4) are applied to 27 groundwater bodies (21.4%) due to natural conditions and to 4 groundwater bodies (3.2%) for technical feasibility reasons.
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2. Horizontal aspects



2.1 Governance

Portugal has designated 10 RBDs: eight on the mainland and two in the Azores and Madeira. Each RBD has its own RBMP, as in previous cycles. The Portuguese Environment Agency is responsible for revising mainland RBMPs, while the regional environment secretariats oversee the Azores and Madeira. This administrative setup matches the 2nd WFD cycle. Portugal's RBMPs have all undergone a strategic environmental assessment. The RBMPs and flood risk management plans (FRMPs) cross-reference each other. Joint consultations for the Water Framework Directive (WFD) and Floods Directive were conducted in all 10 RBDs. There is no clear evidence of coordination with the Marine Strategy Framework Directive in the 3rd RBMPs.

International coordination

Portugal shares four international river basin districts (IRBDs) with Spain: Minho and Lima, Douro, Tagus and West Rivers, and Guadiana. An international agreement has governed water management through the Albufeira Convention and its implementing commission since 1998, ensuring ongoing cooperation between the countries⁷.

Portugal ensured international coordination of public participation for all four shared IRBDs. For the 3rd RBMPs, the Portuguese and Spanish authorities produced one joint document (roof report) per RBD. Cooperation under the Albufeira Convention continued as in previous cycles, covering areas such as minimum flows, heavily modified water bodies, typology and protected areas, significant pressures, monitoring, status assessment, programmes of measures (PoMs), objectives and exemptions, public participation, strategic environmental assessment, and plan monitoring and implementation.

Public consultation

Public consultation for Portugal's 3rd RBMPs saw active stakeholder engagement across all 10 RBDs, including joint sessions with Spain for shared basins. A major strength in this cycle was a 60% increase in public participation during the significant water management issues (SWMI) phase compared with the previous cycle. Portugal effectively utilised online portals (such as PARTICIPA)⁸ and organised dedicated sectoral sessions, ensuring that documents for all phases were open for at least six months. However, there were notable shortcomings: most significantly, the consultation on the draft RBMPs (the third phase) was delayed and failed to comply with the Article 14.1(c) WFD timeline requirements. Additionally, participation in the initial procedural phase was very low, and reporting details for the first consultation phase in the Azores and Madeira were missing.



2.2 Characterisation of River Basin Districts

Water bodies

In Portugal, there are 2 056 surface water bodies and 126 groundwater bodies. There has been an overall increase of 16 surface water bodies and a decrease of 25 groundwater bodies since the 2nd RBMPs. The latter is mainly due to significant changes in the Azores RBD, where the delineation has resulted in the aggregation of several groundwater bodies and a decrease of 26 water bodies (while the total area has remained similar).

⁷ <https://www.cadc-albufeira.eu/es.html>.

⁸ <https://participa.pt/>.

Table 1. Water bodies delineated in Portugal

RBD	Rivers	Lakes	Transitional	Coastal	Territorial	Groundwater
Minho and Lima (PTRH1)	58	3	8	2	1	2
Cávado, Ave and Leca (PTRH2)	69	7	6	1	1	4
Douro (PTRH3)	373	27	3	2	1	3
Vouga Mondego and Lis (PTRH4A)	205	10	10	5	1	22
Tagus and West Rivers (PTRH5A)	424	31	4	6	1	20
Sado and Mira (PTRH6)	201	23	9	3	1	9
Guadiana (PTRH7)	227	30	5	2	1	8
Algarve rivers (PTRH8)	64	4	3	10	1	25
Azores (PTRH9)	10	23	3	27	3	28
Madeira (PTRH10)	137	0	0	8	2	5
Total in Portugal	1 768	158	51	66	13	126

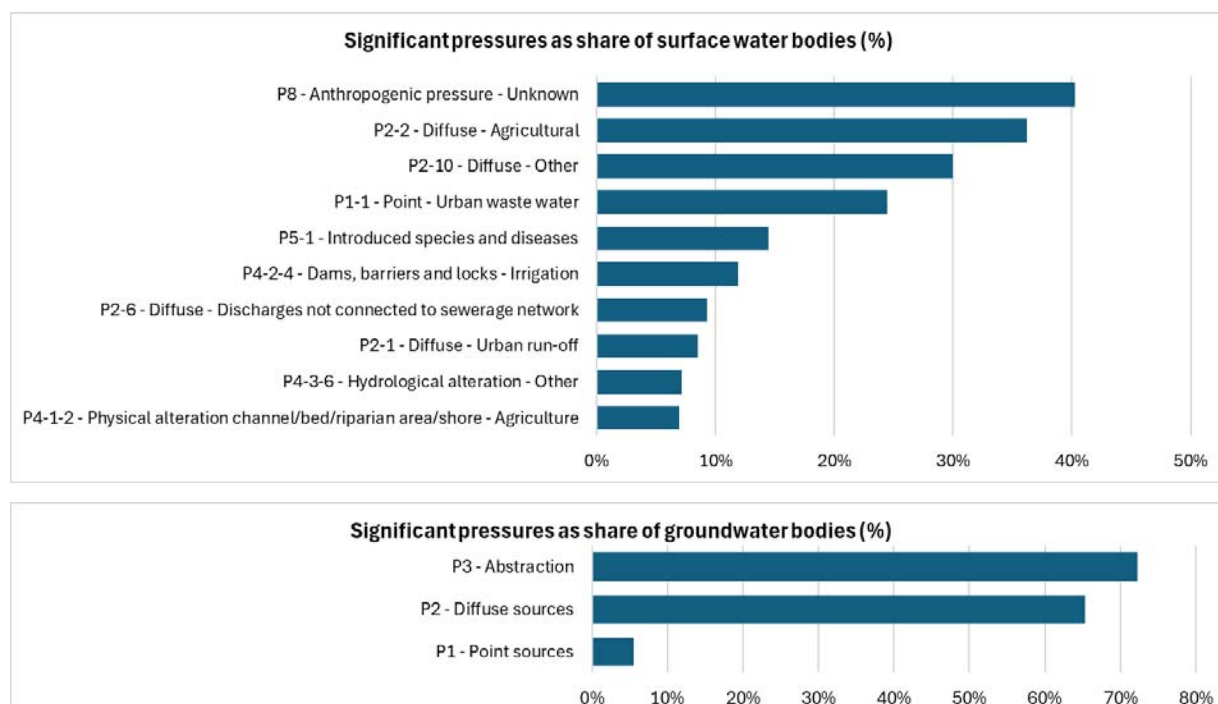
Source: WISE electronic reporting

Significant pressures on surface water bodies. Agricultural diffuse pollution remains one of the most significant pressures on surface water bodies, currently affecting 36% of surface water bodies (Figure 1). However, this represents a significant decrease on the 76% reported in the 2nd RBMPs. Similarly, point source pollution from urban wastewater has seen a significant decrease, from 45% in the previous cycle to 24% in the 3rd RBMPs. Conversely, diffuse pollution from urban runoff has increased slightly, from 6% to 9%. Most notably, 40% of surface water bodies are now reported to be affected by unknown anthropogenic pressures – a sharp increase on the 8% reported in the 2nd RBMPs – highlighting a significant knowledge gap in pressure characterisation that needs to be addressed.

Significant pressures on groundwater bodies. The 3rd RBMPs identify abstraction as the most widespread challenge, affecting 72% of water bodies. This is closely followed by diffuse pollution sources at 65%, while point sources account for just 6% (Figure 1). Direct comparisons with the 2nd RBMPs are difficult due to changes in how pressure categories were defined and reported. In the previous cycle, diffuse sources were the leading pressure (71%), followed by issues related to groundwater recharge or water levels (18%), point sources (7%) and historical pollution (4%). Although these shifting classifications complicate a direct trend analysis, it remains evident that severe water extraction and diffuse pollution continue to drive the primary pressures on Portugal's groundwater.

For most RBDs, expert judgement rather than numerical tools was used to assess significant pressures. Significant pressures on surface water were not defined in terms of thresholds and not linked with failure to achieve status objectives. Significant pressures on groundwater have not been defined in terms of thresholds for any RBDs.

Figure 1. The most significant pressures on surface water and groundwater bodies in Portugal in the 3rd RBMPs (expressed as percentages of the number of water bodies)

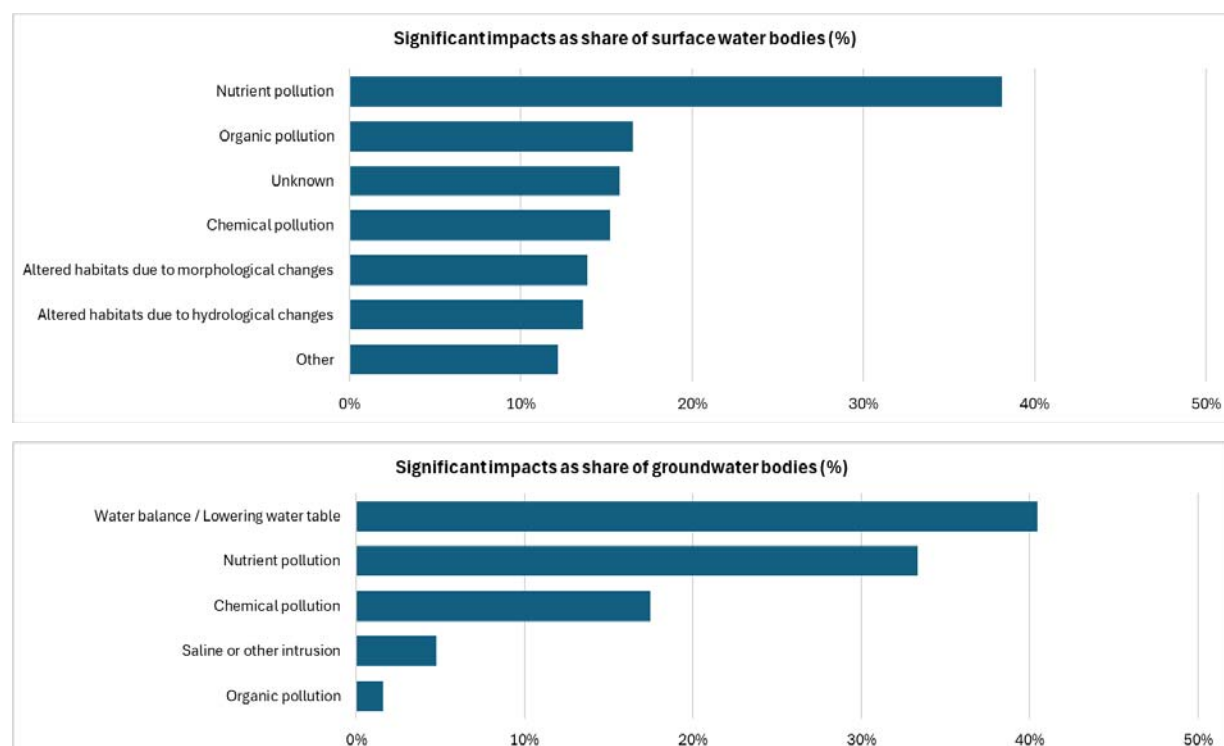


Source: WISE electronic reporting.

Significant impacts on surface water bodies. In the 3rd RBMPs, the most significant impact on surface water bodies is nutrient pollution, which is now reported in 38% of water bodies (Figure 2). This marks a significant shift from the 2nd RBMPs, where organic pollution was the primary concern, at 41%. Since then, organic pollution has fallen sharply, now affecting just 17% of surface water bodies, while nutrient pollution has worsened, rising from 27% in the previous cycle to 38%. Meanwhile, the prevalence of chemical pollution has seen a steep increase, from just 4% in the 2nd RBMPs to 15% in the current cycle. Additionally, unknown impacts are now reported for 16% of surface water bodies, pointing to ongoing challenges in impact characterisation and assessment.

Significant impacts on groundwater. Groundwater bodies are facing sharply escalating impacts, with significant increases in reported impacts across the board (Figure 1). The most prevalent issue is the disruption of the water balance and the lowering of water tables, which now affects 40% of groundwater bodies, a sharp increase on a mere 3% in the 2nd RBMPs. Similarly, nutrient pollution continues to worsen, impacting 33% of groundwater bodies compared with 13% in the previous cycle. Chemical pollution also shows an upward trend, having been reported in 17% of groundwater bodies, up from just 1% in the 2nd RBMPs.

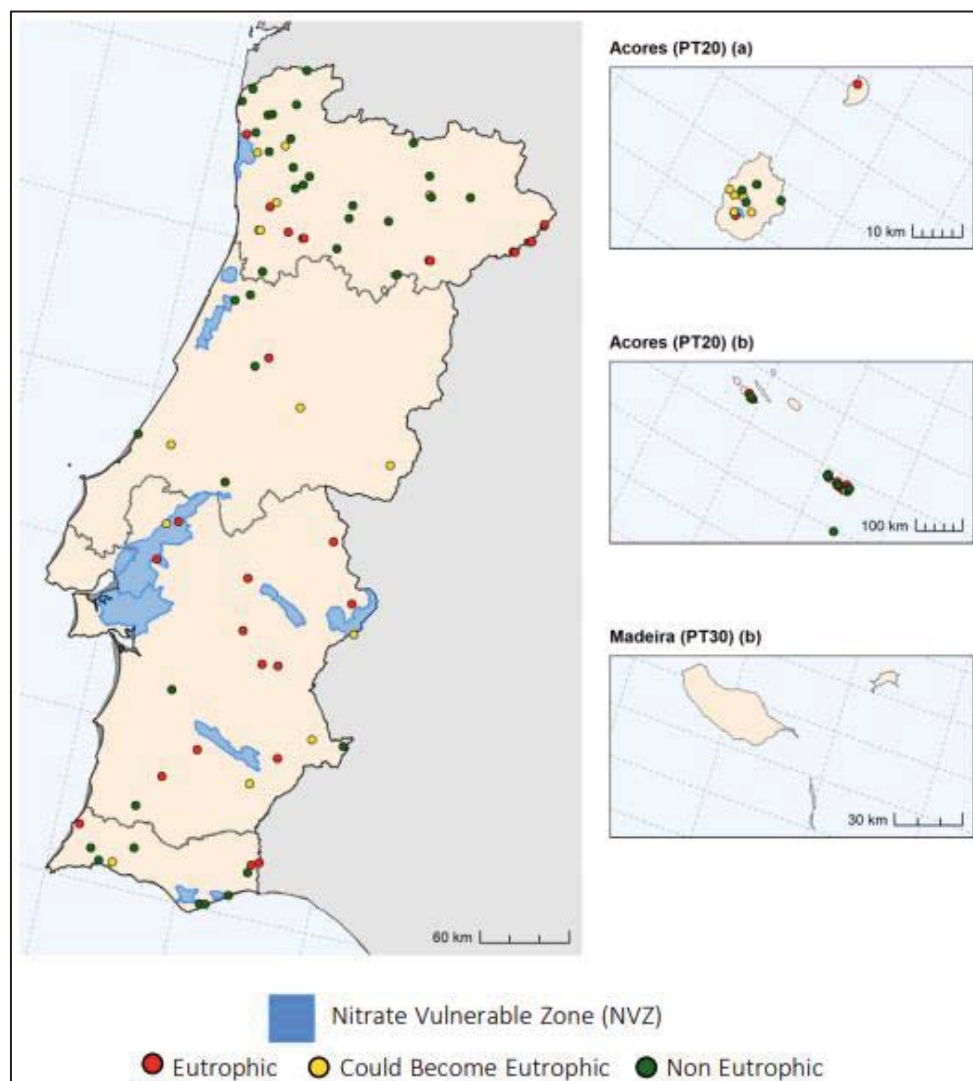
Figure 2. The most significant impacts on surface water and groundwater bodies in Portugal in the 3rd RBMPs (expressed as percentages of the number of water bodies)



Source: WISE electronic reporting

Eutrophication. Discharging excess nutrients into surface waters leads to eutrophication, causing a proliferation of algal blooms and oxygen depletion. Under the Nitrates Directive, Portugal indicated that some monitoring points across the country show surface waters as eutrophic or at risk of becoming eutrophic (Figure 3). Although Portugal has made commendable improvements to its broader Water Framework Directive monitoring networks, reporting under the Nitrates Directive indicates that the density of specific monitoring points within some Nitrate Vulnerable Zones and agricultural hotspots remains low.

Figure 3. Map of the monitoring points showing eutrophication assessment in Portugal, according to the reporting of the Nitrates Directive⁹



Type-specific reference conditions

The WFD requires type-specific reference conditions to be set for biological quality elements and type-specific conditions to be set for hydromorphological and physico-chemical quality elements. These represent the values of these quality elements at high ecological status. Most river and lake types have type-specific reference conditions for all biological quality elements and type-specific conditions for hydromorphological and physico-chemical quality elements. Most transitional types and approximately half of coastal types have type-specific reference conditions for all biological quality elements. All transitional and coastal types have some type-specific conditions for physico-chemical quality elements. This is a clear improvement on the 2nd RBMP. The main gaps are for hydromorphological quality elements in transitional and coastal waters, as most types in these categories have no type-specific conditions for hydromorphological quality elements. According to the Portuguese authorities, that is because the current assessment method is based on expert judgement and significant pressure analysis, rather than on type-specific conditions.

⁹ NITRATES DIRECTIVE - Reporting Period 7 (2016-2019) – trophic status:
<https://water.jrc.ec.europa.eu/portal/apps/dashboards/cb6034c2a75e4df282f8a62f90c16caa>.

Emissions inventories

All RBDs except Maderia (PTRH10) have established emissions inventories for some substances, but in some RBDs there are substances identified as being relevant at RBD-scale that do not have emissions inventories established.

3. Policy elements contributing to biodiversity and climate change adaptation



3.1 Surface Water: what is their ecological status or potential

Monitoring

There are two main types of monitoring: i) operational monitoring, which determines the status of all water bodies at risk of not reaching the environmental objectives; and ii) surveillance monitoring, which provides an assessment of the overall surface water status within the river basin district, and identifies impacts and long-term changes.

In Portugal, surveillance and operational monitoring for ecological status is now undertaken across all four water categories, showing significant improvements compared to the 2nd RBMPs, such as the establishment of specific network methodologies and the introduction of surveillance monitoring for lakes in the Azores. Currently, surveillance monitoring demonstrates high spatial coverage, encompassing 86% of river length, 97% of lake area and 100% of both transitional and coastal areas. Operational monitoring is undertaken with a lower, yet substantial, coverage: 52% of river length, 58% of lake area, 84% of transitional area and 13% of coastal area. Despite these positive trends, a gap remains, as monitoring is still limited exclusively to surveillance monitoring in two RBDs (Azores and Madeira).

Regarding the biological quality elements, overall, most of the quality elements to be monitored are included, although there is a lack of monitoring of fish in lakes. As for hydromorphological quality elements, most required quality elements are monitored at a mid to high coverage, although a gap exists for tidal regime in transitional waters. All physico-chemical quality elements are covered in all surface water categories to some degree, mostly with a high rate of coverage. RBMPs are monitored in the four water categories.

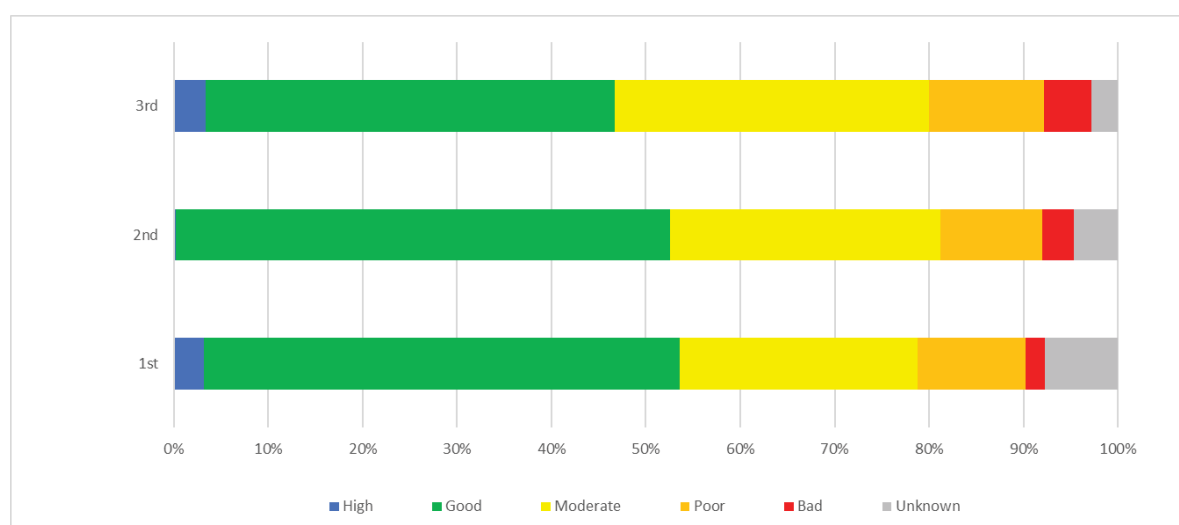
Status assessment

The percentage of surface water bodies in 'good or above' ecological status or potential has decreased from 52.6% in the 2nd RBMPs to 46.7% in the 3rd RBMPs (Figure 4). Portugal attributes this decline primarily to episodes of severe drought and widespread decreases in precipitation during the 2014-2019 monitoring period, which placed ecosystems under significant water stress and reduced their natural dilution and recovery capacities. Additionally, a significant increase in the confidence and accuracy of the status assessments since the last cycle has probably helped uncover previously unrecorded degradations. The percentage of surface water bodies in unknown ecological status or potential has decreased slightly since the 2nd RBMPs, from 4.7% to 2.8%. By 2027, it is predicted that 74.4% of surface water bodies will be in good or above status or potential, which would imply a significant improvement on the 3rd RBMP.

Biological quality element assessments are missing for 24% of rivers, 13% of lakes and 18% of coastal water bodies. However, Portugal notes that this is primarily due to the natural absence or

lack of ecological relevance of certain biological elements in specific water bodies, rather than a gap in monitoring. In these cases, status assessments continue to rely on actual monitoring data from other supporting quality elements (such as physico-chemical parameters) or the grouping of water bodies, with minimal reliance on expert judgement. In contrast, ecological status is assessed using at least one biological quality element for all transitional water bodies. Since the 2nd RBMPs, confidence in the ecological status classification has improved. For good, moderate, poor and bad status classifications, the level of high confidence has increased significantly, while the share of medium and low confidence has decreased.

Figure 4. Ecological status or potential of surface water bodies in Portugal in the 1st, 2nd and 3rd RBMPs



Source: WISE electronic reporting.

Portugal has updated its monitoring list of river basin-specific pollutants (RBSPs) in the 3rd RBMPs. However, despite the inclusion of background information, it remains unclear whether the derivation of the Environmental Quality Standards (EQS) for these pollutants fully aligns with the recommended guidance. Based on the reported data, the RBSPs causing surface water bodies to fail to achieve good ecological status are zinc (affecting approximately 8% of surface water bodies), ammonia (4%), and copper, terbuthylazine and dimethoate (1% each).

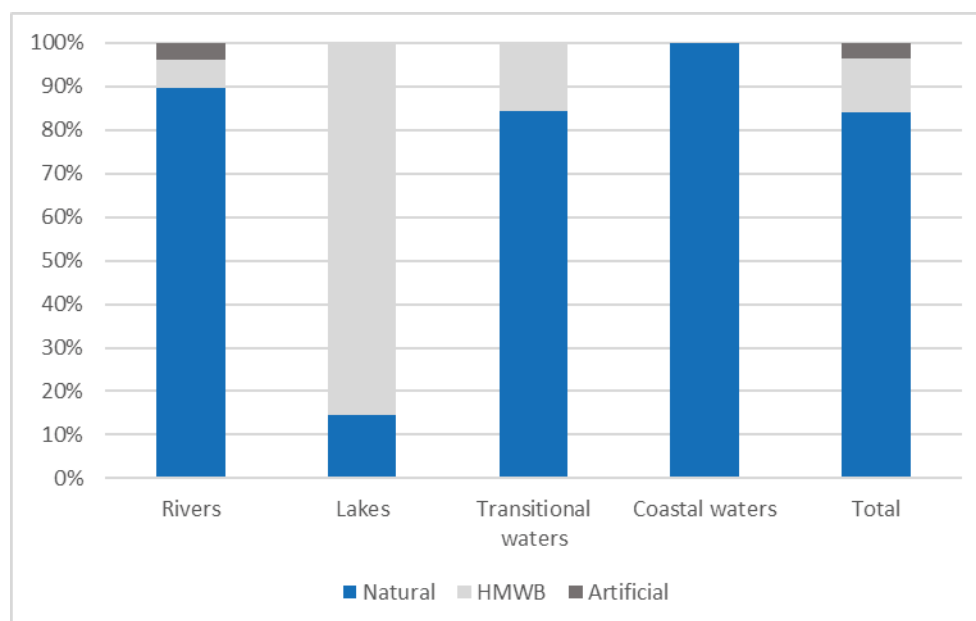


3.2 Hydromorphological changes and artificialisation (HMWBs and AWBs)

The level of human intervention in Portugal's water system remains low overall and below the EU average. In 2021, 12% of the country's water bodies were designated as heavily modified and 3% were classified as artificial, which is the same share as in 2015. Portugal has designated a total of 255 water bodies as heavily modified, comprising 112 rivers, 135 lakes and 8 transitional waters. Since the 2nd RBMPs, the number of heavily modified rivers has decreased, while the number of heavily modified lakes has increased. No coastal waters are designated as heavily modified. Portugal has designated 70 artificial water bodies, which are all rivers.

Figure 5 shows the percentage of surface water bodies designated as heavily modified or artificial. The percentage of heavily modified lakes (85%) is particularly high.

Figure 5. The proportion of natural, heavily modified and artificial water bodies, by water category and total



Source: WISE electronic reporting

Water bodies are designated as heavily modified mostly due to irrigation of agricultural land, followed by hydropower, then urban development related to drinking water supplies. Other uses leading to such a designation include fisheries, flood protection, industry, tourism and recreation.

Regarding heavily modified water bodies (HMWBs), the 3rd RBMPs show a slight improvement at the top end of the scale, with 38% now reaching good ecological potential, up from 34% in the 2nd RBMPs. Meanwhile, the proportion of HMWBs in moderate and poor status has decreased to 38% (down from 43%) and 14% (down from 16%), respectively. However, the proportion of water bodies classified as having bad status has increased from 4% to 9%, as the 3% previously reported as unknown in the 2nd cycle has now been classified. For artificial water bodies (AWBs), Portugal has made significant strides in data collection and assessment. While 100% of AWBs were reported in unknown status during the 2nd RBMPs, the current cycle has successfully classified a large portion, with 23% achieving good status and 16% in moderate status. Although 61% of AWBs remain in unknown status, this represents a substantial step forward in reducing knowledge gaps.

The methodology for designating water bodies as AWBs or HMWBs is at least partly based on CIS guidance document No 4 (Identification and Designation of Heavily Modified and Artificial Water Bodies). However, the information provided on the national implementation of this CIS guidance is limited, as regards the criteria used to define whether the required restoration measures would have significant adverse effects on the use of the water body or the wider environment. As regards the analysis of whether the benefits of the uses resulting from the hydromorphological alteration of the water body can be achieved by other means that constitute a significantly better environmental option, detailed information is provided at least for some of the water bodies.

Portugal has improved its methodology for defining good ecological potential since the previous cycle by better aligning with EU guidance and systematically incorporating the effects of mitigation measures into its assessments.



3.3 Groundwater bodies –have they sufficient water – quantitative status

Monitoring

In Portugal's 3rd RBMPs, the number of groundwater bodies decreased by 16.5%, from 151 in the 2nd RBMPs to 126, due to revisions in the Azores and Madeira, though most boundaries and the total surface area remained unchanged. This equates to a relative reduction of 16.5% in the number of groundwater bodies. Despite these changes, the total groundwater body area remained nearly the same. No transboundary groundwater bodies have been reported.

Quantitative monitoring now covers 86 groundwater bodies (68.3%, up from 53% (80 groundwater bodies) in the 2nd RBMPs) and 81.9% of the total groundwater body area. Monitoring sites for quantitative monitoring increased from 430 in the 2nd RBMPs to 501. The number of groundwater bodies designated as drinking water protected areas fell from 112 to 97, mainly due to aggregation in boundary re-delineation.

Groundwater associated aquatic ecosystems (GWAAEs) are reported in 6 out of 10 RBDs, although they are considered in the quantitative status assessments for 7 RBDs¹⁰. Groundwater dependent terrestrial ecosystems (GWDTEs) are reported in 7 out of 10 RBDs, although they are considered in the quantitative status assessments for 9 RBDs¹¹. Grouping of groundwater bodies was used when assessing the quantitative status of groundwater bodies.

Status assessment

Portugal's groundwater quantitative status has fallen significantly since the 2nd RBMPs. Poor-status bodies rose from 2.6% (4 of 151) in 2015 to 11.1% (14 of 126) in 2021 (Table 2, Figure 6).

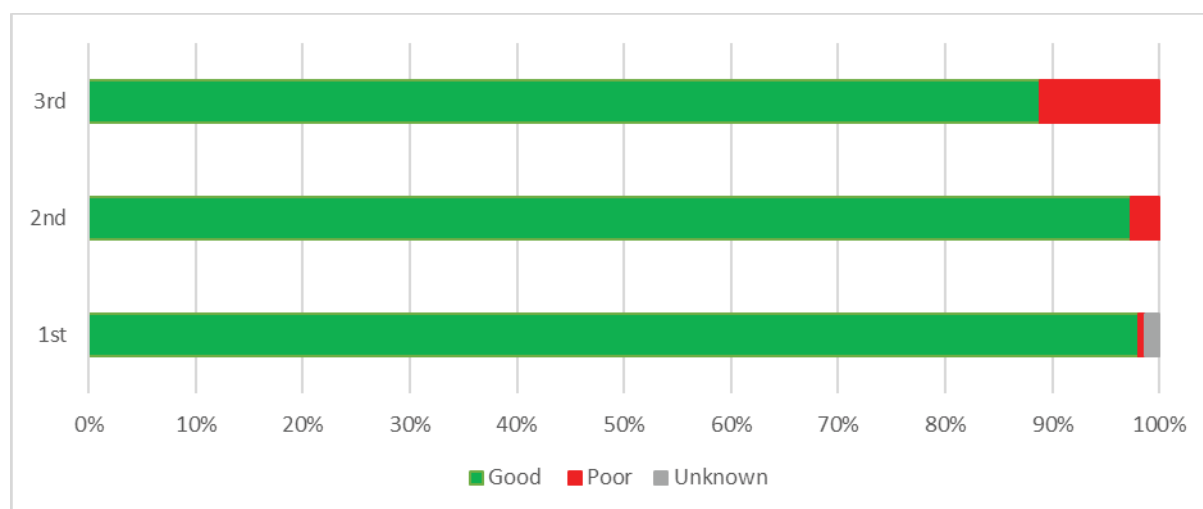
Of the current poor-status bodies, 12 (9.5%) failed because abstractions exceed long-term recharge or cause human-induced level declines. An additional 2 (1.6%) failed due to saline or other intrusions caused by over-abstraction and altered flow directions. Despite these challenges, data reliability has improved; high and medium-confidence classifications have risen, low-confidence classifications have decreased, and 'unknown' confidence classifications have been eliminated.

While 41 bodies (32.5%) are currently at risk, Portugal expects just 3 (2.4%) in the Madeira and Guadiana regions to fail their 2027 targets. To achieve this, Portugal plans to rely on stricter abstraction permitting, enhanced water efficiency measures across agriculture and industry, and initiatives to increase supply through water reuse and new reservoirs. However, reaching this ambitious target may prove challenging; agricultural abstraction volumes are still largely based on estimates rather than direct metering, and the intensifying impacts of climate change and recurrent droughts are expected to severely strain groundwater recharge and availability.

¹⁰ According to 3rd RBMPs e-reporting (GWB_GroundWaterBody), 6 out of 10 RBDs report GWAAEs: Minho and Lima RBD (PTRH1), Vouga Mondego and Lis RBD (PTRH4A), Tagus and West Rivers RBD (PTRH5A), Sado and Mira RBD (PTRH6), Algarve Rivers RBD (PTRH8), and Azores RBD (PTRH9). Furthermore, GWAAEs are reported (GWMET_gwm methodologies) to be considered in the groundwater quantitative status assessment in all 6 of them, and in the Madeira RBD (PTRH10), where they have not been reported to exist.

¹¹ According to 3rd RBMPs e-reporting (GWB_GroundWaterBody), 7 out of 10 RBDs report GWDTEs: Douro RBD (PTRH3), Vouga Mondego and Lis RBD (PTRH4A), Tagus and West Rivers RBD (PTRH5A), Sado and Mira RBD (PTRH6), Guadiana RBD (PTRH7), Algarve Rivers RBD (PTRH8), and Madeira RBD (PTRH10). Furthermore, GWDTEs are reported (GWMET_gwm methodologies) to be considered in the groundwater quantitative status assessment in all 7 of them, and in the Minho and Lima RBD (PTRH1) and Azores RBD (PTRH9), where they have not been reported to exist.

Figure 6. Quantitative status of groundwater bodies in 2009, 2015 and 2021, and expected status by 2027



Source: WISE electronic reporting



3.4 Protected Areas (identification, monitoring, objectives and measures)

Portugal has designated seven types of protected area: drinking water protection areas; bathing waters under the Bathing Water Directive; Natura 2000 sites under the Birds and Habitats Directives; nitrate vulnerable zones under the Nitrates Directive; nutrient-sensitive areas under the Urban Wastewater Treatment Directive (UWWTD); freshwater fish designated waters; and shellfish designated waters (Table 2).

Table 2. Number of water bodies associated with protected areas, by type of protected area and type of associated water body

Protected area type	Rivers	Lakes	Coastal	Transitional	Groundwater
Drinking water	89	44		1	97
Bathing water	69	20*	35	15*	
Natura 2000	546	57	46	36	
Nitrate vulnerable zone		13			14*
Sensitive area (UWWTD)	1	17*	2		
Freshwater fish designated area	199	44			
Shellfish designated area	1		53	24	

Source: 3rd RBMP e-reporting + values with * were subsequently provided by Portugal

Figure 7 shows the progress in the status of water bodies associated with protected areas between the 2nd and 3rd RBMPs. Since the 2nd RBMPs, there has been a small decrease in the percentage of surface water bodies associated with protected areas in 'good or above' ecological status or potential, down from 56.8% in the 2nd RBMPs, to 52.0% in the 3rd RBMPs. However, there has been a small increase in the percentage of surface water bodies in high ecological status or maximum potential. A large improvement can be seen in the chemical status of surface water bodies associated with

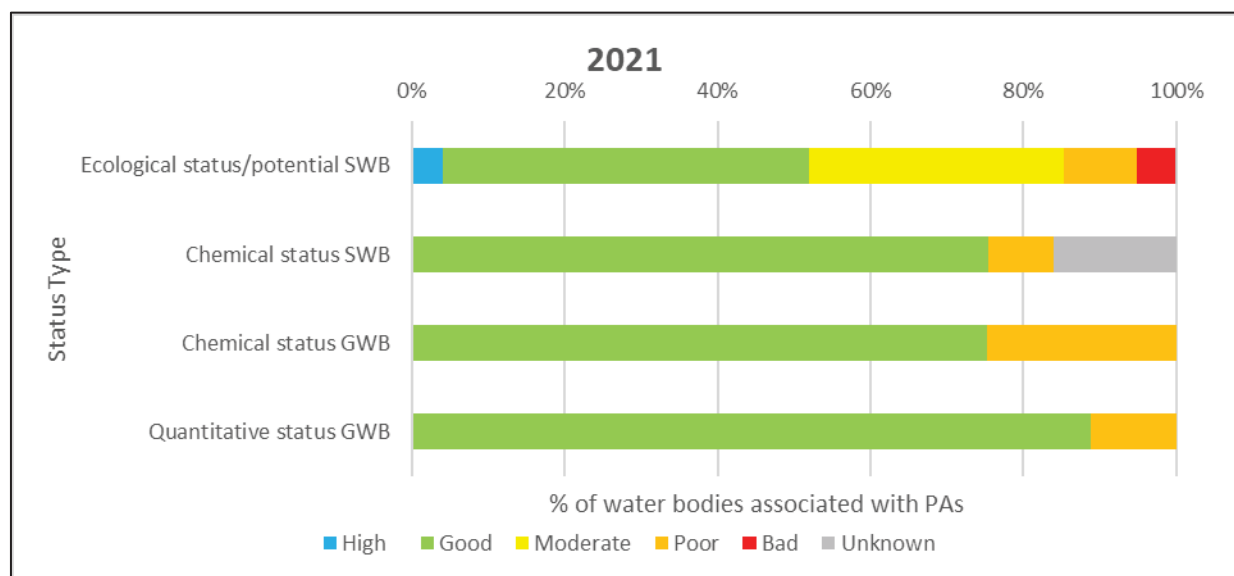
protected areas, where the percentage in good chemical status has increased from 37.4% in the 2nd RBMPs to 75.4% in the 3rd RBMPs. However, this is mainly due to overall better knowledge, as the percentage of cases of unknown chemical status has decreased from 60.5% in the 2nd RBMPs to 16.0% in the 3rd RBMPs. For groundwater bodies associated with protected areas, there has been a fall in the percentage of good quantitative status, from 96.6% in the 2nd RBMPs to 89.7% in the 3rd RBMPs, and of good chemical status, from 87.9% in the 2nd RBMPs to 75.3% in the 3rd RBMPs.

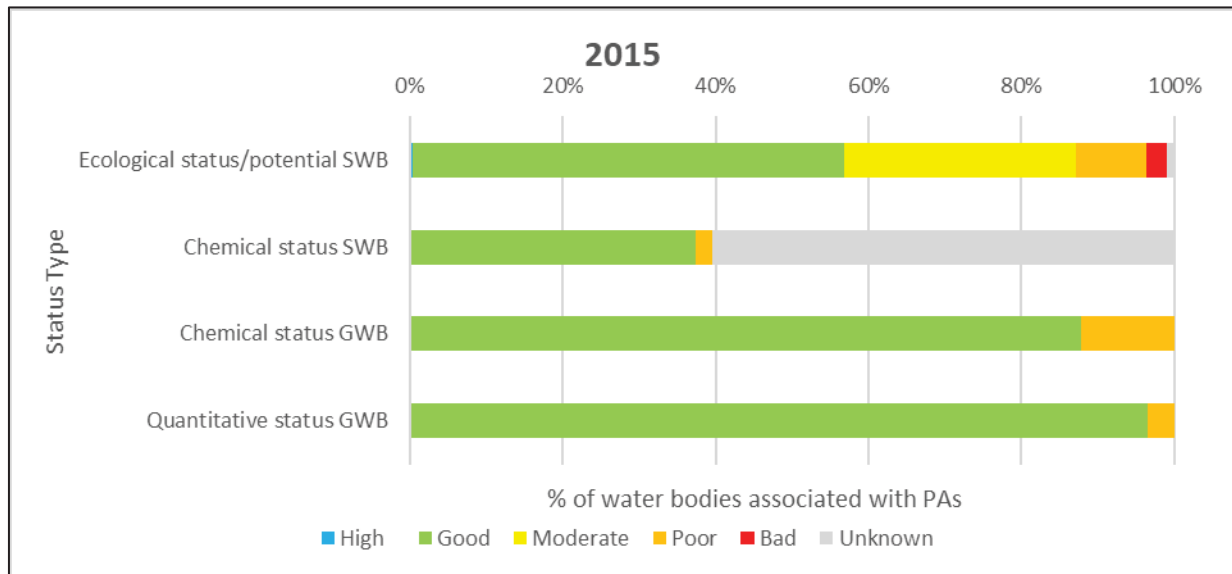
Monitoring sites have been established for surface and groundwaters covering each type of protected area. There have been changes since the 2nd RBMPs regarding the number of monitoring sites in protected areas. For drinking water protection areas, bathing waters, shellfish protected waters and nutrient-sensitive areas, the number of monitoring sites has increased.

Over 40% of groundwater bodies are protected for drinking water, even though they provide just 29% of the overall supply of drinking water. The main source of water supply in mainland Portugal is surface water bodies.

Additional objectives have been set regarding water quality in Natura 2000 areas, several coastal bathing waters, drinking water protection areas and shellfish designated areas. Based on the four PDF RBMPs assessed in detail, Portugal has provided limited information on the additional objectives and measures required to improve water bodies associated with protected areas. For instance, the e-reporting outlines that a total of 160 objectives has been set for shellfish protected areas with microbiological standards different to those in the repealed Shellfish Directive 2006/113/EC. Where non-compliant protected areas are identified, specific measures to improve those protected areas have been identified. In particular, specific measures have been identified in the RBMP for drinking water protection areas and for freshwater fish designated areas. However, specific measures are not reported for the other types of designated protected area.

Figure 7. Progress in the status of water bodies associated with protected areas in the 2nd RBMPs (2016) and 3rd RBMPs (2022)





Source: WISE electronic reporting



3.5 What is being done to prevent/reduce hydromorphological pressures

In Portugal, significant hydromorphological pressures are identified for all RBDs. The sectors most commonly associated with these pressures are agriculture, hydropower and public water supply.

To tackle these pressures, the RBMPs include various measures to improve longitudinal continuity and hydromorphological conditions; improve the flow regime and/or establishment of ecological flows; reduce sediment from soil erosion and surface runoff; implement natural water retention measures; and carry out additional research. According to reporting in WISE, there is a register and permitting regime to control the physical modification of water bodies and riparian areas in place according to Article 11(3)(i) WFD.

In many water bodies there are barriers without associated uses that alter the hydrological regime and sediment transport, compromise longitudinal connectivity and prevent the free movement of fish species. It is therefore welcomed that Portugal has planned to update the inventory of hydro-morphological pressures and identify obsolete artificial barriers to support the regional administrative measure 'Preparation of a national plan for the restoration of river continuity'. This work is also relevant for the implementation of the Nature Restoration Regulation¹². Portugal has planned measures related to controlling diffuse sediment pollution, measures addressing soil erosion from forest exploitation and forest fires and measures promoting soil conservation.

Regarding measures that are also relevant for the Floods Directive, Portugal promotes the use of natural water retention measures (e.g. sustainable urban drainage systems) to reduce flood risk and promote adaptation to climate change. Specific examples include river restoration initiatives in the Tagus RBD, natural flood protection measures in Madeira, the replacement of existing drainage with sustainable urban drainage systems (SUDS) in Porto, and the promotion of sustainable silviculture to reduce sediment yield.

¹² [Regulation \(EU\) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature restoration and amending Regulation \(EU\) 2022/869](#)

Portugal has only partially defined and implemented ecological flows in certain water bodies. Although national guidelines for defining ecological flows have been published¹³, application remains incomplete. A dedicated monitoring programme is scheduled to be implemented in the 2022-2027 period. This programme aims to evaluate the ecological effectiveness of the flow regimes that have already been established, measure actual flow volumes to identify non-compliance, and gather data to support the definition of specific e-flow measures for additional water bodies.

Around EUR 710 million in EU investments under cohesion policy aimed at promoting climate change adaptation and disaster risk prevention and resilience, taking into account ecosystem-based approaches (Specific Objective 2.4), out of which EUR 435 million is indicatively earmarked for investments in prevention or management of floods and landslides and EUR 38,9 million for investments in water management and water resource conservation.



3.6 What Portugal is doing for abstractions and water scarcity

Water abstractions are a significant pressure

Water abstractions are a significant pressure in 9 out of 10 RBDs in Portugal, causing the poor quantitative status of 13 of 126 groundwater bodies (10.3% of groundwater bodies) and the poor ecological status of 10 of 2 056 surface water bodies (0.5% of surface water bodies).

In 2018, the main water uses in Portugal were agriculture (86%), public supply (10.4%) and industry (3.6%).

According to Eurostat, the long-term average Water Exploitation Index (WEI+)¹⁴ for Portugal between 2014 and 2023 was 8.8%. However, this national average masks drastic seasonal and regional disparities, with the southern RBDs suffering from acute water stress. Data from the European Environment Agency (EEA) covering the 2016-2021 period¹⁵ highlights these regional extremes, especially during the summer months. Average summer WEI+ values peaked in several basins, including Guadiana (91%), Sado and Mira (86%), Algarve Rivers (78%), Tagus and West Rivers (38%), and Cávado, Ave and Leca (30%). The Sado and Mira RBD in particular experiences continuous water stress year-round, reporting a winter minimum WEI+ of 29%. Conversely, summer peak values in the Douro (17%), Vouga, Mondego and Lis (15%), and Minho and Lima (2%) RBDs remained below the 20% threshold for water stress.

Measures

Portugal strives to constrain water abstractions through a combination of basic measures (permitting, metering and pricing) and by defining and implementing ecological flows, particularly in transboundary rivers shared with Spain. Under Portugal's Water Law, most groundwater and surface water abstractions must be registered and authorised. However, the European Court of Auditors (ECA) noted in 2021¹⁶ that significant loopholes remain, such as exemptions from authorisation for certain legacy abstractions. Furthermore, Portuguese law allows concessions to be issued for a maximum of

¹³ https://apambiente.pt/sites/default/files/SNIAMB_Agua/DRH/PlaneamentoOrdenamento/PGRH/2022-2027/PGRH_3_PTCONT_Guia_RegimeCaudaisEcologicos.pdf.

¹⁴ The WEI+ provides a measure of total water consumption as a percentage of the renewable freshwater resources available for a given territory and period. WEI+ values above 20% indicate that water resources are under stress and therefore water scarcity conditions prevail, while values above 40% indicate that water stress is severe and the level of freshwater use may be unsustainable.

¹⁵ <https://www.eea.europa.eu/en/analysis/indicators/use-of-freshwater-resources-in-europe-1/seasonal-water-scarcity-conditions-for> and <https://www.eea.europa.eu/en/datahub/datahubitem-view/4d59470c-b3bd-4b06-9cc0-2515b29f56cc>.

¹⁶ https://www.eca.europa.eu/Lists/ECADocuments/SR21_20/SR_CAP-and-water_EN.pdf.

75 years and does not require the competent authorities to carry out periodic reviews to update the control measures on water abstractions and impoundments and any other significant adverse impacts on the status of water.

To enforce abstraction rules, Portugal's water management authorities use a system of on-the-spot checks based on an annual control plan, risk analysis and complaints, which includes random visual inspections of agricultural parcels. Despite these efforts, the ECA report pointed out that in the EU, implementation of the WFD is progressing slowly and that Portugal's control system under the CAP requires substantial improvement. Notably, during cross-compliance checks on the implementation of the standard for good agricultural and environmental condition of land (GAEC 2), under the CAP 2014-2020, inspectors generally only verify that an authorisation exists as the legal text¹⁷ requires compliance with authorisation procedures, as the Commission did not make a proposal on including any parts of the WFD in the 2014-2020 cross-compliance framework. Like many other Member States, Portugal does not check the actual content of these authorisations, such as maximum permitted abstraction volumes or restricted irrigation times, and there is no indication that the presence of required water meters is verified in practice.

Recognising these administrative and technological shortcomings, Portugal's 2024 national water management strategy (*Água que Une*) outlines a new 'intelligence axis'. This includes a comprehensive digitalisation action plan for the water cycle, backed by a EUR 50 million investment. The strategy aims to modernise tracking by deploying widespread telemetry, remote sensing and satellite imagery to monitor water consumption in real time. Furthermore, the strategy proposes the creation of a 'large water user' status, which will impose special reporting and efficiency obligations on the biggest consumers to foster transparency and accountability.

Furthermore, current economic instruments do not provide a sufficient deterrent against agricultural over-abstraction. The ECA identified that Portugal's water pricing mechanisms favour agriculture, charging much lower prices than for other uses. For instance, the basic unit value of the water resource charge (*taxa de recursos hídricos*) applied to agriculture is 4.7 times lower than the rate for public water supply, significantly weakening the financial incentive for efficient water use in the agricultural sector.

As for measures with a positive effect on drought prevention, Portugal's PoMs promote sustainable water intakes, efficient water use, environmentally friendly agricultural practices (which also serve a dual purpose by reducing sediment runoff), technical measures for irrigation, industry and housing, and additional conditions applied in the licensing procedures.

Furthermore, the implementation of ecological flows remains largely incomplete. While work is ongoing in 9 out of 10 RBDs, e-flows have only been defined and implemented for a limited number of specific water bodies. As a result, their inclusion in the permitting process to actively constrain water abstractions is limited in practice.

Water efficiency plan

Two of four RBMPs include dedicated chapters on climate change, forecasting and measures for sustainable agriculture, water scarcity and droughts¹⁸.

¹⁷ [Regulation \(EU\) No 1306/2013 of the European Parliament and of the Council of 17 December 2013 on the financing, management and monitoring of the common agricultural policy and repealing Council Regulations \(EEC\) No 352/78, \(EC\) No 165/94, \(EC\) No 2799/98, \(EC\) No 814/2000, \(EC\) No 1290/2005 and \(EC\) No 485/2008](#)

¹⁸ 3rd RBMP pdf documents assessed: Douro RBD (PTRH3), Guadiana RBD (PTRH7), Azores RBD (PTRH9) and Madeira RBD (PTRH10).

In 2005, Portugal adopted a National Water Use Efficiency Programme (*Programa Nacional para o Uso Eficiente da Água* – PNUEA)¹⁹, which was later updated in 2012 with targets extending to 2020. While these past frameworks have initiated important actions, significant challenges persist. According to Portugal's 2024 national water management strategy (*Água que Une*), current water losses still average 25% in large public hydro-agricultural developments, while non-revenue water in urban retail supply systems remains high, at 27.1%. To address these inefficiencies, the *Água que Une* strategy mandates the revision of the PNUEA and its formal inclusion in the upcoming National Water Plan (*Plano Nacional da Água* – PNA).

Rather than relying solely on percentage-based goals, the new 2024 national strategy sets concrete volumetric targets backed by a EUR 1.7 billion investment under its 'efficiency axis'. By 2030, Portugal aims to decrease overall water inefficiencies by 328 hm³ and increase the availability of treated wastewater for reuse by 122 hm³. This national push is complemented by regional water efficiency plans adopted for the highly vulnerable Alentejo and Algarve regions²⁰. These plans combine demand and supply-side measures with a particularly positive focus on increasing wastewater reuse. For instance, the Algarve has outlined 53 measures, setting ambitious water reuse targets for agricultural irrigation and golf courses to alleviate pressure on the region's depleted groundwater.

Around EUR 1.24 billion in EU investments under cohesion policy aimed at promoting secure access to water, sustainable water management, including integrated water management, and water resilience (Specific Objective 2.5), which will partially support the implementation of some measures foreseen in the "*Água que Une*" strategy. Out of these amounts, EUR 507 million is indicatively earmarked for investments in wastewater collection and treatment, EUR 305 million for investments in water management and water resource conservation, EUR 428 million for investments in provision of water for human consumption (extraction, treatment, storage and distribution infrastructure, efficiency measures, drinking water supply).

While the Portuguese Recovery and Resilience Plan (RRP) does not contain measures explicitly linked to the 3rd RBMPs or the Flood Risk Management Plans, it makes an important contribution to reducing pressure on water resources by lowering water consumption, improving monitoring, and reducing leakages. The original 2021 RRP submission also established clear links between these investments and the objectives of the River Basin Management Plans. Under Component 9 (Water), the following measures are particularly relevant: 1. CO9-i01 – Algarve Water Efficiency Regional Plan: This measure is especially relevant given its larger financial allocation and greater number of milestones and targets. The original RRP specified that it is aligned with the objectives of the Algarve River Basin Management Plan and the Climate Change Adaptation Action Programme (P-3AC). 2. CO9-i03-RAM – Plan for Water Efficiency and Supply and Irrigation Systems of Madeira: The original RRP explained that this measure is aligned with the CLIMA-Madeira Strategy (Regional Strategy for Adaptation to Climate Change) and the River Basin Management Plan for the Madeira Archipelago River Basin District (RH10).

International coordination

Internationally, Portugal coordinates with Spain on several shared river basins through the Albufeira Convention, focusing on water scarcity, droughts and environmental flows. This collaborative framework has evolved significantly between planning periods: while the 2nd cycle relied on a single joint document for all shared basins, the current 3rd cycle has shifted towards a more specific approach. To reinforce coordination at local level, this strategy now delivers four distinct documents,

¹⁹ <https://apambiente.pt/agua/programa-nacional-para-o-uso-eficiente-da-agua>.

²⁰ <https://apambiente.pt/agua/planos-de-gestao-de-seca-e-escassez>.

one for each IRBD (Minho and Lima²¹, Douro²², Tagus²³ and Guadiana)²⁴. These documents synthesise key planning elements, including pressures, monitoring networks and environmental objectives.

Furthermore, at the 27th plenary session of the Commission for the Application and Development of the Albufeira Convention (CADC, December 2025), the two countries achieved a significant milestone by approving the joint RBMP for the Tâmega River. This pilot project serves as a technical framework for the eventual development of a single IRBMP by harmonising methodologies for water body characterisation and status assessment.

Despite this progress, technical discrepancies remain. Evaluations of the 3rd RBMPs reveal that Portugal and Spain frequently use different methodologies to determine water body typologies and assess ecological status. While the POCTEP Albufeira project (2014-2020) made strides in harmonising these criteria, further efforts are required to align the definition of ecological flows with robust, jointly collected data.

The advantage of jointly developing transboundary RBMPs would be that Portugal and Spain could agree upfront on the definition of ecologic flows for their transboundary rivers in regular six-year intervals rather than on an ad hoc basis in intergovernmental meetings. Ecologic flows could then also be defined based on more robust data, which a well-resourced secretariat for the Albufeira Convention could collect from experts from both countries.



3.7 Adaptation to climate change

Given the close relationship between overall water management and flood management and the importance of climate change for both, droughts and floods are jointly addressed in this section.

The 3rd RBMPs address climate change by highlighting its significant impacts on the temporal and spatial distribution of water resources and water quality. These impacts manifest as increased occurrences of soil degradation, coastal erosion, floods, forest fires and extreme weather. The Madeira RBMP serves as an interesting example of regional planning, as it specifically outlines these climate pressures on groundwater quality, salinisation, availability and extraction volumes.

Adaptation strategies are based on the National Strategy for Adaptation to Climate Change (ENAA), launched in 2010 and extended to 2025, with support from the 2030 National Energy and Climate Plan. The ENAA focuses on updating scientific data, reducing vulnerability, raising awareness, and international cooperation. The 2100 National Roadmap for Adaptation assesses vulnerabilities, adaptation investment needs, and costs of inaction. The 3rd RBMPs follow on from the previous cycle, when climate adaptation strategies were developed with updated measures for this cycle. The national strategy outlines the framework and guidelines for the inclusion of climate change adaptation measures and highlights information sharing between neighbouring countries with Spain as stipulated in the Albufeira Convention.

Portugal uses the early warning assessment of the Standardised Precipitation Index (SPI) forecast at various timescales to monitor drought impacts on water resources:

²¹ https://www.cadc-albufeira.eu/content/dam/albufeira/8--documentacion/3-1--coordinacion-internacional-2022-2027/Documento_coordinacion_Mino-Limia.pdf

²² https://www.cadc-albufeira.eu/content/dam/albufeira/8--documentacion/3-1--coordinacion-internacional-2022-2027/Documento_coordinacion_Duero.pdf

²³ https://www.cadc-albufeira.eu/content/dam/albufeira/8--documentacion/3-1--coordinacion-internacional-2022-2027/Documento_coordinacion_Tajo.pdf

²⁴ https://www.cadc-albufeira.eu/content/dam/albufeira/8--documentacion/3-1--coordinacion-internacional-2022-2027/Documento_coordinacion_Guadiana.pdf

- 3 months: short- and medium-term soil moisture
- 6 months: medium-term precipitation trends
- 9 months: agricultural impact and prolonged droughts
- 12+ months: surface and groundwater reserves

While in the past, Portugal had no national drought management plan and managed droughts as crises, the approach changed from crisis management to risk management when in 2017 Portugal approved its Prevention, Monitoring and Contingency Plan for Drought Situations (*Plano de Prevenção, Monitorização e Contingência para Situações de Seca*) – Resolution of the Council of Ministers No 80/2017, which is still in force today.

The plan serves as Portugal's drought management plan (DMP) until regional plans are developed and is structured around prevention, monitoring and contingency. It standardises concepts, procedures and warning thresholds, and clarifies responsibilities for both agrometeorological and hydrological droughts. Developing specific DMPs is a measure under the RBMP for all eight mainland Portugal RBDs²⁵. The plan considers water management authorities at national and regional level. It also lays down measures such as public awareness campaigns and incentives for water-efficient practices. A permanent commission for the prevention, monitoring and follow-up of drought effects oversees contingency planning.

As regards floods, the Floods Directive requires the impacts of climate change on the occurrence of floods to be considered when preparing Flood Hazard and Risk Maps (FHRMs) and Flood Risk Management Plans (FRMPs). While climate change had not been considered in Portugal's first FHRMs, it is now addressed in the second cycle, albeit with different levels of detail across mainland Portugal, the Azores and Madeira. For mainland Portugal, climate change has been considered for 100-year floods, with peak flows adjusted based on precipitation anomalies projected for 2041-2070. This analysis drew on international sources such as the Intergovernmental Panel on Climate Change (IPCC) and national research programmes. However, the results are presented only in tables and explanatory reports and are not reflected in the maps. For the Azores, the competent authorities simply note that climate change should be taken into account, while for Madeira they quote the results of earlier studies.

Four of the five FRMPs assessed include measures to improve knowledge of climate impacts, such as studies on climate effects on floods and actions to improve cost-benefit analysis (CBA) methods for coastal adaptation. Dedicated measures in the mainland FRMPs including retention basins, renaturalisation of water lines, sustainable drainage and stronger monitoring networks help minimise climate impacts. Several fiches for measures explain how climate change considerations were incorporated into structural and non-structural measures, such as plans for the maritime front in Porto (PTRH3) or corrective flood actions in Vimieiro (PTRH5A). Moreover, climate change is one of the criteria used to prioritise measures in the mainland FRMPs.

²⁵

https://apambiente.pt/sites/default/files/_Agua/DRH/OrgaosConsultivos/ComissaoPermanenteSeca/Reunioes/02_PlanoMonitorizacaoPrevencaoContingencia_Seca_19Jul2017.pdf.



4. Policy elements contributing to zero pollution

4.1 Surface Water: what is their chemical status

Monitoring

Since the publication of the 2nd RBMPs, Portugal has substantially expanded its monitoring network, with surveillance monitoring now covering 85.8% of all rivers (by length), 97% of lakes and 100% of transitional and coastal waters (by area)²⁶.

The national-level supporting document on monitoring indicates that 34 (out of 45) priority substances are included in the monitoring programme. However, Portugal has since clarified that 41 priority substances are monitored²⁷. Biota monitoring is undertaken in sediment for 12 of the 20 substances for which an EQS in sediment or biota is set, along with 9 in biota (6 substances are monitored in both). The combined total for monitoring in sediment and biota is 15 of the 20 substances, the missing entries being anthracene, DEHP, SCCPs, quinoxifen and HBCDD.

Status assessment – Evolution of chemical status of surface water bodies since the 2nd RBMPs

66.8% (1 374 water bodies) reached good chemical status, while 7.6% (156 water bodies) did not achieve good chemical status in 2021. Approximately a quarter of water bodies (25.6%) were in unknown chemical status. While this is still a significant portion, it is much lower than in the 2nd RBMPs (Figure 8).

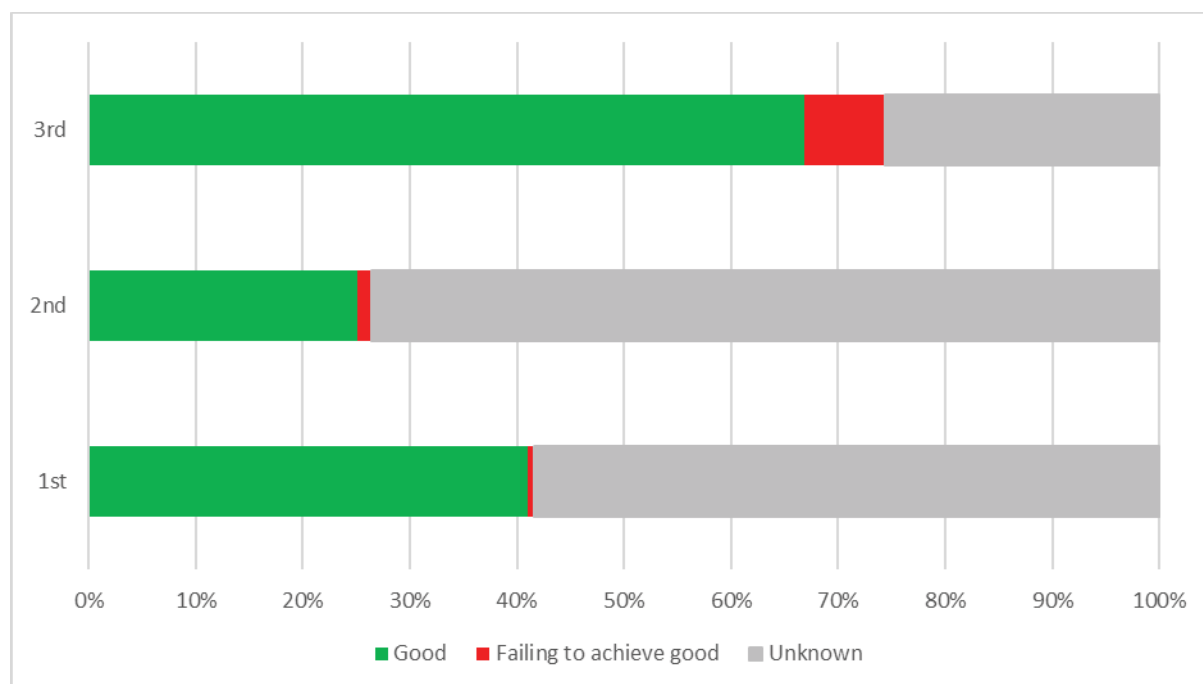
A comparison with the 2nd RBMPs shows an increase in water bodies in good status, from 25.1% to 66.8%, but also an increase in the share of water bodies in bad chemical status, from 1.3% to 7.6%. Much better knowledge of the status of the water bodies probably explains the increase in both categories, as bodies in previously unknown chemical status have now been classified.

By 2027, the proportion of surface water bodies in good chemical status is expected to improve only slightly, from 66.8% to 69.1%. Because Portugal lacked sufficient baseline monitoring data at the time of drafting, it could not project the future status of the 25.6% of water bodies currently classified as 'unknown'. Consequently, these water bodies remain unclassified in the 2027 projections.

²⁶ For comparison, in the 2nd RBMP, the assessment stated that the scale of the monitoring network supporting chemical status spanned 1% of all rivers, 100% of lakes, 6% of transitional waters and 53% of coastal waters.

²⁷ The reason why the four missing substances are not monitored is that Portugal currently lacks the laboratory capacity to measure them at the (very low) detection limits required by the EU Directive on chemical sampling and analysis (Directive 2009/90/EC).

Figure 8. Chemical status of surface water bodies in Portugal in the 1st, 2nd and 3rd RBMPs



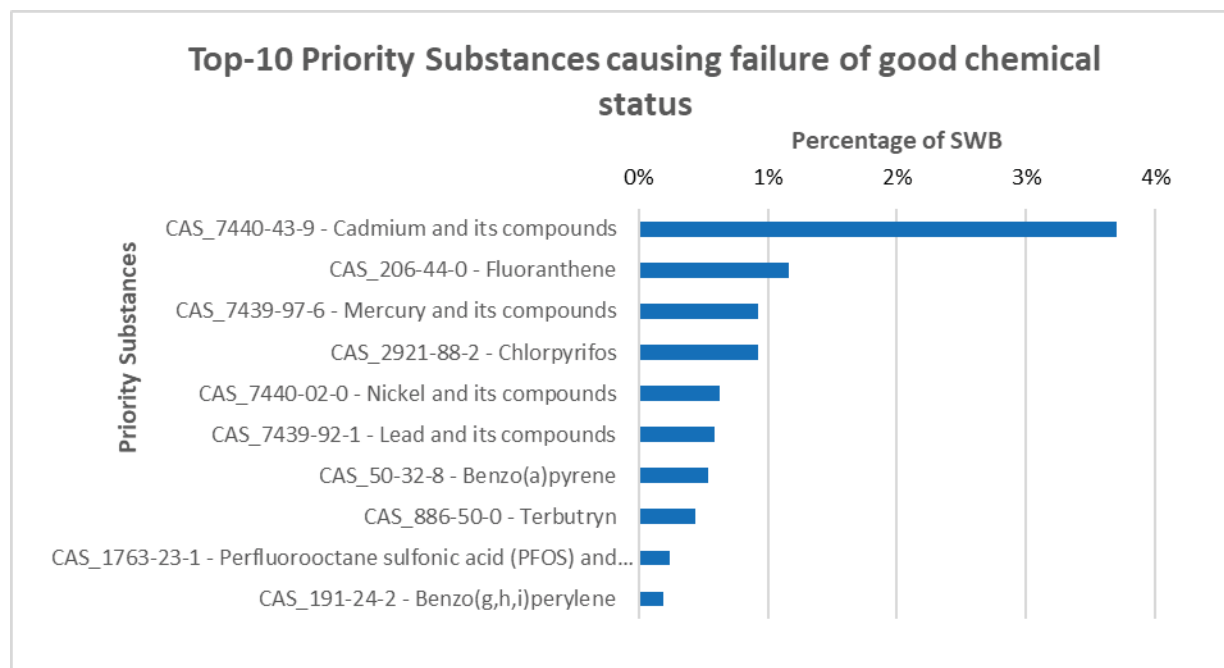
Source: WISE electronic reporting

The top 10 reasons for failure to achieve good chemical status are dominated by heavy metals (cadmium, mercury, nickel and lead) and chemicals linked to industrial sources, including combustion of fossil fuels (fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene and PFOS). The top 10 also includes the pesticide chlorpyrifos (which was banned in 2020²⁸ when the approval was not renewed) and terbutryn (banned as a pesticide since 2002 and whose remaining industrial uses as a biocide have also been banned²⁹). Cadmium is of particular concern. Half of the 7.6% of all surface water bodies in Portugal that fail to achieve good chemical status can be linked to cadmium alone. In the 2nd RBMP the most important causes of EQS failures were nonyl phenol, nickel and cadmium. It is noted that compared with other Member States, polybrominated diphenyl ethers (PBDEs – heavily used in paints, plastics, foam furniture padding, textiles and building materials) are not in the top list for Portugal and that the prevalence of mercury is significantly lower than in many other Member States.

²⁸ [Commission Implementing Regulation \(EU\) 2020/18 of 10 January 2020 concerning the non-renewal of the approval of the active substance chlorpyrifos, in accordance with Regulation \(EC\) No 1107/2009 of the European Parliament and of the Council concerning the placing of plant protection products on the market, and amending the Annex to Commission Implementing Regulation \(EU\) No 540/2011.](#)

²⁹ [Commission Implementing Decision \(EU\) 2026/1420 of 30 June 2026 on the non-approval of terbutryn, 1,2-Benzisothiazol-3\(2H\)-one \(BIT\) and tetrahydro-1,3,4,6-tetrakis\(hydroxymethyl\)imidazol\[4,5-d\]imidazole-2,5\(1H,3H\)-dione \(TMAD\) as existing active substances for use in biocidal products of product-types 9, 9, and 12, respectively, in accordance with Regulation \(EU\) No 528/2012 of the European Parliament and of the Council.](#)

Figure 9. The top 10 priority substances causing failure to achieve good chemical status in surface water bodies in Portugal



Source: WISE electronic reporting



4.2 Groundwater Bodies: what is their chemical status

Monitoring

Chemical monitoring now covers 117 of 126 groundwater bodies (92.9%)³⁰, representing 99.0% of the groundwater body area. Surveillance monitoring covers 117 groundwater bodies (92.9%) with 655 monitoring sites, an increase on the 86 groundwater bodies (57.0%) and 506 monitoring sites reported in the 2nd RBMPs. Operational monitoring covers 11 groundwater bodies (8.7%) with 126 monitoring sites, a decrease on the 18 groundwater bodies (11.9%) and 201 monitoring sites reported in the 2nd RBMPs. The increase in surveillance and decrease in operational monitoring are justified by changes in water quality status and the grouping of small, similar groundwater bodies.

Pesticides are monitored in all groundwater bodies of its inland RBDs, but not for the Azores and the Madeira RBDs. This is a concern, given the importance of groundwater bodies as the main source of public water supply on the two islands. Furthermore, electronic reporting has indicated that not all mandatory substances listed under Annex I and Annex II (Part B) to the Groundwater Directive (GWD), nor all WFD core parameters, are universally monitored. For example, trichloroethylene, tetrachloroethylene, nitrite and ammonium were reported as missing in Madeira, and trichloroethylene was missing in the Azores.

There are still significant gaps in the setting of threshold values (EQS) for groundwater. According to the electronic reporting, threshold values for several mandatory Annex II (Part B) GWD pollutants, such as lead, mercury and nitrites, are missing in several RBDs. While Portugal subsequently clarified that those threshold values are indeed set in national legislation and detailed in the PDF plans for the mainland RBDs, the discrepancies in electronic reporting hinder a clear overview. Furthermore,

³⁰ The number of groundwater bodies subject to chemical monitoring is not available for the 2nd RBMPs.

when setting these threshold values, the methodology generally considers relevant ecological impacts, except for the Madeira RBD, which fails to consider impacts on GWAAEs and GWDTEs.

Overall, Portugal follows the recommended EU methodology (CIS Guidance 18) for assessing groundwater chemical status, but its application remains inconsistent across the country. For the general chemical assessment, 7 out of 10 RBDs correctly base their status on the proportion of the groundwater body's area that exceeds the threshold values. However, the Azores RBD deviates by basing the assessment merely on the number of monitoring sites that exceed the thresholds. In the Minho and Lima RBD, the general water quality test was not fully explained in the reporting. Portugal justified this by clarifying that no monitoring stations exceeded the national threshold values, thereby negating the need for the test under CIS Guidance 18. The grouping of groundwater bodies was also used to support these assessments.

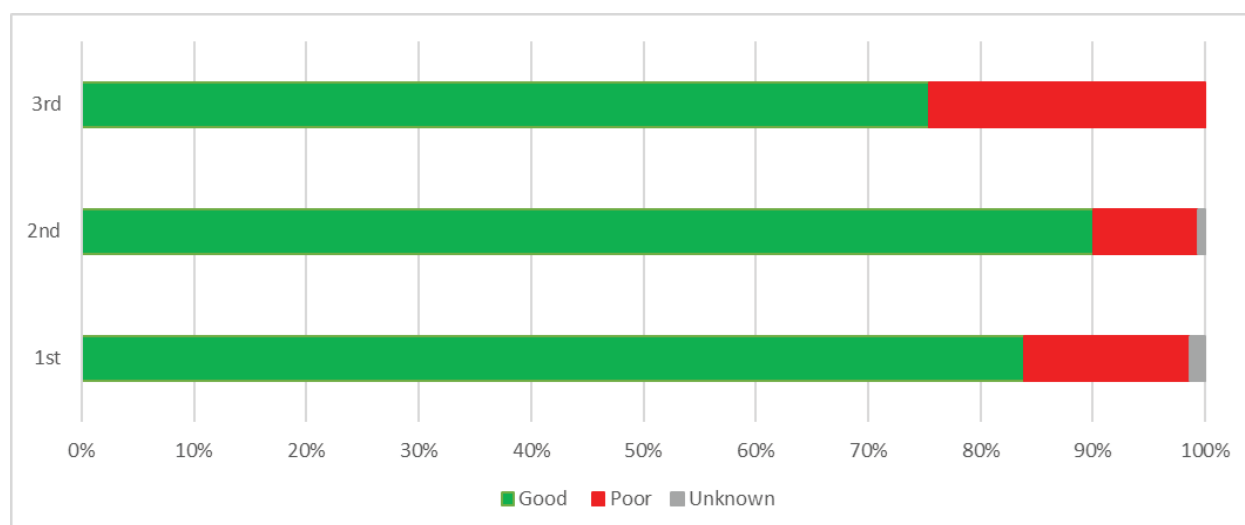
Initial electronic reporting also pointed to apparent methodological gaps regarding specific risk tests, although Portugal has provided clarifications that resolve some of these concerns. For example, while saline and other intrusions were seemingly not considered in the status assessments of three mainland RBDs (Minho and Lima, Cávado, Ave and Leca, and Douro), Portugal clarified that these specific aquifers are located far inland. A preliminary geological analysis confirmed that there is no physical risk of seawater intrusion, making the specific test irrelevant for those water bodies. Similarly, although the data reported suggested that drinking water protected areas were ignored in the chemical status assessments, Portugal confirmed that they are actively considered across all mainland RBDs, with threshold values strictly aligned with human consumption requirements.

Classification

A critical requirement for correctly classifying groundwater chemical status is assessing the impacts of pollutants on associated ecosystems. Yet electronic reporting reveals significant gaps in this area. While GWAAEs are present in 6 RBDs, they are only factored into the chemical status classification in 1 (the Azores RBD). Also, GWDTEs are reported in 7 RBDs, yet electronic data indicates that they are not considered in the chemical status classification of any of these districts.

As of 2021, the 3rd RBMPs electronic reporting shows that 95 of the 126 groundwater bodies (75.4%) were in good chemical status, and 31 (24.6%) were in poor status (Figure 10). In 2015, under the 2nd RBMPs, 14 of the 151 groundwater bodies (9.3%) had poor chemical status.

Figure 10. Chemical status of groundwater bodies in Portugal in the 1st, 2nd and 3rd RBMPs



Source: WISE electronic reporting

In the 3rd RBMPs electronic report, 25 groundwater bodies (19.8%) failed to meet good chemical status due to general water quality concerns linked to significant pollutant risks, while 6 groundwater bodies (4.8%) were affected by saline or other intrusions from human-induced changes in flow direction. Assessments of impacts on GWAAEs, GWDEs and drinking water protected areas were not included for all national RBDs, so some failures may be underreported³¹.

The main pollutants causing failure are total phosphorus, nitrate, ammonium, chloride and dimethoate, with multiple substances often affecting a single groundwater body. Sodium and electrical conductivity are also showing sustained upward trends in groundwater bodies, a sign of an increasing trend of regional saline or other intrusions resulting from over-abstractions.



4.3 What Portugal is doing to combat pollution from agriculture

Agriculture covers 47.4% of Portugal, while forest and semi-natural areas cover 46.6%³². In 2022, 19% of agricultural land was managed organically³³.

Diffuse pollution from agriculture, particularly nutrients and pesticides, is identified as a main pressure in virtually all RBDs in Portugal, with both basic and supplementary measures in place at national level. The data underscores significant pressures across the country's water systems, with 33% of groundwater bodies reporting nutrient pollution as a significant impact and 17% experiencing chemical pollution. Similarly, surface water bodies face a significant impact, with 38% impacted by nutrient pollution and 15% affected by chemical pollution, which extends beyond agricultural pesticides alone.

Portugal has programmed 48 measures (10 basic and 38 supplementary) explicitly dedicated to reducing nutrient pollution from agriculture. These basic measures are directly tied to controlling diffuse pollutants and implementing the requirements of the Nitrates Directive. Another 24 supplementary measures are specifically targeted at reducing pesticide pollution. Additionally, 14 measures (2 basic and 12 supplementary) focus on providing agricultural advisory services to help farmers adopt better environmental practices. Beyond these core categories, the plans incorporate several targeted regional actions. These include extending the application of good agricultural practices to water bodies currently in less than good status even if they fall outside designated Nitrate Vulnerable Zones, implementing a National Strategy for Agricultural and Livestock Effluents (such as electronic tracking of manure transport), and promoting organic farming. Furthermore, to address severe agricultural abstraction pressures, Portugal employs measures focused on water efficiency and technical improvements for irrigation, which include basic legal controls over water abstraction and the promotion of efficient water use.

Although Portugal's electronic reporting technically categorises its agricultural measures as regional, they encompass broad, mainland-wide strategic initiatives to combat water pollution (while the autonomous regions of the Azores and Madeira implement their own agricultural measures). A key supplementary measure is the preparation of a new national legal framework to reduce diffuse nutrient pollution, aligned with Portugal's 2023-2027 CAP Strategic Plan. This legislation aims to define national nutrient targets to help water bodies achieve good status and will introduce mandatory requirements for planting vegetation buffer strips along watercourses and groundwater

³¹ It is noted that the assessments of impacts on GWAAEs, GWDEs and drinking water protected areas are not considered in all national RBDs, so there is some uncertainty regarding the reasons for failure presented.

³² <https://www.eea.europa.eu/en/analysis/maps-and-charts/land-cover-and-change-statistics-dashboards>.

³³ Eurostat - Developments in organic farming in 2022:
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Developments_in_organic_farming.

abstraction points. Furthermore, it sets specific objectives for agricultural land³⁴: sustainable and reduced use of pesticides on 29% of the utilised agricultural area (UAA), improving and protecting soils of 29% UAA, protecting water quality on 24% UAA and achieving sustainable nutrient management on 13% of the UAA. Moreover, the target for organic farming is set at 19.2% UAA, a figure that is hardly an ambitious increase on the share reported in 2022³⁵, but which already ranks among the highest in the EU (2022).

The RBMPs include, as part of the PoM, an assessment of the implementation of the measures from the 2nd RBMPs. Fewer than half of the measures related to agriculture have been reported as completed. The rest are either ongoing or will be implemented in the 3rd RBMP cycle. The RBMPs do not evaluate how the measures have performed in relation to achieving the WFD objectives.

The RBMPs contain scenarios that include projections for the expected development of nitrogen (N) and phosphorus (P) emission from agriculture (and from other sources), considering economic and demographic trends. While this is welcomed, the RBMPs do not present enough details to understand how the measures take the prospective scenarios into account. The RBMPs also do not present gap assessments in terms of the amounts of nutrient – tonnes of N and P that need to be reduced to achieve good environmental status (GES). There is therefore a significant disconnect between proposed measures and the prospective scenarios for N and P reduction. Despite providing data on nutrient loads, the RBMPs do not clearly link how specific funded measures will achieve the necessary pollution reductions. Furthermore, while transboundary cooperation is not applicable to the Azores and Madeira, the mainland RBDs offer limited evidence of coordination with Spain regarding shared nutrient management.

The RBMPs state that it has not been possible to quantify the development of the use of pesticides. There is no assessment of the impacts of the measures that aim to address pesticides.

Funding for agricultural measures across Portugal's RBDs is characterised by significant regional variation and a general lack of budgetary detail. While the RBMPs identify implementing authorities, they often fail to provide a transparent overview of the total costs or the specific breakdown between national and EU funding. It is also not always clear whether the funding has been secured.



4.4 What Portugal is doing to combat pollution from other sectors

Portugal is implementing a wide range of measures to protect its water resources from non-agricultural pollution. These efforts focus on modernising infrastructure, cleaning up contaminated sites and controlling more strictly the discharge of hazardous chemicals into the environment. The information is only at headline level, however. This means that there are no specific details, such as a planned timeline and/or investment plans, included in the information about each measure. What is missing or not clear from the RBMPs is the extent to which reductions are needed to achieve the WFD objectives. Similarly, there is no information on what each measure is expected to achieve. Therefore, there is no assessment of the extent to which the gaps will be closed.

Across the mainland and its islands, Portugal has prioritised several key actions to improve water quality.

- **Infrastructure upgrades:** improving and building new wastewater treatment plants for both urban areas and industrial sites.

³⁴ [Result Indicators dashboard](#)

³⁵ [EU organic farming: 16.9 million hectares in 2022](#)

- **Contamination cleanup:** remediating old mining sites, landfills and soil erosion to prevent runoff from reaching rivers and coasts.
- **Hazardous substance control:** phasing out priority chemicals and toxic substances to ensure they do not enter the water cycle.
- **Knowledge:** investing in scientific research to better understand and manage pollution sources.

While national goals are consistent, specific regions focus on their most pressing local risks:

- **Azores.** The islands focus on preventing oil and hydrocarbon spills in coastal waters, alongside training programmes to improve wastewater inspections.
- **Douro and Guadiana.** These regions are tackling pollution from historical mining operations and landfills. They are also implementing measures to restore drainage basins affected by forest fires and reducing the use of chemical pesticides.
- **Madeira.** Efforts here are centred on modernising sanitation systems and controlling point source pollution – identifiable pipes or channels that discharge waste directly into the water.

Overall, the risk from priority hazardous substances is considered low in many areas, such as the Azores. While information on the long-term drivers of chemical pollution remains limited in some regional reports, the ongoing shift towards reducing pesticide use and industrial discharges is helping Portugal move closer to its environmental quality targets.



4.5 What Portugal is doing to combat significant pressures - Overall assessment of the Programmes of Measures

In total, 1 617 measures have been reported electronically. Measures are split between 554 basic measures and 1 063 supplementary measures. The top pressures identified in Portugal come from several areas, including diffuse agricultural pollution, diffuse other, point source from urban wastewater, and abstraction for agriculture.

Portugal has partially carried out a cost-effective analysis for all its RBDs, which consists of two steps. In the first step, each individual measure has been scored for a series of features and impacts. The scores are put together in an implementation priority index (IPI). The resulting IPI value is considered to represent the measure's effectiveness. The IPI then feeds into a cost-efficiency analysis, which identifies a combination of measures that have the lowest cost to achieve the objectives. The assessment considers:

- the effectiveness of each measure – represented by the IPI; and
- the financial costs of investment³⁶.

Even though some measures may have the most effective IPI, they might not be taken forward, due to their cost. The Douro, Guadiana and Madeira RBMPs all include five parameters for setting out their IPI, with the Azores taking a different approach, using just three categories. It is unclear how the IPI and appraisal technique secures the most cost-effective application of measures to close the gaps

³⁶ Portugal has subsequently clarified that the IPI is an MCA methodology, as it takes into account different parameters and weighted criteria. When the costs of implementing the measures are taken into account, it becomes a cost-effectiveness analysis.

and fulfil the WFD objectives. There is no clear reporting on cost-effectiveness analysis and prioritisation of measures in the two island RBMPs (Azores and Maderia), and there is no clear reporting on the progress achieved in implementing the planned measures in the Azores RBD.

Through the electronic reporting, Portugal has provided a split of costs between national investment and EU funding. For example, for the Douro EUR 267 million comes from national investment and EUR 84 million is from EU funding. No EU funding has been reported for the Azores or Madeira RBDs.

When designing and implementing research-related measures, Portugal should make better and more systematic use of results from EU-funded research and innovation projects. This research can support better action on water management including future water demand as well as climate change impacts, and pollution from substances such as pesticides, pharmaceuticals, PFAS and microplastics.

5. Exemptions and economics

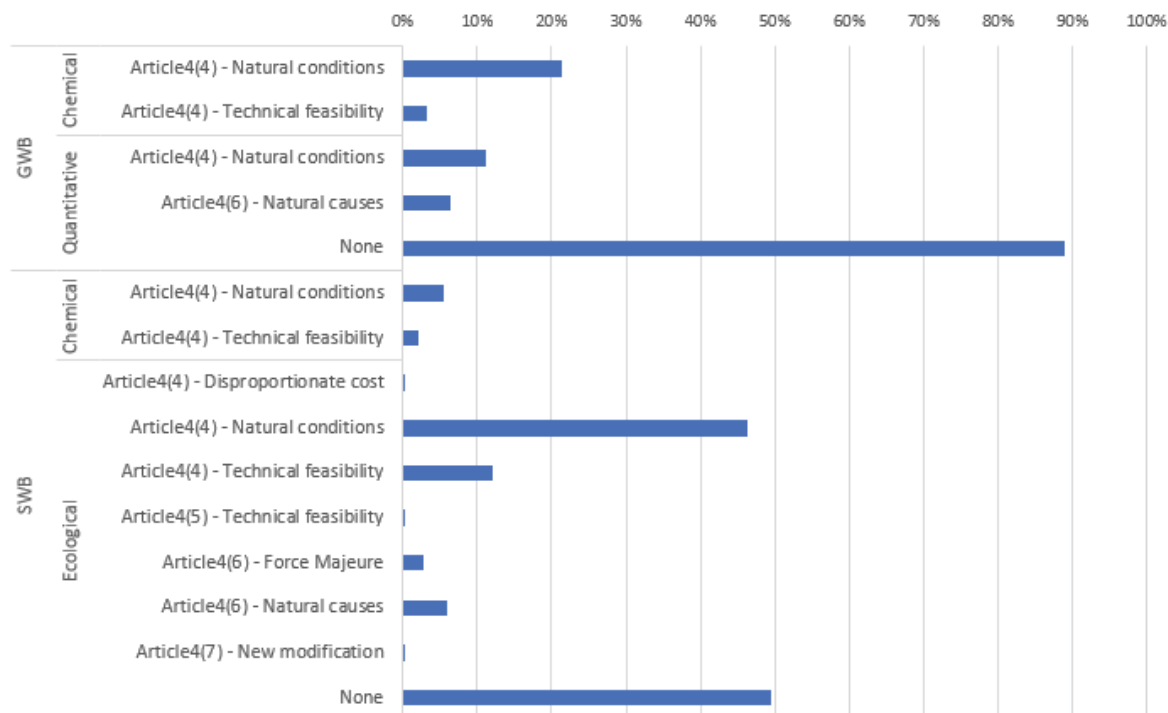


5.1 To what extent are exemptions applied in Portugal

As good status has not been achieved in all water bodies, Portugal has applied a significant number of exemptions under Article 4(4)-(7) WFD in the 3rd RBMPs. No exemptions under Article 6(3) of the Groundwater Directive have been reported.

Figure 11 shows the use of exemptions under Article 4(4)-(7) in Portugal, based on electronic reporting.

Figure 11. The use of exemptions under Article 4(4)-(7) WFD in surface water bodies (SWBs) and groundwater bodies (GWBs) in Portugal. The figure shows the proportion of water bodies for each type of exemption.



Source: WISE electronic reporting

Article 4(4) exemptions have been applied based on:

- technical feasibility in 248 surface water bodies (12.1%) for ecological status/potential, in 43 surface water bodies (2.1%) for chemical status, and in 4 groundwater bodies (3.2%) for chemical status;
- natural conditions in 953 surface water bodies (46.4%) for ecological status/potential, in 113 surface water bodies (5.5%) for chemical status, in 14 groundwater bodies (11.1%) for quantitative status, and in 27 groundwater bodies (21.4%) for chemical status;
- disproportionate costs in 8 surface water bodies (0.4%) for ecological status/potential.

The number of surface and groundwater bodies to which exemptions under Article 4(4) are applied has increased since the 2nd RBMPs.

According to the 3rd RBMPs, technical feasibility under Article 4(4) can be invoked in the following cases: lack of knowledge of an available technical solution; problem resolution taking more time than is available in the cycle; the cause of the adverse impact being unknown (pressure unknown); and practical constraints of a technical nature preventing implementation of the measure. Disproportionate costs are considered if: the cost is too high compared with the benefit; there is a high level of uncertainty about the water body status and high cost of the measure; and implementing measures within a shorter period involve too high a cost for a particular sector or conflict with the polluter pays principle. For natural conditions, the reasons are ecological recovery time of ecosystems and groundwater recovery time (e.g. time is needed for pollutants to degrade, as they persist in the aquifer).

Article 4(5) exemptions have been justified based on infeasibility in 7 surface water bodies (0.3%) for ecological status/potential. No Article 4(5) exemptions were used in the 2nd RBMPs. According to the 3rd RBMPs, infeasibility under Article 4(5) can be invoked in the case of no known technical solution available (or an unknown cause of less than good status). For disproportionate costs (not used in the 3rd RBMPs), the reasons are unfavourable balance of costs and benefits, and affordability.

For Article 4(4) and 4(5) exemptions, the assessment is carried out and reported for each individual water body, and justification is provided for each water body, including information on the water body category (e.g. river, lake, transitional, coastal, groundwater bodies), exemption type (e.g. Article 4(4) or (5)), exemption grounds (e.g. technical feasibility) and a brief description of the justification (e.g. disproportionate costs on the balance of costs and benefits), without providing further details.

Article 4(6) exemptions have been justified based on:

- natural causes in 121 surface water bodies (5.9%) for ecological status/potential and 8 groundwater bodies (6.3%) for quantitative status;
- *force majeure* in 56 surface water bodies (2.7%) for ecological status/potential.

No Article 4(6) exemptions were used in the 2nd RBMPs.

The 3rd RBMPs define the methodology used to apply Article 4(6) exemptions, listing all WFD conditions that need to be met and sub-clauses of: natural causes (extreme floods and prolonged droughts); *force majeure* (cases of *force majeure* that cannot be reasonably foreseen); and accidents (situations due to accidents). The assessment is carried out for each individual water body and reported in a summary table, including: details of water body category (e.g. river, lake); exemption type (i.e. Art. 4(6)); type of justification used (i.e. natural causes, *force majeure*); and (a quite brief) explanation (i.e. droughts, fires).

The exemptions under Article 4(7) in the 3rd RBMPs have been applied to 3 surface water bodies (0.1%) for ecological status in the Douro RBD. Article 4(7) exemptions were also used in the 2nd RBMPs in the Douro, Vouga, Mondego and Lis RBD because of the building of new dams for hydroelectricity production, while in the Algarve Rivers RBD the application of Article 4(7) was related to drinking water. The 3rd RBMPs refer to the licensing procedure, according to which new developments are only authorised by the National Water Authority if all conditions for granting the exemptions are met. The 3rd RBMPs report a detailed methodology to apply Article 4(7) exemptions and report the assessment results at water body scale. This includes a detailed overview of the projects, accompanying EIA and various Article 4(7) tests, e.g. water body impact (at water body scale), mitigation measures, overriding public interest, and alternative environmentally friendly options.

No exemptions under Article 6(3) GWD have been reported as part of the electronic reporting.



5.2 Use of economic analysis and water pricing – cost recovery

While Portugal's 3rd RBMPs recognise a series of individual water services (including storage and water reuse), they discuss pricing policies and cost recovery only for the broad water services, namely (drinking) water supply, sanitary services (wastewater collection and treatment) and irrigation water supply. The description of the other water uses is incomplete. Self-abstraction and self-sanitation are not considered, and water reuse tends to be subsumed under sanitary services. The description of water uses varies across the RBDs and there is heterogeneity as regards the water uses listed across the various RBDs, which seems to be related to the variation in operational and governance structures.

The 3rd RBMPs have a dedicated section on economic analysis, detailing the approach towards cost recovery, the use of economic instruments and the contribution of the various water uses to recovery of the costs of water services. They do not present a direct comparison with previous studies, making it difficult to understand what progress has been achieved since the 2nd RBMPs.

The RBMPs' economic analysis varies in its coverage of the elements listed in Annex III WFD. Overall, however, coverage is incomplete, limiting the value of the economic analysis. Some RBMPs provide long-term forecasts for water supply (until 2030) while others do not. Long-term forecasts of water demand, estimates of the potential costs of water services and judgements about the most cost-effective combination of measures tend not to be reported. The absence of forecasts, investment needs and cost-effectiveness assessments makes it less clear how the PoM has been defined, hindering the understanding of future challenges and the sustainability of the planned measures. No clear information is available on the inclusion of long-term climate change adaptation scenarios in the economic analysis, which limits the ability to fully assess future resilience and planning needs.

The RBMPs present a cost recovery assessment based on a uniform, national methodology. This assessment presents a range of cost recovery rates, basically as regards the recovery of operational costs and the recovery of 'financial costs', i.e. operational and capital costs (represented by depreciation and amortisation); some rates treat subsidies as a revenue source, making them difficult to interpret. There seems to be good coverage across the RBMPs, including separate water supply and wastewater recovery rates, and across different types of utilities.

Overall, the reported recovery rates tend to be high (>93%) for both broad water services, but usually higher for wastewater services. The high rates may explain why no RBMP provides information on mitigation factors for cost recovery efforts. While municipal services tend to have lower recovery rates compared with other organisational structures, the RBMPs do not mention cross-subsidies

between entities, nor disaggregated data that would make it possible to assess how the various water user sectors, such as domestic, industrial or agricultural users, vary in their contribution to cost recovery. There is an exploration of the evolution of cost recovery in the next programming period, and how this relates to policy choices as regards water pricing and investment and finance planning over the longer term. Suggested improvements that are under consideration include market-based approaches, such as virtual auctions for water rights, to protect resources via controlled abstraction.

The 3rd RBMPs refer to Portugal's national legal and regulatory framework, notably the Water Law and the Economic and Financial Regime for Water Services, which in turn explicitly link water pricing structures to achieving efficiency objectives. The nationwide water pricing methodology allows for different water tariffs across RBDs due to variation in costs. The 3rd RBMPs note that the current pricing policy is under evaluation to determine its effectiveness in encouraging efficient water use and the adequacy of sectoral contributions to cost recovery. Despite the existence of a common legal and regulatory framework that emphasises cost recovery and efficiency, the practical application of water pricing across the Portuguese RBDs remains heterogeneous, which is challenging for a systematic assessment. While some regions introduce tariff structures and mechanisms that could promote efficient use, the absence of consistent, sector-specific evaluations limits the ability to measure the actual effectiveness of pricing as a policy tool. While the RBMPs tend to provide a description of key parts of the water pricing system in place (albeit to varying degrees), they do not explicitly discuss whether the price incentives can be considered adequate in view of the environmental objectives.

While some RBMPs refer to a national methodology to appraise environmental and resource costs (ERCs), they do not tend to report quantitative estimates. This makes it unclear to what extent the water resource tax is influenced by such appraisals. Together with water service tariffs, the water resource tax is presented as a mechanism to promote sustainable water use by internalising both environmental and scarcity costs that are not directly borne by individual users. Its structure consists of clearly defined components related to pollution types and corresponding unit rate values. However, its uniform application to all sectors and users on the basis of their water use volume – corrected for actual harm through correction factors – implies that in practice, the water resources tax does not take account of the variation of water scarcity across regions or seasons, and that it reflects an application of the user pays principle rather than the polluter pays principle. In contrast, the polluter pays principle is reflected in the treatment of pollution-related incidents, through penalties to ensure that polluters bear the financial burden of the environmental damage they cause. No information is available on the existence or application of fertiliser taxes, pesticide-related levies or standalone nitrogen charges beyond their inclusion in the water resource tax.



6. WFD recommendations

Recommendations:

1. Further raise the level of ambition and accelerate action to reduce the compliance gap as much as possible by 2027. This implies:
 - further improving governance by ensuring that the consultation, adoption and reporting of the 4th RBMPs is carried out in accordance with the WFD timetable;
 - developing a more ambitious PoM, which should provide a methodology for how the prioritisation and cost-effectiveness analysis for all measures have been carried out, include a gap assessment to achieve the objectives of measures, and link the measures to the relevant key type measures (KTMs);
 - ensuring full compliance with WFD provisions on mandatory periodic review of permits/controls for all relevant activities impacting water bodies (including abstraction, impoundment and hydromorphological pressures);
 - tackling decisively the surge in 'unknown' anthropogenic pressures (which increased from 8% to 40% in surface water bodies) by closing knowledge gaps to ensure measures are appropriately targeted to achieve 2027 compliance.
2. Regarding the application of exemptions and the gap in compliance, Portugal should ensure continued efforts to transparently justify every exemption in all RBDs, in line with ECJ case-law on the restrictive interpretation of exemptions. In particular, it should:
 - provide a higher level of detail for justifications under Article 4(4) and (5) exemptions at individual water body level, ensuring a clear distinction between technical feasibility, disproportionate costs and natural conditions;
 - make better use of Article 4(7) by providing specific details on cumulative effects, the assessment of better environmental options, and the measures taken to mitigate the adverse impacts of new developments.
3. To reduce persisting pressures, Portugal should step up action on diffuse and point source pollution. In particular, it should:
 - effectively implement its new national legislative framework to reduce agricultural diffuse pollution (which remains the most significant pressure, affecting 36% of surface water bodies and 33% of groundwater bodies). This includes strictly enforcing vegetation buffer strips and defining more ambitious organic farming targets than the stagnant 19.2% currently proposed;
 - further reduce point source pollution from urban wastewater and put in place targeted measures to reverse the slight upward trend in diffuse pollution from urban runoff.
4. To address the water scarcity challenge and over-abstraction, Portugal needs to accelerate efforts to ensure sustainable water use. Specifically, it should:

- address the disruption of groundwater balances and lowering of water tables (which now affect 40% of groundwater bodies, up from 3% under the 2nd RBMP) by enforcing abstraction rules and closing loopholes that exempt certain legacy abstractions from authorisation;
 - move away from relying on estimates for agricultural abstraction. Portugal should implement widespread, verified water metering and leverage satellite remote sensing data to complement visual checks and detect unauthorised abstractions;
 - fully implement the objectives of the 2024 *Água que Une* strategy to modernise supply networks, reduce non-revenue water and increase wastewater reuse.
5. To prevent and reduce hydromorphological pressures, Portugal should:
- accelerate the complete definition and implementation of ecological flows across all water bodies. Crucially, Portugal must establish an explicit link between the implementation of e-flows and the authorisation process for water abstractions;
 - continue to prioritise the implementation of nature-based solutions and natural water retention measures (e.g. sustainable urban drainage systems, river restoration and sustainable silviculture) to simultaneously reduce flood risks and improve hydromorphological conditions.
6. On the use of economic tools, Portugal should apply the cost recovery principle transparently to all water use activities. In particular, it should:
- revise its water pricing mechanisms, particularly for agriculture, to ensure they provide a sufficient incentive against over-abstraction and promote efficient water use, addressing the current imbalance where agricultural water resource charges are 4.7 times lower than public supply;
 - implement the user pays principle as outlined in the new national water strategy, providing systematic information on mitigating factors to cost recovery and reporting clearly on the application of the polluter pays principle.
7. Regarding adaptation to climate change, Portugal should improve water management to better address present and future effects. It should:
- improve the climate-proofing of measures, particularly addressing the vulnerability of groundwater bodies, where 32.5% are currently at risk of failing 2027 targets due to the compounded effects of severe droughts, increased evapotranspiration and agricultural demand;
 - provide more detailed analyses of how climate change impacts water abstraction and ensure that drought management plans act not just as alert systems but are fully included in river basin planning to guarantee the preservation of water bodies.
8. For protected areas, Portugal should:
- establish additional needs for protected areas, defining additional objectives and implementing appropriate monitoring;
 - improve the measures that apply to such protected areas to ensure that their status improves, since achieving standard WFD good status is often insufficient to protect highly vulnerable habitats.
9. To improve monitoring, assessment and data management, Portugal should:
- address gaps in monitoring biological quality elements by clearly distinguishing between the natural absence of these elements and actual monitoring deficiencies;

- improve the selection of river basin-specific pollutants (RBSPs) ensuring that the derivation of environmental quality standards (EQS) fully aligns with EU technical guidance and address the specific pollutants leading to status failures (e.g. zinc, ammonia and copper);
- systematically consider the needs of GWAAEs and GWDTEs in the chemical status assessment of all RBDs, extending mandatory monitoring to the island RBDs of the Azores and Madeira;
- expand baseline data collection to classify the 25.6% of surface water bodies currently remaining in 'unknown' chemical status.

10. To optimize the use of EU funding for water security and climate resilience, Portugal should:

- Accelerate and ensure the full implementation of planned 2021–2027 Cohesion Policy investments to foster secure access to water, integrated water management, and overall water resilience.
- Prioritize climate change adaptation and disaster risk prevention by deploying ecosystem-based approaches, with targeted investments in flood risk management and infrastructure resilience.

SECTION B:

FLOODS DIRECTIVE

7. Flood risk management under the Floods Directive (FD)

The Floods Directive requires each Member State to: scan its territory for flood risks; assess the potential adverse consequences of future floods for human health, the environment, cultural heritage and economic activity; identify the significant risks; map the flood extent and the potential adverse consequences; and take measures to reduce the flood risk. These activities are reflected in: (a) the preliminary flood risk assessments, or PFRAs (including the identification of areas of potential significant flood risk, or APSFRs); (b) the preparation of flood hazard and risk maps, or FHRMs; and (c) the establishment of flood risk management plans, or FRMPs. The preliminary assessments, mapping and planning for flood risk are repeated in six-yearly cycles.

There are 10 Units of Management (UoMs) corresponding to the RBDs under the WFD. Fluvial and coastal floods are considered as potentially significant sources of flooding in Portugal. Portugal has designated 141 APSFRs. The impacts of climate change on flood risk were considered in Portugal at the time of the second PFRAs (see section 3.7 for further details).

Although Portugal submitted its second FRMPs late, a detailed analysis was conducted on a representative sample of five plans, covering three mainland regions (Douro, Tagus and West Rivers, and Guadiana) alongside the autonomous regions of the Azores and Madeira.



7.1 Flood hazard and risk maps

FHRMs have been prepared for all 10 RBDs and are available both in GIS format and, in some cases, as PDF maps and fiches. FHRMs for mainland Portugal and the Azores are accessible through the national GIS portal operated by the Portuguese Environment Agency³⁷, while Madeira has a separate GIS portal managed by the Regional Secretariat for Environment, Natural Resources and Climate Change³⁸. In addition, tabular information on each APSFR is available in the annexes to the explanatory reports.

For mainland Portugal, the GIS maps are clear and user-friendly, with layers and legends that can be viewed separately or together. They provide information on fluvial floods for low-probability (1/1 000-year), medium-probability (1/100-year) and high-probability (1/20-year) scenarios, and on coastal floods for a 100-year scenario. Elements shown include flood extent, water depth, velocity, danger, population affected, sensitive buildings, cultural heritage, protected areas, water bodies, roads and rail. Economic activity impacts are available via a separate interactive dashboard, although this is not directly linked to the GIS maps. For the Azores, GIS maps show only flood extent for the three probability scenarios, complemented by PDF maps with limited information (mainly extent and buildings affected, particularly for coastal floods). Madeira's GIS maps are more detailed than those for the Azores but less detailed than for the mainland, with two sets of layers: one showing susceptibility, APSFR vulnerability and risk; another showing extent, depth, velocity, danger and consequences for fluvial floods under three scenarios, and less information for coastal floods.

In terms of changes in contextual information (i.e. the way in which information about the maps is conveyed to the public) since the first FHRMs, the main novelty is the establishment of a GIS system for Madeira, which did not exist in the previous cycle. Otherwise, little change has been reported in how contextual information is presented. While the maps are generally adequate and accessible, a direct link to the dashboard or explanatory reports would be useful.

³⁷ <https://sniamb.apambiente.pt/content/geo-visualizador>.

³⁸ <https://pgri-ram.madeira.gov.pt/>.

In terms of methodologies, the second FHRMs in Portugal continue to cover the same sources of flooding as the first cycle – fluvial and coastal floods. For fluvial floods, the same approaches have been used, while for coastal floods, the methodology has been clarified: whereas in the first cycle such events were effectively shown as part of fluvial maps influenced by tides, in the second cycle they are presented as separate coastal flood maps. No major changes have been reported in the methodologies for risk maps, which continue to use similar sources of information as in the first FHRMs, with the same range of adverse consequences shown. Pluvial flooding remains unmapped and its exclusion from the final maps represents a significant gap that should be addressed in future cycles to better prepare for intense, localised rainfall events.

Climate change in the second FHRMs

Climate change considerations for flood hazard and risk mapping are detailed in section 3.7 (Adaptation to climate change).



7.2 Flood risk management plans

Objectives and measures

Portugal has reported FRMPs for all 10 UoMs. The eight mainland FRMPs follow a common template prepared by the Portuguese Environment Agency, which is also used in Madeira, though with less detail in some chapters. The Azores FRMP follows a different approach and is considerably shorter. All FRMPs include fiches for measures; those for mainland and Madeira use a common template, while the fiches for the Azores use a different one, though all are equally detailed. The mainland FRMPs were adopted by Resolution of the Council of Ministers in April 2024, the Madeira FRMP by Resolution of the Regional Government in January 2024, and the Azores FRMP by Legislative Regional Decree in January 2025. All were subject to strategic environmental assessments.

Portugal's FRMPs establish an overall national objective to minimise the impacts and risks of flooding. The three mainland FRMPs assessed in detail and the Madeira FRMP include common strategic objectives and sub-objectives, while the Azores FRMP defines four thematic areas with sub-objectives. Strategic objectives cover the reduction of adverse consequences for human health, economic activity, the environment and cultural heritage, although these are not always stated explicitly. Several objectives refer to soft, non-structural initiatives, such as raising awareness, improving knowledge and forecasting, and spatial planning and prevention measures, including reducing exposure by relocating sensitive buildings or infrastructure out of flood-prone areas.

Portugal has reported 810 measures across its 10 UoMs, including 445 in the five FRMPs assessed. The large number of measures also reflects the fact that national measures tend to be repeated for each UoM. Measures are identified at UoM level, detailed in fiches, and prioritised according to a methodology described in the FRMPs. All reported measures have been assigned a priority level, with costs reported for over 90%. Benefits are described mainly in qualitative terms, and while costs and benefits are discussed, it is not clear if and to what extent selection or prioritisation was based on a formal cost-benefit analysis. Indicators are included in the fiches, and the mainland FRMPs describe monitoring systems, but the FRMPs do not assess progress towards achieving objectives but only progress in implementing the measures. Regarding the new PoM for the 2022-2027 cycle, Portugal has reported the status of all 810 measures (an increase on the 299 measures the country had in the first cycle). A large majority of these measures (86%) had not yet started, while 6% were in ongoing maintenance, 4% were in preparation, 4% were under construction, and one preparedness measure in Madeira was completed.

Prevention measures account for 9% of all reported measures, protection for 23% and preparedness for 62%, with preparedness reported in all 10 UoMs. Measures include improvements in forecasting

and early warning systems, restrictions on land use in flood risk areas, and nature conservation actions. Natural water retention measures are included in all five FRMPs assessed, and four FRMPs explicitly include an objective for water retention. The mainland FRMPs also list examples of structural and non-structural measures that include climate change considerations, and climate change is one of the criteria for prioritisation. Some measures address port infrastructure or navigation, though this is only relevant in certain UoMs.

Coordination with the WFD is a strategic objective in four of the five FRMPs assessed, and one of the criteria for prioritising measures. Achieving and maintaining good water body status is highlighted, and the same authorities are responsible for both FRMPs and RBMPs.

Consideration of climate change in the second FRMPs

Climate change considerations for FRMPs are detailed in section 3.7 (Adaptation to climate change).

Governance

In the four Portuguese UoMs that share borders with Spain – Minho and Lima (PTRH1), Douro (PTRH3), Tagus and West Rivers (PTRH5A), and Guadiana (PTRH7) – Portugal reported that coordination had taken place at international level. The three mainland FRMPs assessed all contain a common sub-chapter on transboundary cooperation, referring to coordination with Spain in the framework of the bilateral Albufeira Convention. This cooperation is organised through three working groups on planning, information sharing, and droughts and floods.

Public consultation and the active involvement of stakeholders were an important part of the preparation of the FRMPs. Meetings were held with implementing bodies to discuss measures, and several meetings took place with stakeholders at both local and national levels to discuss the draft plans.

Progress identified in the second FRMPs

The second Portuguese FRMPs show progress compared with the first cycle. For example, most plans (with the exception of the Azores) now clearly describe how the hazard and risk maps were used to develop their measures. However, some areas remain underdeveloped. Firstly, the plans still focus on fluvial and coastal flood sources. The omission of pluvial flooding remains a blind spot, particularly as climate change is driving an increase in extreme and localised precipitation events that can quickly overwhelm urban drainage systems. Secondly, the plans do not clearly address conveyance routes – the pathways that floodwaters take when they overflow – which are essential for effective emergency response and spatial planning.

Objectives are now linked to measures. General and measure-specific indicators support monitoring, funding sources are detailed, and four of the five FRMPs provide some information on costs and benefits, though their influence on prioritisation is unclear. Climate change is considered in four FRMPs (out of the five that were assessed), with impacts incorporated into measure prioritisation for the mainland and Madeira. The Azores plan, on the other hand, provides limited information. Public consultation has improved for the three mainland FRMPs, now being conducted over six months, although consultation details remain limited for Madeira and the Azores. Overall, the second FRMPs offer clearer links between objectives, measures and climate considerations, reflecting incremental but meaningful progress.

Regarding specific measures that are relevant for the Floods Directive (see also Section 3.5), 2021-2027 Cohesion Policy Programmes will support strategic investments across all regions in Portugal, such as implementation of measures under the Lisbon Urban Drainage Plan (LUDP) (so far EUR 250

million estimated total cost of selected operation linked to the LUDP, out of which EUR 50 million to be financed by Cohesion Fund).



8. FD recommendations

Based on the information reported and the FHRMs and FRMPs assessed, the following recommendations are made to enhance flood risk management. Portugal should:

In the FHRMs:

- ensure that the Azores and Madeira maps provide the same level of detail as those for mainland Portugal, including water depths and the indicative number of inhabitants potentially affected;
- make the maps easily accessible online to the public;
- clearly show Industrial Emissions Directive (IED) and Directive on integrated pollution prevention and control (IPPC) installations that are at risk of flooding;
- indicate the potentially affected protected areas identified in Annex IV(1)(i), (iii) and (v) WFD;
- explicitly represent the type of economic activity in areas at risk of flooding.

In the FRMPs:

- provide more detail in the FRMPs on how the FHRMs and PFRAAs were used in the selection and prioritisation of measures;
- make objectives more specific and measurable and provide information on progress towards achieving them, not only on the implementation of measures;
- include detailed information on the use of cost-benefit analysis in the selection and prioritisation of measures;
- provide more information on climate change considerations, particularly in the Azores FRMP;
- where appropriate, consider flood conveyance routes in the FRMP, as they are relevant to emergency response.